September 10, 2019

Massachusetts School Building Authority
40 Broad Street, Suite 500
Boston, MA 02109

Attn: Jess Deleconio
Senior Project Coordinator, MSBA

Re: Worcester Doherty Memorial High School
Feasibility Study – PRELIMINARY DESIGN PROGRAM

Dear Jess:

In accordance with Section 8.1.1.2 of our OPM Contract, we have compiled and are submitting for MSBA review and approval the Feasibility Study, Preliminary Design Program documents for the Worcester Doherty Memorial High School.

The submittal includes one (1) hard copy of materials and one (1) electronic file in PDF format in accordance with the requirements stipulated in MSBA, Module 3 for the Feasibility Study, Preliminary Design Program.

This letter certifies that the District has approved all materials being submitted to the MSBA at this time. We have reviewed and certify that the Preliminary Design Program submission is complete and is submitted for the MSBA review and comment.

Very truly yours,

TISHMAN CONSTRUCTION CORPORATION OF MASSACHUSETTS

[Signature]
Eugene Caruso
Owner's Project Manager

Cc: Russ Adams – City of Worcester
Robert Poitrast – TCCMA
Katie Crockett - LPA
### 3.1.1 INTRODUCTION

A. Narrative Summary
B. Project Directory
C. Updated Project Schedule
D. Supporting Documents
   1. Current Statement of Interest (SOI)
   2. MSBA Board Action Letter
   3. Executed Design Enrollment Certification
   4. Capital Budget Narrative

### 3.1.2 EDUCATIONAL PROGRAM

A. Narrative
B. Teaching Philosophy Statement
C. Chapter 74 Program Submission
D. Supporting Documents
   1. Program Meeting Minutes
      a. Visioning Kick-off Meeting | May 22, 2019
      b. Doherty Staff Visioning Workshop | June 3, 2019
      c. Visioning Workshop One | June 5, 2019
      d. Academic Organization | June 12, 2019
      e. Core Spaces, Community Use & Site Program | June 14, 2019
      f. Administration, Guidance, Medical Suite & Media Center | June 17, 2019
      g. Chapter 74 Engineering & Technology Program | June 17, 2019
      h. Visioning Workshop Two | June 17, 2019
      i. Finance and Operations Update | June 20, 2019
      j. PDP Program Wrap-Up | June 24, 2019
      k. Visioning Workshop Three | June 24, 2019
      l. Public Hearing & Visioning Summary | June 24, 2019
      m. Special Education Program | June 25, 2019
      n. Chapter 74 Programs | July 2, 2019
      o. Space Summary Review | July 8, 2019
      p. Art, Music and Theater Programs | July 10, 2019
      q. School Committee Meeting | July 18, 2019
      r. Dining & Food Service
      s. Athletics and PE Program | July 30, 2019
      t. Security Program | August 13, 2019
      u. SPED Program Refinement | August 20, 2019
| 2. Teacher Survey, Responses & Summary |
| 3. Tours of Similar School Facilities–Summary |
| 4. Worcester Public Schools Strategic Plan |
| 5. Emergency Shelter Narrative |
| 6. WPS Safety and Security Risk and Vulnerability Assessment |
| 7. Student Projects on the Ideal School |
| 8. Program Adjacency Diagrams |
| 9. DESE Coordinated Program Review Report |
| 10. DESE Coordinated Program Review Mid–Cycle Report |

### 3.1.3 INITIAL SPACE SUMMARY

A. MSBA Space Summary Template
B. Floor Plans of Existing Facility
C. Narrative for Variances
D. Program Diagram–Existing vs. Proposed

### 3.1.4 EVALUATION OF EXISTING CONDITIONS

A. Legal Title to the Property
   1. Narrative
   2. Doherty Memorial High School Site
   3. Foley Stadium Site
   4. Chandler Magnet School Site
B. Determination of Historical Registrations
C. Determination of Development Restrictions
D. Evaluation of Building Code Compliance
   1. Evaluation of Building Code Compliance
   2. Building Code Egress Floor Plans
E. Evaluation of Architectural Access Board (AAB) Rules & Regulations
F. Evaluation of Significant Structural, Environmental, Geotechnical or other Physical Conditions
   1. Existing Conditions Narrative–Architectural, LPA
   2. Existing Conditions–Site Civil/Landscape, Nitsch Engineering
TABLE OF CONTENTS

5. Existing Conditions Report—Plumbing & HVAC, Seaman Engineering Corporation
6. Existing Conditions Report—Electrical, ART Engineering
7. Existing Conditions Report—Food Services, Colburn & Guyette

G. Determination for Need and Schedule for Soils Exploration & Geotechnical Evaluation
   1. Narrative
   2. Doherty Memorial High School Site
   3. Foley Stadium Site
   4. Chandler Magnet School Site

H. Phase 1 Environmental Site Assessment
I. Assessment of the Facility for the Presence of Hazardous Materials, Universal Environmental Consultants

J. Supporting Documents
   1. Utility Summary
   2. AHERA 3-Year Reinspection Report

3.1.5 SITE DEVELOPMENT REQUIREMENTS

   A. Site Program Narrative, Nitsch Engineering
   B. Existing Conditions Site Plan
   C. Existing vs. Proposed Site Diagram

3.1.6 PRELIMINARY EVALUATION OF ALTERNATIVES

   A. Narratives
      1. Narrative
   B. Code Upgrade Option
      1. Narrative
      2. Site Diagram
   C. Renovation and/or Additions Option
      1. Narrative
      2. Site Diagram
   D. New Construction on Existing Site Option A.1
      1. Option A.1 Narrative
      2. Option A.1 Site Plan
      3. Option A.1 Site Diagrams Phase 1 – 3
      4. Option A.1 Evaluation
   E. New Construction on Alternative Sites Options
      1. Alternative Site Narrative
      2. Site Selection Narrative, Nitsch Engineering
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3. Option B. Foley Stadium Site Plan  
4. Option B.1 Foley Stadium Site Diagram  
5. Option B.1 Foley Stadium Site Evaluation  
6. Option C. Chandler Magnet School Site Plan  
7. Option C.1 Chandler Magnet School Site Diagram  
8. Option C.1 Chandler Magnet School Site Evaluation  
9. Option C.2 Chandler Magnet School with Added Land Site Diagram  
10. Option C.2 Chandler Magnet School with Added Land Evaluation  

**F. Comparative Cost Analysis & Site Ranking Matrix**  
1. Narrative  
2. Site Ranking Matrix  
3. **Comparative Cost Analysis**, A.M. Fogarty & Assoc., Inc.  

**G. Recommended Alternatives for Further Development and Evaluation**  

**H. Supporting Documents**  
1. Site/Landscape—Basis of Design, Nitsch Engineering  
3. Fire Protection—Basis of Design, Sensible Solutions  
4. HVAC & Plumbing—Basis of Design, Seaman Engineering Corporation  
5. Electrical Systems—Basis of Design, ART Engineering  
6. Charrette Sketches  

### 3.1.7 LOCAL ACTIONS AND APPROVALS

**A. Narrative**  

**B. Local Actions and Approvals Certification**  
1. Local Approval of PDP  
2. Certified copy of SBC Meeting Minutes  

**C. Public Meeting Agendas and Minutes**  

**D. Press & Local News Articles**
3.1.1 INTRODUCTION

A. Narrative Summary
B. Project Directory
C. Updated Project Schedule
D. Supporting Documents
3.1.1 INTRODUCTION

A. Narrative Summary
OVERVIEW

In May of 2019, Lamoureux Pagano Associates Architects (LPA|A) was selected by the Massachusetts School Building Authority (MSBA) with representatives from the City of Worcester to conduct a Feasibility Study for the Doherty Memorial High School. The Preliminary Design Program (PDP) portion of the study is included in this submission and will be followed, after MSBA review and approval, by the Preferred Schematic Report (PSR) to conclude the Feasibility Study phase. Upon approval of the Feasibility Study by the MSBA Board of Directors, the project will proceed into the Schematic Design phase.

EXISTING DOHERTY MEMORIAL HIGH SCHOOL

The existing Doherty Memorial High school is a terraced three level 168,000 GSF building on a 20-acre site. The site has access along Highland Street but is otherwise surrounded by Newton Hill at Elm Park, a Fredrick Law Olmsted designed park with an active community advocacy group. Twelve acres of the site are currently developed, while the balance of the site is constrained by very steep topography to the south. The existing school building consists of core academic areas, undersized Gymnasium, Cafeteria, and Media Center and an Auditorium. Since initial occupancy in 1965, the building has benefited from targeted alteration/repair projects has been well maintained, but has not undergone any significant additions or renovations. The high school facility’s deficiencies are detailed in the Statement of Interest (SOI) included with this section’s Supporting Documents, but can briefly described as follows:

- Lack of adequate spaces to support the District’s Educational Program
- Undersized and separated core facilities limit after-hours community use
- Out-of-date and failing mechanical, electrical, technology, data, security and communication systems
- Lack of a full-coverage fire suppression system
- Lack of accessibility for disabled individuals
- Security risks due to multiple access points on various levels
- Inefficient exterior envelope systems
- Potential for presence of hazardous materials
- Lack of on-site athletic facilities
3.1.1 INTRODUCTION
A. Narrative Summary

MSBA INVITATION TO FEASIBILITY STUDY

Following submission of the Statement of Interest, the MSBA Board of Directors invited the City of Worcester to conduct a Feasibility Study in February of 2018. A copy of the MSBA’s February 21, 2018 letter to the City of Worcester is included with this section’s Supporting Documents.

ENROLLMENT

This Feasibility Study is based on a 1,670-student High School configured for grades 9–12; a copy of the executed Design Enrollment Certification is included with this section’s Supporting Documents.

CAPITAL BUDGET STATEMENT
A Capital Budget Narrative, prepared by the City, is included with this section’s Supporting Documents.

PROJECT DIRECTORY

A full Directory of the Feasibility Study participants is included with this section’s Supporting Documents. Throughout the course of the Study, numerous meetings were held with the Worcester Public Schools District, Owner’s Project Manager, City of Worcester School Building Committee, City Boards/Officials/Committees, representatives of the School District, other project stakeholders and the Design Team; copies of applicable meeting memos are included in this study where relevant.

PROJECT SCHEDULE

An updated Project Schedule, prepared by the Owner’s Project Manager, is also included with this section’s Supporting Documents and includes key milestones, including the following:

- Projected February 2020 MSBA Board of Directors meeting has been targeted for approval of Preferred Schematic Report (PSR) and to authorize proceeding into the Schematic Design (SD) phase.
- Projected August 2020 MSBA Board of Directors meeting has been targeted for approval of Project Scope and Budget.

SUBMISSION ORGANIZATION

This report is organized in accordance with the most current MSBA Module 3 – Feasibility Study Guidelines. The Preliminary Design Program process generally included determination of the Owner’s needs, assessment of existing conditions, analysis/evaluation of alternatives, and recommendation of three (3) distinct alternatives for further study.
3.1.1 INTRODUCTION

B. Project Directory
MSBA Module 3
Feasibility Study PDP

3.1.1 INTRODUCTION
B. Project Directory

OWNER

City of Worcester
City Manager’s Office
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Worcester, MA 01608

City of Worcester
Mayor’s Office
City Hall Room 305
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Worcester, MA 01608

City of Worcester—DPW
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Worcester, MA 01604

Worcester City Hall
Administration & Finance
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Fire Prevention Division

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Daniel Racicot, Mayor’s Chief of Staff
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Doherty Memorial High School
3.1.1 INTRODUCTION

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Worcester City Hall
Purchasing Department
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Worcester, MA 01608

Christopher Gagliastro, Purchasing Director
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SCHOOL DEPARTMENT

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Peter Bowler, Assistant Principal
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John O’Malley, Assistant Principal
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Ed Capstick, Assistant Principal
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Worcester Public Schools
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Kate Kerr, Superintendent Chief of Staff
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Tel: (508) 799–3117
3.1.1 INTRODUCTION

B. Project Directory

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Paul Comerford, Facilities Director
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Email: SullivanN@worcesterschools.net
### SCHOOL BUILDING COMMITTEE

<table>
<thead>
<tr>
<th>Designation</th>
<th>Name and Title</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBC member who is MCPPO certified</td>
<td>Jeremy Flansburg, DPW&amp;P, Clerk of the Works</td>
<td>50 Skyline Drive Worcester, MA 01605</td>
</tr>
<tr>
<td>Local Chief Executive Officer &amp; Administration/Manager</td>
<td>Edward Augustus, City Manager</td>
<td>455 Main Street Worcester, MA 01608</td>
</tr>
<tr>
<td>School Committee Member</td>
<td>Jack Foley WPS School Committee</td>
<td>20 Irving Street Worcester, MA 01609</td>
</tr>
<tr>
<td>Supt. of Schools</td>
<td>Maureen Binienda, WPS Superintendent</td>
<td>20 Irving Street Worcester, MA 01609</td>
</tr>
<tr>
<td>Deputy Supt. of Schools</td>
<td>Dr. Susan O’Neil WPS Deputy Supt.</td>
<td>20 Irving Street Worcester, MA 01609</td>
</tr>
<tr>
<td>Local Official Responsible for Building Maintenance</td>
<td>James Bedard, Director of Environmental Mgmt &amp; Capital Projects</td>
<td>20 Irving Street Worcester, MA 01609</td>
</tr>
<tr>
<td>Rep. of Office authorized by law to construct schools bldgs.</td>
<td>Edward Augustus, City Manager</td>
<td>455 Main Street Worcester, MA 01608</td>
</tr>
<tr>
<td>School principal</td>
<td>Sally Maloney, Principal</td>
<td>299 Highland Street Worcester, MA 01602</td>
</tr>
<tr>
<td>Local Budget Official or Member of Local Finance Committee</td>
<td>Thomas Zidelis City of Worcester Chief Financial Officer</td>
<td>455 Main Street Worcester, MA 01608</td>
</tr>
<tr>
<td>Other</td>
<td>Joseph Petty, Mayor City of Worcester Co-Chair SBC</td>
<td>455 Main Street Worcester, MA 01608</td>
</tr>
<tr>
<td></td>
<td>Paul Moosy, DPW&amp;P Commissioner, Co-Chair</td>
<td>20 East Worcester Street Worcester, MA 01604</td>
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<td></td>
<td>Brian A. Allen, WPS Chief Financial Officer</td>
<td>20 Irving Street Worcester, MA 01609</td>
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<tr>
<td></td>
<td>Christina Kilday, Architect familiar with Public School Bldgs.</td>
<td>50 Skyline Drive Worcester, MA 01605</td>
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<tr>
<td></td>
<td>Morris Bergman, City Councillor</td>
<td>455 Main Street Worcester, MA 01608</td>
</tr>
</tbody>
</table>
### 3.1.1 INTRODUCTION

#### B. Project Directory

<table>
<thead>
<tr>
<th>Designation</th>
<th>Name and Title</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matthew Wally, City Councilor, District 5</td>
<td>455 Main Street Worcester, MA 01608</td>
<td></td>
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<tr>
<td>Steve Bucciaglia, Teacher</td>
<td>38 Ireta Road Shrewsbury, MA 01545</td>
<td></td>
</tr>
<tr>
<td>Katerina Kambosos, Teacher</td>
<td>84 Barry Road Worcester, MA 01609</td>
<td></td>
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<tr>
<td>Renah Razzaq, Teacher</td>
<td>20 Healey Road Worcester, MA 01603</td>
<td></td>
</tr>
<tr>
<td>M. Jesse Garcia, Teacher</td>
<td>113 Grafton Street Millbury, MA 01527</td>
<td></td>
</tr>
<tr>
<td>John Brissette, Parent/ Community Member</td>
<td>55 Amherst Street Worcester, MA 01602</td>
<td></td>
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<tr>
<td>Rick Miller, Parent/ Community Member</td>
<td>23 Germain Street Worcester, MA 01602</td>
<td></td>
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<tr>
<td>Brendan Melican, Parent/ Community Member</td>
<td>89 Olean Street Worcester, MA 01602</td>
<td></td>
</tr>
<tr>
<td>Angela Plant, Parent/ Community Member</td>
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</tbody>
</table>

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MSBA Module 3
Feasibility Study PDP

3.1.1 INTRODUCTION

B. Project Directory

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Doherty Memorial High School
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**Doherty Memorial High School**
Doherty Memorial High School

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Laboratory Consultant
Lamoureux Pagano Assoc. | Architects
108 Grove Street, Suite 300
Worcester, MA 01605
Eric Moore, AIA, Project Manager
Tel: (508) 752–2831 Fax: (508) 757–7769
Email: emoore@lpaa.com

Library/Media Consultant
Lamoureux Pagano Assoc. | Architects
108 Grove Street, Suite 300
Worcester, MA 01605
Eric Moore, AIA, Project Manager
Tel: (508) 752–2831 Fax: (508) 757–7769
Email: emoore@lpaa.com
3.1.1 INTRODUCTION

B. Project Directory

Security Consultant
ART Engineering Corp.
38 Front Street, 3rd Flr
Worcester, MA 01608
Azim Rawji, P.E. Principal
Tel: (508) 797–0333 Fax: (508) 797–5130
Email: azim@artengineering.us

Construction Manager
TBD

Commissioning
TBD

Utilities
National Grid
Energy Efficiency Sales
939 Southbridge Street
Worcester, MA 01610
TBD, Project Manager
Tel: (781) 907–3487
E-mail: TBD@nationalgrid.com
SHS Work Order: 25663473
MS Work Order #: 26290038

TBD, Engineer/Project Manager
Tel: (508) 860–6130
Email: TBD@nationalgrid.com

BACKUP INFORMATION AS REFERENCE AND TEAM USE

UTILITIES
VERIZON
Lisa Donovan
Network Engineer
Central–West Engineering
866–686–1195
Email: lisa.j.donovan@verizon.com

GAS COMPANY
Eversource Energy
Thomas Angelo
Account Executive
508–368–6735
Email: Thomas.Angelo@eversource.com

REBATE PROGRAM
Tracey A. Beckstrom
Lead Commercial Sales New Construction
National Grid
280 Melrose Street
Providence, RI 02907
www.nationalgrid.com
Cell: (401) 474–1640
MSBA Module 3

3.1.1 INTRODUCTION

Energy Modeling for N-Grid
TBD

CITY AGENCIES
Historic Commission
Planning & Regulatory Services Division
455 Main Street, Room 404 (4th Floor)
(508) 799–1400 ext 234
Fax: (508) 799–1406

Worcester Department of Public Works & Parks
20 East Worcester Street, 3rd Floor
Worcester, MA 01604
Office (508) 799–1454
Fax (508) 799–14

Jayna Turchek, Esq.
Director of Human Rights and Disabilities
Office of the City Manager
Worcester City Hall, Room 311
455 Main Street, Worcester, MA 01608
(508) 799–1152
Email: TurchekJ@worcesterma.gov

Raquel Castro-Corazzini
Director of Division of Youth Services
25 Meade St Office B8
Worcester Ma 01610
Tel: (508) 799 1328
Email: Castro–CorazziniR@worcesterma.gov

DOEP Central Region–Solid Waste Division
Jim McQuade
(508) 767–2759
james.mcquade@state.ma.us

DOHERTY MEMORIAL HIGH SCHOOL TEACHERS, STAFF AND COMMUNITY PARTNERS

DOHERTY ACADEMIC DEPARTMENT HEADS:
Sherri Blake, English Department Head
blakes@worcesterschools.net

Adriana Dine, World Language Department Head
Dinea@worcesterschools.net

Valerie Sanchez, Science Department Head
sanchezve@worcesterschools.net
3.1.1 INTRODUCTION

B. Project Directory

Here are the details of the project directory:

**Feasibility Study PDP**

Mike Hargrove, ESL Department Head  
[Email: hargro vem@worcesterschools.net](mailto:hargrovem@worcesterschools.net)

Steve Bucciaglia, History Department Head  
[bucciaglias@worcesterschools.net](mailto:bucciaglias@worcesterschools.net)

Renah Razzaq, Math Department Head  
[razzaqrn@worcesterschools.net](mailto:razzaqrn@worcesterschools.net)

Annette Cochran, ETA Department Head  
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**ADMIN/GUIDANCE**

Judy Fairful, Guidance Department Head  
[fairfulj@worcesterschools.net](mailto:fairfulj@worcesterschools.net)

Carolyn Waters, Instructional Coach  
[watersc@worcesterschools.net](mailto:watersc@worcesterschools.net)

**PHYS ED**

Michael Pageau  
[Email: Pageaum@worcesterschools.net](mailto:Pageaum@worcesterschools.net)

Meghan McDonald  
[Email: mcdonaldm@worcesterschools.net](mailto:mcdonaldm@worcesterschools.net)

Wendy Marshall, PE Teacher

**SPECIAL EDUCATION**

**MUSIC/ART**

Amie Nemes, Art Teacher  
[Email: nemesad@worcesterschools.net](mailto:nemesad@worcesterschools.net)

**FAMILY HEALTH CENTER**

Sue Sleigh, SBHC Coordinator, Family Health Center of Worcester  
[Email: Susan.Sleigh@fhcw.org](mailto:Susan.Sleigh@fhcw.org)
3.1.1 INTRODUCTION

C. Updated Project Schedule
### Doherty Memorial High School Feasibility/Schematic Design Project Schedule

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Start Date</th>
<th>End Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Schedule</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Worcester Doherty Memorial High School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Schedule</td>
<td></td>
<td></td>
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<tr>
<td>DOHERTY MEMORIAL HIGH SCHOOL - PROJECT SCHEDULE</td>
<td></td>
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<tr>
<td>MSBA Board Meeting</td>
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<tr>
<td>MBAB DSP Meeting Schedule</td>
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<td></td>
</tr>
<tr>
<td>MBAB DSP meeting March 12, 2019</td>
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<tr>
<td>Designer Selection request for Interviews</td>
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<tr>
<td>City contract w/Designer submit to MBAB</td>
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<tr>
<td>Feasibility Study thru Project Complete</td>
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<tr>
<td>Feasibility Study - POP</td>
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<tr>
<td>Kick Off meeting with CoW and Designer</td>
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<tr>
<td>Project Meeting with MBAB</td>
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<tr>
<td>Educational Program</td>
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<tr>
<td>Visioning Workshop I</td>
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<tr>
<td>Visioning Workshop II</td>
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<td>Visioning Workshop III</td>
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<td>DESE Chapter 74 Program Summary</td>
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<tr>
<td>School Building Committee Vote DESE</td>
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<tr>
<td>Submit Chapter 74 Summary to MBAB</td>
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<tr>
<td>Space Summary requirements</td>
<td></td>
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<tr>
<td>Existing Conditions evolutions</td>
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<td></td>
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<tr>
<td>Site Development requirements</td>
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<tr>
<td>Three Alternatives/ Cost Estimates</td>
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<td></td>
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<tr>
<td>Public Meeting for PDP update</td>
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<td></td>
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<tr>
<td>SBC / District Approval for PDP</td>
<td></td>
<td></td>
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<tr>
<td>Submit PDP Binder to MBAB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MBAA review comments for PDP</td>
<td></td>
<td></td>
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<tr>
<td>Develop Preferred Schematic Report (PSR)</td>
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<tr>
<td>MBAB comments from PDP updated</td>
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<tr>
<td>SBC/Public update meeting PSR</td>
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<tr>
<td>Final evaluation of Existing conditions</td>
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<tr>
<td>Final evaluation of three Alternatives</td>
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<td>SBC/Public update meeting PSR</td>
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<td>Total Project Budget and Cost estimate</td>
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<tr>
<td>Project and Design Schedule</td>
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<tr>
<td>PSR Meeting</td>
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<tr>
<td>SBC / District approval for PSR</td>
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<td></td>
</tr>
</tbody>
</table>

**City of Worcester Doherty Memorial High School**

**MBAB DSP Meeting Schedule**

- **MBAB DSP meeting March 12, 2019**
- **Designer Selection request for Interviews**
- **City contract w/Designer submit to MBAB**

**Feasibility Study thru Project Complete**

- **205 days**
- **Final evaluation of Existing conditions**
- **Feasibility Study - POP**
- **Kick Off meeting with CoW and Designer**
- **Project Meeting with MBAB**
- **Educational Program**
- **Visioning Workshop I**
- **Visioning Workshop II**
- **Visioning Workshop III**
- **DESE Chapter 74 Program Summary**
- **School Building Committee Vote DESE**
- **Submit Chapter 74 Summary to MBAB**
- **Space Summary requirements**
- **Existing Conditions evolutions**
- **Site Development requirements**
- **Three Alternatives/ Cost Estimates**
- **Public Meeting for PDP update**
- **SBC / District Approval for PDP**
- **Submit PDP Binder to MBAB**
- **MBAB review comments for PDP**

**Develop Preferred Schematic Report (PSR)**

- **96 days**
- **MBAB comments from PDP updated**
- **SBC/Public update meeting PSR**
- **Final evaluation of Existing conditions**
- **Final evaluation of three Alternatives**
- **SBC/Public update meeting PSR**
- **Total Project Budget and Cost estimate**
- **Project and Design Schedule**
- **PSR Meeting**
- **SBC / District approval for PSR**
### Doherty Memorial High School Feasibility/Schematic Design Project Schedule

#### General Information
- **Predecessors:**
  - Wed 2/26/20
  - Schematic Design Drawings 18"x24"
- **Schematic Design Drawings:**
  - Thu 2/27/20
  - 0 days
- **SCHEMATIC DESIGN:**
  - Thu 2/27/20
  - 262 days
- **Possible Proprietary Items:**
  - Thu 6/4/20
  - 2 days

### Key Dates
- **Submit PSR to MSBA:**
  - Thu 6/4/20
  - 2 days
- **FAS Meeting - No MSBA date posted:**
  - Thu 6/25/20
  - 10 days
- **Project Schedule:**
  - Thu 6/3/20
  - 5 days

### Important Notes
- **Update PSR at MSBA comments:**
  - Wed 5/6/20
  - 5 days
- **Submit PSR to MSBA:**
  - Thu 5/14/20
  - 20 days

### Milestone Events
- **SBC/Public update meeting for SD:**
  - Wed 3/18/20
  - 5 days
- **Prepare and document the Dept. of Elem and Sec Ed (DESE) requirements:**
  - Thu 3/26/20
  - 1 day

### Project Timeline
<table>
<thead>
<tr>
<th>ID</th>
<th>Task Name</th>
<th>Start</th>
<th>Finish</th>
<th>Duration</th>
<th>Notes</th>
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<tr>
<td>01</td>
<td>Submit PSR to MSBA</td>
<td>Fri 12/27/19</td>
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<td>Tue 12/31/19</td>
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<td>FAS Meeting - No MSBA date posted</td>
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<td>04</td>
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<td>05</td>
<td>MSBA est. (TBD) Board Meeting for PSR</td>
<td>Thu 1/10/20</td>
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<td>06</td>
<td>MSBA Board Approval letter for PSR</td>
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<td>07</td>
<td>DESE Binder</td>
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<td>Thu 1/11/20</td>
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<td>Prepare and document the Dept. of Elem and Sec Ed (DESE) requirements</td>
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<td>Schematic Design Binder</td>
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<td>Introduction and Final Design narratives</td>
<td>Tue 1/28/20</td>
<td>Thu 1/30/20</td>
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<td>Sustainable Building Design guidelines</td>
<td>Tue 2/4/20</td>
<td>Thu 2/6/20</td>
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<td>Complete Room Data sheets</td>
<td>Wed 2/5/20</td>
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<td>Thu 2/6/20</td>
<td>Thu 2/7/20</td>
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<td>Thu 2/14/20</td>
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<td>Thu 2/14/20</td>
<td>1 day</td>
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<td>Fri 2/15/20</td>
<td>Thu 2/16/20</td>
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<td>17</td>
<td>Project Schedule</td>
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<td>18</td>
<td>Schematic Design Project Manual</td>
<td>Thu 2/21/20</td>
<td>Thu 2/22/20</td>
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<td>19</td>
<td>Site Plan and development</td>
<td>Thu 3/11/20</td>
<td>Thu 3/12/20</td>
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<td>20</td>
<td>Building Floor plans min. 1/8&quot; scale</td>
<td>Thu 3/12/20</td>
<td>Thu 3/13/20</td>
<td>2 days</td>
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<td>21</td>
<td>Interior elevations</td>
<td>Thu 3/12/20</td>
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<td>22</td>
<td>Exterior elevations</td>
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<td>23</td>
<td>Public meeting to review SD</td>
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<td>24</td>
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<tr>
<td>25</td>
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</tr>
</tbody>
</table>

---

[Projects@dohertyhsschools.net] [Design Schedules/Qtr 3/Qtr 4] [Send to MSBA] [Processed this document on Thu 6/25/2020]
3.1.1 INTRODUCTION

D. Supporting Documents

1. Current Statement of Interest (SOI)
2. MSBA Board Action Letter
3. Executed Design Enrollment Certification
4. Capital Budget Narrative
Massachusetts School Building Authority

School District  Worcester

District Contact  Jeffrey Martin TEL: (508) 799-3151

Name of School  Doherty Memorial High

Submission Date  3/25/2016

SOI CERTIFICATION

To be eligible to submit a Statement of Interest (SOI), a district must certify the following:

- The district hereby acknowledges and agrees that this SOI is NOT an application for funding and that submission of this SOI in no way commits the MSBA to accept an application, approve an application, provide a grant or any other type of funding, or places any other obligation on the MSBA.
- The district hereby acknowledges that no district shall have any entitlement to funds from the MSBA, pursuant to M.G.L. c. 70B or the provisions of 963 CMR 2.00.
- The district hereby acknowledges that the provisions of 963 CMR 2.00 shall apply to the district and all projects for which the district is seeking and/or receiving funds for any portion of a municipally-owned or regionally-owned school facility from the MSBA pursuant to M.G.L. c. 70B.
- The district hereby acknowledges that this SOI is for one existing municipally-owned or regionally-owned public school facility in the district that is currently used or will be used to educate public PreK-12 students and that the facility for which the SOI is being submitted does not serve a solely early childhood or Pre-K student population.
- After the district completes and submits this SOI electronically, the district must sign the required certifications and submit one signed original hard copy of the SOI to the MSBA, with all of the required documentation described under the "Vote" tab, on or before the deadline.
- The district will schedule and hold a meeting at which the School Committee will vote, using the specific language contained in the "Vote" tab, to authorize the submission of this SOI. This is required for cities, towns, and regional school districts.
- Prior to the submission of the hard copy of the SOI, the district will schedule and hold a meeting at which the City Council/Board of Aldermen or Board of Selectmen/equivalent governing body will vote, using the specific language contained in the "Vote" tab, to authorize the submission of this SOI. This is not required for regional school districts.
- On or before the SOI deadline, the district will submit the minutes of the meeting at which the School Committee votes to authorize the Superintendent to submit this SOI. The district will use the MSBA’s vote template and the vote will specifically reference the school and the priorities for which the SOI is being submitted. The minutes will be signed by the School Committee Chair. This is required for cities, towns, and regional school districts.
- The district has arranged with the City/Town Clerk to certify the vote of the City Council/Board of Aldermen or Board of Selectmen/equivalent governing body to authorize the Superintendent to submit this SOI. The district will use the MSBA’s vote template and submit the full text of this vote, which will specifically reference the school and the priorities for which the SOI is being submitted, to the MSBA on or before the SOI deadline. This is not required for regional school districts.
- The district hereby acknowledges that this SOI submission will not be complete until the MSBA has received all of the required vote documentation and certification signatures in a format acceptable to the MSBA. If Priority 1 is selected, your Statement of Interest will not be considered complete unless and until you provide the required engineering (or other) report, a professional opinion regarding the problem, and photographs of the problematic area or system.
* Local chief executive officer: In a city or town with a manager form of government, the manager of the municipality; in other cities, the mayor; and in other towns, the board of selectmen unless, in a city or town, some other municipal office is designated to the chief executive office under the provisions of a local charter. Please note, in districts where the Superintendent is also the Local Chief Executive Officer, it is required for the same person to sign the Statement of Interest Certifications twice. Please do not leave any signature lines blank.
Massachusetts School Building Authority

School District  Worcester

District Contact  Jeffrey Martin TEL: (508) 799-3151

Name of School  Doherty Memorial High

Submission Date  3/25/2016

Note

The following Priorities have been included in the Statement of Interest:

1. □ Replacement or renovation of a building which is structurally unsound or otherwise in a condition seriously jeopardizing the health and safety of school children, where no alternative exists.
2. □ Elimination of existing severe overcrowding.
4. □ Prevention of severe overcrowding expected to result from increased enrollments.
5. □ Replacement, renovation or modernization of school facility systems, such as roofs, windows, boilers, heating and ventilation systems, to increase energy conservation and decrease energy related costs in a school facility.
7. □ Replacement of or addition to obsolete buildings in order to provide for a full range of programs consistent with state and approved local requirements.
8. □ Transition from court-ordered and approved racial balance school districts to walk-to, so-called, or other school districts.

SOI Vote Requirement

□ I acknowledge that I have reviewed the MSBA’s vote requirements for submitting an SOI which are set forth in the Vote Tab of this SOI. I understand that the MSBA requires votes from specific parties/governing bodies, in a specific format using the language provided by the MSBA. Further, I understand that the MSBA requires certified and signed vote documentation to be submitted with the SOI. I acknowledge that my SOI will not be considered complete and, therefore, will not be reviewed by the MSBA unless the required accompanying vote documentation is submitted to the satisfaction of the MSBA.

Potential Project Scope:  Potential New School

Is this SOI the District Priority SOI?  YES

School name of the District Priority SOI:  2016 Doherty Memorial High

Is this part of a larger facilities plan?  NO

If "YES", please provide the following:

Facilities Plan Date:
Planning Firm:
Please provide an overview of the plan including as much detail as necessary to describe the plan, its goals and how the school facility that is the subject of this SOI fits into that plan:
Please provide the current student to teacher ratios at the school facility that is the subject of this SOI: 15 students per teacher

Please provide the originally planned student to teacher ratios at the school facility that is the subject of this SOI: 17 students per teacher

Does the District have a Master Educational Plan that includes facility goals for this building and all school buildings in District? NO

Does the District have related report(s)/document(s) that detail its facilities, student configurations at each facility, and District operational budget information, both current and proposed? NO

If "NO", please note that:
If, based on the SOI review process, a facility rises to the level of need and urgency and is invited into the Eligibility Period, the District will need to provide to the MSBA a detailed Educational Plan for not only that facility, but all facilities in the District in order to move forward in the MSBA’s school building construction process.

Is there overcrowding at the school facility? NO

If "YES", please describe in detail, including specific examples of the overcrowding.

Has the district had any recent teacher layoffs or reductions? NO

If "YES", how many teaching positions were affected? 0
At which schools in the district?
Please describe the types of teacher positions that were eliminated (e.g., art, math, science, physical education, etc.).

Has the district had any recent staff layoffs or reductions? NO

If "YES", how many staff positions were affected? 0
At which schools in the district?
Please describe the types of staff positions that were eliminated (e.g., guidance, administrative, maintenance, etc.).

Please provide a description of the program modifications as a consequence of these teacher and/or staff reductions, including the impact on district class sizes and curriculum.

N/A

Please provide a detailed description of your most recent budget approval process including a description of any budget reductions and the impact of those reductions on the district’s school facilities, class sizes, and educational program.

The Worcester Public Schools FY16 general fund budget of $318,189,979, represents an increase of $13,438,129, or 4.4% over the prior fiscal year, reflecting continued enrollment growth and demographic changes within the district. The adopted budget reflects a collaborative effort with school and district leadership teams to develop resource allocations for schools using a data-driven, needs-based assessment resulting in additional personnel, instructional materials, and technology improvements to the schools. The budget process is based on a Seven Point Financial Plan for Advancing Student Achievement and Program Sustainability that relies on long term resource allocation strategies and allows individual school councils and instructional leadership teams to create templates for future school-based accountability and resource planning. Concurrently, the district Administration has made numerous budget presentations and solicited valuable input from parent groups, students, local business leader roundtables, civic and community leaders, and concerned citizens.
General Description

BRIEF BUILDING HISTORY: Please provide a detailed description of when the original building was built, and the date(s) and project scope(s) of any additions and renovations (maximum of 5000 characters).

Doherty Memorial High School was constructed in 1966. The school has an enrollment of approximately 1,467 students in grades 9-12. The facility is approximately 168,000 square feet situated on a 20-acre parcel. Based upon a review of the findings generated by the 2011 visiting team, the commission of the New England Association of Schools and Colleges voted to place Doherty Memorial High School on Warning Status for the Standards on Accreditation for Curriculum; and Community Resources for Learning due to issues associated with the building.

TOTAL BUILDING SQUARE FOOTAGE: Please provide the original building square footage PLUS the square footage of any additions.

168000

SITE DESCRIPTION: Please provide a detailed description of the current site and any known existing conditions that would impact a potential project at the site. Please note whether there are any other buildings, public or private, that share this current site with the school facility. What is the use(s) of this building(s)? (maximum of 5000 characters).

Facility is located on a 20-acre parcel which includes the building and all parking lot facilities. There are no known site conditions that would impact the potential project.

ADDRESS OF FACILITY: Please type address, including number, street name and city/town, if available, or describe the location of the site. (Maximum of 300 characters)

Doherty Memorial High School, 299 Highland Street, Worcester, MA 01602

BUILDING ENVELOPE: Please provide a detailed description of the building envelope, types of construction materials used, and any known problems or existing conditions (maximum of 5000 characters).

Window System:
The window system in the school is original to the school. The single-pane window system is extremely inefficient and is causing significant heat loss and strain on the heating system. It is having difficulty trying to maintain a comfortable temperature throughout the heating season.

Many of the windows do not operate properly and in many cases fixed shut.

Exterior Walls:
The exterior brick work of the school is aged and is showing signs of wear and tear. The sills and mortar are deteriorating. The steal entrance way overhangs are showing signs of age and deterioration.

Roof:
The roof was installed in 1995 and will soon be becoming a maintenance problem as the membrane system becomes more aged.

Has there been a Major Repair or Replacement of the EXTERIOR WALLS? NO
Year of Last Major Repair or Replacement:(YYYY) 1966
Description of Last Major Repair or Replacement:
Original to construction in 1966.
Roof Section  A
Is the District seeking replacement of the Roof Section?  YES
Area of Section (square feet)  0
Type of ROOF (e.g., PVC, EPDM, Shingle, Slate, Tar & Gravel, Other (please describe)
Membrane
Age of Section (number of years since the Roof was installed or replaced)  21
Description of repairs, if applicable, in the last three years. Include year of repair:
Full replacement in 1995.

Window Section  A
Is the District seeking replacement of the Windows Section?  YES
Windows in Section (count)  0
Type of WINDOWS (e.g., Single Pane, Double Pane, Other (please describe))
Single-pane
Age of Section (number of years since the Windows were installed or replaced)  50
Description of repairs, if applicable, in the last three years. Include year of repair:
Original to construction in 1966.

MECHANICAL and ELECTRICAL SYSTEMS: Please provide a detailed description of the current mechanical and electrical systems and any known problems or existing conditions (maximum of 5000 characters).

Mechanical:
The HVAC control is comprised of two different temperature control packages for different areas of the building. These two systems do not communicate well and it makes for serious discrepancies in temperatures.

The hot water distribution piping is original to the facility and requires constant maintenance. We experience frequent leaks. A failure in this distribution system would cause major heat loss throughout the facility. The numerous zone-based building pumps are in need of constant repair and maintenance.

The boilers have been experiencing significant reliability issues and several sections within the boilers have been repaired.

The modulating dampers on the energy recovery units are fixed at 100% and require a modulation upgrade to allow for increased heating capabilities.

The gymnasium and auditorium have antiquated HV units and are in need of complete replacement. These units are well beyond the expected life span and are requiring continuous maintenance.

The emergency generator is not connected to the boiler and therefore does not provide freeze protection in case of a power failure.

Electrical:
The main electrical system in the building is original and becoming aged.

The subpanels are approaching capacity based on the increased need for technology in all areas of the building. There are not enough outlets in the classrooms and common areas to satisfy the needs of the school.

The electrical backup generator is outdated and significantly undersized to handle all of the needs of the building. There is not enough equipment wired to the generator to protect the facility in the case of a power outage.

The fire alarm panel is the original Edwards panel that is well beyond its life expectancy. Replacement parts are extremely
hard to find and becoming more and more difficult to obtain. If any one of the components in the fire alarm system fails, it would cause a complete system failure.

The clock/bell/phone/intercom system is requiring a lot of maintenance to maintain. The system is outdated and in dire need of replacement.

Plumbing:
The distribution piping in the school is original. Minimal areas of piping have been completely replaced and many patch-type repairs have occurred instead. Isolation valves are continuously failing to hold and operate properly, requiring the entire facility to be shut down to make repairs. The aged feed and waste lines are becoming high maintenance due to leaks, blockages, and breakages.

Plumbing fixtures in many of the science labs do not work properly or are shut off completely.

Eye wash stations need to be installed in many areas of the school.

**Boiler Section**

1

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the District seeking replacement of the Boiler?</td>
<td>YES</td>
</tr>
<tr>
<td>Is there more than one boiler room in the School?</td>
<td>NO</td>
</tr>
<tr>
<td>What percentage of the School is heated by the Boiler?</td>
<td>100</td>
</tr>
<tr>
<td>Type of heating fuel (e.g., Heating Oil, Natural Gas, Propane, Other)</td>
<td>Natural Gas</td>
</tr>
<tr>
<td>Age of Boiler (number of years since the Boiler was installed or replaced)</td>
<td>11</td>
</tr>
</tbody>
</table>

Description of repairs, if applicable, in the last three years. Include year of repair:

Full replacement with gas-fired, forced hot water boilers in 2005. Please also see Mechanical and Electrical Systems section above.

Has there been a Major Repair or Replacement of the HVAC SYSTEM? YES

Year of Last Major Repair or Replacement: (YYYY) 2007

Description of Last Major Repair or Replacement:

Rooftop units replaced in 2007. Please also see Mechanical and Electrical Systems section above.

Has there been a Major Repair or Replacement of the ELECTRICAL SERVICES AND DISTRIBUTION SYSTEM? NO

Year of Last Major Repair or Replacement: (YYYY) 1966

Description of Last Major Repair or Replacement:

Original to construction in 1966.

BUILDING INTERIOR: Please provide a detailed description of the current building interior including a description of the flooring systems, finishes, ceilings, lighting, etc. (maximum of 5000 characters).

The school has narrow hallways throughout the building that make it difficult for students to move between course periods without significant safety concerns. The school's cafeteria is too small for all students to eat in fewer lunch periods which has a significant impact on the school's flexibility for scheduling students for specialized enrichment classes. The majority of the flooring throughout the facility consists of ACT, VCT, carpeting, as well as hardwood floors in the gymnasium and the auditorium stage. The majority of the ceiling material consists of 2X2 and 2X4 ceiling tile drop-ins throughout the facility. Typical wall finishes are painted plasterboard, exposed glazed block, and various other architectural surfaces.

PROGRAMS and OPERATIONS: Please provide a detailed description of the current programs offered and grades served, and indicate whether there are program components that cannot be offered due to facility constraints, operational constraints, etc. (maximum of 5000 characters).
Doherty Memorial High School is a comprehensive grade 9-12 high school. Despite an outdated facility, the school offers a strong academic program and some meaningful, high-interest, and skills-rich electives. For example, the Engineering and Technology program, (ETA), has been most successful in providing students with learning experiences that support the development of the skills necessary for today’s college and career opportunities. The number of students who participate in this program has been steadily increasing during the recent past. At approximately 400 students this year, and given the current space allocated to this program, we will have reached the maximum number of students given the vocational requirements of this Chapter 74 program. In order to expand this program, additional space will be needed. Recently, we were able to add a course in Marketing which has provided an additional option for students who have an interest in the Business and Technology areas. However, in order to seek approval for the expansion of this pathway option, not only would we need to offer additional courses, we would need additional space for the students to fully operate and maintain a school store, to learn in a setting that simulates that of a business environment, and to use technology as successful organizations do in the workplace.

The FY11 capital improvements to the school included locker installation in various areas, science lab renovation in the 300 wing, floor coverings in the 400 section, complete resurfacing of both gym floors, installation of athletic flooring in locker rooms, renovations to 6 bathrooms, painting throughout the facility, paving of front driveway and entrance way, as well as painting of the front canopies. More extensive renovation is recommended.

The Advanced Academy was initially proposed to be housed at Doherty High, but due to the lack of space, it seems unlikely to occur. This program would have involved an additional 250 students and ten classrooms dedicated to advanced academics for the Worcester district. If there were additional space at Doherty, it would have provided a central location for students from all areas of the city in a location that did not cost the district any additional monies in rental agreements.

There are some additional needs in the Health Center which is not large enough to service the student population for their medical needs. Additionally, this year a much-needed Behavioral Specialist was added to the Health Center staff for a total of five people confined to that space. While we desperately need the support for the students who have social and emotional issues, the current space is inadequate and lacks any place for the Behavioral Specialist to have confidential conversations with individual students and/or any space for the therapist to convene any small group interventions.

The other issue that has been highlighted this past year by the Coordinated Program Review is the space dedicated to the Special Education students. Doherty High has been cited for the use of rooms with partitions for Special Education classes, more specifically, room 205, and room 321. Much of the space for the increasing number of Special Education programs is not designed to allow for the small group instruction necessitated by the educational plans. The use of certain spaces and the use of temporary partitions to divide larger spaces is not optimal.

Lastly, the lack of handicapped accessibility continues to be an issue. There is at least one current grade 8 student for whom Doherty is the home school and the siblings attend but this student is unable to attend Doherty due to the lack of handicapped accessibility to the building. I am confident that there are, or have been, or will be other students adversely affected by this issue.

CORE EDUCATIONAL SPACES: Please provide a detailed description of the Core Educational Spaces within the facility, a description of the number and sizes (in square feet) of classrooms, a description of science rooms/labs including ages and most recent updates, a description of the cafeteria, gym and/or auditorium and a description of the media center/library (maximum of 5000 characters).

The core educational spaces at Doherty High School remain largely unchanged since the building was opened in 1966. Doherty has 70 classrooms, one auditorium, one media center, one cafeteria for students and teachers, and one gymnasia.

Classrooms: While the class sizes vary (at times significantly) throughout the two buildings, an average-size classroom at
Doherty is approximately 775 sq. ft. with an average of 29 seats.

The music program consists of one classroom and thus has minimal opportunity for growth. The art program is similar. The art department has one classroom with twenty-eight desks set in 1,040 square feet of space.

Science Labs: In August 2011, work was completed to renovate two of the science laboratories. Room 320 has 25 seats and four lab stations that seat between two and four students at each. Room 324 has eighteen seats and six lab stations that also seat between two and four students each.

Library Media Center: The Center is set in 3,000 square feet of space. This space includes nine tables for students to sit and work, twenty-eight computers, all of our books, all storage, and the librarian’s station/office.

In order to meet the needs of 21st-century learners, the media center needs to be expanded in terms of physical space and must be equipped with more technology. Upon comparison of our current media center space compared with that of newer facilities in our district and in our local area, it is clear that this physical space and the technology in it are inadequate to properly meet the needs of today’s learners.

The school has narrow hallways throughout the building that make it difficult for students to move between course periods without significant safety concerns. The school’s cafeteria is too small for all students to eat in fewer lunch periods which has a significant impact on the school’s flexibility for scheduling students for specialized enrichment classes.

CAPACITY and UTILIZATION: Please provide a detailed description of the current capacity and utilization of the school facility. If the school is overcrowded, please describe steps taken by the administration to address capacity issues. Please also describe in detail any spaces that have been converted from their intended use to be used as classroom space (maximum of 5000 characters).

School is at capacity, but is not overcrowded.

MAINTENANCE and CAPITAL REPAIR: Please provide a detailed description of the district’s current maintenance practices, its capital repair program, and the maintenance program in place at the facility that is the subject of this SOL. Please include specific examples of capital repair projects undertaken in the past, including any override or debt exclusion votes that were necessary (maximum of 5000 characters).

The Worcester Public Schools performs maintenance work in all of its school buildings, primarily utilizing in-house personnel. The scope of work ranges from routine maintenance through emergency repairs, as well as findings through various code inspections. Worcester Public Schools uses an electronic maintenance work order program for all of its work order submission, tracking, and documentation. Capital projects, preventative maintenance, and various other facility infrastructure improvements are prioritized and performed based on need and available funding. The City of Worcester has engaged the services of a third party to launch a comprehensive energy conservation program. This program includes the replacement of capital equipment in various school facilities; examples include: boilers, chillers, controls, and various other energy conservation-related equipment.
Priority 3

Question 1: Please provide a detailed description of the "facility-related" issues that are threatening accreditation. Please include in this description details related to the program or facility resources (i.e. Media Center/Library, Science Rooms/Labs, general classroom space, etc.) whose condition or state directly threatens the facility’s accreditation status.

The NEASC noted several deficiencies regarding the physical plant of Doherty Memorial High School in their decennial report following their October 2011 visit.

The school was placed at Warning status, primarily because of issues that related to whether or not 21st-century education can take place within the aging facility. The following statements were among those observations and recommendations made by the NEASC:

- The current facility greatly hinders opportunities for students to learn. It is apparent that the facility has fallen into an extreme state of neglect. Lack of handicapped accessibility prevents students with disabilities or even short term mobility issues from participating in the programs at Doherty Memorial High School. Lack of basic maintenance for extended periods of time have led to numerous sanitary and health issues. The cafeteria cannot accommodate the entire student body so many students do not have a place to sit and, as a result, go without lunch. The current facility prevents many required programs from being implemented and severely hinders teaching and learning at Doherty Memorial High School. If students are going to be prepared for 21st-century life, drastic changes must be made to the physical plant.

- There are limited resources available in the media center which is closed numerous days each year to be used as testing space.

- Numerous problems still exist with heating and ventilation.

- Lavatories have limited ventilation and inoperable stalls and sinks.

- The original single-pane windows do not provide adequate protection from the cold air. Many of them are broken throughout the building and have not been replaced.

- There is a need for a plan to address capital improvement needs. The lack of such a plan places Doherty Memorial High School at a disadvantage.

- Doherty Memorial High School site and plant do not support the delivery of high quality school programs and services. Despite the noble attempts by the staff to dress up some of the walls with a coat of paint or artwork, the school is in a state of extreme disrepair. The school was constructed in 1966 and has seen little renovation. The school is built on a slope and has numerous levels, but there is no elevator. Students with permanent or temporary mobility impairments cannot access programs and services within the building. Accessibility to and throughout the building for people with limited mobility is extremely restrictive. There are no elevators, and no internal structures are currently in place to allow movement between the first and second floors and the third and fourth floors. Students and visitors who are not able to use stairs must exit the building, travel through the parking lot, and reenter the building on the third floor. The cafeteria area
is small and does not have the physical capacity to serve the student body. Many students have expressed concern with cafeteria overcrowding and their inability to utilize the lunch program consistently. The library has inadequate space to address the needs of 1,300 students. Space in the special education department is inadequate for program needs. Lavatories are insufficient to serve the school population. Lavatories lack ventilation, and some have inoperable stalls and sinks. The current facility prevents the delivery of high quality school programs and services, and as a result, students cannot achieve the school’s 21st-century learning expectations.

The following statements are recommendations made by the NEASC:

- Develop and implement a plan to ensure sufficient levels of technology, equipment, supplies, facilities and library/media space and resources to fully implement the curriculum.

- Immediately address all heat and safety issues with the facility.

- Repair all plumbing, lighting, and ventilation in lavatories to provide adequate sanitary and safety conditions.

- Provide adequate space and seating in the cafeteria so that all students may sit down to eat.

- Ensure equal access to programs and services in all parts of the building for all students and staff members.

- Ensure handicapped access to programs and services on all levels.

- Develop a timeline to address the many capital improvements necessary to implement the curriculum and 21st-century instruction and assessment practices.

- Provide adequate heating and ventilation throughout the facility.

- Develop and implement a technology plan to ensure that computers and other technologies are up to date and available for student and faculty use.
Priority 3

Question 2: Please describe the measures the district has taken to mitigate the problem(s) described above.

The District continues to provide general and emergency maintenance and support of the facility in an effort to maintain a safe and welcoming environment that also provides for reasonable teaching and learning. The District continues to make temporary enhancements to the facility until a more long-term remedy can be determined. The District has upgraded electrical and data wiring over a period of time in order to accommodate new technology initiatives that have been implemented at the school.

Although these enhancements have not been robust to integrate state-of-the-art technology throughout the entire school, efforts have been made to introduce new technology for student learning. The District was also able to use local funds to replace one of the existing science labs which allows for one classroom to have up-to-date furnishing and equipment.

To improve the energy-efficiency of the school, the District has installed more efficient lighting, providing for more consistent lighting within the classrooms. In addition, the District has recently weatherized and re-caulked windows providing short-term measures for the highly inefficient window system.

Finally, the District has used local funds to improve common areas of the school, including student locker replacement, and selective floor covering replacement and painting.
Priority 3

Question 3: Please provide a detailed explanation of the impact of the problem described in this priority on your district's educational program. Please include specific examples of how the problem prevents the district from delivering the educational program it is required to deliver and how students and/or teachers are directly affected by the problem(s) identified.

In January of 2015, a comprehensive facilities needs study was done at the Doherty Memorial High School and identified a total need just under $18 million dollars, which included deferred maintenance, capital renewal & modernization, and grandfathered Code issues.

The District is unable to provide the educational program at Doherty Memorial High School that it would need in order for all students to graduate college and career-ready due to the facility. Despite the efforts of the faculty and administration to creatively maintain and add courses & programs to enhance the educational experiences of our students, the facility continues to prohibit the delivery of curriculum in a manner that supports the development of 21st-century skills.

Throughout the building, there is a lack of technology and the existing technology is outdated. All classrooms should be equipped with several computers to be used by students during class time without having to leave the room. LCD projectors, interactive whiteboards, computer tablets, document cameras, etc. should be in each classroom for teachers and students to use in order to support the delivery of high-quality instruction focused upon current curricular standards. Additionally, wireless connections and computer labs should be readily available for teacher and student use.

The level of collaboration among teachers that is needed to meet the needs of our learners is also adversely-impacted by the facility. The lack of workspace for teachers to meet with one another both within and across academic disciplines does not support the integration of subject matter and limits the extent to which teachers can implement learning experiences for students that are interdisciplinary and demonstrate clear connections among the topics that students are learning in various courses. By increasing and modernizing the workspace for teachers, the opportunities for sharing successful strategies and practices would become greater and as would the horizontal and vertical alignment of our courses. As a result of our teachers having increased opportunities to meet and discuss issues of curriculum, instruction, assessment, data, and professional growth in the newly-added workspace, our students would be provided with enhanced learning opportunities and would better prepared for their future endeavors. Additional workspace is also needed to allow for meetings and to ensure that confidentiality issues are addressed properly.

The Massachusetts High School program of Studies is a recommended, rigorous course of study based upon the standards of the Massachusetts Frameworks that align high school coursework with college and workforce expectations. A review of the suggested course of study provides additional evidence that our current facility does not support the learning requirements of today. The recommendations include one unit of study in the arts for all high school graduates. Currently, our facility allows for only one art classroom and no practice space for our theater students. Our music students, including vocals and band, have only one room equipped with mildly acceptable acoustics for their rehearsals and practices. To expand our offerings in the arts to meet the minimum requirement of State graduation requirements, we will need to increase our offerings and the space dedicated to these courses significantly. Currently, only 23% of our students are able to participate in art, music and theater courses. To fulfill state graduation requirements, we need to provide opportunities for all students to participate in at least one arts course. Given our current population of 1,467, this will require a 77% increase in the number of students enrolled in the arts.

Similarly in the sciences, State graduation requirements require three courses and the WPS recently increased the number of science courses required to graduate to three. This will require additional classrooms equipped for laboratory activities.

In accordance with the Worcester Public Schools High Quality Teaching and Learning document, the learning environment must continually adjust to match learning objectives and student needs to ensure engagement. Learning materials and physical space must be organized to provide adequate and equitable engagement in productive tasks. In order to accomplish this and to fulfill
the State's graduation requirements to meet the needs of our current and future 21st-century learners, we will need to expand our course offerings and dedicated course space, especially in the areas of wellness, the arts, and career/technical education. Increased space devoted to trends in wellness education (i.e. yoga, conditioning, etc.) is needed to better prepare our students to lead healthy lives. As a result of increased physical education and health/wellness space, there needs to be adequate shower and locker room facilities to support hygiene and healthy living.

The theater department needs classroom/rehearsal space committed to theater courses. Appropriate space is needed to showcase student work and talents and to provide a variety of multicultural performance opportunities. Improved work/technical space in the theater will allow students to master the Massachusetts Theater Curriculum, including all aspects of technical theater. Increased space to offer expanded career/technical course offerings is needed to prepare our students for entering an ever-changing and competitive, technically-driven workforce. Increased space needs to be provided to better service students with academic & social/emotional needs and to facilitate appropriate behavior & learning for students with diverse learning characteristics.

As noted in the New England Association of Schools and Colleges report, the current building is not fully handicapped accessible and continues to be an issue. There is at least one current grade 8 student for whom Doherty is the home school and the siblings attend, but this student is unable to attend Doherty due to the lack of handicapped accessibility to the building. I am confident that there are, or have been, or will be other students adversely affected by this issue.

The Advanced Academy was initially proposed to be housed at Doherty High, but due to the lack of space, it seems unlikely to occur. This program would have involved an additional 250 students and ten classrooms dedicated to advanced academics for the Worcester district. If there were additional space at Doherty, it would have provided a central location for students from all areas of the city in a location that did not cost the district any additional monies in rental agreements.

There are some additional needs in the Health Center which is not large enough to service the student population for their medical needs. This year, a much-needed Behavioral Specialist was added to the Health Center staff for a total of five people confined to that space. While we desperately need the support for the students who have social and emotional issues, the current space is inadequate and lacks any place for the Behavioral Specialist to have confidential conversations with individual students and/or any space for the therapist to convene any small group interventions.

The other issue that has been highlighted this past year by the Coordinated Program Review is the space dedicated to the Special Education students. Doherty High has been cited for the use of rooms with partitions for Special Education classes, more specifically, room 205, and room 321. Much of the space for the increasing number of Special Education programs is not designed to allow for the small group instruction necessitated by the educational plans. The use of certain spaces and the use of temporary partitions to divide larger spaces is not optimal.

Please also provide the following:

Name of accrediting entity (maximum of 100 characters):
New England Association of Schools and Colleges (NEASC)

Current Accreditation Status: Please provide appropriate number as 1=Passed, 2=Probation, 3=Warning, 4=Lost:
3

If "WARNING", indicate the date accreditation may be switched to Probation or lost: 10/2/2013
If "PROBATION", indicate the date accreditation may be lost:

Please provide the date of the first accreditation visit that resulted in your current accreditation status.: 10/2/2011

Please provide the date of the follow-up accreditation visit: 10/2/2013

Are facility-related issues related to Media Center/Library? If yes, please describe in detail in Question 1 below.: 
<table>
<thead>
<tr>
<th><strong>YES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Are facility-related issues related to Science Rooms/Labs? If yes, please describe in detail in Question 1 below.:</td>
</tr>
<tr>
<td><strong>YES</strong></td>
</tr>
<tr>
<td>Are facility-related issues related to general classroom spaces? If yes, please describe in detail in Question 1 below.:</td>
</tr>
<tr>
<td><strong>YES</strong></td>
</tr>
<tr>
<td>Are facility-related issues related to SPED? If yes, please describe in detail in Question 1 below.:</td>
</tr>
<tr>
<td><strong>YES</strong></td>
</tr>
<tr>
<td>Are facility-related issues related to support spaces? If yes, please describe in detail in Question 1 below.:</td>
</tr>
<tr>
<td><strong>YES</strong></td>
</tr>
<tr>
<td>Are facility-related issues related to &quot;Other&quot;? If yes, please identify the other area below and describe in detail in Question 1 below.:</td>
</tr>
<tr>
<td>NO</td>
</tr>
</tbody>
</table>

Please describe (maximum of 100 characters):
Priority 5

Question 1: Please provide a detailed description of the issues surrounding the school facility systems (e.g., roof, windows, boilers, HVAC system, and/or electrical service and distribution system) that you are indicating require repair or replacement. Please describe all deficiencies to all systems in sufficient detail to explain the problem.

Mechanical: The HVAC control is comprised of two different temperature control packages for different areas of the building. These two systems do not communicate well and it makes for serious discrepancies in temperatures.

The hot water distribution piping is original to the facility and requires constant maintenance. We experience frequent leaks. A failure in this distribution system would cause major heat loss throughout the facility. The numerous zone-based building pumps are in need of constant repair and maintenance.

The boilers have been experiencing significant reliability issues and several sections within the boilers have been repaired.

The modulating dampers on the energy recovery units are fixed at 100% and require a modulation upgrade to allow for increased heating capabilities.

The gymnasium and auditorium have antiquated HV units and are in need of complete replacement. These units are well beyond the expected life span and are requiring continuous maintenance.

The emergency generator is not connected to the boiler and therefore does not provide freeze protection in case of a power failure.

Electrical: The main electrical system in the building is original and becoming aged.

The subpanels are approaching capacity based on the increased need for technology in all areas of the building. There are not enough outlets in the classrooms and common areas to satisfy the needs of the school.

The electrical backup generator is outdated and significantly undersized to handle all of the needs of the building. There is not enough equipment wired to the generator to protect the facility in the case of a power outage.

The fire alarm panel is the original Edwards panel that is well beyond its life expectancy. Replacement parts are extremely hard to find and becoming more and more difficult to obtain. If any one of the components in the fire alarm system fails, it would cause a complete system failure.

The clock/bell/phone/intercom system is requiring a lot of maintenance to maintain. The system is outdated and in dire need of replacement.

Plumbing: The distribution piping in the school is original. Minimal areas of piping have been completely replaced and many patch-type repairs have occurred instead. Isolation valves are continuously failing to hold and operate properly, requiring the entire facility to be shut down to make repairs. The aged feed and waste lines are becoming high maintenance due to leaks, blockages, and breakages.

Plumbing fixtures in many of the science labs do not work properly or are shut off completely.

Eye wash stations need to be installed in many areas of the school.

Window Systems: The window system in the school is original to the school. The single-pane window system is extremely inefficient and is causing significant heat loss and strain on the heating system. It is having difficulty trying to maintain a comfortable temperature throughout the heating season.
Many of the windows do not operate properly and in many cases fixed shut.

**Exterior Walls:** The exterior brick work of the school is aged and is showing signs of wear and tear. The sills and mortar are deteriorating. The steal entrance way overhangs are showing signs of age and deterioration.

**Roof:** The roof was installed in 1995 and will soon be becoming a maintenance problem as the membrane system becomes more aged.
Priority 5

**Question 2: Please describe the measures the district has already taken to mitigate the problem/issue described in Question 1 above.**

The District continues to provide general and emergency maintenance and support of the facility in an effort to maintain a safe and welcoming environment that also provides for reasonable teaching and learning. The District continues to make temporary enhancements to the facility until a more long term remedy can be determined. The District has upgraded electrical and data wiring over a period of time in order to accommodate new technology initiatives that have been implemented at the school.

Although these enhancements have not been robust to integrate state-of-the-art technology throughout the entire school, efforts have been made to introduce new technology for student learning.

The District was also able to use local funds to replace one of the existing science labs which allows for one classroom to have up-to-date furnishing and equipment.

To improve the energy-efficiency of the school, the District has installed more efficient lighting, providing for more consistent lighting within the classrooms. In addition, the District has recently weatherized and re-caulked windows providing short term measures for the highly inefficient window system.

Finally, the District has used local funds to improve common areas of the school, including student locker replacement, and selective floor covering replacement and painting.
Priority 5

Question 3: Please provide a detailed explanation of the impact of the problem/issues described in Question 1 above on your district's educational program. Please include specific examples of how the problem prevents the district from delivering the educational program it is required to deliver and how students and/or teachers are directly affected by the problem identified.

Each of the areas highlighted in Question 1 have a direct impact on our school's educational program that prevents us from being able to deliver high quality 21st-century teaching and learning opportunities to our students. The issues are as follows:

Mechanical: The HVAC system is inconsistent. Frequently as a result of room temperatures that can be in the high forties to low fifties we are forced to relocate classrooms for periods of time, sometimes because of lack of available space, to areas that are not intended nor properly equipped for instruction. Additionally, because of the significant temperature variations that can exist from room to room, students wear heavy jackets or sweaters, in violation of our dress code policy and school safety measures, in order to stay warm only to have to shed layers upon entering rooms where temperatures are warmer. However, the opposite is also true; periodically, we have classrooms where heat, that cannot be controlled, drives temperatures into the mid to high-80's, leading staff to take such measures as blocking floor heating vents with boards and books, or opening exterior doors where they exist, for the sake of ventilation. Clearly, neither of these situations is conducive to an appropriate educational environment. The covering of vents in an effort to decrease the heat also blocks the flow of fresh air into the classrooms leading to stagnant air within the rooms. Of greater concern is that, despite policies to the contrary, teachers have felt it necessary at times to leave open an exterior door for the sake of cooling very hot rooms, potentially jeopardizing the safety of those within the classroom and the school. Without an operable, and more sophisticated, security system than what exists currently, this poses a risk.

Electrical: The lack of an updated electrical system within the building hampers the educational process by limiting the amount of technology that can be used within certain classroom spaces. An updated system would allow for a significant increase in our ability to infuse instructional technology into our classrooms providing our students with the 21st-century educational experience they need and deserve. All computers are running on power strips. Computers frequently malfunction. A wireless internet structure for our facility does not exist. We cannot activate any of our wellness center exercise machines without an electrical upgrade, nor can we expand or add additional CVTE offerings.

Plumbing: As cited in the NEASC report, the impact of identified plumbing issues on the school's ability to deliver instruction primarily manifests itself in the fact that in a number of our science laboratories, the aged condition of the plumbing and fixtures have necessitated shutting them down. Thus, making the conducting of experiments within these classrooms all but impossible and leaving our students at a significant educational disadvantage when compared to their peers hailing from schools appropriately equipped to deliver 21st-century education.

Window System: Along with the many issues that exist with the HVAC system, the single-pane window system, which is original to the school, is highly inefficient and contributes significantly to the temperature regulation issues we have within many of our instructional spaces. Broken windows are nailed shut and do not allow for ventilation. Windows are inoperable in the event of an emergency as well.
Priority 5

Question 4: Please describe how addressing the school facility systems you identified in Question 1 above will extend the useful life of the facility that is the subject of this SOI and how it will improve your district's educational program.

The systems identified here are critical components to the facility. By upgrading and renovating these components, as well as the facility as a whole, the District and the school will be able to provide a valuable 21st-century learning environment for many years to come.

Please also provide the following:

Have the systems identified above been examined by an engineer or other trained building professional?: **NO**

If "YES", please provide the name of the individual and his/her professional affiliation (maximum of 250 characters):

The date of the inspection:

A summary of the findings (maximum of 5000 characters):
Priority 7

Question 1: Please provide a detailed description of the programs not currently available due to facility constraints, the state or local requirement for such programs, and the facility limitations precluding the programs from being offered.

There are several programs that are not currently available due to issues and limitations associated with our current facility:

The building is not handicapped-accessible in accordance to state and federal law. As noted in the New England Association of Schools and Colleges, the current building is not fully handicapped-accessible. There is at least one current grade 8 student for whom Doherty is the home school and the siblings attend, but this student is unable to attend Doherty due to the lack of handicapped accessibility to the building. I am confident that there are, or have been, or will be other students adversely affected by this issue.

Computer lab space is not adequate. The number of computers per student does not meet state technology guidelines. The building was not designed for computer use and has not been adequately retrofitted for 21st-century technology.

In accordance with the Worcester Public Schools High Quality Teaching and Learning document, the learning environment must continually adjust to match learning objectives and student needs to ensure engagement. Learning materials and physical space must be organized to provide adequate and equitable engagement in productive tasks. In order to accomplish this and to fulfill the Common Core/Mass Core requirements to meet the needs of our current and future 21st-century learners, we will need to expand our course offerings and dedicated course space, especially in the areas of wellness, the arts, and career/technical education.

We are not currently offering enough opportunities for Career, Vocational and Technical Education (CVTE). We would like to expand our current vocational program in engineering and marketing, but we lack adequate properly-equipped space. Additionally, we would like to expand our current offerings to include: Early Childhood Education, Electronics, Information Technology, Dental Assisting, Emergency Medical Services, and expanded Business/Management courses.

We currently have ten class spaces used to teach science, however only two provide adequate resources to conduct laboratory activities in fulfillment of Worcester Public School requirements and the Common Core/Mass Core. Absent of any renovation, we are unable to offer a rigorous science curriculum.

Increased space devoted to trends in wellness education (i.e. yoga, conditioning, etc.) is needed to better prepare our students to lead healthy lives. As a result of increased physical education and health/wellness space, there needs to be adequate shower and locker room facilities to support hygiene and healthy living.

The Health Center needs to expand to be able to service the number of students in the school and to provide adequate, secure and confidential meeting, exam, and storage space. This year, a much-needed Behavioral Specialist was added to the Health Center staff for a total of five people confined to that space. While we desperately need the support for the students who have social and emotional issues, the current space is inadequate and lacks any place for the Behavioral Specialist to have confidential conversations with individual students and/or any space for the therapist to convene any small group interventions.

The Common Core/Mass Core requires credit for the arts. At present, there is not enough space for adequate theater classes.

The theater department needs classroom/rehearsal space committed to theater courses. Appropriate space is needed to showcase student work and talents and to provide a variety of multicultural performance opportunities. Improved work/technical space in the theater will allow students to master the Massachusetts Theater Curriculum, including all aspects of technical theater.

Increased space to offer expanded career/technical course offerings is needed to prepare our students for entering an
everchanging and competitive, technically-driven work force.

Additional space is also required to expand our course offerings in art, music and dance, in addition to the needs of our theater program, to meet the district and Common Core/Mass Core requirement of one unit of the Arts for all students for graduation.

Currently, only one classroom is equipped for Art instruction, one for Music instruction, and there is no space for any type of Dance course offering.

Increased space needs to be provided to better service students with academic and social/emotional needs, and to facilitate appropriate behavior and learning for students with diverse learning characteristics. Currently, in some classrooms, partitions are being used to divide the available space. The use of partitions is not adequate, as one classroom is distracted by the activities of another. For example, highlighted this past year by the Coordinated Program Review is the space dedicated to the Special Education students. Doherty High has been cited for the use of rooms with partitions for Special Education classes, more specifically, room 205, and room 321. Much of the space for the increasing number of Special Education programs is not designed to allow for the small group instruction necessitated by the educational plans. The use of certain spaces and the use of temporary partitions to divide larger spaces is not optimal.

The Advanced Academy was initially proposed to be housed at Doherty High, but due to the lack of space, it seems unlikely to occur. This program would have involved an additional 250 students and ten classrooms dedicated to advanced academics for the Worcester district. If there were additional space at Doherty, it would have provided a central location for students from all areas of the city in a location that did not cost the district any additional monies in rental agreements.
Priority 7

Question 2: Please describe the measures the district has taken or is planning to take in the immediate future to mitigate the problem(s) described above.

The District continues to provide general and emergency maintenance and support of the facility in an effort to maintain a safe and welcoming environment that also provides for reasonable teaching and learning. The District continues to make temporary enhancements to the facility until a more long term remedy can be determined. The District has upgraded electrical and data wiring over a period of time in order to accommodate new technology initiatives that have been implemented at the school.

Although these enhancements have not been robust to integrate state-of-the-art technology throughout the entire school, efforts have been made to introduce new technology for student learning.

The District was also able to use local funds to replace one of the existing science labs, which allows for one classroom to have up-to-date furnishing and equipment.

To improve the energy-efficiency of the school, the District has installed more efficient lighting, providing for more consistent lighting within the classrooms. In addition, the District has recently weatherized and re-caulked windows providing short term measures for the highly inefficient window system.

Finally, the District has used local funds to improve common areas of the school, including student locker replacement, and selective floor covering replacement and painting.
Priority 7

Question 3: Please provide a detailed explanation of the impact of the problem described in this priority on your district's educational program. Please include specific examples of how the problem prevents the district from delivering the educational program it is required to deliver and how students and/or teachers are directly affected by the problem identified.

The impact of the outdated facility prevents the delivery of the full range of educational programming in several ways:

1. Lack of adequate computer infrastructure prevents students from using any laptops or tablets for classroom teaching and learning.

2. Of the 70 classrooms, only 3 contain a Smart Board, so the teachers are unable to utilize this technology with the students in their classrooms unless they switch rooms with a colleague.

3. Of the ten classrooms used for science instruction, only two are properly equipped for lab experiments. This causes science teachers to constantly move their classrooms in order to accommodate their colleague’s lab times.

4. We currently have only two class spaces dedicated to computer labs. Many of these computers are outdated and not functioning. Teachers are required to change classrooms in order to access these computer labs.

5. In order to provide some form of a wellness center for our students, we had to decrease the amount of space to our physical education classes.

6. We are using partitions within some classrooms as a means to divide classroom space among teachers.

7. The inability to balance the heat has caused students and teachers to relocate from one class to another throughout each school year which further disrupts learning.

8. Approximately 25% of the teaching staff do not have their own classroom and must travel throughout the day to various classrooms. The inability to maintain a stable teaching environment disrupts student learning.

9. There is no dedicated work space for teachers to meet and collaborate on curriculum revisions, instructional strategies, and assessment practices.

10. The Advanced Academy was initially proposed to be housed at Doherty High, but due to the lack of space, it seems unlikely to occur. This program would have involved an additional 250 students and ten classrooms dedicated to advanced academics for the Worcester district. If there were additional space at Doherty, it would have provided a central location for students from all areas of the city in a location that did not cost the district any additional monies in rental agreements.
REQUIRED FORM OF VOTE TO SUBMIT AN SOI

REQUIRED VOTES
If the SOI is being submitted by a City or Town, a vote in the following form is required from both the City Council/Board of Aldermen OR the Board of Selectmen/equivalent governing body AND the School Committee.

If the SOI is being submitted by a regional school district, a vote in the following form is required from the Regional School Committee only. FORM OF VOTE Please use the text below to prepare your City's, Town's or District's required vote(s).

FORM OF VOTE
Please use the text below to prepare your City's, Town's or District's required vote(s).

Resolved: Having convened in an open meeting on ____________, prior to the closing date, the City Council/Board of Aldermen of ____________, in accordance with its charter, by-laws, and ordinances, has voted to authorize the Superintendent to submit to the Massachusetts School Building Authority the Statement of Interest dated ____________ for the ____________ of ____________, located at ____________, which describes and explains the following deficiencies and the priority category(s) for which an application may be submitted to the Massachusetts School Building Authority in the future.

Massachusetts School Building Authority
27
Statement of Interest
CERTIFICATIONS

The undersigned hereby certifies that, to the best of his/her knowledge, information and belief, the statements and information contained in this statement of Interest and attached hereto are true and accurate and that this Statement of Interest has been prepared under the direction of the district school committee and the undersigned is duly authorized to submit this Statement of Interest to the Massachusetts School Building Authority. The undersigned also hereby acknowledges and agrees to provide the Massachusetts School Building Authority, upon request by the Authority, any additional information relating to this Statement of Interest that may be required by the Authority.

Chief Executive Officer  *  School Committee Chair  Superintendent of Schools
Edward M. Augustus  Joseph M. Petty  Marco C. Rodrigues
City Manager

(signature)  (signature)  (signature)

Date 3/29/16  Date 3/27/16  Date 3/28/16

* Local Chief Executive Officer: In a city or town with a manager form of government, the manager of the municipality; in other cities, the mayor; and in other towns, the board of selectmen unless, in a city or town, some other municipal office is designated to the chief executive office under the provisions of a local charter. Please note, in districts where the Superintendent is also the Local Chief Executive Officer, it is required for the same person to sign the Statement of Interest Certifications twice. Please do not leave any signature lines blank.
On a roll call, the vote was as follows:

For the motion: Miss Biancheria, Ms. Colorio,
Mr. Foley, Miss McCullough,
Mr. Monfredo, Mr. O'Connell,
Mayor Petty

Against the motion: 0

The motion carried.

Statements of Interest/
Belmont Street
Community School/
Chandler Elementary
Community School/
Gerald Creamer
Center/
Wawecus Road
School

gb #6-43 - Administration
(January 13, 2016)

To authorize the Administration to submit Statements of Interest to the Massachusetts School Building Authority for the following Accelerated Repair Projects for 2016:

Belmont Street Community School:
  Window and Boiler Replacements
Chandler Elementary Community School
  Window and Boiler Replacements
Gerald Creamer Center
  Window and Boiler Replacements
Wawecus Road School
  Window Replacement

It was moved to approve the item and submit it to the Worcester City Council for approval.

On a roll call, the vote was as follows:

For the motion: Miss Biancheria, Ms. Colorio,
Mr. Foley, Miss McCullough,
Mr. Monfredo, Mr. O'Connell,
Mayor Petty

Against the motion: 0

The motion carried.

Statements of Interest/
Doherty Memorial
High School/
Burncoat High
School/
Worcester East
Middle School

gb #6-44 - Administration
(January 13, 2016)

To authorize the Administration to submit Statements of Interest to the Massachusetts School Building Authority for the following projects for major renovation or replacement for 2016:
Doherty Memorial High School (district priority project)
Burncoat High School
Worcester East Middle School

It was moved to approve the item and submit it to the
Worcester City Council for approval.

On a roll call, the vote was as follows:

For the motion: Miss Blancheria, Ms. Colorio,
Mr. Foley, Miss McCullough,
Mr. Monfredo, Mr. O'Connell,
Mayor Petty 7

Against the motion: 0

The motion carried.

48. gb #6-45 - Administration
(February 12, 2016)

To approve a decrease in the mileage reimbursement rate
from $0.575 per mile to $0.54 per mile, effective January
1, 2016, for all represented and non-represented
personnel in accordance with the 2016 standard mileage
rate established by the Internal Revenue Service.

It was moved to approve the item.

On a roll call, the vote was as follows:

For the motion: Miss Blancheria, Ms. Colorio,
Mr. Foley, Miss McCullough,
Mr. Monfredo, Mr. O'Connell,
Mayor Petty 7

Against the motion: 0

The motion carried.

Committee Chairperson

Date 2-6-16
CITY OF WORCESTER

ORDERED: That

The City Council of the City of Worcester hereby accepts and approves the Statement of Interests for the following as approved by the Worcester School Committee on January 21, 2016:

Doherty Memorial High School (district priority project)
Burncoat High School
Worcester East Middle School

AND BE IT FURTHER ORDERD: That

The City Manager be and he is hereby requested to approve the same Statement of Interest and authorized the Superintendent of the Worcester Public Schools to submit for submission to the Massachusetts School Building Authority.

In City Council                                           February 9, 2016

Order adopted by a yeas and nays vote of Eleven Yeas and No Nays.

A Copy. Attest:

David J. Rushford
City Clerk
February 21, 2018

Mr. Edward M. Augustus, Jr., City Manager
City of Worcester
Worcester City Hall
455 Main Street, Room 306
Worcester, MA 01608

Re: City of Worcester, Doherty Memorial High School

Dear Mr. Augustus:

Enclosed for your records, please find an original, fully-executed Feasibility Study Agreement and Exhibits A-C for the Doherty Memorial High School project in the City of Worcester (the “District”).

Also, attached for your convenience, please find instructions for entering project budgets in the Massachusetts School Building Authority (the “MSBA”) ProPay System, and the Feasibility Study Agreement Budget Revision Request Form. Please note the MSBA will not process reimbursement requests until the District has entered the budget and the budget has been accepted by the MSBA.

Please feel free to contact me if you have any questions.

Regards,

Jess Delecono
Senior Project Coordinator

Cc: Legislative Delegation
The Honorable Joseph M. Petty, Mayor, City of Worcester
Konstantina B. Lukes, Vice Chair, Worcester City Council
K. Russell Adams, Assistant Commissioner of Engineering & Architecture Services, City of Worcester
John L. Foley, Vice Chair, Worcester School Committee
Maureen F. Binienda, Superintendent, Worcester Public Schools
File: 10.2 Letters (Region 2)
MASSACHUSETTS SCHOOL BUILDING AUTHORITY
FEASIBILITY STUDY AGREEMENT

This Feasibility Study Agreement, dated the 21\textsuperscript{st} day of February, 2018 (the "Agreement") is between the Massachusetts School Building Authority (the "Authority"), a public instrumentality of the Commonwealth of Massachusetts established by Chapter 70B of the Massachusetts General Laws and Chapters 208 & 210 of the Acts of 2004 of the Commonwealth, in each case as amended from time to time, and the City of Worcester (the "District").

WHEREAS, the District submitted a Statement of Interest to the Authority for the Doherty Memorial High School (hereinafter "School"), and the District prioritized this Statement of Interest as its priority to receive any potential funding from the Authority;

WHEREAS, on February 15, 2017, the Board of Directors of the Authority voted to invite the District to the MSBA's Eligibility Period, and on June 1, 2017, the Board of Directors of the Authority voted to invite the District to commence the Eligibility Period, and the District has completed all applicable preliminary requirements to the satisfaction of the MSBA;

WHEREAS, on February 14, 2018, the Board of Directors of the Authority shall have voted to authorize the Parties to enter into this Agreement upon the terms and conditions stated herein.

WHEREAS, the Feasibility Study is one step in the multi-step process of the Authority's grant program for school building construction and renovation projects, and the invitation to collaborate on conducting and/or reviewing a Feasibility Study is not approval of a project or any funding by the Authority, except as expressly provided in this Agreement;

WHEREAS, the Authority's grant program for school building renovation and construction projects is a non-entitlement, discretionary program based on need, as determined by the Authority;

WHEREAS, the District has submitted a signed Initial Compliance Certification, as described in 963 CMR 2.02, 2.03 & 2.10(2), in the form prescribed by the Authority, and it has been accepted by the Authority;

WHEREAS, the District has formed a School Building Committee to monitor the Feasibility Study and advise the District during the study;

WHEREAS, the Authority may reimburse the District for a portion of eligible, approved costs incurred in connection with the Feasibility Study undertaken by the District for the School under certain terms and conditions, hereinafter provided, and subject to the provisions of M.G.L. c. 70B, 963 CMR 2.00 \textit{et seq.} and all applicable policies and guidelines of the Authority.

Feasibility Study Agreement v.03.18.14
NOW THEREFORE, in consideration of the promises and the agreements, provisions and covenants contained in this Agreement, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Authority and the District (together, the "Parties") agree as follows:

SECTION 1
DEFINITIONS

1.1 Capitalized terms not specifically defined in this Definitions section shall have the meanings ascribed to them in either M.G.L. c. 70B or 963 CMR 2.00 et seq.

"Budget" shall mean a complete and full enumeration of all costs, including both hard costs and soft costs, so-called, that the District reasonably estimates, to the best of its knowledge and belief, will be incurred in connection with the planning, development, and the completion of the Feasibility Study, which Budget shall be approved by the Authority and attached hereto as Exhibit A, as it may be updated from time to time.

"Design Contract" shall mean the standard design contract developed and prescribed by the Authority, as it may be amended by the Authority from time to time that shall be executed by the District and the Designer for design services related to the Proposed Project.

"Designer" shall mean the individual, corporation, partnership, sole proprietorship, joint stock company, joint venture, or other entity engaged in the practice of architecture, landscape architecture, or engineering that meets the requirements of M.G.L. c. 7C, § 44 and has been procured and contracted by the District to conduct a Feasibility Study, in accordance with the provisions of Sections 2.1(a)(i) and 2.1(a)(ii) of this Agreement.

"Excusable Delay" shall mean a delay of the Feasibility Study that either (a) is solely because of a natural event, such as flood, storms, or lightning, that is not preventable by any human agency, or (b) is reasonably determined by the Authority to be excusable.

"Feasibility Study" shall mean a study as described in 963 CMR 2.10(8) and in any applicable policies and guidelines of the Authority and, in relation to a Major Reconstruction Project or Repair Project, as described in M.G.L. c. 70B, 963 CMR 2.00 et seq. and any applicable policies and guidelines of the Authority, shall also include an engineering study, in a format prescribed by or otherwise acceptable to the Authority, to investigate potential options and solutions, including cost estimates, for the deficiencies and issues identified in the Statement of Interest or as otherwise determined by the Authority.

"Owner's Project Manager" shall mean the individual corporation, partnership, sole proprietorship, joint stock company, joint venture, or other entity under contract
with, designated, or assigned by the District and approved by the Authority, to fully and completely manage and coordinate administration of the Project to completion. The Owner’s Project Manager must meet the qualifications set forth in M.G.L. c. 149, § 44A ½, 963 CMR 2.00 et seq., and all applicable policies and guidelines of the Authority.

“Scope” shall mean the scope of the Feasibility Study as described in 963 CMR 2.10(8) and any applicable policies and guidelines of the Authority or as otherwise determined in writing by the Authority and as more fully described in Exhibit B attached hereto, as it may be updated from time to time as mutually agreed upon by the District and the Authority.

“Schedule” shall mean the schedule for the Feasibility Study, which schedule shall be updated from time to time and approved by the Authority.

“School” shall mean the Doherty Memorial High School located in the District.

“Statement of Interest” shall mean the Statement of Interest, as defined in 963 CMR 2.09 and all applicable policies and guidelines of the Authority, submitted to the Authority by the District for the School.

SECTION 2
FEASIBILITY STUDY

Subject to the terms and conditions of this Agreement, and in reliance on the representations, warranties and covenants contained herein, the Parties hereby agree as follows:

2.1 Feasibility Study.

(a.) The Parties hereby agree that the District shall undertake a Feasibility Study to investigate potential options and solutions, including cost estimates, to the School’s deficiencies and issues as identified in the Statement of Interest or as otherwise determined by the Authority and in accordance with the Scope, Budget, and Schedule approved by the Authority. The adequacy, sufficiency and/or acceptability of a Feasibility Study or a Prior Study, as defined in Section 2.1(e) of this Agreement, for the purposes of the Authority’s grant program shall be determined by the Authority within its sole discretion. Any determination by the Authority that a Feasibility Study or Prior Study is adequate, sufficient or acceptable for the Authority’s purposes shall not be construed as a certification or approval by the Authority of the studies, plans, drawings, designs, cost estimates, specifications or any other information or materials contained therein. The District, its officials, employees and agents are and shall remain responsible for the Feasibility Study and/or Prior Study and the building designs, site plans, drawings, cost estimates, specifications and
other materials and information relative thereto that the District submits to the Authority. The Authority's review of the Feasibility Study and/or Prior Study and any studies, plans, drawings, designs, cost estimates, specifications or any other information or materials contained therein or related thereto is solely for the purpose of determining whether they meet the provisions of this Agreement and the Authority's regulations, standards, policies, guidelines and other requirements and whether the District will be eligible for potential funding from the Authority for the Proposed Project. Approval of a Proposed Project shall only be determined by a vote of the Authority's Board in accordance with 963 CMR 2.00 et seq. and the applicable policies and guidelines of the Authority.

(i.) The District shall procure a Designer to conduct the Feasibility Study pursuant to the provisions of M.G.L. c. 7C, § 44 through 58, 963 CMR 2.10(8), 963 CMR 2.12, and any other applicable laws and regulations; provided, however, that if the estimated construction cost of the Proposed Project is determined to be more than five million dollars ($5,000,000), then the District shall select the Feasibility Study Designer using the Authority's Designer Selection Panel in accordance with 963 CMR 2.00 et seq. and all applicable policies and guidelines of the Authority. The District shall not use a Designer who was procured by the District prior to July 1, 2007, to conduct the Feasibility Study, unless the Designer is acceptable to the Authority. It is further provided that, if said Designer who was procured by the District prior to July 1, 2007, is unacceptable to the Authority, the District shall conduct a new procurement for a Feasibility Study Designer pursuant to the applicable provisions of M.G.L. c. 7C, § 44 through 58, 963 CMR 2.10(8), 963 CMR 2.12, and any rules, regulations, policies and guidelines of the Authority.

(ii.) The District shall use the Authority's Design Contract to contract with the Designer for the Feasibility Study. The District shall monitor the performance of the Designer and shall require the Designer to fully comply with all provisions of the Design Contract, including, but not limited to, all provisions affecting the interests of the Authority.
(iii.) If, at any time, the construction cost of the Proposed Project is estimated to be more than one million five hundred thousand dollars ($1,500,000), or if the construction cost of the Proposed Project is estimated to be equal to or less than one million five hundred thousand dollars ($1,500,000) and the Authority so requires, at any time, as a condition to qualify for funding by the Authority, the District shall procure and maintain under contract, or otherwise assign, an Owner's Project Manager, pursuant to M.G.L. c. 149, § 44A ½ , 963 CMR 2.00, et seq. and any applicable policies and guidelines of the Authority. The selection of an Owner's Project Manager shall be subject to the review and approval of the Authority as required by M.G.L. 70B, 963 CMR 2.00, et seq., and any applicable policies and guidelines of the Authority. Any costs associated with an Owner's Project Manager who is not approved by the Authority shall not be eligible for reimbursement.

(iv.) Where applicable, the District shall use the Authority's model request for services and standard contract to procure and contract with any Owner's Project Manager for the Proposed Project, including the Feasibility Study stage of the Proposed Project. The District shall monitor the performance of the Owner's Project Manager and shall require the Owner's Project Manager to fully comply with all provisions of the contract between the District and the Owner's Project Manager including, but not limited to, all provisions affecting the interests of the Authority.

(b.) Subject to the satisfaction of or compliance with, as reasonably determined by the Authority, all of the terms and conditions of this Agreement, the applicable provisions of M.G.L. c. 70B, Chapters 208 and 210 of the Acts of 2004, and 963 CMR 2.00 et seq. and any other rule, regulation, policy or guideline of the Authority, and further subject to the Authority's approval of the Scope, Budget and Schedule and the District's approval, authorization and appropriation for the Feasibility Study using forms prescribed by or otherwise acceptable to the Authority, the Authority hereby agrees to pay to the District an amount that shall under no circumstances exceed the lesser of (i) 78.95% of the eligible, approved costs of the Feasibility Study, as determined by the Authority, or (ii) $1,579,000.00. The Parties hereby acknowledge and agree that
$1,579,000.00 is the maximum amount of funding that the District may receive from the Authority for the Feasibility Study, and that the final amount of eligible Feasibility Study costs approved by the Authority may equal an amount less than $1,579,000.00, as determined by an audit or audits conducted by the Authority. Any costs and expenditures that are determined by the Authority to be either in excess of the $1,579,000.00 or ineligible for payment by the Authority shall be the sole responsibility of the District. The reimbursement rate set forth above, and as more fully described in the Reimbursement Rate Summary, attached hereto as Exhibit “C”, is the rate at which the District may be reimbursed for the eligible, approved costs of the Feasibility Study.

In the event that the Authority reasonably determines that the Feasibility Study is not in accordance or compliance with the Scope, Schedule, Budget, all of the terms and conditions of this Agreement, the provisions of M.G.L. c. 70B, Chapters 208 and 210 of the Acts of 2004, 963 CMR 2.00 et seq. and any other rule, regulation, policy or guideline of the Authority, or is delayed (other than an Excusable Delay) or is not duly authorized, approved and funded by the District in accordance with applicable law and as required by the Authority, then the Authority may temporarily and/or permanently withhold payments to the District for any eligible, approved costs of the Feasibility Study, provided that the Authority shall not unreasonably withhold any such payments and further provided that the Authority shall give written notice to the District of any such withholding. Notwithstanding the foregoing, failure by the Authority to provide such written notice timely shall not create or result in any entitlement to payment for the District. In the event that the Authority either temporarily or permanently withholds payment for the Feasibility Study, the District hereby agrees and acknowledges that the Authority shall have no liability for any such withholding of payment or any loss that may occur as a result of any such withholding of payment.

The District shall not be eligible to receive any funding for the Authority’s share of the eligible, approved Feasibility Study costs, or any portion thereof, unless and until the Authority has approved the Scope, Budget, and Schedule. The Authority shall reimburse the District only for costs incurred by the District in connection with the Feasibility Study that are timely submitted to the Authority, eligible for reimbursement pursuant to Authority policies, procedures, and guidelines, and audited and approved by the Authority.

(c) Notwithstanding the provisions of Section 2.1(a) above, in the event that the District commenced a feasibility study unilaterally or without the prior written acknowledgement and concurrence of the Authority in connection with the deficiencies and issues identified in the Statement of Interest or as otherwise determined by the Authority (hereinafter “Prior Study”), and,
after review, the Authority has determined in writing that the Prior Study is adequate and meets the needs of the Authority, in whole or in part, the District may submit to the Authority requests for reimbursement of costs related to the Prior Study subject to the provisions of Section 2.1(b), Section 4 and any other applicable provisions of this Agreement. The District acknowledges and agrees that any costs incurred by the District in relation to the Prior Study may not be eligible for reimbursement. In the event that any such costs are determined to be eligible, approved costs by the Authority, they shall be subject to the provisional reimbursement rate set forth in Section 2.1(b) of this Agreement and shall be subject to audit by the Authority. The District further acknowledges and agrees that, notwithstanding a determination by the Authority that the Prior Study is adequate and meets the Authority’s needs, in whole or in part, the Authority may require the District to conduct a new or supplemental Feasibility Study, in accordance with, and as described in, the Budget, Scope and Schedule. The District further acknowledges and agrees that costs incurred in connection with a Prior Study that (i) does not meet the needs of the Authority, in whole or in part, as determined by the Authority, or (ii) was conducted after September 22, 2006, shall not be eligible for reimbursement.

2.2 Term of Agreement.

This Agreement shall terminate upon (1) approval of a Project Scope and Budget Agreement for the Proposed Project by the Authority’s Board and (2) execution of said Project Scope and Budget Agreement by the Authority and the District or it shall terminate on August 15, 2020 or whichever occurs sooner.

SECTION 3 COVENANTS

The District covenants and agrees that as long as this Agreement is in effect, the District shall and shall cause its employees, officers, agents, and representatives to perform and comply with all covenants of this Agreement.

3.1 The District hereby agrees that it shall make available for inspection by, and submit to, the Authority any and all information and documentation related to the Feasibility Study, including, but not limited to budget information, progress reports, and draft copies that may be requested by the Authority, promptly and in no event later than the deadline stated in any such request.

3.2 The District hereby agrees that it shall work with the Authority in developing the Scope, Budget and Schedule for the Feasibility Study and it acknowledges and agrees that the Authority’s funding for the Feasibility Study is subject to the Authority’s approval of the Scope, Budget and Schedule.
3.3 The District hereby acknowledges and agrees that the Authority shall not provide any amounts in excess of the amount determined under Section 2.1(b) of this Agreement.

3.4 The District hereby acknowledges and agrees that the Authority may, in its sole discretion, determine that certain costs incurred by the District in connection with the Feasibility Study are not eligible for reimbursement by the Authority, pursuant to any applicable provisions of M.G.L. c. 70B, 963 CMR 2.00 et seq., including, but not limited to, sections 2.10 & 2.16(5), and any other policies and guidelines of the Authority.

3.5 The District shall comply with all provisions of this Agreement; the provisions of all other agreements between the Authority and the District that relate to the Feasibility Study; the provisions of M.G.L. c. 70B, 963 CMR 2.00 et seq., and all policies and guidelines of the Authority; and all provisions of law applicable to the Feasibility Study, this Agreement, and any other agreements and documents related to the Feasibility Study, and shall take all action necessary to fulfill its obligations under this Agreement.

3.6 The District hereby acknowledges and agrees that the Authority shall not be required or obligated to make any payment for any eligible Feasibility Study costs while an Event of Default, as defined in section 8 of this Agreement, shall have occurred.

3.7 The District shall, and shall cause any Owner's Project Manager and Designer and their employees, subconsultants and agents to, keep adequate records of the Feasibility Study and make all Feasibility Study records and the Feasibility Study site(s) available to the Authority or representatives of the Authority for review during the course of the Feasibility Study.

3.8 The District hereby acknowledges and agrees that the duties of any Owner's Project Manager hired by and/or assigned to the Proposed Project by the District shall include, but not be limited to, fully and completely managing and coordinating on behalf of the District the administration of the Feasibility Study to completion. Any Owner's Project Manager hired by and/or assigned to the Proposed Project by the District shall be responsible for overseeing, tracking, and managing the Budget and Schedule. In the event that an Owner's Project Manager is not required for the Proposed Project, the District shall have the aforesaid duties and responsibilities in addition to any others imposed by M.G.L. c. 70B, 963 CMR, et seq., the policies and guidelines of the Authority, and any other applicable provisions of law.

3.9 The District hereby agrees that the Authority shall have free access to, and open communication with, any Owner's Project Manager hired by and/or assigned to the Proposed Project by the District and that the Authority shall have full and complete access to all information and documentation relating to the Proposed Project to the same extent that the District has such access. The District agrees that it shall require any such Owner's Project Manager to fully cooperate with the Authority in all matters related to the Proposed Project; to promptly communicate, transmit, and/or make available for inspection and copying any and all information and documentation requested by the Authority; to fully, accurately and promptly complete all forms and writings requested by
the Authority; and to give complete, accurate, and prompt responses to any and all questions, inquiries and requests for information posed by the Authority. The District agrees that it shall not in any way, directly or indirectly, limit, obstruct, censor, hinder or otherwise interfere with the free flow of communication and information between the Owner’s Project Manager and the Authority in all matters related to the Proposed Project and as provided herein; that it shall not suffer the same to occur by the act or omission of any other person or entity; and that it shall not retaliate against the Owner’s Project Manager for communicating information to the Authority as provided herein. The District agrees to execute, deliver and/or communicate to the Owner’s Project Manager any and all authorizations, approvals, waivers, agreements, directives, and actions that are necessary to fulfill its obligations under this paragraph. The District further agrees that the Authority shall bear no liability whatsoever arising out of the Authority’s knowledge or receipt of information communicated to the Authority by the Owner’s Project Manager and that the District shall remain responsible for the management and completion of the Proposed Project.

3.10 The District hereby acknowledges and agrees that the duties of the Designer shall include, but not be limited to, those described in this Agreement, including, but not limited to, the Scope attached hereto as Exhibit B; 963 CMR 2.10(8); any applicable rules, regulations, policies and guidelines of the Authority, and any standard scope of services and the Design Contract prescribed by the Authority.

3.11 The District hereby acknowledges and agrees that neither the District nor any of its employees, officials, agents, consultants or contractors shall submit any false or intentionally misleading information or documentation to the Authority in connection with this Feasibility Study Agreement or the Feasibility Study, and further acknowledges and agrees that the submission of any such information or documentation may cause the Authority to suspend, revoke or terminate any and all payments otherwise due to the District and/or recover any previous payments made to the District, and the District may be ineligible for any funding from the Authority. The District hereby further agrees that it shall have a continuing obligation to update and notify the Authority in writing when it knows or has any reason to know that any information or documentation submitted to the Authority contains false, misleading or incorrect information.

3.12 The District hereby acknowledges and agrees that the Authority shall bear no responsibility or liability of any sort for the results of any Feasibility Study, environmental assessment, geotechnical site testing, any necessary site remediation, clean-up, or other site remediation services.

3.13 The District hereby acknowledges and agrees that it shall provide a final Feasibility Study report to the Authority, which shall be in a format that is prescribed by or otherwise acceptable to the Authority.

3.14 The District hereby acknowledges and agrees that the Authority’s grant program is a non-entitlement, discretionary program based on need, and the Feasibility Study may
not result in a school construction, renovation or repair project that is eligible for funding by the Authority.

3.15 The District shall not combine, consolidate, or conjoin in any way the procurement, pre-qualification or selection of an Owner’s Project Manager or Designer for the Proposed Project with the procurement, pre-qualification or selection of an Owner’s Project Manager or Designer for any other construction, repair or renovation project without the express prior written approval of a duly authorized representative of the Authority. Any costs incurred by the District that relate to, or arise out of, the use of a combined, consolidated or conjoined procurement, pre-qualification or selection process as proscribed above, including, but not limited to, the preparation of bid documents, requests for services, and requests for qualifications, without the express prior written approval of a duly authorized representative of the Authority shall not be eligible for reimbursement.

SECTION 4
PAYMENTS AND AUDIT

4.1 Subject to the terms and conditions of the Agreement, the Authority shall reimburse the District for eligible, approved costs incurred in connection with the Feasibility Study in accordance with the following:

(a) Using the Authority’s Pro-Pay system, the District shall submit requests for reimbursement on a monthly basis to the Authority in a format prescribed by the Authority. Each monthly request for reimbursement shall be approved locally by a duly authorized representative of the District, shall be in a form acceptable to the Authority, shall include reasonable detail, including, but not limited to (1) the amount of funding requested, (2) the nature of the materials or property or services received, (3) the total value of the work performed and materials furnished by the Owner’s Project Manager, if any, the Designer, and each consultant, subconsultant or vendor to date, and (4) the value of the work completed during the Feasibility Study. The District agrees that each request for reimbursement shall be accompanied by the invoices for each of the amounts requisitioned and any other supporting documentation and information substantiating the District’s request for reimbursement, as the Authority may request, in a form satisfactory to the Authority.

(b) Each request for reimbursement shall include a written certification signed by a duly authorized representative of the District stating that: (1) such request for reimbursement is solely for Feasibility Study costs, (2) the obligations itemized in the request for reimbursement have not been the basis for a prior request for reimbursement submitted by the District that has been paid or rejected by the Authority, (3) the reimbursement requested is due for work actually and properly performed or materials or property actually supplied prior to the date of the requisition, (4) the
reimbursement requested is for costs that already have been duly paid by the District, and (5) such reimbursement requested is within the Budget approved by the Authority.

(c) The Authority shall review all requests for reimbursement properly submitted pursuant to this Agreement as soon as reasonably possible. The Authority shall not consider requests for reimbursement that are not, as reasonably determined by the Authority, (1) timely and properly submitted, (2) in accordance with the most recent Budget approved by the Authority, and (3) for eligible Feasibility Study costs incurred by the District. The District understands and agrees that no reimbursement shall be made by the Authority unless the District has complied with all of the terms and conditions of this Agreement, the applicable provisions of M.G.L. c. 70B, chapters 208 and 210 of the Acts of 2004, 963 CMR 2.00 et seq., and all policies and guidelines of the Authority.

(d) After receipt from the District of a timely and properly submitted request for reimbursement pursuant to this Agreement, the Authority shall make payment to the District of the Authority's share of approved, eligible Feasibility Study costs, subject to the terms and conditions of this Agreement. The District hereby agrees and acknowledges that the amount of approved, eligible Feasibility Study costs reimbursed by the Authority may be subject to change, pending audit, including but not limited to an audit pursuant to Section 4.2 of this Agreement and the final close-out audit pursuant to Section 4.3 of this Agreement.

4.2 The Authority may review and perform a preliminary audit on each request for reimbursement submitted pursuant to this Agreement to ensure that only eligible costs of the Feasibility Study are approved and paid by the Authority. Any such preliminary audits shall be conducted in accordance with 963 CMR 2.16 and other policies and guidelines of the Authority. In the event that the Authority determines that an item contained in a request for reimbursement submitted by the District pursuant to this Agreement is not eligible for reimbursement by the Authority, the Authority shall adjust a subsequent reimbursement to the District to account for the ineligible costs. The District hereby acknowledges and agrees that each audit conducted pursuant to this Section 4.2 is preliminary, and the Authority may further adjust and alter the results of a preliminary audit after it conducts subsequent audits or a final close-out audit of the Feasibility Study.

4.3 The District hereby acknowledges and agrees that a final, close-out audit of the Feasibility Study by the Authority shall include an audit of all requests for reimbursement submitted and all reimbursements made by the Authority. The final, close-out audit shall be conducted in accordance with 963 CMR 2.16 and any other applicable regulations, policies and guidelines of the Authority. The District shall make all documents and materials requested by the Authority or its representatives available in a timely manner. The District further acknowledges and agrees that the final, close-out audit of the Feasibility Study may not occur until such time as the Authority conducts its final, close-
out audit of the project that may result from the Feasibility Study, should the District be approved for any such project. Any adjustments applicable as a result of the final, close-out audit may be made in the final amount of the Total Facilities Grant, as determined by the Authority.

SECTION 5
REPRESENTATIONS AND WARRANTIES

The District hereby warrants and represents that each of the following statements is true, correct and complete:

5.1 The District is validly organized and existing under and by virtue of the laws of the Commonwealth, has full power and authority to own its properties and carry on its business as now conducted, and has full power and authority to execute, deliver and perform its obligations under this Agreement and all other documents related to the Feasibility Study.

5.2 The District is duly authorized to execute and deliver this Agreement and has taken all necessary steps to authorize the execution and delivery of this Agreement, to undertake the Feasibility Study and to perform and consummate all transactions contemplated by this Agreement.

5.3 The undersigned has the full legal authority to execute this Agreement on behalf of the District and to bind the District to its provisions.

5.4 This Agreement does not and will not, to any material extent, conflict with, or result in violation of any applicable provisions of law, including, but not limited to, any statute, charter, by-law, ordinance, rule or regulation, or any judgment, order, rule or regulation of any court or other agency of government.

5.5 The District has all requisite legal power and authority to own and operate the School that is the subject of the Feasibility Study and to undertake and oversee the Feasibility Study or, in the case of a school facility that is leased by the District, the District has all of the requisite legal power and authority to control and operate the School that is the subject of the Feasibility Study and to undertake and oversee the Feasibility Study pursuant to a lease which assures that the District has exclusive jurisdiction and control of the School and the land upon which it is situated for the anticipated useful life of the Proposed Project.

5.6 No information furnished by or on behalf of the District to the Authority in this Agreement, the Budget, the Initial Compliance Certification, or any other document, certificate or written statement furnished to the Authority in connection with the Feasibility Study contains any untrue statement of a material fact or omitted, omits or will omit to state a material fact necessary in order to make the statements contained in this Agreement or therein not misleading in light of the circumstances in which the same were made.
5.7 The District has duly obtained all necessary votes, resolutions, authorizations, appropriations and local approvals, in accordance with formats prescribed by or otherwise acceptable to the Authority, and has taken all actions necessary or required by law to enable it to enter into this Agreement and to fund and perform its obligations hereunder, in accordance with the Authority's guidelines, regulations, policies and standards. This Agreement constitutes a valid and binding obligation of the District, enforceable in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, moratorium, reorganization or other laws heretofore or hereafter enacted and general equity principles.

5.8 No litigation before or by any court, public board or body is pending or threatened against the District or the Authority seeking to restrain or enjoin the execution and delivery of this Agreement or the Feasibility Study, or contesting or affecting the validity of this Agreement or the power of the District to pay its share of the Feasibility Study.

5.9 The District has implemented policies and procedures to prevent and eliminate fraud, waste and abuse of public funds in connection with the Feasibility Study and any future construction or renovation projects that may be forthcoming as a result of the Feasibility Study.

5.10 The District has submitted all audit materials requested by the Authority in connection with any project for which the District has received or anticipates receiving funding from the Authority.

5.11 All meetings of all public bodies in the District that relate in any way to the Proposed Project, including, but not limited to, the meetings of the District's school building committee, have been conducted, and shall be conducted, in compliance with the provisions of G.L. c. 30A, §§ 18 – 25, 940 CMR 29.00 et seq., the so-called Open Meeting Law, and all other applicable law.

SECTION 6
INSURANCE

6.1 The District shall obtain and maintain all insurance required by law and insurance of such types and limits and upon such terms and conditions as may be required by, or as may be acceptable to, the Authority.

6.2 The District shall require by contractual obligation, and shall also ensure by the exercise of due diligence, that any Designer hired by the District in connection with the Feasibility Study obtain and maintain, at a minimum, insurance of such types and limits and upon such terms and conditions as may be required by law and as may be prescribed by the Authority in the Design Contract between the Designer and the District.

6.3 Except where the Owner's Project Manager is an existing employee of the District, the District shall require by contractual obligation, and shall also ensure by the exercise of due diligence, that any Owner's Project Manager hired by the District obtain
and maintain, at a minimum, insurance of such types and limits and upon such terms and conditions as may be required by law and as may be prescribed by the Authority in its standard contract for Owner's Project Manager services which is incorporated by reference herein.

SECTION 7
COMPLIANCE WITH CONTRACT DOCUMENTS, PROJECT PERMITS AND OTHER APPLICABLE LAW

7.1 The District shall take all reasonable actions designed to ensure that the Feasibility Study complies with all applicable contract documents, building codes, laws, rules and regulations and to ensure that all necessary project permits have been obtained. Notwithstanding any right of approval or review held or exercised by the Authority in connection with this Agreement or the Feasibility Study, the District shall be responsible for the successful performance and completion of the Feasibility Study in accordance with this Agreement, the Design Contract, design documents and project permits, if any, and for the economical and efficient operation and administration of the Feasibility Study.

SECTION 8
DEFAULTS AND REMEDIES

8.1 The occurrence of any of the following events shall constitute, and is herein defined to be, an Event of Default under this Agreement:

(a) If the District shall fail to perform and observe any covenant, agreement or condition on its part provided in this Agreement and such failure shall continue for a period of thirty (30) days after written notice thereof shall be given to the District by the Authority; provided if such failure cannot be remedied within such thirty (30) day period, it shall not constitute an Event of Default hereunder if corrective action satisfactory to the Authority, as determined by the Authority in writing, is instituted by the District within such period and diligently pursued until the failure is remedied. Any forbearance or failure of the Authority in giving such written notice shall not amount to any waiver of the Authority's rights under this Agreement as to the same or subsequent breaches and shall not preclude the Authority from pursuing any of its rights or remedies provided under this Agreement or as otherwise provided by law.

(b) If any representation or warranty made by the District in this Agreement or in any other agreement entered into by the District with the Authority shall prove to have been incorrect or to be misleading in any material respect.

8.2 If any Event of Default hereunder shall occur and be continuing, the Authority may proceed to protect its rights under this Agreement, and may: (a) terminate this Agreement, (b) permanently withhold or temporarily suspend payment of any eligible, approved costs to the District, (c) recover any payments of eligible, approved costs
previously made to the District, and/or (d) exercise any other right or remedy upon such
default as may be granted to the Authority under this Agreement or under any other
applicable provision of law.

8.3 No remedy conferred upon or reserved to the Authority is intended to be
exclusive and every such remedy shall be cumulative and shall be in addition to every
other remedy given under this Agreement or now or hereafter existing at law or in equity.
No delay or omission to exercise any right, remedy or power accruing upon any Event of
Default shall impair any such right, remedy or power or shall be construed to be a waiver
thereof, but any such right, remedy or power may be exercised from time to time and as
often as the Authority may deem expedient.

SECTION 9
OTHER TERMS

9.1 Governing Law. This Agreement shall be governed by, construed, and enforced
in accordance with, the laws of the Commonwealth of Massachusetts.

9.2 Venue. Any civil action brought against the Authority by the District, or any
person or entity claiming by, through or under it, that arises out of the provisions of this
Agreement, shall only be brought in the Superior Court for Suffolk County,
Massachusetts. The District, for itself and for any person or entity claiming by, through
or under it, hereby waives any defenses that it may have as to the venue to which it has
agreed herein, including, but not limited to, any claim that this venue is improper or that
the forum is inconvenient. The District for itself and for any person or entity claiming
by, through or under it, hereby waives all rights, if any, to a jury trial in any such civil
action that may arise out of the provisions of this Agreement.

9.3 Indemnification of the Authority by the District. To the fullest extent
permitted by law, the District shall indemnify and hold harmless the Authority and
its officers, agents and employees from and against any and all claims, actions,
damages, liabilities, injuries, costs, fees, expenses, or losses, including, without
limitation, reasonable attorney’s fees and costs of investigation and litigation,
whosoever which may be incurred by, or for which liability may be asserted against,
the Authority or any of its officers, agents or employees arising out of any activities
undertaken by, for, or on behalf of the District in the execution or implementation of
this Agreement or with respect to the Feasibility Study, including, but not limited to,
the performance of any contract or obligation directly or indirectly related to the
Feasibility Study. Such obligation shall not be construed to negate or abridge any
other obligation of indemnification running to the Authority which would otherwise
exist.

9.4 Members, Employees Not Liable. No member or employee of the Authority shall
be charged or held personally or contractually liable by or to the District under any term
or provision of this Agreement or because of any breach thereof or because of its
execution or attempted execution.
9.5 Assignability. The District shall not assign any interest, in whole or in part, in this Agreement and shall not transfer any interest in the same, whether by assignment or novation, without the prior written approval of the Authority.

9.6 Payment Not A Waiver.

The Authority's payment(s) to the District under this Agreement or its review, approval or acceptance of any actions by the District under this Agreement shall not operate as a waiver of any rights under this Agreement and the District shall remain liable to the Authority for all damages incurred by the Authority as a result of the District's failure to perform in accordance with the terms and conditions of this Agreement.

The rights and remedies of the Authority provided for under this Agreement are in addition to any other rights or remedies provided by law. The Authority may assert a right to recover damages by any appropriate means, including, but not limited to, set-off, suit, withholding, recoupment, or counterclaim either during or after performance of this Agreement.

9.7 Notices. Any notices required or permitted to be given by either of the Parties hereunder shall be given in writing and shall be delivered to the addressee (a) in-hand (b) by certified mail, postage prepaid, return receipt requested; (c) by facsimile; or (d) by a commercial overnight courier that guarantees next day delivery and provides a receipt, and such notices shall be addressed as follows:

**If to the Authority:**

Massachusetts School Building Authority  
40 Broad Street, Suite 500  
Boston, MA 02109  
Attention: Director of Capital Planning  
Facsimile: (617) 720-8460

**If to the District:**

City of Worcester  
Worcester City Hall  
455 Main Street, Room 306  
Worcester, MA 01608  
Attention: City Manager  
Facsimile: 508-799-1208

or to such other address or addressee as the District and the Authority may from time to time specify in writing. Any notice shall be effective only upon receipt, which for any notice given by facsimile shall mean notice that has been received by the party to whom it is sent as evidenced by a confirmation slip that bears the time and date of receipt.
9.8 **Severability.** If any provisions of this Agreement shall for any reason be held to be invalid or unenforceable, the invalidity or unenforceability of such provision shall not affect any of the remaining provisions of this Agreement, and this Agreement shall be construed and enforced as if such invalid or unenforceable provision had not been contained herein.

9.9 **Counterparts.** This Agreement may be executed in one or more counterparts, any of which shall be regarded for all purposes as an original and all of which constitute but one and the same instrument. Each party agrees that it will execute any and all documents or other instruments, and take such other actions as may be necessary to give effect to the terms of this Agreement.

9.10 **No Waiver.** No waiver by either party of any term or conditions of this Agreement shall be deemed or construed as a waiver of any other terms or conditions, nor shall a waiver of any breach be deemed to constitute a waiver of any subsequent breach, whether of the same or of a different section, subsection, paragraph, clause, phrase, or other provision of this Agreement.

9.11 **Integration.** This Agreement merges and supersedes all prior negotiations, representations, and agreements between the Parties hereto relating to the Feasibility Study and constitutes the entire agreement between the Parties hereto with respect to the Feasibility Study and the Authority’s funding of a portion of the eligible, approved costs of the Feasibility Study.

9.12 **Amendments.** This Feasibility Study Agreement may be amended only through a written amendment signed by duly authorized representatives of the District and the Authority.

IN WITNESS WHEREOF, the Parties have executed this Agreement on this 21st day of February, 2018.

MASSACHUSETTS SCHOOL BUILDING AUTHORITY
By,

John K. McCarthy
Executive Director

CITY OF WORCESTER
By,
Edward M. Augustus, Jr.
NAME (type or print)

City Manager
TITLE (type or print)
EXHIBIT A

FEASIBILITY STUDY BUDGET

City of Worcester
Doherty Memorial High School

The total Budget for the Feasibility Study conducted pursuant to this Agreement, which is attached hereto and incorporated by reference herein, shall be no more than $2,000,000 based upon the following estimates:

<table>
<thead>
<tr>
<th>Category</th>
<th>Budget</th>
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<td>Owner’s Project Manager</td>
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<td>Designer</td>
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<tr>
<td>Environmental and Site Testing</td>
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<tr>
<td>Other</td>
<td>$300,000</td>
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EXHIBIT B

SCOPE OF THE FEASIBILITY STUDY

City of Worcester
Doherty Memorial High School

The Scope of the Feasibility Study conducted under this Agreement, which is attached hereto and incorporated by reference herein, shall consist of the development of a feasibility study/schematic design for the evaluation of a renovation of the existing school, a renovation of and addition to the existing school and/or new construction for the Doherty Memorial High School (the "Proposed Project") in the City of Worcester (the "District"). Pursuant to the Massachusetts School Building Authority's (the "MSBA") regulations, 963 CMR 2.06, the space allowance for the Proposed Project shall meet all applicable MSBA regulations and guidelines.

The Feasibility Study shall contain all information required by 963 CMR 2.10(8) and any other applicable rules, regulations, policies, guidelines and directives of the MSBA including, but not limited to, a final design program, educational space summary, budget statement for educational objectives, and a proposed total project budget. The District shall submit to the MSBA the educational space summary, based on the agreed upon enrollment of 1,670 students in grades 9-12 at the Doherty Memorial High School, for review and acceptance. Upon acceptance of the educational space summary, the District will commence with the evaluation of alternatives. The Schematic Design that is developed pursuant to this Agreement shall be based upon the final design enrollment, which shall be subject to the written approval of the MSBA. The Schematic Design shall include, but not be limited to, the information required by the MSBA's Feasibility Study Guidelines, including, but not limited to, a site development plan, environmental assessment, geotechnical assessment, geotechnical analysis, code analysis, utility analysis, schematic building floor plans, schematic exterior building elevations, narrative building systems descriptions, NE-CHPS scorecard or LEED for Schools checklist, outline specifications, cost estimates, project schedule and proposed total project budget.

In conducting the Feasibility Study and developing the Schematic Design, the District shall, in a sufficient and timely manner as determined by the MSBA, initiate such notification procedures, undertake such review processes, and obtain such determinations and approvals as may be required by 963 CMR 2.03(2)(h) & (i), including, but not limited to, such procedures, reviews, determinations, and approvals, as may be required by the Massachusetts Historical Commission (the "MHC") and/or the Massachusetts Environmental Policy Act. At its earliest opportunity, the District shall seek a written determination from the MHC as to whether the MHC intends to undertake a review of the Proposed Project.

The District shall be responsible for conducting such geotechnical evaluations, site investigations, soils explorations and environmental assessments as are reasonable and necessary to determine whether any significant environmental, geotechnical or other physical conditions exist that may have an impact upon eventual construction on the proposed site. The MSBA may require the District to fully fund certain environmental or geotechnical site testing beyond initial investigatory costs. The MSBA shall bear no responsibility or liability of any sort for the results
of any geotechnical evaluations or site testing, soils explorations, environmental assessments, nor for any site remediation, clean-up, or other site remediation services.

The development of the Schematic Design shall be subject to continuing review by the MSBA in accordance with the provisions of this Agreement, the MSBA’s Feasibility Study guidelines and any other applicable rule, regulation, policy, guideline or directive of the MSBA. The District shall be responsible for submitting to the MSBA all documentation that is required to complete the Feasibility Study and Schematic Design and to support the preparation of a Project Scope and Budget Agreement.
Exhibit C
Calendar Year 2018

Worcester

Doherty Memorial High School - 201603480512

<table>
<thead>
<tr>
<th>MSBA Reimbursement Rate Calculation</th>
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<tr>
<td>Base Points</td>
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<tr>
<td>Income Factor</td>
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<tr>
<td>Property Wealth Factor</td>
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<tr>
<td>Poverty Factor*</td>
</tr>
</tbody>
</table>

Subtotal: Reimbursement Rate Before Incentives | 78.95 |

Incentive Points
- Maintenance (0-2)
- CM @ Risk (0-1)
- Only projects invited to Capital Pipeline prior to 1/2/17
- Newly Formed Regional District (0-6)
- Major Reconstruction or Reno/Reuse (0-5)
- Overlay Zoning 40R & 40S (0-1)
- Overlay Zoning 100 units or 50% of units for 1, 2 or 3 family structures (0-0.5)
- Energy Efficiency - "Green Schools" (0 or 2)
- Model Schools (5)
- Only projects invited to Capital Pipeline prior to 1/2/16

Total Incentive Points

MSBA Reimbursement Rate | 78.95 |

*Poverty factor is calculated based on Chapter 110 of the Acts of 2017. Future reimbursement rates for feasibility or project scope and budget will be based on the calendar year reimbursement rate in effect at that time, which may be higher or lower than this rate.
March 15, 2017

Mr. Edward M. Augustus, Jr., City Manager
City of Worcester
Worcester City Hall
45 Main Street, Room 309
Worcester, MA 01608

Re: City of Worcester, Doherty Memorial High School

Dear Mr. Augustus:

I would like to thank your team for meeting with Massachusetts School Building Authority (the “MSBA”) staff on October 26, 2017 to review enrollment projections and methodologies for the Doherty Memorial High School project (the “Proposed Project”) in the City of Worcester (the “District”). As discussed, the next critical step is for the MSBA and the District to agree on a design enrollment for Doherty Memorial High School.

Doherty Memorial High School is a high school that presently serves a portion of the District’s grade 9-12 enrollment, and accordingly, this analysis will be particularly focused on the enrollment projections for those grades.

The table below illustrates the District’s K-12 enrollment during the most recent ten year period, including enrollment for the 2016-2017 school year as reported by the Department of Elementary and Secondary Education (“DESE”). The total grade 9-12 enrollment in the City of Worcester as reported by the District for the 2016-2017 school year was 7,156 students which was the maximum grade 9-12 enrollment reported in the preceding ten years. Additionally, the 2016-2017 grade 9-12 enrollment reflects an increase of approximately 315 students (4.6%) from the average grade 9-12 enrollment reported during the preceding ten year period.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>K-5</th>
<th>6-8</th>
<th>9-12</th>
<th>TOTAL</th>
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<td>5,163</td>
<td>7,156</td>
<td>24,110</td>
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</table>
November 15, 2017

Worcester Enrollment Letter

The MSBA understands that the District is proposing a design enrollment to accommodate approximately 1,550 students in grades 9-12 at Doherty Memorial High School. The enrollment in grades 9-12 reported to DESE for the 2016-2017 school year at Doherty Memorial High School was 1,555 students.

With respect to future enrollments, the MSBA’s base enrollment forecast indicates the City of Worcester’s grade 9-12 enrollment will experience an increasing trend over the next seven years then stabilize through 2025-2026. The average grade 9-12 base enrollment forecast for the projected period through the 2025-2026 school year is 7,580 students.

The District accommodates grade 9-12 students in multiple facilities. In order to recommend a design enrollment for an appropriately sized project for Doherty Memorial High School, the MSBA performed an enrollment analysis of the District’s grade 9-12 schools. For the purposes of this analysis, Claremont Academy, University Park Campus School, and Worcester Technical High School, each of which have specialized educational programs, have been assumed to accommodate a total of 2,175 grade 9-12 students going forward, which is consistent with the current utilization of these facilities. The remaining four grade 9-12 facilities are comprehensive high schools that serve specific enrollment zones with fixed boundaries across the District which have remained constant for many years. Each of these comprehensive high schools also house district-wide Chapter 74 and/or special needs programs. Currently, the Doherty Memorial High School accommodates approximately 29.5% of Worcester’s grade 9-12 population (exclusive of Claremont Academy, University Park Campus School, and Worcester Technical High School). Accordingly, the MSBA applied this percentage of the projected enrollment to the proposed project and recommends a design enrollment of 1,670 students for Doherty Memorial High School.

The MSBA believes that this design enrollment recommendation will position the District to efficiently meet space capacity needs throughout future enrollment variations. Please sign and return the attached certification within 14 calendar days to confirm agreement on this design enrollment. If the District feels that this design enrollment does not meet the needs of the District, please respond to this letter via e-mail to Jess Deleconio and propose three meeting/conference call times for which the District can be available to discuss enrollment.

If you have any questions regarding this matter, please do not hesitate to contact me or Jess Deleconio (Jess.Deleconio@massschoolbuildings.org) at 617-720-4466.

Sincerely,

Mary Pichetti
Director of Capital Planning

Cc: Legislative Delegation
   The Honorable Joseph M. Petty, Mayor, City of Worcester
   Michael T. Gaffney, Vice Chair, Worcester City Council
Worcester Enrollment Letter

K. Russell Adams, Assistant Commissioner of Engineering & Architecture Services, City of Worcester
John F. Monfredo, Vice Chair, Worcester School Committee
Maureen Binienda, Superintendent, Worcester Public Schools
File: 10.2 Letters (Region 2)
MASSACHUSETTS SCHOOL BUILDING AUTHORITY

CITY OF WORCESTER
DOHERTY MEMORIAL HIGH SCHOOL
DESIGN ENROLLMENT CERTIFICATION

As a result of a collaborative analysis with the Massachusetts School Building Authority (the "MSBA") of enrollment projections and space capacity needs for the proposed project at Doherty Memorial High School, the City of Worcester hereby acknowledges and agrees that the design of the proposed project at Doherty Memorial High School shall be based on an enrollment of no more than 1,670 students in grades 9-12. The City of Worcester further acknowledges and agrees that, pursuant to 963 CMR 2.00 et seq., the MSBA shall determine the square feet per student space allowance and total square footage for a high school serving 1,670 students in grades 9-12. The City of Worcester acknowledges and agrees that it has no right or entitlement to any particular design enrollment, square feet per student space allowance, or total square footage and that it has no right or entitlement to a design enrollment any greater than 1,670 students for Doherty Memorial High School, and further acknowledges and agrees that it shall not bring any claim or action, legal or equitable, against the MSBA, or any of its officers or employees, for the purpose of obtaining an increase in the design enrollment of Doherty Memorial High School that it has acknowledged and agreed to herein. The City of Worcester further acknowledges and agrees that, among other things, the design enrollment, square feet per student space allowance, and total square footage of Doherty Memorial High School shall be subject to the approval of the MSBA’s Board and that the final approval of a proposed project at Doherty Memorial High School shall be within the sole discretion of the MSBA’s Board.

The undersigned, for themselves and the City of Worcester, hereby certify that they have read and understand the contents of this Design Enrollment Certification and that each of the above statements is true, complete and accurate. The undersigned also hereby certify that they have been duly authorized by the appropriate governmental body to execute this Certification on behalf of the City of Worcester and to bind the City of Worcester to its terms.

[Signature]
Chief Executive Officer
Edward M. Augustus, Jr.

Date
11/16/17

[Signature]
Duty Authorized Representative of School Committee - Joseph M. Petty

Date
11/16/17

[Signature]
Superintendent of Schools
Maureen Binienda

Date
11/16/17
The following Capital Budget Narrative was prepared by the City:

“As of June 30, 2016, the City of Worcester had $454,486,617 in general fund supported net debt. The net debt equates to 3.7% of the City’s fiscal year assessed value in the amount of $12,266,519,406. The City has a moderately aggressive debt defeasance with 72.4% of the outstanding debt being retired within the next ten years.

The City’s debt management is governed by the City’s Five-Year Plan (5PP). The plan limits the issuance of bonds (inclusive of bonds issued for MSBA supported projects) to a predefined amount, factored for inflation. The City’s capital planning has projected the initial project estimates into its financial planning and shall make available capacity to fund the City’s share.”

In addition, the OPM provided the following information:

“As discussed, and confirmed by the “City,” $200 million is to be used as the target Budget for the PDP submission.”
3.1.2 EDUCATIONAL PROGRAM

A. Narrative
B. Teaching Philosophy Statement
C. Chapter 74 Program Submission
D. Supporting Documents
3.1.2 EDUCATIONAL PROGRAM

A. Narrative
To develop the program for the Doherty Memorial High School, an intensive and inclusive process was undertaken to garner input from the Doherty Memorial High School faculty, students, parents and neighbors, Central Administration Educational and Facilities representatives, representatives of City of Worcester and community stakeholders. Primary input strategies included public visioning workshops, focus group meetings, questionnaire distribution, public hearings, and tours of recently completed high schools.

**STEERING COMMITTEE MEETINGS**

The Steering Committee, comprised of key decision makers from the School, District, and City, oversaw the programming process, and has participated in bi-weekly project meetings throughout the PDP Phase. The members of the Steering Committee included:

- **Maureen Binienda** | Superintendent | Worcester Public Schools
- **Jim Bedard** | Director of Environmental Compliance & Capital Projects | Worcester Public Schools
- **Sally Maloney** | Principal | Doherty Memorial High School
- **K. Russell Adams** | Assistant Commissioner | Department of Public Works & Parks | City of Worcester
- **Eugene Caruso** | Owner’s Project Manager | AECOM Tishman

The Steering Committee convenes on a regular basis since early May 2019.

Additional input was received from:

- City and District representatives including IT, Facilities, Food Service, School Transportation, Procurement, Budget/ Finance, Fire and Police
- Doherty Memorial High School Department Heads, Assistant Principals and Administration
- Worcester Public Schools Curriculum Liaisons and Directors
- Worcester Technical High School Administration, local employment agencies

**VISIONING WORKSHOPS**

In addition to our in-house programming process, LPA|A partnered with David Stephen of New Vista Design to host several public Visioning Workshops. The design team and the Steering Committee participated the following Workshops:
Visioning Kick-Off | May 22, 2019
- Overview of the project with the Steering Committee and discussion of goals for the Public Visioning Sessions

Staff Visioning Workshop | June 3, 2019
- Priority Goals
- Visions for the Future

Public Visioning Workshop One: Learning Goals & Best Practices | June 5, 2019
- Priority Goals
- 21st Century Teaching & Learning Practices
- Strengths, Challenges, Opportunities, and Goals (SCOG Analysis)
- 21st Century Learning Goals

Public Visioning Workshop Two: Design Patterns & Guiding Principles | June 17, 2019
- 21st Century Design Patterns
- Blue Sky Ideas
- Guiding Principles

Public Visioning Workshop Three: Key Spaces, Adjacencies & Conceptual Design Directions | June 24, 2019
- Key Spaces and Adjacencies
- Bubble Diagramming
- Conceptual Design Directions
- Community Talking Points
Public Visioning Summary | June 24, 2019

- A Summary of Input received at Visioning Sessions
- Collection of Additional Feedback from individuals unable to attend the Visioning Sessions
- A Project Update

Information on the Public Visioning Workshops was posted on the Doherty Memorial High School and City websites, added to the school and municipal online calendars, posted at the City Clerks office and advertised on the school sign. Members of the School Building Committee were also invited to attend. Attendees included School and District staff, students, parents, neighbors, press, City representatives, community members and parks advocates, and more. Minutes and a list of attendees for each of the workshops are included in Section 3.1.2.C.1, however, a summary of key takeaways is outlined below.

Through the visioning workshops, the design team gathered critical input relating to the priorities for the project, desired programmatic and building features, and the role of the new school in the neighborhood, Doherty Quadrant and City as a whole. The attendees emphasized the need for a welcoming, comfortable and inclusive school that would serve as a hub for community wellness and learning after school hours. The project team also heard that it was critical for the building to be sustainable, not just from an energy and materials standpoint, but also through the use of flexible and adaptable spaces equipped support innovative educational programming over a 50+ year lifespan. The attendees and teachers strongly prioritized the concept of “real world connections”, and the desire for strengthened relationships to the outdoors, neighboring parks, and to the community as a whole. This objective dovetailed into another Visioning Workshop priority goal and Worcester Public Schools initiative to distribute more Chapter 74 programs and career pathways throughout the district, to accommodate the significant number of students placed on Worcester Technical High School’s waitlist.
Refer to Section 3.1.2.C for the proposed Chapter 74 Program Submission for additional details. Lastly, the attendees emphasized the need for on-site athletic fields, both to support Doherty’s very robust athletic programs, and to increase student pride and ownership of their school. In summary, the third Visioning Workshop resulted in consensus on the following Guiding Design Principals:

- Mastery Based Learning
- Real World Connections
- Personalization and Ownership
- School as a Community Resource
- Flexibility and Utility
- Sustainability & Outdoor Connections

FOCUS GROUP MEETINGS (meeting minutes included in 3.1.2.D.1 Program Meeting Minutes)
In parallel to the Visioning Workshops, LPA|A conducted many focus group meetings with district, school and city personnel that concentrated on the specific spaces required to deliver the proposed educational program.

5/22/19 Visioning Kick-off Meeting
6/3/19 Doherty Memorial High School Staff Visioning Workshop
6/5/19 Visioning Workshop One
6/12/19 Academic Organization
6/14/19 Core Spaces, Community Use & Site Program
6/17/19 Administration, Guidance, Medical Suite & Media Center
6/17/19 Chapter 74 Engineering & Technology Program
6/17/19 Visioning Workshop Two
6/20/19 Finance and Operations Update
6/24/19 PDP Program Wrap-Up
6/24/19 Visioning Workshop Three
6/25/19 Special Education Program
7/2/19 Chapter 74 Programs
7/8/19 Space Summary Review
7/10/19 Art, Music and Theater Programs
7/18/19 School Committee Meeting
7/30/19 Athletic and PE Programs
8/13/19 Security
8/20/19 Special Education
8/22/19 Building Systems & Technology
8/22/19 Medical Suite Program
QUESTIONNAIRE DISTRIBUTION

An online survey was distributed to all faculty members on May 24, 2019 with 83 responses received. See Section 3.1.2.D.2 for a copy of the questionnaire and a summary of responses. Based on the survey responses and subsequent discussion, highest staff priorities were Technology Integration, Real World Connections, and Hands-on / Project Based learning.

TOURS OF SIMILAR HIGH SCHOOLS

Based on recommendations from MSBA and New Vista Designs, the Steering Committee, Design Team and select Doherty Memorial High School staff toured several recently completed high schools. A summary of the tours with associated comments is included in Section 3.1.2.D.2:

1. West Bridgewater Middle Senior High, Grades 7–12, Enrollment 619
2. Billerica Memorial High School, Grades 8–12, Enrollment 1610
3. Dearborn STEM Academy, Grades 6–12, Enrollment 600

PUBLIC INPUT & HEARINGS

In addition to the public visioning sessions, several public hearings and School Building Committee Meetings were held to update the community and the SBC on the feasibility study progress.

5/13/19  Public School Building Committee Meeting
6/24/19  Public Hearing / Visioning Summary
7/15/19  Public Hearing
7/18/19  Televised School Committee Meeting and vote to approved the proposed Chapter 74 Programs
8/19/19  Public School Building Committee Meeting
9/9/19   Public School Building Committee Meeting & Vote to submit the PDP to MSBA

Agendas and meeting minutes and from these public meetings can be found in section 3.1.7.D

The district also added a link on the School’s website where the public can submit comments or questions regarding the project.

PROGRAM SUMMARY

The resultant program includes an approximately 400,000 GSF building and supporting site features, to support 1670 high school students. Some features of the program that warrant special recognition include:

- Year-round facility to support special education and extended learning programs
MSBA Module 3
Feasibility Study PDP

3.1.2 EDUCATIONAL PROGRAM
A. Narrative

- Core facility organization to support significant after hours extended learning and community use
- A welcoming yet secure entrance and lobby that supports display of student work.
- 9th Grade Academies to support students in the transition from middle school, classrooms serving grades 10–12 will be clustered by department.
- Organization of the departmental clusters to allow for Math–Science and English–History alliances and collaborative teacher planning spaces.
- Expansion of the space for the existing Chapter 74 Engineering and Technology Academy to comply with DESE regulations.
- The addition of three Chapter 74 Programs, including Programming & Web Development, Marketing & Finance, and Construction Craft Laborer.
- Special education programs for life skills and behavior modification, significant increase of inclusion and resource classrooms to support the student population.
- Community support features to provide food, clothing, and medical services to the high proportion of homeless and economically disadvantaged students.
- The Kitchen and Servery will be expanded to the size to support the practice of “from-scratch” cooking that has been established as the district standard.
- The cafeteria will be divided into smaller spaces adjoining one central kitchen/servery, to reduce the scale and number of students in one large space.
- A shared common room and adjacencies to unite visual and performing arts. Doherty’s strong Technical Theater program requires a small alternative performance theater/classroom.
- The Media Center suite will include a maker space, a large group seminar room and computer labs to support flexible hands-on learning.
- ELL classrooms and language labs to support the high proportion of students who do not speak English as a first language.
- The facility will serve as a non-designated emergency shelter for the City.
- Ideal site program includes a turf football field with track, baseball field, softball field, practice field, basketball courts and tennis courts.

Regarding systems development, the general tenet has been to use the recent Nelson Place School and South High Community School as a metric for mechanical, electrical, security, and IT and telecommunications systems. Additionally, sustainable design strategies will follow the recommendations for additional envelope insulation and photovoltaic solar panel installations for enhanced energy efficiency. The project will be LEED Certified as a minimum, with LEED Silver certification as a secondary goal.
3.1.2 EDUCATIONAL PROGRAM

B. Teaching Philosophy
   Statement
DOHERTY MEMORIAL HIGH SCHOOL
Worcester Public Schools
EDUCATIONAL PROGRAM

Feasibility Study for submission to the Massachusetts School Building Authority
September, 2019
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   B. Class Size Policies
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   N. Transportation Policies
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III. Conclusion
Introduction

Doherty Memorial High School (DMHS) is a community of learners committed to working together to develop the mindset and the skills necessary for all students to become college and career ready, and lifelong learners. The school empowers students to become critical and independent thinkers while fostering creativity and a growth mindset that supports the belief that all students can succeed. Doherty Memorial High School engages families, students, staff, and community members to work collaboratively to ensure the success of all members of the Doherty school community.

The students, staff and family have a sense of pride in the school as is evidenced by the enthusiastic and continued support of its academic and extracurricular activities. In the 2011 Decennial Report, the New England Association of Schools and Colleges (NEASC) noted in its accreditation report that the students have a sense of pride in their school. They are happy to be there each day and they feel safe and secure. This school pride can be seen as they cheer for each other on the playing field, on the stage, in their classrooms, and in our community. Doherty Pride is more than just a slogan at the school, it is something than can be witnessed in the care they show for each other, stepping up to assist a classmate in need or organizing a school-wide rally for Stand for the Silent, or the care they take in making the aging facility a home as they use their artistic talents to paint murals on the walls or decorate a classroom.

Doherty Pride is visible among the staff as well. Currently, 30 staff members are Doherty alumni, fifteen have had their children or relatives attend the school, and six currently have students attending or will attend the school next year. This adds to the sense of community that is present in the school and demonstrates a level of commitment to the core values that guide the work and support our students. As we began this phase of our journey towards planning a new building, faculty members were asked to share their opinions and their hopes for our students in a new building. A survey was distributed to the faculty had an 85% return/participation rate and yielded valuable information to guide us in the writing of this report. Many shared their excitement for being able to provide a more modern facility with state-of-the art technology to prepare our students to succeed in the twenty-first century. Teachers shared their ideas and their hopes for the school and for our students at faculty meetings, on surveys and many volunteered their time after school and during the summer to participate in the visioning process. This is just one way that they demonstrate their commitment to our students and their pride in our school and its programs.

The school is an integral part of the neighborhood and has long been supported by the community. Students are actively involved in our local community and partner with local agencies and business through internship programs. Each year over 70 local community members volunteer their time as Career Day speakers and share their career paths with our
students. As a result, many speakers have opened their businesses to our student interns and volunteer to come back each year to work with our students as speakers, as AVID tutors, and as supporters of our performing arts and sports programs.

Doherty Memorial High School is located at 299 Highland Street, Worcester, MA and in the 2018-19 school year, DMHS had 1,529 students in grades nine through twelve. Opening its doors in fall 1966, the school was originally built to house students in grades ten through twelve. The school population increased with the inclusion of Grade 9 in 1983 and its student enrollment has been growing steadily since then.

Located on the west side of the city, the student body represents a cross-section of the local community. The school offers a range of academic and extra-curricular programs to serve its body of diverse student learners.

Table 1

<table>
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<th>Year: (As of October 1st each year)</th>
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<th>Male</th>
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<td>214</td>
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</table>

Academic success and college and career readiness are the cornerstones on which Doherty Memorial High School’s foundation of learning is built. The breadth of course offerings and the rigor of course content prepares students for post-secondary success. The school offers a range of courses to meet both student needs and student interest including 22 Advanced Placement courses in the humanities, and math and sciences, an Engineering and Technology Academy
(ETA), visual and performing arts, world languages, Career Pathways program, as well as college and career preparatory courses at multiple levels. The curriculum is purposefully designed and adheres to the Worcester Public Schools (WPS) curriculum which aligns with the Massachusetts Department of Elementary and Secondary Education’s Mass Core curriculum frameworks.

Students challenge themselves through participation in a variety of courses at every level. Students who participate in the Advanced Placement courses challenge themselves to engage in advanced-level course work and earn college credit based on qualifying scores on the AP exams. In 2019, students in AP courses at Doherty Memorial High School achieved 207 qualifying scores an increase from 151 qualifying scores prior to 2017.

Figure 1

Other students challenge themselves by participating in Early College High School classes. Beginning in 2019-20, Doherty Memorial High School will be able to expand this opportunity by offering college courses on the Doherty campus, in partnership with Worcester State University and Quinsigamond Community College.

Course work at all-levels challenges students to engage in higher-order thinking and to apply these skills to authentic learning opportunities. The collaborative skills supported through these courses provide valuable tools for our students as they prepare to engage in a global economy and the world around them. Students apply these transferable skills to not only their class work but to opportunities that arise in the community through partnership and internship opportunities.
Doherty Memorial High School has a long tradition of academic excellence and many of its graduates go on to pursue their post-secondary education at a variety of colleges and universities located across the nation. Others further their education through training programs and enter the workforce or the military. Members of the class of 2019 were accepted to 188 different colleges and universities including: Assumption College, Becker College, Boston University, Brandeis University, Brown University, Clark University, College of the Holy Cross, George Washington University, Harvard University, Massachusetts College of Art and Design, Massachusetts College of Pharmacy, Morehouse College, Quinsigamond Community College, University of Oregon, University of San Diego, University of Massachusetts, Worcester Polytechnic Institute, and Worcester State University. The school profile for the class of 2018, with 376 members, shows that 87.4% of the students went onto some type of postsecondary schooling. More specifically, 54% to four-year college, 33% to two-year college, 0.4% to postsecondary and trade school, 8% to work, 2.4% to the military, and 0.2% to other.

Student growth and their ability to make progress is essential for them to succeed and be college and career ready. John Hattie’s research provides insight into what makes a visible difference in student learning. Hattie identifies a hinge point, something that will provide a year’s academic growth within a year’s time. He determined that anything with a 0.40 or greater effect size will provide such positive growth for students (DeWitt, 2014). The teachers’ self-efficacy, the belief that they can positively affect growth in their students supports the school’s mission to create life-long learners and enhances the sense of community that is present in their day-to-day work.

While our students have been successful both during their academic career while at Doherty and in their post-secondary education and career paths, there is a need to expand our offerings to meet changing student needs and to better prepare our students to be capable and contributing community members who can make a positive difference in our global community. This can be done by expanding our current programs, adding additional career pathways and providing our students with increased opportunities that reflect the global society in which they will interact. Doherty Memorial High School needs additional space in the physical plant in order to offer programs to meet the needs of our students. When we welcome families and students to our school, we feel that they are joining our Doherty family and we await the opportunity to have our family reside in a building that effectively meets the needs of our family and that provides the 21st century learning environment that the Doherty family and our community needs and deserves.

As part of the New England Association of Schools and Colleges (NEASC) Decennial visit in 2011, the commission cited several commendations including: the school pride amongst faculty and students, the strong relationships within the community including local businesses, colleges and universities, the development of measurable academic, civic, and social expectations, the
caring and unified faculty willing to maintain a positive attitude toward teaching and in spite of working in an inadequate facility, the safe, positive, and respectful school culture, the open access philosophy encouraging all students to take advanced placement courses, efforts by staff to build connections with students, the willingness of the principal to share leadership with faculty members and the willingness of faculty members to take on leadership roles including as providers of professional development, the identification and support of at-risk students and communication between support services staff members and families, and the onsite health center which provides students with preventative and wellness care. The commission also cited recommendations and expressed some concerns largely focused on the building. These included: ensuring equal access to programs and services in all parts of the building for all students and staff members including handicapped access to programs and services on all levels, ensuring sufficient levels of staffing, instructional materials, technology, equipment, supplies, facilities and library/media resources to fully implement the curriculum, immediately addressing all health and safety issues within the facility including safe chemical storage, making repairs to windows, doors, water fountains, shower facilities in the locker rooms, and plumbing, lavatories and ventilation in lavatories, providing adequate heating and ventilation throughout the facility, providing adequate seating in the cafeteria so that all students may sit down to eat, and providing science laboratory facilities to all implementation of the science curriculum. Doherty Memorial High School remains on warning status due to the facility although the commission is pleased that we have been accepted to participate in this Feasibility Study and we are grateful to the MSBA for allowing us to engage in this process.

As a part of the Feasibility Study phase of the process, members of the Doherty Memorial High School community conducted a comprehensive review of the guiding documents and engaged in a number of activities in order to reflect upon our current programming and to recommend revisions/additions to our current programming to inform and guide our plans for the future. In addition to reviewing and referencing the NEASC Decennial report of 2011, and our District/School Improvement Plans, another guiding document for this work included Defining Our Path: A Strategic Plan for Education in Worcester 2018-2023. The report was written in collaboration with the superintendent and several members of our community and organizations including the Worcester Education Collaborative, the Worcester Regional Research Bureau and the Rennie Center with support from the Barr Foundation, the George I. Alden Trust, and the Greater Worcester Community Foundation. There were multiple committees and subcommittees and the members of these groups gathered input from focus groups including educators, families, students, and community members. The focus areas of this strategic plan include: Culture of Innovation, Academic Excellence, Welcoming Schools, Investments in Educators, and Technology and Operations. The goals of the Strategic Plan and the goals of our district and school level initiatives have been woven throughout our Feasibility Study and Educational Programming Development process for our vision of the new facility and the focus on 21st century skill development.
Another integral part of this phase of the project included members of our community participating in several Educational Visioning and Programming sessions with David Stephen of New Vista Design and the team of architects from Lamoureux, Pagano and Associates (LPA) as part of our Feasibility Study.

A summary of the Visioning Sessions and Responses is included below.

During the month of June 2019, the Doherty Memorial High School Educational Working Group (EWG), a group of approximately 20-25 Worcester Public Schools administrative leaders, teachers, parents, and community partners, participated in three Educational Visioning Workshops run by New Vista Design and LPA Architects. Each workshop was a collaborative session designed to inform the Doherty Memorial High School Feasibility Study and design process. Participants were led through a step-by-step visioning process aimed at capturing their thinking about Worcester Public School’s current and future educational goals and priorities and connecting them to best practices and possibilities in innovative school facility design. Additionally, a Faculty Visioning Workshop was held on June 3, 2019 in which the entire faculty of Doherty Memorial High School met to offer feedback on their educational and architectural priorities and goals, and a Community Visioning Workshop was held on the evening of June 24, 2019 to share priorities established by the EWG and ask for feedback from the larger Doherty Memorial High School community.

On June 3, 2019 the entire faculty of Doherty Memorial High School participated in a one-and-a-half-hour Educational Visioning Workshop that explored the following topics:

- **Priority Goals** for the renovated and/or new DMHS educational program and facility
- Visions for the Future of DMHS’s academic and extra-curricular programming

On June 5, 2019, the Doherty Memorial High School EWG participated in Educational Visioning Workshop One. The four-hour workshop explored the following topics:

- **Priority Goals** for the renovated and/or new DMHS educational program and facility
- **21st century teaching and learning practices** as connected to Worcester Public School’s present and future educational vision
- **Strengths, Challenges, Opportunities, and Goals (SCOG Analysis)** associated with Worcester Public School’s current academic programs as well as the vision for its renovated and/or new facility
21st Century Learning Goals that distill the group’s best thinking with regard to Worcester Public School’s current and future educational programming and priorities

On June 17, 2019 the Doherty Memorial High School EWG participated in Educational Visioning Workshop Two. The four-hour workshop explored the following topics:

- 21st Century Design Patterns 1.0 that participants would like to see employed within the renovated and/or new DMHS facility
- Guiding Principles and priorities for design of the renovated and/or new DMHS facility

On June 24, 2019 the Doherty Memorial High School EWG participated in Educational Visioning Workshop Three. The four-hour workshop explored the following topics:

- Blue Sky Ideas for the renovated and/or new DMHS facility
- Key Spaces and Adjacencies for the renovated and/or new DMHS facility
- Bubble and Adjacency Diagramming for the renovated and/or new DMHS facility

On June 24, 2019 an evening Community Visioning Workshop was help, that explored the following topics:

- Timeline and Tasks connected to the MSBA Feasibility Study for the renovated and/or new DMHS facility
- Educational and Architectural Priorities that the DMHS EWG had determined for the renovated and/or new DMHS facility

Each workshop generated ideas, goals, and aspirations, and identified urgent needs, critical infrastructures, etc. from the perspective of school and community stakeholders. This input helped shape the design proposal by providing information about the following areas: the physical layout and space adjacencies; expanding current educational programs to better serve students; increasing community access so that the school’s resources and features are available beyond the school day; creating flexible space so that in the coming decades all students graduate with appropriate college and career readiness skills; increasing educational programming opportunities to address the needs of the students and the community.

In May 2019, Doherty Memorial High School staff members completed an online introductory survey. This tool asked participants to reflect and identify current features and practices that excite and motivate the school community, but then also asked respondents to look to the future and highlight their aspirations for the school. Finally, staff members were asked to think about
the end result of this design process and to review a list of sample visionary goals in order to select one or more goals that they identified to be the most important and impactful on the stakeholders. For example, one respondent identified the importance of collaboration, and the opportunities available in a newly designed space with this still in mind:

*I am excited about using different ways for students to collaborate both face-to-face and online.*

*(In the future…) I would like to see more space for collaboration and more flexible space that can easily be adapted as our needs change throughout the school year as well as over the years. I would like to be able to have large spaces available for big groups to work together as well as small study areas for groups to meet with teachers. I would like to continue to expand the use of technology and to expand the media center to provide the students more of a collegiate experience for research.*

Another educator’s goals were related to the goal of increasing interdisciplinary connections within their curriculum:

*I am excited about all the available technology that benefits students learning English as A second language.*

*(In the future…) I am excited about the available technology and project-based learning that integrates knowledge and skills from different content areas that students need to apply in their own student-led learning in order to tackle a real-world problem.*

On June 3, 2019, with the survey results as a catalyst for conversation, the entire faculty of Doherty Memorial High School participated in an Educational Visioning Workshop that explored their priority goals for the renovated and/or new Doherty Memorial High School educational program and facility, as well as their visions for the future of DMHS educational program and facility. The conversations and products from this session was grouped thematically and highlight the faculty’s visions for the future.

<table>
<thead>
<tr>
<th>ACADEMIC PRIORITY</th>
<th>NUMBER OF VOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Values</td>
<td>30</td>
</tr>
<tr>
<td>Differentiated Instruction</td>
<td>22</td>
</tr>
<tr>
<td>Team Teaching</td>
<td>25</td>
</tr>
</tbody>
</table>
Faculty and community stakeholder input has guided the careful reflection of the current, and desired, educational programming and space design features within a modernized and purposefully planned space. For example, all stakeholders emphasized career pathways, which included desires for courses and programs of study that would better expose students to a variety of career options and help them develop skills and content knowledge. In addition, these career pathways would align with the needs and interests of underrepresented populations, and/or identify and implement programs for which there is a demonstrated student interest and need. With student survey data from Naviance, a comprehensive college and career readiness platform, relating to career interests, local, regional and national labor market analyses, and from a review of currently available local and area schools and training programs, Doherty Memorial High School identified three additional Chapter 74 Career Vocational Technical Education programs that are included in this proposal.
Conversations have continued with members of LPA through July and August with input from school, district, and community stakeholders. Most recently, we participated in school visits to the following recent MSBA projects:

- West Bridgewater Middle High School; Grades 7-12, enrollment 619
- Billerica Memorial High School; grades 9-12, enrollment 1,610
- Dearborn STEM Academy; grades 6-12, enrollment 600

The lessons learned, the relationships developed, and the information gained during these visits have proven to be invaluable and have been incorporated into our educational visioning and programming as well as the overall design for the school. We are eternally grateful to the teams of people at each of these schools for their willingness to host our team and to share their insights and experiences. It is our hope, upon completion of our project, to be able to host teams from other schools that are engaged in this process. We are pleased to be working collaboratively with members of our community and with the MSBA in order to provide our students with the best educational program in a facility that supports teaching and learning for all.

A. Grade Configuration

Doherty Memorial High School currently serves students in grades 9-12 and the vision for the new school is to continue this grade configuration. The vision for the new school includes the addition of ninth grade academies designed to provide targeted supports to assist students in the transition from middle school to high school and to prepare them to be on track for graduation and college and career ready.

Ninth-Grade Academy/Teaming

Ninth grade and its associated transition to high school is often considered to be one of the most pivotal years in a student’s academic career. Many students struggle with the change of schedule/start time, the challenge of working with new and unfamiliar teachers, and the changes within their peer group coupled with the changes associated with this stage in their physical, emotional, and social development. The challenge of a new school environment can lead to increased stress and contribute to academic, social, and behavior problems for some students.

Neild’s (2009) research indicates:

“Transitions in schooling are moments of great promise for children, holding the potential for personal growth, new learning, and greater independence and responsibility...Students who do not navigate a school transition well face the possibility of personal and academic turmoil and even falling off track for promotion and
The entrance to ninth grade marks one such critical juncture in American schooling” (p.53).

The majority of the ninth-grade students transition from Forest Grove Middle School, Doherty’s primary feeder school. Each year, additional students enroll having completed the eighth grade in a private school, a school outside of the district, or a different Worcester Public Schools’ middle school (special permission). Ninth and tenth grade students in the Engineering and Technology Academy (ETA) are placed in a grade-specific team where they share the same core academic teachers. At present, this is the only Grade 9 team that is available to students.

Research indicates students who have experienced even a moderate level of difficulty in middle school are at a greater risk for not succeeding during the transition to high school (Neild, Balfanz & Herzog, 2007). Students who struggle in ninth grade may have to repeat courses, placing them off-track for graduation in four years with their cohort of peers. Data from the Massachusetts Department of Elementary and Secondary Education (DESE) indicates that 96% of students who pass all of their ninth-grade courses will graduate in four years. That number drops significantly as only 64% of students who failed at least one ninth-grade course graduate in four years. (https://abcs.sites.digital.mass.gov/)

Figure 2

Statistics such as this indicate the need for ongoing, targeted support and a need for a change in programming to support ninth grade students. The recognition that laying a strong academic foundation to support ninth-grade students to be college and career ready and to graduate with their cohort of peers within four years, coupled with the ever-growing concern for reducing the
number of ninth-grade students who fail classes, drives the desire to seek additional support for ninth-grade students.

We currently offer several programs to support students’ transition to Grade 9. These programs include a fall Open House for students and families, outreach to middle school students to help students plan for course selection, an outreach program for parents to provide course information, a parent orientation prior to the start of the school year, and a two-day Jumpstart program prior to the start of school to support students and prepare them to have a successful start to ninth grade. While these supports are beneficial to students there is a demonstrated need for additional supports for ninth grade students.

Presently, ninth-grade students at DMHS attend classes that are scheduled in classrooms in areas designated for each academic discipline throughout the building. These frequent transitions are often a cause of stress for many new students who begin their high school career feeling lost or overwhelmed by a comprehensive high school schedule in a large building. Ninth-grade students participate in classes taught by different teachers who often do not share common students. Other than the ETA program, there is no central location for these ninth-grade students to attend classes or the opportunity for them to share a common group of teachers who could monitor their progress and plan coordinated supports.

Ellerbrock and Kiefer (2014) define a community of care as a ‘school culture in which students and teachers care about and support each other, individuals' needs are satisfied within a group setting, and members feel a sense of belonging and identification with the group’” (p.3). While our teachers take an interest in the well-being of all of our students and work diligently to support them during their transition to high school, their desire to form such a community of care specifically to support ninth-grade students is impacted by the lack of space in the current building which prevents the ability to schedule all ninth-grade students into ninth-grade academies/teams.

The vision for the ninth grade in the new school is to create a ninth-grade neighborhood to promote a supportive community, or a community to guide students during the transition from middle school to high school. This would include an area of the school designated specifically for ninth-grade classes with close proximity of classrooms for core academic classes that would allow for teaming and cross-curricular sharing and designated collaborative space to successfully deliver the curriculum and support ninth-grade students during their transition to Doherty Memorial High School. Teachers would be able to utilize a team-approach by sharing the same caseload of students allowing them to build stronger bonds with ninth-grade students and offer a range of supports.
All ninth-grade students take the core academic subjects in addition to required elective courses. The typical ninth-grade schedule includes English I, Algebra I or Geometry, Biology, World History II, World Language, Physical Education (0.25 credits), Introduction to College and Career Readiness (ICCR), and (0.25 credits) Arts elective/other additional core electives.

As part of a ninth-grade academy, students and teachers will benefit from close proximity of grade-alike courses and shared collaborative space within sightline of classrooms, designed to facilitate break-out sessions, foster cross-curricular sharing and study as well as support interdisciplinary project-based learning. Such common areas will support such opportunities and allow for shared presentations and collaboration among teachers and classes. These areas need to be able to support a distributive model for technology (Chromecarts) and opportunities for students to publish (both in print and digitally) and present materials.

Teachers from each content area, working in grade-alike Professional Learning Communities (PLCs) can focus on their particular group of shared students and plan engaging and rigorous instruction while reviewing data and identifying academic, social/emotional, and behavioral issues of their shared students. Within this collaborative space there needs to be an area dedicated to supporting professional learning, complete with areas for presentation and modeling classroom strategies.

In order to support the ninth-grade team as part of the transition program, there will need to be ease of access to other school support services and flexibility to grow and change these spaces as enrollment and student needs change. Flexible office space than can be used to house an administrative and other support staff will help to support the program and foster a community of care for the students (Ellerbrock & Kiefer, 2010; Ellerbrock & Kiefer, 2014).

The proposed ninth-grade academy will be able to utilize the school’s bell schedule but will have the flexibility to combine classes for programming opportunities. The break-out spaces should be large enough to allow multiple classes or a team to meet for presentations for both students and their families and have appropriate technology (Epson boards, document cameras, sound system, etc.) to support such programs and presentations. The classrooms should have collaborative doors to allow for team teaching and integration of subjects. Additionally, each area of this part of the building will need appropriate heating/ventilation and natural light to provide a welcoming and productive environment. Students will need access to lockers within the academy to allow for ease of access during their time in their core academic classes. The ninth-grade academy will house classes for the core academic subjects and therefore should be located between the humanities and the STEM neighborhoods to allow for vertical articulation and collaboration in each subject area.
Advanced Academy

In January 2012, during his inaugural speech, Mayor Joseph M. Petty announced a goal of establishing an exam school in Worcester as part of his educational platform. Subsequent to that speech, Mayor Petty appointed an Ad-Hoc Committee, chaired by School Committee member Tracy O’Connell Novick, and comprised of other school committee members, higher education partners, community partners and parents. This Ad-Hoc Committee was charged with studying “the feasibility of establishing an exam school for students in Grades 9 to 12 which would develop and promote academic excellence relevant to success in the 21st century.” They spent several months researching, studying and visiting exam schools, and researching available curricula and programs such as the International Baccalaureate and Project Lead the Way programs, as it formulated recommendations to be presented to Mayor Petty and the Worcester School Committee. Additionally, several public hearings were held throughout the time.

In June 2013, the Ad-Hoc Committee recommendations were forwarded by the Worcester School Committee to the Superintendent for consideration in the creation of a proposal to establish a high school option for high achieving students. Since that time, the Worcester Public Schools Superintendent and Senior Leadership Team members have reviewed those recommendations and conducted additional research resulting in a proposal for “A Pilot Innovation Academy for Worcester Public Schools.”

As indicated in the Statement of Interest (SOI), and in the Request for Designer Services (RFS), the Advanced Academy was initially proposed (Fall 2013) to be housed at Doherty Memorial High School but due to lack of space, this did not occur. At the time, this program would have involved an additional 250 students and would require ten classrooms dedicated to advanced academics for the Worcester district. If there had been additional space at Doherty, it would have provided a central location for students from all areas or the city in a location that did not cost the district any additional monies in rental agreements.

While Massachusetts leads the nation in most educational indicators, it is virtually silent on the identification and education of gifted and high achieving students. Worcester Public Schools has been on the forefront of academic programming for these students. Specifically, the Goddard Scholars Program serving gifted and high achieving students from across the district at Sullivan Middle School and South High Community School. The Goddard Scholars Program at Sullivan Middle School is one of the district’s first innovation academies. The teachers in that program have expanded their knowledge of and implementation of pedagogy and best practices in gifted education. The Arts Magnet Pathway from Worcester Arts Magnet School to Burncoat Middle School to Burncoat High School has developed students with gifts, talents and interests in the visual and performing arts for many years with state and national recognition of their performances, productions and artistic creations. Across the district for gifted and high achieving
students, Worcester Public Schools offers 23 Advanced Placement Courses to students. Additionally, our students are able to earn college credit through dual enrollment opportunities with local colleges and universities.

It should be clearly noted and understood that this Advanced Academy is not designed to replace or supplant any of the existing programs serving gifted and high achieving students. Rather, the Academy will be an additional option within the Worcester Public Schools portfolio of school and program offerings. The district will continue strong support for and enhancement of those existing programs.

Doherty Memorial High School, and the Worcester Public Schools, is poised to begin implementation of the Advanced Academy through communication and outreach efforts starting in the district’s middle schools. In addition to core academics, students throughout Grades 7-12 in the Advanced Academy will enroll in coursework focusing on the biomedical and biotechnological sciences. The target population is students who have demonstrated exceptional interest in and an ability to be successful in a rigorous high school program of studies leading to advanced college readiness. The Academy will attract students from throughout the City of Worcester and will enroll 50 students per grade, for a total of 200 students from across the district. Students would apply while in Grade 6. Accepted students would join together to form a cohort, and this group would matriculate to a common middle school (Forest Grove Middle School), which is the primary feeder school to Doherty. This cohort would take core academic courses, and an introductory science course within this Biomedical Sciences sequences. This cohort would remain together in Grade 8, and then all would move on to Doherty Memorial High School for ninth grade.

School and district personnel within the Advanced Academy would review all middle school students’ academic records and invite students who receive Advanced in both English and Math on the MCAS in Grade 6 to apply to attend the academy. This is similar to the other programs in the district, including the Goddard Scholars program a South High Community School and the Hanover Academy at Burncoat High School. Beginning in the 2022-23 school year, 50 students will be accepted from all areas of Worcester, including but not limited to the Doherty quadrant.

The district will create an admission set of criteria, an application, and a process for selecting and notifying students. The admissions criteria will include:

- A completed application
- A review of academic grades from the student’s seventh and eighth grade transcripts
- MCAS and/or other state assessment scores
- Transcript/grade report showing courses enrolled in and completed in middle school
- Student essay
- Teacher recommendation from one core academic teacher
● Attendance history
● Other criteria, if any, that the district deems necessary.

The application process will be coordinated by the district and Advanced Academy Assistant Principal, and applications will be reviewed and scored. Should the number of eligible students oversubscribe the number of available student slots, a lottery will be held.

The Advanced Academy, in addition to Massachusetts general education course requirements and college and career readiness skills, will incorporate and deliver a coherent curriculum focusing on the biotechnology and biomedical sciences. Labor Market trends from Central Massachusetts, statewide, as well as from national databases all demonstrate an increasing need for qualified employees. Further, there are numerous entry points to the Biomedical and related fields based on the students’ level of education, including Associate’s and Bachelor’s Degrees.

### Advanced Academy – Biomedical Curriculum Focus - Occupational Projections

#### Table 3

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Employment 2016</th>
<th>Employment 2026</th>
<th>Percent Change</th>
<th>Typical Education needed for Entry</th>
<th>2018 Mean Annual Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Technician</td>
<td>168</td>
<td>170</td>
<td>+1.19%</td>
<td>Associate’s Degree</td>
<td>$57,829</td>
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<tr>
<td>Biological Technician</td>
<td>296</td>
<td>319</td>
<td>+7.77%</td>
<td>Bachelor’s Degree</td>
<td>$43,311</td>
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<tr>
<td>Medical and Clinical Lab Technologist</td>
<td>784</td>
<td>880</td>
<td>+12.24%</td>
<td>Bachelor’s Degree</td>
<td>$61,876</td>
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<tr>
<td>Medical and Clinical Lab Technician</td>
<td>166</td>
<td>181</td>
<td>+9.04%</td>
<td>Associate’s Degree</td>
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<td>Microbiologist</td>
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<td>175</td>
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<td>Biological Scientist</td>
<td>195</td>
<td>216</td>
<td>+10.77%</td>
<td>Bachelor’s Degree</td>
<td>$72,822</td>
</tr>
</tbody>
</table>

In Worcester alone, Biomedical- and Biotechnological-related industries have increased their presence. Support from local post-secondary schools demonstrates a strong current and healthy outlook for future needs. For example, in 2010 Worcester Polytechnic Institute (WPI) completed the development of their Gateway Park – a facility blending research, studies, innovation, and
industry. Within this multi-facility park, WPI designed and implemented a Biomanufacturing Education and Training Center, as well as a Life Sciences and Bioengineering Center. In addition, several private industries have established sites within the complex. In 2006, Dr. Craig Mello, of the University of Massachusetts Medical School, was awarded the Nobel Prize for his work in Medicine and Physiology. This accomplishment heightened local attention to this growing field. Assumption College offers degrees in Biotechnology and Molecular Biology, Quinsigamond Community College provides Associate’s Degrees and Certification trainings in several related fields, and many other area colleges offer similar programs and coursework.

The Advanced Academy sequence of courses will blend district-developed courses with nationally recognized providers of rigorous and innovative curriculum: Project Lead the Way (PLTW) and the College Board’s Advanced Placement (AP) Program both offer curricula and resources that emphasize the utilization of information and skills from the classroom to a career.

Doherty currently offers a Biochemistry course to students in Grades 11 and 12. From a review of post-secondary degree programs and related coursework, as well as identifying common preferred skills for those seeking employment in biomedical and biotechnological fields, the school will be working with secondary, post-secondary, and industry professionals to design additional course offerings to ensure students are appropriately prepared for their entry into college and/or into a career. These courses will likely focus on genetics, gene editing, immunology, microbiology, laboratory skills, and a strengthening of the existing biochemistry coursework. As a result of this partnership, the goal is for students to see practical applications of this work through learning opportunities within the community.

Project Lead the Way’s Biomedical Sciences (BMS) Curriculum Program is designed for secondary-level students and engages students in learning content and activities relating to human medicine, bioinformatics, cell biology, genetics, disease and other biomedical topics. The BMS program offers a sequence of three foundation courses and ends with a capstone course. These courses are designed to support and enhance Doherty’s core science course offerings.

There is a strong programmatic alignment between PLTW and the College Board. Curriculum sequencing within the Biomedical Sciences program align and mutually supports Advanced Placement Biology and Chemistry courses. The PLTW courses emphasize applied learning and provide foundational coursework and learning activities to introduce students to the field. In Grades 11 and 12, the specialized PLTW courses focus on knowledge and skill development for entry to college and careers. The AP courses, and associated exams, provide additional opportunities for advanced coursework, as well as college credit.

As part of the MassCore graduation requirements, all students in the Worcester Public Schools must complete a minimum of three laboratory-based science courses. The majority of students,
to ensure college and/or career readiness, enroll in a science course each year. To successfully offer this advanced Biomedical Science coursework, students in each grade will be enrolling in an additional laboratory-based science course. For example, students in Grade 9 will take Biology, the traditional first-year course offered to all students in Doherty. This course engages students in rigorous learning experiences, lays the foundation for subsequent coursework, but also prepares students for the MCAS exam. Ninth-grade students accepted into the Advanced Academy will also enroll in the PLTW Principles of Biomedical Sciences course. By participating in this course of study and by engaging in college and career readiness activities throughout this program, these students will be well-prepared and knowledgeable about the many opportunities in this field in terms of college majors and employment opportunities both locally and globally.

Often, students enroll in one science course per year. During the 2018-2019 school year, 102 students enrolled in two or more unique science course offerings. With the inclusion of this Biomedical Science program, 50 additional students will be taking two laboratory-based science courses simultaneously. This added enrollment will necessitate an additional science laboratory, and associated storage and preparatory spaces. Each of these BioTech/Biomedical Science courses will be designed for 1 credit, or the equivalent of a 1-period, full-year course. Advanced Placement Biology and Chemistry courses, due to the rigorous laboratory work embedded within their respective curricula, are 2 credit courses, requiring 2 periods of instruction each year. Therefore, at full enrollment Doherty expects to run an additional 12 periods of science instruction each year. With a seven-period day, the implementation of the Academy will necessitate an additional two dedicated laboratory classroom spaces. One of these laboratories will be utilized for advanced coursework in anatomy and physiology and will be supported by the inclusion of at least 2 Z-Space, or virtual dissection tables. These state-of-the-art AR/VR devices provide industry-level training and skill development and avoid the necessity of dissection specimens.

The Academy-related science classrooms and laboratory spaces would ideally be situated within the science cluster: there is no necessary adjacency to another program or space within the building.

Students in the Academy will benefit from shared enrollment in the other general education courses at Doherty Memorial High School, such as Mathematics, English, Social Studies, etc. In addition, Academy students will have access to the range of other elective and required courses including Physical Education, Health, Arts and a range of Advanced Placement courses.
B. Class Size Policies

Doherty Memorial High School follows the class size and teacher course load policies set by the Worcester Public Schools. Each teacher has a maximum of 125 students in his or her caseload which consists of the combined total of their five classes with an average of 25 per the negotiated teacher contract. During the 2018-19 school year, the average class size at Doherty Memorial High School was 22.2. However, during the same school year there were 451 classes with over 25 students enrolled in them and 27 courses with enrollments of 30 or more. Some programs, such as the Engineering and Technology Academy (ETA) are impacted by the class size and space requirements for safety reasons. As a result, the number of students who are able to participate in the ETA at each grade level is capped at 100, following the Career Vocational Technical Education (CVTE) guidelines.

Class Size Data for Doherty for Core Academic Subjects for 2018-2019

Table 4

<table>
<thead>
<tr>
<th>MATH</th>
<th>Average Class Size</th>
<th># Classes</th>
<th># Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra 1</td>
<td>24.09</td>
<td>11</td>
<td>265</td>
</tr>
<tr>
<td>Geometry</td>
<td>24.68</td>
<td>16</td>
<td>395</td>
</tr>
<tr>
<td>Algebra 2</td>
<td>28.08</td>
<td>12</td>
<td>337</td>
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<tr>
<td>Statistics</td>
<td>23</td>
<td>1</td>
<td>23</td>
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<tr>
<td>AP Statistics</td>
<td>28</td>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>Pre-Calculus</td>
<td>26.6</td>
<td>8</td>
<td>213</td>
</tr>
<tr>
<td>Calculus</td>
<td>25.5</td>
<td>2</td>
<td>51</td>
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<tr>
<td>AP Calculus BC</td>
<td>30</td>
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<tr>
<td><strong>AP Calculus AB</strong></td>
<td>20</td>
<td>1</td>
<td>20</td>
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<tr>
<td>--------------------</td>
<td>----</td>
<td>---</td>
<td>----</td>
</tr>
<tr>
<td><strong>SCIENCE</strong></td>
<td><strong>Average Class Size</strong></td>
<td><strong># Classes</strong></td>
<td><strong># Students</strong></td>
</tr>
<tr>
<td>AP Biology</td>
<td>25.33</td>
<td>3</td>
<td>76</td>
</tr>
<tr>
<td>AP Environmental Science</td>
<td>28</td>
<td>2</td>
<td>56</td>
</tr>
<tr>
<td>AP Physics 1 (AP Physics 2)</td>
<td>24.66</td>
<td>3</td>
<td>74</td>
</tr>
<tr>
<td>Biology 1</td>
<td>24.11</td>
<td>17</td>
<td>410</td>
</tr>
<tr>
<td>Biology 2</td>
<td>24</td>
<td>4</td>
<td>96</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>25</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>Chemistry</td>
<td>24.3</td>
<td>13</td>
<td>316</td>
</tr>
<tr>
<td>Physics</td>
<td>26</td>
<td>4</td>
<td>104</td>
</tr>
<tr>
<td>Human Anatomy</td>
<td>26.8</td>
<td>10</td>
<td>268</td>
</tr>
<tr>
<td><strong>Social Studies</strong></td>
<td><strong>Average Class Size</strong></td>
<td><strong># Classes</strong></td>
<td><strong># Students</strong></td>
</tr>
<tr>
<td>World History II</td>
<td>23.68</td>
<td>16</td>
<td>379</td>
</tr>
<tr>
<td>US History I</td>
<td>25.68</td>
<td>16</td>
<td>411</td>
</tr>
<tr>
<td>US History II</td>
<td>27.3</td>
<td>13</td>
<td>354</td>
</tr>
<tr>
<td>Course</td>
<td>Average Class Size</td>
<td># Classes</td>
<td># Students</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>--------------------</td>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>Psychology</td>
<td>25.8</td>
<td>5</td>
<td>129</td>
</tr>
<tr>
<td>Sociology</td>
<td>15</td>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>AP World History</td>
<td>11</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>AP US History</td>
<td>25</td>
<td>2</td>
<td>50</td>
</tr>
<tr>
<td>AP Psychology</td>
<td>21.66</td>
<td>3</td>
<td>65</td>
</tr>
<tr>
<td>AP Human Geography</td>
<td>24.75</td>
<td>4</td>
<td>99</td>
</tr>
<tr>
<td>AP Government and Politics</td>
<td>23</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td><strong>ENGLISH</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average Class Size</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 1</td>
<td>20.05</td>
<td>18</td>
<td>361</td>
</tr>
<tr>
<td>English II</td>
<td>22.4</td>
<td>17</td>
<td>381</td>
</tr>
<tr>
<td>English III</td>
<td>27</td>
<td>14</td>
<td>375</td>
</tr>
<tr>
<td>English IV</td>
<td>23.6</td>
<td>13</td>
<td>307</td>
</tr>
<tr>
<td><strong>World Language</strong></td>
<td><strong>Average Class Size</strong></td>
<td><strong># Classes</strong></td>
<td><strong># Students</strong></td>
</tr>
<tr>
<td>Spanish 1</td>
<td>15.25</td>
<td>8</td>
<td>122</td>
</tr>
<tr>
<td>Spanish 2</td>
<td>20.06</td>
<td>15</td>
<td>301</td>
</tr>
<tr>
<td>Grade Level</td>
<td>Avg Class Size</td>
<td># Classes</td>
<td># Students</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------</td>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>PK</td>
<td>15.2</td>
<td>77</td>
<td>1167</td>
</tr>
<tr>
<td>K</td>
<td>18.9</td>
<td>928</td>
<td>17519</td>
</tr>
</tbody>
</table>

Class Size data for the Worcester Public Schools
Table 5

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Avg Class Size</th>
<th># Classes</th>
<th># Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>PK</td>
<td>14.6</td>
<td>66</td>
<td>963</td>
</tr>
<tr>
<td>K</td>
<td>17.4</td>
<td>655</td>
<td>11418</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Avg Class Size</th>
<th># Classes</th>
<th># Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>PK</td>
<td>14.6</td>
<td>66</td>
<td>963</td>
</tr>
<tr>
<td>K</td>
<td>17.4</td>
<td>655</td>
<td>11418</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>---</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>1</td>
<td>25.9</td>
<td>560</td>
<td>14505</td>
</tr>
<tr>
<td>2</td>
<td>27.3</td>
<td>532</td>
<td>14521</td>
</tr>
<tr>
<td>3</td>
<td>25.9</td>
<td>511</td>
<td>13231</td>
</tr>
<tr>
<td>4</td>
<td>24.1</td>
<td>483</td>
<td>11649</td>
</tr>
<tr>
<td>5</td>
<td>28.2</td>
<td>470</td>
<td>13241</td>
</tr>
<tr>
<td>6</td>
<td>15.5</td>
<td>19</td>
<td>294</td>
</tr>
<tr>
<td>7</td>
<td>19.5</td>
<td>177</td>
<td>3450</td>
</tr>
<tr>
<td>8</td>
<td>19.0</td>
<td>805</td>
<td>15256</td>
</tr>
<tr>
<td>9</td>
<td>19.6</td>
<td>223</td>
<td>4366</td>
</tr>
<tr>
<td>10</td>
<td>14.5</td>
<td>779</td>
<td>11285</td>
</tr>
<tr>
<td>11</td>
<td>14.0</td>
<td>696</td>
<td>9768</td>
</tr>
<tr>
<td>88</td>
<td>8.9</td>
<td>64</td>
<td>570</td>
</tr>
<tr>
<td>99</td>
<td>9.1</td>
<td>284</td>
<td>2592</td>
</tr>
</tbody>
</table>

District | 19.3 | 7616 | 146981 | District | 19.4 | 6075 | 118058

Additional course offerings are impacted by the lack of available classrooms. In order to offer additional courses to support college and career readiness in the global community, we would need both additional teachers and classroom space. While some classroom space needs to be specific to the course offerings, such as science courses or Career Vocational Technical Education, (CVTE) courses, other additional classroom space needs to be flexible in order to adapt to changing course needs and to support future changes in the curriculum frameworks.
C. School Scheduling Method (including Advantages and Disadvantages)

The school day begins at 7:20 a.m. and ends at 1:43 p.m. and includes a traditional seven-period day. The scheduling process is completed through a collaborative effort between the administration and the guidance department. Periodically throughout the year, the guidance staff meets with students to discuss their academic programming. Each spring, counselors work with students to complete the course selection process for the upcoming year. Attention is given to areas of student interests, college and career goals, and graduation requirements. Beginning in the 2018-19 school year, the course selection process was done electronically but in previous years had been done on paper and then the data entered into the computer program. By having the students complete this part of the process electronically in the portal, families can review and discuss the selections together and adjust accordingly. The courses are then approved by the counselor to be sure that they are consistent with all grade level requirements. This way, the data can be uploaded directly to formulate course tallies without data entry errors. Course tallies are used to determine the number of sections of each course to be offered and every effort is made to accommodate students’ requests for courses. The scheduling program used by the Worcester Public Schools allows for flexibility as the process evolves, including allowing us to do batch scheduling changes and to link courses through Mass Schedule Edit feature.

The difficulty we face in the scheduling process is available classroom space to accommodate the courses and number of sections we need to offer. The school is overcrowded, and the facility does not support the needed academic programming. Room utilization is at nearly 100% for most spaces throughout the day. The classrooms used for the Special Education classes are too small to use for most other courses or purposes and some courses are being taught in spaces for which they were not intended. For example, art is being taught in a converted home economics classroom. Science is being taught in rooms that are not equipped for labs. Additionally, 50% of the teachers travel from room to room to teach their classes and noble attempts are made to limit the distance in order to avoid adversely affect teaching and learning.

With nearly 100% room utilization, we are not in a position to easily add staff to our existing building, and therefore must maintain careful supervision of caseloads, class sizes, and contractual agreements. A disadvantage for our school is that the SAGE (Student Attendance Grading and Enrollment) program allows for each counselor and administrator to make changes to a student’s schedule. This can be problematic forcing us to monitor these types of changes. At times we must follow a one-student-out / one-student-in policy in order to adhere to the teacher caseloads as prescribed by the negotiated contract.
Room Occupancy Information (2018-2019)

Table 6

<table>
<thead>
<tr>
<th>Department</th>
<th># Assigned Classrooms</th>
<th># Available Periods of Instruction</th>
<th># Instructional Periods used by department/assigned personnel</th>
<th># Instructional Periods used for other departments, coursework, scheduled sessions</th>
<th>Combined Usage Rate per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>11</td>
<td>77</td>
<td>64</td>
<td>9</td>
<td>73/77 = 95%</td>
</tr>
<tr>
<td>Social Studies</td>
<td>10</td>
<td>70</td>
<td>64</td>
<td>4</td>
<td>68/70 = 97%</td>
</tr>
<tr>
<td>World Languages</td>
<td>7</td>
<td>49</td>
<td>43</td>
<td>4</td>
<td>47/49 = 96%</td>
</tr>
<tr>
<td>Art</td>
<td>2</td>
<td>14</td>
<td>14</td>
<td>0</td>
<td>14/14 = 100%</td>
</tr>
<tr>
<td>English Language Arts</td>
<td>10</td>
<td>70</td>
<td>61</td>
<td>5</td>
<td>66/70 = 94%</td>
</tr>
<tr>
<td>Science</td>
<td>10</td>
<td>70</td>
<td>62</td>
<td>3</td>
<td>65/70 = 93%</td>
</tr>
<tr>
<td>Computer Science</td>
<td>2</td>
<td>14</td>
<td>11</td>
<td>1</td>
<td>12/14 = 86%</td>
</tr>
<tr>
<td>CVTE Engineering Technology</td>
<td>4</td>
<td>28</td>
<td>20</td>
<td>5</td>
<td>25/28 = 89%</td>
</tr>
<tr>
<td>Gymnasium</td>
<td>1</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>7/7 = 100%</td>
</tr>
<tr>
<td>Health</td>
<td>1</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>6/7 = 86%</td>
</tr>
<tr>
<td>Music/Theater</td>
<td>2</td>
<td>14</td>
<td>14</td>
<td>0</td>
<td>14/14 = 100%</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>3</td>
<td>21</td>
<td>17</td>
<td>3</td>
<td>20/21 = 95%</td>
</tr>
<tr>
<td>EL</td>
<td>2</td>
<td>14</td>
<td>10</td>
<td>4</td>
<td>14/14 = 100%</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-------------</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Usage Rate for Classrooms able to hold a general education sized classroom</td>
<td>431/455</td>
<td>94.7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Special Education</td>
<td>9</td>
<td>63</td>
<td>53</td>
<td>0</td>
<td>53/63 = 84%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Usage Rate for classrooms with a layout able to accommodate 5-15 students</td>
<td>53/63</td>
<td>84%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School-wide Classroom Usage Rate, All Students/Courses</td>
<td>484/518</td>
<td>93.4%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

With the 2019-2020 schedule, the room utilization pressures have increased with the addition of new staff members and the increased student enrollment. Of the 64 general education classrooms throughout the school, these are utilized 98% of each school day, an increase from 94.7% from the prior school year. The school utilized non-traditional classroom space for four periods throughout the day, including the utilization of the library (3) and the auditorium (1) due to scheduling demands. The school also assigned five sections into the cafeteria, as there were limited, or no, available classrooms for those respective periods.

The advantages of having a scheduling program within the database written by members of the district and specifically for our district is that the modules, reports and overall program can be customized to meet the needs of our district and of the individual schools within the district. A committee, composed of several individuals across the district and led by the Manager of Instructional Technology and Digital Learning, is currently reviewing other options for scheduling and database management products to determine how to best support the needs of the district as one disadvantage to our current program is that many commonly used, industry standard programming packages (e.g. PowerSchool) more readily interface with the varied sources of student and school-wide data (e.g. standardized exam results from the CollegeBoard, or the ability to import/export information into Naviance, the college/career planning platform) and that many commonly used, industry standard programming packages provide a singular
interface for all stakeholders to access information including grading and progress reporting and to facilitate communication between groups (e.g. student-to-teacher, teacher-to-parent, school-to-family).

The vision for the new school is to continue to use the district high school bell schedule which consists of a seven-period day, so every class meets every day. While our previous bell schedule included a rotating extended block to support learning activities that may have benefitted from additional class time on a six-day rotation, the new schedule has been implemented across the district beginning this school year. This recent standardization of bell schedules has allowed district-wide participation in Early College and Dual Enrollment opportunities for students in all of our high schools. The plan is to continue to utilize the district scheduling program while other options are explored by district personnel. Additionally, all Grade 9 students will be scheduled into ninth-grade teams to support their successful transition to high school as described in detail in the grade configuration section of this document.

In 2016, at the onset of the MSBA process, the proposed enrollment for Doherty Memorial High School was set at 1,670 students. This figure was determined as a result of a collaborative analysis of enrollment projections and space capacity needs for the Doherty Memorial High School project.

As design work continued, and as more community and varied stakeholder input was gathered, for example through a series of school and community member visioning workshops, the community’s desire to grow the curricular and college/career programming options available to students became evident. After much stakeholder input, from a review of current district educational program offerings, and with a thorough labor market analysis, the school is including within this design a proposal to add three vocational programs as well as an advanced academy with a curricular focus on the biotechnology/biomedical sciences. These four additional programs would be open to all students from across the district.

Doherty currently offers a vocational Engineering Technology program. This program was certified 10 years ago, and all Worcester residents are eligible to apply. Each year, the school admits students from across the district, including some entering the public schools from the area’s private and parochial options. Enrollment figures for the 2019-2020 school year are representative of this pattern. Of the 370 students currently enrolled in Grades 9-12, 57% of these students reside in the Doherty quadrant and, theoretically, would be eligible to attend Doherty based on their home address. The remaining 158 students are ‘out-of-district’ and, without the benefit of the vocational program, would be assigned to their home school.
The three additional vocational programs, along with the Advanced Academy, will similarly be available to all Worcester residents. It is reasonable to predict that a comparable percentage of ‘out-of-district’ students will be admitted to these programs.

- **Programming and Web Development**: Program enrollment is estimated at 200 students. If 43% come from outside of the Doherty quadrant, this represents an estimated additional 86 students being served within the new building.
- **Construction Craft Laborer**: Program enrollment is estimated at 150 students. If 43% come from outside of the Doherty quadrant, this represents an estimated additional 65 students being served within the new building.
- **Marketing, Finance and Management**: Program enrollment is estimated at 200 students. If 43% come from outside of the Doherty quadrant, this represents an estimated additional 86 students being served within the new building.
- **Advanced Academy**: Program enrollment is estimated at 200 students. If 43% come from outside of the Doherty quadrant, this represents an estimated additional 86 students being served within the new building.

In total, if estimating similar enrollment patterns, the new Doherty would accommodate an additional 323 students. With the current added enrollment of 158 students from the Engineering Technology program, there is potential for an additional 481 students. This does not account for the students applying for, and receiving, special permission, which allows students to obtain a voluntary transfer and to enroll in the general education programming at our school from a different “home school” within our district.

Admittedly, it is difficult to predict the application figures for these new programs. However, the school administration is mindful that students are always able to attend their home school, which is the school assigned to them based on their current home address. There is a subset of Worcester students who can attend Doherty Memorial High School through the voluntary transfer process without applying or being accepted to any of these vocational programs or the advanced academy.

Therefore, design elements of this Feasibility Study reflect an expected enrollment larger than the stated figure of 1,670 students. For example, the cafeteria seating area will certainly be overcrowded if designed for a capacity of 557 students (1670, 3 seatings). For the purposes of this Feasibility Study, the cafeteria’s capacity should more likely be 675 students for each seating.
D. Teaching Methodology and Structure

Doherty Memorial High School maintains high expectations for all learners while providing them with academic and social-emotional support needed for success in school and in life. The school is guided by its mission and core values and uses its focus statement to support student learning.

<table>
<thead>
<tr>
<th>Mission Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doherty Memorial High School empowers students to become critical and independent thinkers as well as life-long learners. We encourage diversity and creativity as we partner with our students and their families, our teachers, and our community to provide an education in a safe and caring environment.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Academic Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Thinking critically</td>
</tr>
<tr>
<td>· Thinking independently</td>
</tr>
<tr>
<td>· Responding thoughtfully</td>
</tr>
<tr>
<td>· Practicing life-long learning skills</td>
</tr>
<tr>
<td>· Applying creativity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Civic and Social Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Appreciating diversity</td>
</tr>
<tr>
<td>· Partnering with students, families, and community members</td>
</tr>
<tr>
<td>· Working within a safe and caring environment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Focus Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doherty Memorial High School is implementing a school-wide effort to demonstrate measurable growth in students’ ability to read critically and respond thoughtfully in writing as evidenced by progress on external measures, such as the MCAS and the PSAT, and internal measures, such as Star and other common assessments</td>
</tr>
</tbody>
</table>
Doherty Memorial High School is a comprehensive high school. The faculty/staff is organized by academic departments: English Language Arts (ELA), Science, Mathematics, Social Studies, Career Vocational Technical Education (CVTE) Programs, Music, Art, Special Education, World Languages, Guidance, Physical Education (PE), and Administration. Faculty members meet by department to plan instruction, engage in professional learning opportunities and collaborate in Professional Learning Communities (PLCs) within these departments or grade-alike groups. Additionally, some teachers of elective classes (Art, Music, PE, Marketing, and Health) meet within one of the departments, or participate in similar monthly meetings with district-level personnel.

Most departments are assigned a set of classrooms for their primary use, and as such most classrooms within a department are located in proximity to each other. There are several ‘departmental’ classrooms that are not located near the other classrooms in their department due to the layout of the building, along with the limited classroom spaces.

Doherty has a CVTE Engineering Technology program that includes two grade-level, interdisciplinary teams (Engineering, Mathematics, Social Studies, Science, and ELA), one for Grade 9 and the other for Grade 10. The Grade 9 team, and the associated departmental classrooms, are located in proximity to one another and near the engineering classroom and laboratory space.

While there are a few areas in the current facility that have air conditioning it is important that the new facility have proper heating and cooling capabilities throughout the entire school in order to support optimal teaching and learning.

**Administration/Academic Organization/Structure**

There is one principal and there are four assistant principals, each with approximately 400 students in their caseload. One assistant principal is assigned all students in the CVTE Engineering Program as part of his caseload along with a portion of the comprehensive school population. All other students are assigned alphabetically to the other assistant principals. These administrative offices are located in two areas of the building. Two assistant principals’ offices are located on the first floor near the principal’s office and the guidance office. Two other assistant principals’ offices are located in a second administrative suite on the third floor in order to maximize effective supervision and safety procedures.

The vision for the new school is to place administrative offices for the assistant principals in locations that will support effective supervision of students and close proximity to programs within the school. Maintaining the current administrative suite format (two assistant principals in separate offices with a shared space for a shared administrative support personnel and supervised
areas for students) in two areas of the school. These shared spaces need to have a designated place for meetings with students, parents, and counselors. Each individual office needs adequate space for meeting with students and parents and access to technology. An area designated for the administrative support personnel needs to have access to technology and serve as a welcome center for those visiting the administrative offices.

With the projected increase in enrollment and the expansion of course offerings in the new building there is a need to increase the number of assistant principals to meet the needs of the growing enrollment and the diversified programming including the additional vocational pathways, the Grade 9 teams and the Advanced Academy and to be more consistent with the district’s administrator to student ratio. The administrative offices will need to be located throughout the “neighborhoods” to support the students and staff and to increase opportunities for collaboration. It is important that all leaders are also active learners and continuously seek to support and engage in professional learning communities and school wide improvement efforts along with the faculty. Additionally, at least one school adjustment counselor will have an office adjacent to each assistant principal pairing in order to support the district’s focus on promoting student resilience and to support social-emotional learning and proactive problem solving. The increased community use of the new facility, coupled with the level of after school programming that will be afforded to the school community will result in the need for additional administrative coverage beyond the regular school day and the school year.

**Curriculum Delivery Methods and Practices**

At Doherty Memorial High School, we believe in the 4 C’s: critical thinking, communication, collaboration, and creativity and we have designed and implemented learning experiences for students that integrate all four of these areas, despite having a facility that does not support these activities in the manner in which it should. We also subscribe to the importance of rigor, relevance, and relationships. In our decennial report, the NEASC visiting team described the relationship between and among the adults and the students as a true strength of the school. Teachers at Doherty Memorial High School employ a variety of instructional methodologies in their classes to deliver the curriculum. Guided by the Worcester Public Schools High Quality Teaching and Learning document they engage in practices that include whole-group and small group-instruction, modeling, and fostering opportunities for student-centered academic discourse and collaboration. The school is also guided by the Focus Statement and associated student-friendly strategy DHS SCORES (Decode- Read the question carefully, Highlight the tasks and terms, Stop-What is being asked?- Start to answer the question, Compile evidence and information, Organize your thoughts on paper, Respond thoughtfully in writing, Edit and review your work, Scoring higher equals success) to support critical reading and thoughtful writing in all classes across the curriculum. Teachers are increasingly integrating project-based learning
into their curriculum to provide students with real-world learning experiences and to support college and career readiness. Programs such as the ETA regularly engage students in interdisciplinary learning activities that are highlighted during several learning fairs during the school year.

All classrooms and common spaces will enable staff, students, and outside personnel to utilize standard presentation and communication technology. Standard technology includes Epson bright link short throw projector, document camera, LED display is desired with screens that support both independent and mirroring displays; Chromecast/apple TV and speech reinforcement for classwork displays, announcements, etc.; standard Ethernet ports and wireless hubs providing varying degrees of access; and telephone capacity enabling calls between rooms along with connections to outside lines. These align with all stakeholder needs identified during the various listening and visioning sessions, including community members who imagine how outside organizations could benefit from the communal spaces.

**English Language Arts**

The [mission of the English Language Arts](#) program in the Worcester Public Schools is to provide a balanced approach to literacy to empower students to think critically and strategically, communicate effectively, and fully support arguments. Students read, comprehend, and critique a range of complex texts and media, write and present for various audiences and purposes, and develop habits of reading for enjoyment. This supports the school’s focus to read critically and to respond thoughtfully in writing.

Doherty Memorial High School offers a variety of full year (1 credit) and semester (0.50 credit) courses in English Language Arts (ELA). The current 1-credit ELA course offerings include English I-IV, Academic Literacy I -IV, Journalism I-II, Advanced Placement English Language and Composition, and Advanced Placement (AP) English Literature and Composition. During the 2018-2019 school year, there were four sections of AP English scheduled, serving a total of 78 students. All are scheduled as a one-period block.

All students in the school are enrolled in an English course every year, as four years of ELA is a graduation requirement. Students may take additional ELA courses based on interest (Journalism, Creative Writing, Theater) or need (Academic Literacy). Creative writing is a semester-long, 0.50 credit course that was added to the course offerings during 2018-19. Theater I-IV has been a part of the ELA department in past years. There are plans to grow the theater program as part of the expanding performing arts program beginning in the 2019-20 school year with the addition of a dedicated full-time theater teacher. Additionally, as part of the Early College High School program (Appendix 2), the English department, in conjunction with Quinsigamond Community College will offer English 101/102 on the Doherty campus as an
additional way to support college and career readiness and provide students with another opportunity to participate in more advanced coursework while earning college credits.

The English department has sixteen teachers and ten classrooms dedicated to ELA instruction. In total, these staff provided a combined 66 instructional periods of English and general electives. With only ten rooms available in the area designated for the English department teachers often have to travel between rooms for classes. Elective courses such as Journalism, Creative Writing and Theater are scheduled into available classrooms, and therefore are often located outside of the area of the building dedicated to the English department. For the 2018-2019 school year, these 10 ‘English’ rooms had a combined usage rate of 94% (66 used periods out of 70 available periods). With the addition of new staff members next year, we will be faced with additional challenges when scheduling English classes within the current departmental space and will be forced to increase the number of teachers who need to travel to a classroom to teach.

Most of the ELA classrooms are not designed to effectively support a 21st century integrated humanities curriculum. The physical layout of these rooms discourages effective grouping practices, collaborative work, and flexibility. In addition, there were several other non-ELA classes scheduled into these rooms, due to the available space (e.g. Social Studies, World Languages). ELA classrooms are outfitted as general education classrooms, mainly comprised of a whiteboard and tablet-arm chairs. The available space in these rooms often make it difficult to arrange furniture to such classroom activities as whole-group Socratic Seminars or small-group project-based learning activities.

Curriculum in the ELA classes is delivered using a variety of instructional methodologies including but not limited to whole-group instruction and modeling and whole-group and small group discussion, and collaboration that supports the school’s focus on reading critically and responding thoughtfully in writing using AP strategies, Self-Regulated Strategy Development (SRSD), and Advancement Via Individual Determination (AVID) strategies. Classes utilize technology in a variety of ways including the use of video and audio to support critical response, document cameras for modeling and collaboration, and Chromebooks (Chromecarts) for research, collaboration, writing, and publication. While collaboration and project-based activities are incorporated into the lessons in the ELA department, limited classroom and collaboration/break-out space can impact the ease and frequency of use of these activities. For example, when multiple classes have joined together to participate in station rotation activities, these classes have had to move to larger areas such as the cafeteria which provides more space and more flexible arrangement of furniture.

The vision for the English Language Arts department space in the new school includes maintaining the department structure for Grades 10 through 12 and includes classrooms of standard size with natural light and appropriate heat, cooling and ventilation and communication
doors between rooms to support collaborations. There is a need for additional classroom and collaboration space to successfully deliver the ELA curriculum and grow the programs at Doherty Memorial High School. Collaborative space is needed to support increased opportunities for students to engage in the multi-stage/ multi-draft writing process and include opportunities for students and teachers to engage in conferring and collaborating as noted in the AP English Literature and Composition course description. Common areas within sightline of classrooms, designed to facilitate break-out sessions will support such opportunities and allow for shared presentations and collaboration among classes. This area needs to be able to the support distributive model for technology (Chromecarts) assigned to each room and opportunities for students to publish (both in print and digitally) and present materials. Additionally, these spaces will provide areas for Professional Learning Communities (PLCs) within the department to meet to collaborate. Within these collaborative spaces there needs to be an area dedicated to supporting professional learning, complete with areas for presentation and modeling classroom strategies.

As part of a humanities program, ELA classes and teachers will benefit from close proximity within the humanities neighborhoods and shared collaborative space with social studies and English Learner (EL) classes and teachers. This will foster cross-curricular collaboration and study as well as supporting interdisciplinary courses such as AP Research and AP Seminar (currently assigned to the social studies department). Such flexible collaborative space and cross-curricular sharing will allow for future expansion in these departments and allow the school to diversify and increase the elective course offerings in order to “foster deeper and broader subject matter exploration in areas relevant to student interests and societal needs” as indicated in the Worcester Public Schools’ strategic plan (14.)

Mathematics

The mission of mathematics education in Worcester Public Schools is to provide opportunities for all students to interpret and persevere in solving real world, complex mathematical problems using strategic thinking. Students will be effective communicators and collaborators who construct viable arguments and critique the reasoning of others in order to make decisions, draw conclusions and solve problems.

The Massachusetts Frameworks for Mathematics guides the work of the mathematics department and supports the development of the Mathematically Proficient Person of the Twenty-First Century. This proficiency requires students who are college and career ready in mathematics to demonstrate the academic knowledge, skills, and practices necessary to enter into and succeed in entry-level, credit bearing courses in College Algebra, Introductory College Statistics, or other technical courses. These standards provide for a course of study that prepares students for a
science, technology, engineering, or mathematics career by providing pathways for students who want to pursue a mathematics-intensive career or academic major after high school.

Students who meet the standards are able to identify problems, represent problems, justify conclusions, and apply mathematics to practical situations. They gain an understanding of topics and issues by reviewing data and statistical information, develop reasoning and analytical skills, and draw conclusions based on evidence. Students need to be provided multiple opportunities to discuss math’s relevance to everyday life, their interests, and potential careers.

John Hattie’s research has identified teaching problem-solving as being an effective hinge point (0.68) to accelerate student achievement. The creation of the mathematics classroom and collaborative space, coupled with the project-based learning opportunities afforded by the STEM/STEAM adjacencies listed above will allow us to better prepare each of our students to become the Mathematically Proficient Person in the Twenty First Century.

Doherty Memorial High School offers full year (1 credit) and semester (0.50 credit) courses. The current 1-credit course offerings include Algebra I, Algebra II, Geometry, Pre-Calculus, Calculus, Algebraic Reasoning, Numeracy, Statistics, and Topics in Algebra and Geometry. In addition, there are 0.50-credit offering in MCAS (Massachusetts Comprehensive Assessment System) Math. The Mathematics department currently offers three Advanced Placement courses: Calculus AB, Calculus BC, and Statistics. All are offered as a one-period block. During the 2018-2019 school year, there were three sections of AP mathematics scheduled, serving a total of 78 students.

All students in the school are enrolled in a math class every year and four years of mathematics is a graduation requirement. Students may take additional math courses based on interest (AP Statistics or Financial Literacy), or need (Numeracy, MCAS Math). There are plans to grow the mathematics program by offering courses as part of the Early College High School program in partnership with Worcester State University and/or Quinsigamond Community College. This will provide an additional way to support college and career readiness and offer students an opportunity to participate in more advanced coursework, while earning college credits.

The curriculum is delivered using varied and differentiated strategies to meet the needs of all learners. Instructional methods include whole-and small-group -instruction, modeling of strategies, whole- and small-group discussion, collaborative activities, project-based exploration of topics, and the integration of technology using the distributive technology model. While this is the goal in all classes in this department, limited classroom and laboratory space often impacts the ability two fully implement these strategies/activities on a more frequent basis.
Currently there are eleven rooms predominantly utilized by the mathematics department. Six of these classes are located within the same hallway-referred to as the “math wing”, one is located within the ninth-grade CVTE program area at the other end of the 300s floor, to allow for programmatic adjacency with other core academic courses in the ETA. The remaining four mathematics classrooms are located in other areas of the building, based on where rooms could be allocated to the department.

All rooms used for mathematics classes are outfitted as general education classrooms, mainly comprised of a whiteboard and tablet-arm chairs. The rooms assigned to the math department vary in size and seating capacity. Several rooms utilize a large table with chairs, as this furniture was repurposed from other areas within the school as the student population grew.

The school is built into a hill and as a result, many of the classrooms on the “hill side” of the hallway are below ground level, making them more difficult to heat given our current heating system and causing excessive condensation and dampness in the hot weather.

The vision for the mathematics department space in the new school includes maintaining the department structure for grades 10-12 and includes classrooms of standard size with natural light and appropriate heating. This vision also includes additional classroom and collaborative space to successfully deliver the mathematics curriculum and to grow the programs at Doherty Memorial High School. These classrooms should include flexible spaces that facilitate collaboration and that can adapt and be changed as the curriculum changes. They should include furniture that can be reconfigured for group work and projects rather than the lab tables that are in some of the classrooms.

Epson projectors with more than one display area should be in each math classroom to facilitate the use of technology and a Chromecart should be assigned in each of the classrooms. The classrooms need to be planned with this incorporation of technology in mind and placement should allow for ease of efficient access and flexibility to support a variety of presentation and collaborative experiences.

We anticipate adding space and staff to the math department due to the projected increase in enrollment and the addition of courses such as Financial Literacy and Advanced Quantitative Reasoning to our current course offerings. Collaborative space should exist within the department to support the work of the PLC’s and to ensure horizontal and vertical articulation and alignment.

In order to support the advancement of STEM/STEAM programs, the math and science departments will benefit from close proximity and shared collaborative in the STEM/STEAM neighborhood facilitate teachers of the same grade across these departments to implement
interdisciplinary project-based learning to demonstrate the relationship between the academic areas and for students to have their learning reinforced in multiple contexts. This area will provide collaborative space for students to share information gathered and the analysis of the data for their projects and labs for their mathematics classes as well as to present the results of their research and/or lab findings. Such collaborative space and cross-curricular sharing will enable future expansion in STEM/STEAM departments and allow the school to diversify and increase course offerings to support both student interest and need.

Science, Technology and Engineering

The Worcester Public Schools Science and Technology/Engineering (STE) program provides students with in-depth exploration of the standards identified in the Massachusetts: STE Curriculum Frameworks (2016). Support for classroom and after-school activities are enhanced through partnerships with area colleges and cultural, environmental, and scientific institutions. Doherty Memorial High School offers full year (1-credit) and semester (0.50-credit) courses. The current 1-credit course offerings include Biology, Chemistry, Physics, Biology II, Applied Physics: Introduction to Technology, Human Anatomy, and several non-vocational engineering-based courses taught by CVTE teachers. In addition, there are 0.50 credit offerings such as Forensics, an intensive Biology II course, and Environmental Science. The school also runs 5 AP science courses: Biology, Chemistry, Physics 1, Physics 2, and Environmental Science. All science courses have a laboratory-based curriculum.

The Science department currently offers five Advanced Placement science courses: Biology, Chemistry, Environmental Science, Physics 1, and Physics 2. Of these courses Biology, Chemistry and Environmental Science are each designed to be taught during a two-period block. During the 2018-2019 school year, there were eleven sections of AP science scheduled, serving a total of 275 students.

The curriculum in the Science department is delivered using varied and differentiated strategies to meet the needs of all learners. Instructional methods include whole-and small-group instruction, modeling of strategies, procedures and experimentation, whole- and small-group discussion, collaborative activities, project-based exploration of topics, laboratory experimentation, and the integration of technology using the distributive technology model. While this is the goal in all classes in this department, limited classroom and laboratory space often impacts the ability to fully implement these strategies/activities on a more frequent basis.

Currently there are ten rooms predominantly utilized by the science department. Most of these classes are located within the same hallway, though two classrooms are located in different wings of the building. Of these designated science classrooms:

- two have functional lab benches with available sinks, gas, and electric
six have some variation on lab benches/tables, with one functional sink. These lab benches/tables serve as both a lab surface as well as the students’ desk spaces.

- two are outfitted similar to a regular education classroom, with no sink, gas, lab station/bench, or access to electrical connections.

There is a storeroom that has been converted and dedicated to a chemical storage room which also serves as a chemical preparation space. There are two storage rooms located near this chemical storage room: one is a stockroom for the majority of the biology and chemistry equipment, the other houses the materials for physics and the non-CVTE engineering/technology-based courses.

Most of the science classrooms are not designed to effectively support a 21st century STEM curriculum. Rather, most rooms just have rectangular lab tables, as opposed to tablet-arm desks, and a sink at the teacher’s desk.

DMHS has a seven-period day, with no rotation or dropped periods. Each classroom is then available for use for seven periods each day. Therefore, there are 56 instructional periods available in a room outfitted to some degree to support a science curriculum, with another fourteen periods available for science staff, though situated in a general education classroom. This is a total of 70 available periods in a ‘science’ classroom.

During the 2018-2019 school year, there were thirteen FTE staff members providing a combined 65 instructional periods of science. In addition, there were several other non-science classes scheduled into these rooms, due to the available space (e.g. AVID). For the 2018-2019 school year, these ten ‘science’ rooms had a combined usage rate of 92.8% (65 used periods out of 70 available periods). With the addition of new staff members next year, including one in science, we will be over capacity and will hold more science classes in general education rooms.

The number of available classrooms, combined with their physical layout and available equipment, create deficiencies that challenge the department’s attempted delivery of a 21st century STEM education:

- In order to run laboratory activities, teachers often have to switch rooms. For example, if a teacher needs to use a lab space with available electrical outlets, he/she must coordinate with the teacher assigned to that room and identify day(s) where the classes will switch rooms. This switching of classrooms/lab space has a negative impact on instruction as it detracts from effective use of instructional time. This change of classroom environment also disrupts established classroom routines and access to classroom materials.

- Given that each room is used by 2 or more teachers throughout the day, and given that most classes are structured with rectangular tables serving as both lab
benches and student desks, teachers are forced to break down or move the lab equipment/class activity materials at the end of each period only to have to set them back up when their next class enters. Teachers cannot leave the activity materials on the lab benches/tables as these double as the desks for students. This creates a loss of instructional time.

- The physical layout and lack of available utilities negatively affect the range of laboratory activity offerings. Teachers are able to plan for a wide range of activities, but can only choose to practically implement a subset of these—a subset that aligns with the limitations of the available utilities.
- The classrooms cannot support a renovation. For example, additional electrical outlets cannot be installed into most classrooms due to the school infrastructure being unable to handle the added load.
- Safety equipment is dated and impractical. Two rooms have emergency showers and eyewash stations. Six have hoses that are coiled and located solely by the main door, often behind desks and lab tables. The regular education classrooms serving as science rooms have no safety equipment, and again staff and students need to move rooms in order to engage in science-based laboratory activities.

As we move into the future, and recognizing the growing importance of a STEM education in providing college and career readiness skills, Doherty Memorial High School needs a facility that enables students to rigorously and authentically engage with the Massachusetts Science Curriculum standards, including the acquisition and development of laboratory skills and practices. A 21st century science education will rely on technology, flexibility, classroom space for students to work collaboratively, and laboratory space designed for a range of curricular offerings. Flexible, yet separated, classroom and laboratory space enables educators to utilize a wide range of instructional practices, including but not limited to discussion groups, direct instruction, peer-to-peer collaboration, demonstrations, virtual simulations, laboratory investigations, inquiry-based learning activities, personalized groupings, individual work, etc.

In 2018, the STEM Learning Design, LLC released a report outlining recommendations for the physical design and utilization of effective K-12 STEM learning spaces. Many of these recommendations have been adopted within recent new school designs, and the physical space considerations for science classrooms and associated spaces would likely adhere to the identified best practices within this report. For example, when designing the building space, Doherty would include such recommendations as ensuring that spaces ‘support (a) comprehensive approach to health and hygiene as well as active STEM learning activities, including project-based learning.’ (p. 19). Classrooms and associated spaces would include effectively designed storage options for student work, materials, classroom resources, etc.
Social Studies

The vision of the 2018 Massachusetts Department of Elementary and Secondary Education Frameworks for History and Social Studies is that students will be “educated in the histories of the Commonwealth, the United States, and the world. They will be prepared to make informed civic choices and assume their responsibility for strengthening equality, justice, and liberty in and beyond the United States” (p.9).

Doherty Memorial High School offers a variety of full year (1-credit) and semester (0.50-credit) courses in social studies. The current 1-credit social studies course offerings include World History II, U.S. History I-II, Psychology, Sociology, Legal Aspects, Advanced Placement (AP) World History, AP U.S. History, AP Psychology, AP Human Geography, AP Government and Politics, AP Seminar and AP Research. Criminal Justice is a semester-long 0.50 credit course.

Students are required to take a minimum of three years of history/social studies classes in order to graduate, and all students in the school are required to take World History II, U.S. History I, and U.S. History II Students may choose to take social studies electives and/or AP courses. Additionally, Students Involved in Their Education (SITE), a student internship program, has also been a part of the social studies department. Currently there are 10 rooms predominantly utilized by the Social Studies department. Eight of these classes are located within the same hallway-referred to as the Social Studies wing, and the other two are located within the ninth grade ETA program area. Teachers travel between classrooms during the day to teach their classes.

Each classroom is available for use for seven periods each day. Therefore, there are 70 instructional periods available in a room outfitted to some degree to support a social studies curriculum. During the 2018-2019 school year, there were 14 FTE staff members. Most teachers within the department provided social studies instruction, though several offered general, non-departmentalized elective courses as part of their assignment (e.g. AP Capstone courses, Internship Coordinator). In total, these staff provided a combined 66 instructional periods of social studies and general electives. In addition, there were several other non-social studies classes scheduled into these rooms, due to classroom availability at specific times of the day DMHS has a 7-period day, with no rotation or dropped periods. Each classroom is then available for use for 7 periods each day. Therefore, there are 70 instructional periods available in a room outfitted to some degree to support a social studies curriculum.

During the 2018-2019 school year, there were 14 FTE staff members. Most teachers within the department provided social studies instruction, though several offered general, non-departmentalized elective courses as part of their assignment (e.g. AP Capstone courses,
Internship Coordinator). In addition, there were several other non-social studies classes (e.g. AP Capstone courses, Health, ELA) scheduled into these rooms, due to the available space. For the 2018-2019 school year, these 10 ‘social studies’ rooms had a combined usage rate of 97% (68 used periods out of 70 available periods). With the addition of new staff members to the department next year, and the addition of new courses, there will be a lack of available classroom space within the social studies wing, requiring classes to be scheduled in available rooms outside of the department area. As enrollment increases and the department continues to grow with additional staff and course offerings the school will be challenged to find appropriate classroom space to meet these needs.

The curriculum is delivered using varied and differentiated strategies to meet the needs of all learners. Instructional methods include whole-and small-group -instruction, modeling of strategies, whole- and small-group discussion such as Socratic Seminars and debates, collaborative activities, project-based exploration of topics, and the integration of technology using the distributive technology model. While this is the goal in all classes in this department, limited classroom and laboratory space often impacts the ability two fully implement these strategies/activities on a more frequent basis.

Most of the Social Studies classrooms are not designed to effectively support a 21st century integrated humanities curriculum. The physical layout of these rooms discourages effective grouping practices, collaborative work, and flexibility. All are outfitted as general education classrooms, mainly comprised of a whiteboard and tablet-arm chairs. One classroom (409) is only 730 square feet.

The vision for the social studies department space in the new school includes maintaining the department structure for grades ten through twelve and having classrooms of standard size with natural light and appropriate heat, cooling and ventilation as conversational doors between rooms to support collaborations. There is a need for additional classroom and collaboration space to successfully deliver the social studies curriculum and grow the programs at Doherty Memorial High School. Collaborative space is needed to support increased opportunities to support students to “learn to think critically, construct solid arguments, and see many sides of an issue—skills that prepare them for college and beyond” (AP U.S. History Course and Exam Description p.1). Common areas within sightline of classrooms, designed to facilitate break-out sessions will support such opportunities and allow for shared presentations and collaboration among classes. This area needs to be able to support flexible use of technology (Chromecarts) and opportunities for students to publish (both in print and digitally) and present materials. Additionally, these spaces will provide areas for Professional Learning Communities (PLCs) within the department to meet to collaborate. Within these collaborative spaces there needs to be an area dedicated to supporting professional learning, complete with areas for presentation and modeling classroom strategies. With the addition of an Internship/Community Service Coordinator position beginning
in the 2019-20 school year, all student internships in the school will be developed and monitored by the coordinator and no longer supervised by a member of the social studies department as was the case historically. The coordinator will need a space to meet with students as a part of the new facility design.

As part of a humanities program, social studies classes and teachers will benefit from being in a neighborhood in close proximity and shared collaborative space with ELA and EL classes and teachers. This will foster cross-curricular collaboration and study as well as support interdisciplinary courses such as AP Research and AP Seminar (currently assigned to the social studies department). Such flexible collaborative space and cross-curricular sharing will allow for future expansion in the humanities departments and allow the school to diversify and increase the elective course offerings in order to “foster deeper and broader subject matter exploration in areas relevant to student interests and societal needs” as indicated in the district’s strategic plan (14.)

**World Languages**

The goal of the [Worcester Public Schools World Language](#) program is to promote language proficiency in order for students to engage in meaningful communication and to appreciate cultures different from their own. This program is founded on the belief of the Massachusetts Common Core of Learning that all students should converse, read, and write in at least one other language in addition to English.

The mission of the World Language department states that at every level of world language instruction, students communicate will communicate in the interpretive, interpersonal, and presentational modes in the target languages. Students will gain an understanding of the target language and target culture by making comparisons and connections to their own language and culture and apply the skills and knowledge acquired in future career and life experiences.

Students must successfully complete two years of the same language in order to graduate from the Worcester Public Schools, with the exception of vocational students and some students with disabilities if their Individualized Educational Plan is written with that exception.

Doherty Memorial High School offers a variety of full year (1 credit) courses in World Languages including French I-IV, Latin I-IV, Spanish I-IV, Spanish Native Speaker, and Advanced Placement Spanish Language.

The curriculum is delivered using varied and differentiated strategies to meet the needs of all learners. Instructional methods include whole-and small-group -instruction, modeling of
strategies and oral and written use of the target language, whole- and small-group discussion, collaborative activities, project-based exploration of topics, and the integration of technology using the distributive technology to research the culture and history of the countries associated with the target language and to practice speaking and listening skills using Audacity, a multi-track audio editor and recorder. While this is the goal in all classes in this department, limited classroom and laboratory space often impacts the ability to fully implement these strategies/activities on a more frequent basis.

Currently at Doherty, world language courses are taught in seven classrooms, five of which are located in the world language wing on the fourth floor and two located in close proximity on the fourth floor. Prior to 2018-19, room 422 was a dedicated space used as a language lab for the World Language department. This space contained desktop computers and provided opportunities for classes to use Audacity program to support their speaking and listening skills in their target language. Unfortunately, due to the overcrowding issues at the school this space has been converted to a classroom beginning in 2018-19 and is now used by various departments to provide much needed classroom space.

The vision for the World Language department space in the new school includes maintaining the department structure and includes classrooms of standard size with natural light and appropriate heat, cooling and ventilation as conversational doors between rooms to support collaborations. There is a need for additional classroom and collaboration space to successfully deliver the World Language curriculum and grow the programs at Doherty Memorial High School. Collaborative space is needed to support increased opportunities for students to engage in speaking and listening activities such as plays, presentations, and cultural activities.

Common areas within sightline of classrooms, designed to facilitate break-out sessions will support such opportunities and allow for shared presentations and collaboration among classes. This area needs to be able to support flexible use of technology (Chromecarts) assigned to each room and opportunities for students to publish (both in print and digitally) and present materials. Additionally, these spaces will provide areas for Professional Learning Communities (PLCs) within the department to meet to collaborate. Within these collaborative spaces there needs to be an area dedicated to supporting professional learning, complete with areas for presentation and modeling classroom strategies.

Effective foreign language programs integrate the study of language with the study of culture which includes daily life, history, literature, visual and performing arts, mathematics, and science. In this way, foreign language programs create natural links to all other disciplines. As part of a humanities program, World Language classes and teachers will benefit from close
proximity to the departments in the humanities. This will foster cross-curricular collaboration and study as well as supporting interdisciplinary courses.

The vision for the new school also includes expansion of the course offerings to include AP Spanish Literature and restoration of the Global Learning Lab to this department. A dedicated Global Learning lab will provide increased opportunities for students to enhance their speaking and listening skills in their target language. The world language teachers work to effectively meet the needs of our diverse community of learners using various instructional and assessment practices as they provide differentiated support to those who are new to the study of World Languages, Native Speakers and AP students alike. The addition/replacement of the language lab will greatly support their valiant efforts and help us celebrate the diversity of our community and as we learn about other cultures. The lab will be staffed by licensed teachers and the department chair will oversee the scheduling of the lab.

The use of student-centered Global Language lab activities and assessments supports the gradual release of responsibility as students develop target-language proficiency and confidence through authentic listening activities, listen and respond recording tasks, pair dialoguing, and interactive web-based activities. The lab will allow students to record and listen to themselves speaking in the target-language so they can learn to self-evaluate and self-correct. Students will have the opportunity to participate in engaging, project-based learning activities such as presentations, plays, and video projects.

The restoration of the Global Language lab will support student fluency essential for preparation for the AP exam earning the Seal of Biliteracy. The State Seal of Biliteracy is an award provided by state approved districts that recognizes high school graduates who attain high functional and academic levels of proficiency in English and a foreign language in recognition of having studied and attained proficiency in two or more languages by high school graduation. The vision for awarding this seal is to help students recognize the value of their academic success and for see the tangible benefits of being bilingual as is benefits college and career readiness.

Increased opportunities for student achievement and for students to take increased responsibility for their own learning are consistent with the emphasis on the gradual release of responsibility for students as they move through the years and is consistent with the skills needed for them to be lifelong learners.

**English Learner Classes**

The [English Learner program](#) in the Worcester Public Schools supports the implementation of Sheltered English Immersion with fidelity to promote English language acquisition by
acceleration for all English learners in the district and to bring the opportunity of bilingualism/multilingualism to as many students as possible.

Doherty Memorial High School serves a diverse population of students who represent a range of native languages.

Table 7

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Doherty Memorial High School offers a variety of full year (1 credit) courses that support English Learners in an effort to support English language acquisition. The English Learners department has three teachers who provided a combined 15 instructional periods of language
development and only two classrooms dedicated to EL instruction with one classroom on the fourth floor and one on the third floor. Teachers must travel between rooms for different class periods. DMHS has a seven-period day, with no rotation or dropped periods. Each classroom is available for use for seven periods each day. Therefore, there are 14 instructional periods in the designated EL classrooms. During the 2018-2019 school year, these two ‘EL’ rooms had a combined usage rate of 100% (fourteen used periods out of fourteen available periods). In addition, there were several other non-departmental classes scheduled into these rooms, due to the available space (e.g. Social Studies, ELA, Science). With the increasing enrollment of EL students, additional space is needed to provide instruction to support English language acquisition.

The curriculum is delivered using varied and differentiated strategies to meet the needs of all learners as they develop English fluency. Instructional methods include whole-and small-group instruction, modeling of and oral and written use of the English language, whole- and small-group discussion, collaborative activities, project-based exploration of topics, and the integration of technology using the distributive technology to engage in critical reading and multi-draft writing and editing activities to improve communication skills. While this is the goal in all classes in the ELL department, limited classroom and laboratory space often impacts the ability to fully implement these strategies/activities on a more frequent basis.

Neither English Language Learner classroom is designed to effectively support a 21st century language development curriculum. The physical layout of these rooms discourages effective grouping practices, collaborative work, and flexibility. Both are laid out as general education classrooms comprised of a whiteboard, and tablet-arm chairs.

Curriculum in the EL classes is delivered using a variety of instructional methodologies including but not limited to whole-group instruction and modeling, and whole-group and small group discussion and collaboration that supports the school’s focus on reading critically and responding thoughtfully in writing. Classes utilize technology in a variety of ways including the use of video and audio to support critical response, document cameras for modeling and collaboration, and Chromebooks (Chromecarts) for research, collaboration, writing, and publication. The school works to advance the mission of the Worcester Public Schools Office of English Learners “to support the implementation of Sheltered English Immersion with fidelity to promote English language acquisition by acceleration for all English learners in the district and to bring the opportunity of bilingualism/multilingualism to as many students as possible.”

The vision for the English Learner department space in the new school includes additional classroom and collaboration space to successfully deliver the EL curriculum and grow the programs at Doherty Memorial High School to meet the needs of the many English Learners in the school. Collaborative space is needed to support increased opportunities for students to work...
in peer groups and in small groups with a teacher to engage in academic discourse, reading, writing, and presentations to support their language acquisition. Students will benefit from close proximity to the English and Social Studies neighborhoods to allow for shared collaborative space and opportunities for modeling, EL support and which will help to increase equity and access to other courses in the humanities department.

**College and Career Readiness**

Beginning in the 2018-19 school year all grade 9 students are required to participate in a ten-week course focused on college and career readiness, earning 0.25 credit upon successful completion of the course. The lessons in the Introduction to College and Career Readiness course incorporate lessons from Naviance and are designed to assist students in creating and maintaining a plan for their individual and personal educational plans or MyCap. The lessons include time-management exercises, self-awareness activities, interest inventories and college and career exploration lessons.

Beginning in the 2019-20 school year, all grade 10 students are required to participate in College and Career Readiness II and will earn 0.25 credit upon successful completion of the course. The lessons for the tenth-grade students represent a continuation of the introductory course and increase the breadth and depth of these exploration activities and support the further development of their individual plans for high school while increasing each student’s knowledge of postsecondary options based upon their career interests.

**Academic Support Programming Spaces**

Doherty Memorial High School provides a variety of academic support programs for students during the school day as well as after school and on Saturdays. Students enrolled in the courses such as Academic Literacy, Numeracy, AVID, and Study Skills participated in these classes during the school day. After-school classes and Saturday workshops are available throughout the year and to support students to prepare for the English, Math, and Science MCAS exam. Additionally, AP students participate in Saturday practice exam sessions at different points in the year to help them prepare for the end-of-course AP exam.

**Academic Literacy**

Academic Literacy I-IV is offered to provide a double dose of English to support students with identified needs. In this course, offered through the ELA department, students learn to appreciate the varied reasons for reading; discuss texts as a community of readers; and apply comprehension strategies to academic texts. Students engage in activities that increase or
improve reading comprehension, reading technique, vocabulary acquisition, and general literacy skills.

These classes are currently taught by members of the ELA department and are located in the ELA wing, as space allows. The vision for the new school is to continue to offer these classes in grades 10-12 ELA neighborhood and to locate Academic Literacy I classes in or within close proximity to the Ninth-Grade Academy.

**Numeracy**

Numeracy is offered to provide a double dose of math to support students with identified needs. In this course, offered through the Mathematics department, students strengthen foundational math skills and increase their understanding of Algebra I by addressing properties of rational numbers (i.e., number theory), ratio, proportion, estimation, exponents and radicals, the rectangular coordinate system, formulas, and solving and graphing linear equations and inequalities.

These classes are currently taught by members of the Mathematics department and are located in the Mathematics wing, as space allows. The vision for the new school is to continue to offer these classes in the Mathematics neighborhood as well as within close proximity to the Ninth-Grade Academy.

**Advancement Via Individual Determination (AVID)**

The Worcester Public Schools supports the implementation of AVID’s (Advancement Via Individual Determination [AVID]) mission to close the achievement gap by preparing all students for college readiness and success in a global society. Doherty Memorial High School offers full year (1 credit) and a semester (0.50 credit) courses Advancement Via Individual Determination (AVID) Elective course. AVID I-IV are 1 credit courses and AVID 1 Pt. 1 is a 0.50 credit course. Most students enter the high school AVID program in the ninth grade and stay in the program through graduation.

AVID supports students who are motivated and have the desire to excel and attend college but need additional support (academic, social, and emotional) to prepare them to be college and career ready. Many of the students are the first in their family to attend college and/or are members of groups that are often underrepresented in higher education. Students in the AVID program participate in the AVID Elective course each year. During the 2018-19 school year the semester-long AVID 1 Part 1 course was offered in order to provide these valuable academic and
collaborative skills and supports to students who are not in the AVID Elective courses/AVID program (AVID).

Collaboration and the ability to utilize flexible grouping is an essential part of the AVID curriculum. “Students would rather talk, move around, and ask questions than sit still and be quiet. Humans are wired to construct knowledge through action. AVID classrooms promote motion, communication, and team building through activities such as Socratic Seminars, Collaborative Study Groups, peer tutoring, and Philosophical Chairs. These activities honor the way students learn best” (AVID).

Each week, AVID Elective students participate in collaborative study sessions (tutorials) in which they use critical thinking, collaborative inquiry, and academic discourse skills to explore and solve Points of Confusion (P.O.C.) from different academic content areas. Students receive additional support during this process from AVID tutors. These tutors are community volunteers. Generational tutors are community members, often retirees, who volunteer their time and their expertise to help guide students through the tutorial process. In addition, AVID programs in the district partner with colleges in Worcester and to provide additional tutors to support AVID students. This combination of tutors provides students with varying perspectives and the opportunity to interact with members of our community.

In addition to classroom space for whole group instruction and frequent guest speakers, the AVID classroom is arranged to provide small group collaborative work areas in order to support the tutorial process every Tuesday and Thursday, the current classroom configuration limits the ability to successfully create these collaborative spaces. Students currently use small white boards to present their P.O.C. and furniture must be rearranged for each group for each session. The AVID curriculum also includes instructional methodologies that promote reflective academic discourse and AVID classes frequently participate in activities such as Socratic Seminars, Philosophical Chairs, Gallery Walks and other whole-class participatory activities. An additional part of the AVID curriculum includes collaborative team building activities that often require space for student participation.

The vision for the AVID program space in the new school includes collaboration space to successfully deliver the AVID curriculum and grow the program at Doherty Memorial High School. Currently, there is only one designated classroom AVID classroom and due to the lack of available classrooms in the current building, there is a need to schedule other classes in the room when there is not an AVID class. This posed a challenge when the opportunity arose to add a section of AVID I Part 1 second semester and as a result of previous classroom scheduling this class had to be placed in a science room that lacked appropriate spaces for the collaborative process. In order to successfully engage in collaborative inquiry, students need space to gather in
small groups with tutors (the ideal student: teacher ratio is 7:1) complete with access to technology and white board space to post P.O.C.s and work through the tutorial process. Ideally, the AVID program would like to be able to serve at minimum, ten percent or our school population. The current lack of space impacts the ability to expand the program and to offer additional sections of AVID (Table 8). The ten percent of Grade 10 students served in 2019 is reflective of the addition of the AVID 1 Part 1 course but the students in that course had limited collaborative space. Only 51% of the Grade 10 students in AVID classes (either AVID II elective or AVID 1Part 1) were able to participate in AVID in a classroom with at least limited collaborative space.

Table 8

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AVID strategies are not limited to the AVID Elective class. “The power of AVID Secondary is the ability to impact students in the AVID Elective class and all students throughout the campus. AVID Secondary can have an effect on the entire school by providing classroom activities, teaching practices, and academic behaviors that can be incorporated into any classroom to improve engagement and success for all students. Teachers can take what they've learned at AVID training back to any classroom to help all students, not just those in AVID, to become more college- and career-ready” (AVID). This link between AVID and professional learning opportunities for staff necessitates areas for collaboration, modeling, and access to the AVID library and resources for all staff members including members of the AVID Site Team. The ideal space would allow for space for modeling and co-teaching opportunities to support gradual release and effective utilization of AVID strategies to support academic success and promote college and career readiness.
Study Skills

Study Skills classes are offered through the Special Education Department to support students with identified needs. These year-long courses are taught by members of the Special Education department. (See full description in Special Education section.)

Student Guidance and Support Services

The mission and purpose of the Worcester Public School Guidance Counselor Department is to advocate for every student and provide a comprehensive guidance program that will assist all students in acquiring the knowledge and skills needed to become career and college ready. The program is based on the Massachusetts Model for Comprehensive School Counseling. School counselors take a systematic approach to deliver a standards-based curriculum to all middle and high school students through individual counseling, small group counseling and classroom guidance lessons to facilitate student learning and development in three domains: personal/social development, academic/technical achievement, and workplace readiness/career planning.

The Guidance Department houses staff members who provide a variety of support services to our students. In past years, Doherty has had five guidance counselors. Beginning in 2019-20, there will be six guidance counselors at DMHS to meet increasing enrollment and growing student need and to bring us closer to the American School Counselor Association and the Massachusetts School Counselors Association recommended ratio of students to counselor of 250:1. The number of guidance counselors will likely increase due to the projected increased enrollment in the new facility. These counselors work with students and their families to evaluate academic needs, refer students for evaluation and identify appropriate academic support, provide social/emotional information and provide short and long term counseling/support, communicate with families and assist with facilitating school-to-home/home-to-school communication, and support college and career readiness preparation.

Doherty has two full time school adjustment counselors, and one part-time school adjustment counselor who focus primarily on providing short- and long- term counseling and crisis intervention for students, act as liaisons between parents, students, and teachers regarding student needs, referring students for community-based mental health and counseling services, and monitoring student attendance. Additionally, there is a school psychologist whose responsibilities center on the assessment of students’ academic, social-emotional and behavioral needs, communication with parents and community providers regarding student needs, and providing consultation to teachers and administrators regarding student needs.
Guidance counselors meet in both large and small groups in academic classrooms and in the Guidance Conference room to discuss topics related to college and career readiness. Counselors utilize Naviance, a college and career readiness program that allows students to create a personalized plan that helps them make the right decisions throughout their academic journey, as a tool which provides parents and students access to the portal.

The current Guidance Office has a counter in front of the guidance secretary’s desk. The guidance secretary serves as a greeter for the department welcoming students, parents and college/career representatives, handles all incoming phone calls, helps to schedule appointments and visits in the office and organizes and tracks both current and past student cumulative records. Doherty also serves as the repository of the school records/transcripts for both Classical High School (the predecessor of Doherty Memorial High School) and Commerce High school. These older transcripts/records are currently housed outside of the Guidance Office, in the office of the Instructional Coach.

The central part of the Guidance office also contains a small conference table which serves as a waiting area for students, parents, and other visitors. Currently there are six private offices in this area that are used for three of the guidance counselors, the two school adjustment counselors, and the MassEdCo representative who is assigned to our school to work with students and families to support the college application and financial aid process. There is a small work area behind the guidance secretary that is used for guidance-related materials and the photocopier for the department. This is also used as access to the head counselor’s office. The other two guidance counselors have offices in the guidance conference room. These offices have portable walls and do not allow for private meetings with students or parents. The conference room contains tables, arranged in an oval, and seating for fifteen people. This area is used for presentations, meetings with college/career representatives, parent meetings, and as a student workspace. While this space is flexible, it is not adequate for many of its intended uses. This conference area does not provide private/confidential space for meetings with parents or specialists. For example, Individual Education Plan (IEP) meetings, which involve Special Education staff, guidance counselors, administrators, and other support staff, are held in the conference area in room 309 (the administrative suite that houses two of the assistant principals’ offices) because it ensures more privacy.

The space is not large enough for many of the college/career presentations that need to be scheduled or for whole-class lessons with guidance counselors. Additionally, there are no other spaces for teachers to meet with parents or to make phone calls to parents that provide privacy. This area is often used with students to engage in online college/career exploration utilizing Naviance or work on PLATO (online credit recovery program). With the addition of office space for the sixth guidance counselor beginning in August 2019, there will be even less space available for these purposes.
The vision of the Guidance Suite for the new school is to provide a central location for information, college/career explorations, advising and support. The vision for the Guidance and Support Service Office space in the new school includes private office space, classroom, meeting and collaboration space and a career center to successfully support student needs and provide programs to foster college and career readiness. The proposed Guidance Suite would benefit from proximity to the main entrance for ease of access to the office and services by families, college/ career representatives, and other support service providers. Additionally, adjacency to the other administrative offices will facilitate collaboration among different student supports.

This proposed Guidance Suite will include a welcome center within the front part of the suite with space for the guidance secretary to greet visitors, answer questions, and direct and monitor the flow of phone calls and foot traffic through the office. There is also a need for a waiting area with ample room to accommodate students, college/career representatives, and families. There is a need for flexible collaborative space that can be used for small- group meetings such as enrolling new students or parent-teacher conferences.

Each counselor will need an office which can allow for private meetings and be large enough to include students, parents, appropriate students support personnel, and an interpreter. While there will be six guidance counselors beginning in 2019-20 school year, the office needs to be flexible to accommodate any increase in staff that may be needed to support any increase enrollment and to allow the counselors to stay within the 250 : 1 ratio as recommended by Massachusetts Model for Comprehensive School Counseling.

Private meeting space is an essential part of the Guidance Suite in order to provide emotional safety for students and allow for confidential meetings with students, parents and support personnel. Flexibility within this suite will allow for expansion of these roles should they been required to meet student needs and enrollment. Additional private office/meeting space is needed for programs such as MassEdco which provides college and financial aid counseling to students and families.

The suite needs to be designed in a way that it promotes a sense of emotional security and is a safe space for all students with ease of access to counselors, resources and a place where they can regroup and refocus within visibility of counselors.

Flexible conference/collaborative space is needed for meetings and presentations by college/career representatives; a large conference room/presentation space with seating for 30-40 people and a smaller conference room/presentation space with seating for twenty people. Each space should be equipped with whiteboards, projectors and other appropriate technology. This
space can also be used as instructional space to support the delivery of the curriculum as recommended in the Massachusetts Model for Comprehensive School Counseling. There needs to be reliable and consistent access to technology not only in each individual office area but throughout the entire suite to support the use of technology for activities such as MyCap (My Career and Academic Plan) and Naviance to support academic and career planning process, and PLATO. The suite needs to include space with easy access to resource materials for students and access to technology/printing for applications, resources, and other similar materials.

The Guidance Suite needs space dedicated to safe and secure storage of student academic records, including the repository of records that need to be stored and accessible at the school. The school is a repository for school records for Doherty, Classical High School (the predecessor of Doherty) and Commerce High School. In keeping with the intent of 603 CMR 23.06, the time limit for destruction of the record should probably be not less than sixty years and therefore appropriate safe space to archive these records needs to be included in the Guidance Suite.

**Student Support**

**Health Center**

The Worcester Public Schools partners with Family Health Center to operate a School Based Health Center at Doherty Memorial High School. As noted in the Family Guide and Community Resources document (Appendix D) “Health Centers are staffed by agency personnel as well as a WPS School Nurse and School Adjustment Counselor. The School-Based Health Centers provide students with necessary health care: physicals for school, work or sports; treatment of illness; first aid; emergency care; immunization and/or health education. In order to receive services from the partner health order to receive services from the partner health agency at the school, parents/guardians must complete and return to school a signed enrollment form. This is available at the school. When appropriate, health insurance companies of the families will be billed. No one will be denied services if unable to pay” (Family Guide and Community Resources, 2017, p.18).

Currently, the health center is staffed by two nurses and the School Based Health Center is staffed by a nurse practitioner, an administrative assistant and a behavioral specialist. The area within which they work is not large enough to adequately support this important function a school as large as Doherty. There is no private waiting area for students who are waiting to be seen by either one of the nurses or the nurse practitioner. There is insufficient space for the school nurses to make phone calls to parents or agencies about student’s health issues. There are only two exam rooms and they are quite small in size with inadequate storage for medical supplies. The nurse practitioner, who is employed by Family Health, faces similar situations as
she has only one small exam area within which to work and an office that barely fits one person. Despite these crowded conditions, during the 2018-19 school year, the staff of the health center saw and treated 1,253 students at least one time and the School Based Health Center, SBHC, staff had 4,000 visits, 3,100 for medical issues and 900 visits for behavioral health reasons and involving 398 students. During the 2018-19 school year, there were 750 students at the school who were members of the health center which represents nearly 50% of the school population.

The school nurses’ responsibilities are extensive. They administer medication, evaluate students and staff who visit the health center, triage illnesses, injuries and health concerns and respond to medical emergencies throughout the school. The school nurses provide screening for height, weight, and BMI, vision and hearing, and they engage in Screening, Brief Intervention and Referral to Treatment (SBIRT), an evidence-based practices used to identify, reduce and prevent problematic use, abuse, and dependence on alcohol and illicit drugs. The nurses conduct these SBIRT screenings in the hopes of referring students who may be experimenting with drugs, alcohol, and/or have mental health issues to intervention programs. The school nurses collaborate with the district nursing department, other healthcare providers, and families to address the physical and mental health needs of our students.

The nurse practitioner provides additional treatment to students who are members of the School-Based Health Center, SBHC. She also works with families and other health care providers to meet the needs of our student population by conducting annual physicals to students and treating a variety of conditions. The behavioral specialist also employed by Family Health works collaboratively with our staff and students to help to address the mental health needs of health center members. The nurses and the SBHC staff maintain records and complete injury reports and other documentation to support our student’s health and wellness.

The vision for the new school is to provide ample space for three nurses and the SBHC staff to complete their work. Due to the increased enrollment and the extensive use of this space, the number of nurses will increase from our current staffing of two to three. This area would include adequate exam room space, a waiting area that is large enough to avoid the spreading of germs, office space to be able to communicate with parents and providers while maintaining and respecting confidentiality and privacy issues about student’s health issues and a small conference room to meet with families to discuss medical issues privately, and to be able to provide small group therapy and a lactation space for nursing mothers. Additionally, an increased number of bathrooms, including one to gather specimens, and one that includes a shower. This space should include a larger resting area, a break area for any student who needs to relax or those who may be dysregulated, and a space for diabetic students to test and to eat if need be according to their levels. There also needs to be a sufficient office for the administrative assistant to support the work of the nurse practitioner and multiple exam rooms for the nurse practitioner to treat students who are members of the center. The behavioral specialist needs a space to be able to
meet with students that is large enough to support counseling services, to provide urgent mental health evaluations and to support ongoing therapy. There is also a need for additional storage in the health suite for medical supplies.

Additionally, despite our best-efforts to treat students at school, there are certain situations that warrant calling 911 and having our students transported to the hospital for more care and therefore, we request that there be access to the outside of the building that is handicapped accessible and near a driveway in order for Emergency Medical Services to be able to transport these acute cases of medical need to the hospital without having to travel with students on a stretcher and/or wheelchairs throughout the building. The nurse’s suite and the gymnasium are areas that these types of emergencies seem to occur more frequently. An exterior entrance will also support the SBHC being accessible after school hours and possibly to other family members of our students and other members of the community should this expansion occur. There is a need for space in the health suite to incorporate a food pantry and a clothing outlet to better meet the needs of our students and their families. Historically, all clothing donations have been kept in an area of the guidance office and students have accessed a variety of clothing items for themselves and for their families. This space has been limited to one wardrobe closet. The adjustment counselors have distributed food and grocery gift cards to families particularly during the holidays but there is a need for a more consistent provision of food items than we have been able to address. In the new school, we envision a space for food and clothing distribution as a part of the health center. These areas will be maintained by our community partners, staff donations and service-learning initiatives.

E. Teacher Planning

Each teacher is scheduled for one preparation period each day. This provides teachers with the opportunity to design materials and plan instruction to support the delivery of the curriculum in accordance with DESE curriculum frameworks. Teachers utilize ATLAS, the district’s online platform which provides access to curriculum frameworks, curriculum maps, curriculum resources, and other course-specific information to help with this work. In order to access ATLAS and to facilitate instructional planning teachers need a dedicated space with access to technology and other professional learning materials/supports. Currently there is a teacher workroom on the third floor which has a worktable for individual and collaborative work, as well as access to a telephone for teacher use. This workroom is flanked by two teachers’ rooms each of which provide a small area for staff lunch and can also be used for teacher preparation space, however, access to this space is impacted during staff lunch periods. Teachers may also use the library/media center for teacher preparation, but this area is also used by individual students and by classes which can limit the availability of space for individual and collaborative work.
Members of both the Grade 9 and Grade 10 teams in the ETA meet two days a week for collaborative planning. Currently, they hold these sessions in room 200/conference room. Quite often, however, their meeting/collaborative planning session must be relocated in order to accommodate another meeting that needs to be held in the conference room. As a result, these teams must seek alternate space within the building.

When other PLCs need to meet they too must either try to book time in room 200 or seek an alternate location which will provide enough space and privacy the group to meet. As a result, PLC work and other opportunities for common planning time is often dictated by room availability.

The vision for the new school is to increase both time/opportunities and space for teacher collaboration. This can be accomplished by incorporating collaborative spaces into each academic area in each department as well as including shared collaborative space to allow for cross-disciplinary collaboration. Teacher workspace, equipped with worktables, access to technology and phones, and storage for planning / curriculum materials is essential to enable each teacher the opportunity to work both individually and collaboratively to design lessons to deliver the curriculum. These workspaces need to be flexible in design so as to accommodate changing teacher needs and to be able to be used for both individual and small- group professional learning opportunities.

These teacher planning spaces need to be located in close proximity to the various academic neighborhoods to foster collaboration by subject, team as well as allow for interdisciplinary sharing. Each department space needs to have a table and rolling chairs to allow for flexible seating to accommodate a variety of professional learning and collaborative activities. Individual teacher workstations with flexible furniture, including individual locking file cabinets and flexible seating will ensure every teacher has a home base from which to work and allow teachers to spend valuable time during their preparation period on planning effective instruction rather than trying to find space to work.

Professional development/ professional learning opportunities occur in a variety of ways at Doherty. Whole- group, small-group, and one-on-one coaching sessions and individual activities are used throughout the year to support the needs of our teachers, and ultimately to support the needs of our students.

Each year the principal, Instructional Coach, and the Instructional Leadership Team (ILT) review the data to identify areas of student need. With that in mind, this group identifies which topics/ to be addressed for all staff members, which areas are content-specific and will be addressed professional learning session by department, which areas will be addressed in targeted small-
group professional learning sessions and which areas will be addressed in one-to-one professional learning/coaching sessions with the Instructional Coach.

Professional learning opportunities take place using several formats. Each year the staff participate in two full day professional development days. During these days there is a mix of whole-group professional learning, small-group professional learning, academic department professional learning, and individual teacher reflection. Additionally, each month there is professional learning sessions help as part of the principal’s meeting and during department meetings. Whole-group professional learning is held in the school’s cafeteria and small break-out sessions take place in classrooms.

Professional learning takes many forms including, but not limited to presentations, (video, and/or speakers) book studies, modeling successful strategies, ongoing analysis of multiple sources of data, whole and small-group discussion and reflection, as well as a variety of training sessions such as MCAS / SAT test administration procedures, ALICE training, and other safety/wellness trainings. During professional development days, department meeting days and other after-school sessions, small groups meet in available spaces such as classrooms, the library and the conference room (room 200). One-to-one coaching/professional learning sessions occur in the Instructional Coach’s office or in individual teacher’s classrooms. Technology coaching is offered by the school’s two Google trainers and occurs where there is available space and access to technology.

While there are multiple opportunities for professional learning to occur throughout the year, the principal, Instructional Coach, and the ILT work to create a theme and establish connections between topics to link ideas and to create a web of professional learning that is applicable and supportive to all staff members.

The vision for professional development in the new building will include expanding opportunities for teachers to meet in PLCs and increasing collaboration in PLCs in grade-alike groups/teams, vertical collaborative groups and cross-disciplinary groups. These collaborative and professional learning sessions will take place in the collaborative spaces located in the different “neighborhoods” associated with the academic disciplines (STEM/STEAM, humanities, arts, world languages, special education, etc.). Within these spaces there needs to be appropriate technology to support professional learning and presentations and modeling of successful strategies. This would include being equipped with access to technology, printing, presentation equipment (projector, screen, sound, flat screen TV for video). Additionally, there needs to be shared collaborative space between the different neighborhoods complete with appropriate technology and presentation equipment (projector, screen, sound, flat screen TV for video) to provide both content-specific technology trainings and cross-curricular professional learning opportunities. Such shared professional learning/collaboration space could occur near the
humanities departments, STEM departments, arts departments, health and wellness departments and counseling/administrative departments.

Professional learning is a continuous process and needs to be able to be delivered and allow for active participation in the various venues. Whole-group professional development opportunities require a large area with appropriate access to technology and presentation equipment (projector, screen, sound, flat screen TV for video). Both the cafeteria and the auditorium need to be designed to allow for professional learning presentations --access to technology, sound, presentation equipment (projector, document cameras, screen, TV)

Professional learning also involved individual support and one-on-one and small group coaching. Doherty currently has one instructional coach. The vision for the new building is to provide a space for two Instructional Coaches (one for the humanities and one for STEM) where each coach can meet with small groups and in private with individual teachers. There needs to be a shared collaborative space for planning and presenting professional development complete with access to technology and presentation equipment (projector, screen, sound, flat screen TV for video) and access to whiteboards to model successful instructional strategies. There also needs to be adequate storage space for professional learning resources and materials for both the Instructional Coaches and staff members.

**Assessment Coordinator**

Students in Grades 9-12 engage in a variety of assessments to measure student progress. Assessments include Star assessment, PSAT/ SAT, AP assessment, ACCESS test for EL students and Massachusetts Comprehensive Assessment System (MCAS) assessment, which is a graduation requirement. The Assessment Coordinator, referred to as the MCAS Specialist currently works out of an isolated office on the first floor to keep secure test materials.

The vision for the new building is to provide a space for the Assessment Coordinator/MCAS Specialist to prepare test materials, review data and monitor/administer assessments that occur throughout the building. The area needs to have access to technology (desktop computer) that allows the coordinator to oversee online testing that occurs in classrooms. While many of our assessments are not given electronically, there are still some hard copy test materials (student test tickets, paper test for students for which this is an accommodation in their IEP) that need to be secured. There needs to be space within this office to organize test materials and to meet with teachers and students to review data and test results.
Room Assignments

Currently, the assigning of rooms is difficult due to our overcrowded and outdated facility. Over 50% of the teachers in our school travel from room to room and although we attempt to limit the distance it is difficult to keep the traveling teachers within the department to which they are assigned. As mentioned throughout this document, some courses are being taught in rooms for which they were not designed, and others are simply too small for the number of students in our classes. The vision for the new school is to maintain the assignment of rooms by department with intentional adjacencies to support teaching and learning. Rooms dedicated to the ninth-grade teams, Special education and Chapter 74 programming will not follow the departmental or “neighborhood” room assignment methodology but rather will be integrated into “neighborhoods.”

F. Lunch Programs

Doherty Memorial High School’s current cafeteria includes approximately 4312 square feet, excluding the kitchen, food preparation, storage, and point-of-sale stations. There are 36 tables for student seating. During each seating, students enter through one of several identical serving lines. Each line operates similar to a cafeteria-style, where an employee serves the food onto disposable trays and places these trays on a stainless-steel serving station. Students move across the serving line and select their items, ending at the point-of-sale station operated by another cafeteria employee.

Per district policy, all students in the Worcester Public Schools are offered free breakfast and lunch each day. After making their meal selections, students enter their unique Worcester Identification number at the point-of-sale station. If a student selects additional items during a meal, they are able to pay cash for these items.

The current Doherty Memorial High School cafeteria is situated at the end of the first-floor corridor. Students are able to enter and exit through a primary entrance, with a secondary entrance at the back of the cafeteria. At the start and end of each lunch period, there is a delay in dismissing students promptly as the limited number of exits, as well as the layout of the corridors and stairwells, hinders the timely flow out into the rest of the building.

The cafeteria space provides seating for students with bench-style, foldable, rectangular tables. The maximum capacity of these tables is approximately 432 students. With a student population well over 1500 students, and with 3 lunch seatings, the cafeteria is currently over capacity during each lunch period. Some students are able to each lunch in other supervised settings, including classrooms, the guidance area, administrative offices, and in the library, when available.
The hope with the new school construction design is to ensure adequate space for a third of the school population. The district-wide secondary-level bell schedule designates three lunch seating sessions, approximately starting at 10:45 a.m. with the last seating ending shortly after noon. The planned student population is 1670, however there will likely be far more students than what is anticipated. As introduced and clarified within the vocational and proposed programming sections, this design proposal is planning for a cafeteria to house up to 675 students at each seating.

Prior to the start of the school day, students are able to acquire breakfast from the cafeteria. Many students choose to select their meals and sit in the cafeteria space, while others elect to take their selections and head to their classrooms, lockers, or to meet up with staff and/or students. Cafeteria planning and delivery models are changing to reflect a ‘grab and go’ service style. Once the school day starts, students coming in late still need the opportunity to get breakfast. Therefore, there will be one ‘grab and go’ serving station available in the serving area that will remain open once the school day begins. This station will be structured to serve as a stand-alone, albeit smaller, entity that serves students at non-traditional times. For example, this stand-alone, self-sufficient station would serve students coming late to school, arriving after the starting bell and after the main cafeteria and kitchen closes as they begin preparations for the lunch service. In addition, this station would now provide opportunities for students, e.g. those participating in afterschool athletics or extracurricular events, to access nutrition in the later afternoon or evening. This stand-alone, self-sufficient station’s design will include a point-of-sale unit, handwashing infrastructure, a refrigeration unit, dry storage, a countertop heating cabinet, and will be kept secure via a rolling overhead door. This station will be accessible to students without needing to enter the main kitchen or main serving area.

The new cafeteria design will consist of one central kitchen and serving area adjacent to the student seating area. The design will enable proper visibility throughout both the serving and seating areas for supervisory purposes, and will have windows providing daylight throughout the space. During passing time, there will be multiple points of entry and exit, thus ensuring a steady student flow. The student seating areas will consist of several smaller, though connected, dining areas revolving around this central kitchen and serving area. The new school design has planned for 8350 net square feet for the cafeteria seating area. This space, while dedicated for breakfast and lunch time use, will be available as a multi-purpose space during non-meal time hours.

The student seating area will connect to an exterior dining area. This space will allow for overflow during the school day and would allow students to be outside during appropriate weather, but will also enable after-school activities, e.g. athletics, to access the kitchen space.

In order to provide the same access for staff to meals, a faculty cafeteria will be situated adjacent to this space. This space would occupy 200 net square feet and would contain a buffet-style adult
service station, and would be structured with a single, linear serving line ending with a point-of-sale unit. One additional benefit of this space is that it would allow for other adults, e.g. school visitors, to have access to meals if needed, though the design is not intended for steady community usage.

To facilitate ease of serving and to provide access to food during a teachers’ preparation period as well as to students who participate in after-school activities such as sports or drama rehearsals, etc. We are planning to include a robotic salad machine “Sally” by Chowbotics. This robotic vending machine customizable, made-to-order salads, snacks, breakfast bowls, and grain bowls within a sleek 3×3 footprint. This machine, located in the faculty dining area will provide continued access to healthy snacks beyond the school day. The ingredients will be prepared by current cafeteria staff and menu items can be updated seasonally and could incorporate items that are grown in the school’s garden/growing spaces.

The proposed main cafeteria serving area will be based on a scramble-style service. This is a variation where numerous stations are arranged around the space, each serving different foods. The variation in menu selections, along with the expected student population being served on a daily basis, demonstrates a need for 5 serving stations within the serving area. Students would go from one station to another, and after making all selections they would then exit through one of several point-of-sale stations. One benefit of this scramble-style service is that students can move from one serving station to another without having to pass through an entire line offering choices of which the student will not select. Research indicated that a scramble style kitchen enables more students to be served in shorter periods of time. Within similar research, however, scramble style serving areas require more space than single line serving stations (Beasley, 1995).

The desired ratio is 75 students per point-of-sale station. The proposed design is planning for 6 stations. This figure represents a balance between the available staffing with the logistics of ensuring students are able to efficiently move through the serving stations and have sufficient time to eat. Typically, 80-90% of the school population cycles through the cafeteria serving lines.

In order to accommodate such a high volume of students during each seating, the scramble style serving area is planned for 3000 net square feet. This will be supported by a kitchen and preparation area adjacent to this serving area. The planned kitchen area would provide 3,146 net square feet and would include a Dry Prep area which is utilized for bundling nonperishable meals. The space can be used to prepare breakfast and lunch meals for Doherty as well as for distribution at other schools within the district that lack facilities and space. For example, the kitchen at another city high school, with allocated conditioned/refrigerated space is preparing salad and fruit servings that are then shipped to other schools across the city.
The kitchen space would include ‘pass through’ style doors, have central tables and food preparation, dry storage shelving around the perimeter, ovens and warmers, a dishwasher, and appropriate hand-, food-, and tool-wash sinks. The kitchen will also require a walk-in freezer and walk-in refrigerator. Each would be approximately 200 square feet, with 8-foot tall ceilings.

The refrigeration units and the dry preparation spaces should be in proximity to the loading dock or delivery area. This would allow for prepared food deliveries to be moved to and from the loading dock without having to travel through the main kitchen. Within the kitchen space, an employee office space will accommodate up to 6 workstations. These employees will utilize an adjacent locker room/changing area, including a lavatory and shower facility. A custodial closet, providing storage for cleaning supplies and related materials, will be accessible from all associated areas.

G. Technology Instruction Policies and Program Requirements

During the 2018-2019 school year, the Worcester Public Schools converted the majority of hardware and software to utilize the Google suite of products. Most staff members, including all teachers, were issued a Chromebook for their individual utilization. In addition, based on the school population, each school was allocated a number of Chromebooks and storage/charging carts for classroom utilization. Staff members are permitted to bring their Chromebooks home for lesson planning and preparation. With these devices, faculty members can access the Google G Suite of office applications, including Docs, Sheets, Slides, Drive, Calendar, and others. These applications provide similar features to the Microsoft Office products, i.e. Word, Excel, PowerPoint, etc.

In addition, the school has purchased numerous carts outfitted with a document camera and a projector. These are assigned throughout the building and are shared between all staff. These devices connect to desktop and Chromebook computers and are used by educators and students for instructional purposes. Some classrooms have a ceiling mounted projector, installed by Doherty staff.

Prior to this transition, Doherty relied primarily on desktop computers and traditional computer labs located throughout the building. Each classroom had a desktop for staff use, there were several generalized computer labs, including one in the library, others for general classroom use, and some computer labs were designed to support specialized curricula. Chromebooks, and the associated G Suite software, now provide typical general education classrooms with the ability to conduct research, perform word processing tasks, and design and implement presentations.

However, Doherty offers several courses of study and educational programs that require hardware and software that stretches the limits of the Chromebooks. Prior to the transition,
therefore, each school was able to request and plan for their unique number of needed computer labs—labs equipped with more robust desktop computers that can operate specialized curriculum, including the computer programming, marketing software, and the varied engineering tools, e.g. AutoDesk, required in those courses. Each computer lab designed and/or retained in the school lowered the allotment of student Chromebooks that would ultimately be delivered.

The student Chromebooks are stored in moveable charging carts. These carts are stored throughout the building and are spread across each floor. The school administration created a digital calendar allowing staff members to reserve the carts for specific days and instructional periods. Each day, staff members will move these carts from one location to another based on this reservation system. With 73 classrooms and 24 carts, each cart is used daily.

Each Chromebook cart is assigned to a specific classroom for evening storage and charging purposes. This ‘home-base’ policy ensures that all carts are accounted for at the end of every day and that they are properly charged for use for the coming day. During a typical day, the period 1 educator who has reserved the cart will go to the home-base classroom and bring the cart to his/her classroom. The educator has a standardized sign-out log, where each student is assigned a specific Chromebook for usage. This is done to minimize the loss of instructional time in getting the Chromebooks to each student.

Part of the Worcester Public Schools’, and Doherty’s vision of a graduate and guiding principles is to graduate computer-literate students. Students coming to Doherty have unique and diverse background knowledge relating to their skill sets and technological proficiency. All staff, throughout the school year, plan lessons and learning activities where students will utilize the available Chromebook technology to engage with their respective curricula. Students conduct research, discuss and respond in writing to a variety of prompts, prepare and deliver presentations, etc. Effective with the 2018-2019 school year, Doherty is administering several standardized exams, including the MCAS exams, AP Spanish Language and Culture, and an internal diagnostic literacy and mathematical proficiency test, via the Chromebooks. To ensure that student exam scores reflect their respective level of curricular comprehension, as opposed to their computer-interface proficiency, staff plan lessons that enable students to learn the mechanics of using the devices prior to the exam administration.

Near the end of the lesson, the educator ensures students have saved their work, logged out, and returned the Chromebooks to the cart in preparation for the next period. This process takes several minutes of instructional time. At times, the cart will remain in the classroom for the incoming students, but often the cart will be moved to another classroom. Given the crowding in the extremely narrow hallways during transition times, educators often try to move the carts in the moments right before the dismissal bell, or in the moments right after the bell to start the next period.
The process then repeats with having students getting their assigned Chromebooks. In general, each cart is used throughout the day, and often each cart is moved from one classroom to another, and ultimately is returned to the home-base for evening storage. There are numerous carts on each floor of the building, approximately proportional to the number of classrooms therein.

With the transition to MCAS 2.0, the Chromebooks are used for standardized testing. Given the approximate size of the testing population, the majority of Chromebooks (21/24 carts during the spring 2019 MCAS administration) are reserved. Carts are reassigned to specific testing rooms for the exam administration days, and several are brought from other floors. Given that there is no elevator, carts are brought outside and wheeled through the parking lot to a doorway accessing the testing floor. This is done the day prior to the start of testing. This necessity reduces the availability of this technology for general classroom usage during exam administration.

The Worcester Public Schools, through their Office of Instructional Technology and Digital Learning, regularly offers Chromebook and G Suite training to all WPS staff. Recent trainings target novice, intermediate, and more experienced users, and include numerous offerings throughout the summer and school year: Beginning Google Challenges for Educators; Rethinking Lesson Planning with Digital Tools; and G Suite Accelerated Trainings are all recent offerings. Doherty has identified and trained, through this district office, several staff members to be ‘Google Trainers,’ or site-based personnel with more advanced knowledge so that he/she can provide more timely and personable support to the building personnel as each continues to improve their facility with the relatively new technology. Doherty, through its internal professional development opportunities and facilitated by the in-house Google Trainers, provides support for any interested staff members. This support happens through formal planned sessions, e.g. during a faculty meeting, but it also is provided informally through one-on-one conversations and requests for assistance from a staff member to the Google Trainer.

The Worcester Public Schools Information Technology (IT) Department services and maintains this technology. Staff devices, if damaged during normal usage or through expected wear and tear, are replaced with an equivalent unit. If a student Chromebook is damaged, it is sent to an administrator who submits a repair ticket to IT. A member of IT will collect the device and return it after repairs are implemented, usually within one to two weeks depending on the nature of the damage.

The Worcester Public Schools’ Strategic Plan outlines the district-wide goals and objectives relating to technology and the students’ development of technological skills. In part, the Worcester Public Schools ensures that “all students will have access to rigorous and personalized
learning supported by technology.” Technology certainly includes computers, Chromebooks, printers, projectors and other standard classroom devices, but also extends to curriculum specific tools. For example, the Doherty Science department utilizes TI Nspire devices within their laboratory activities, the Mathematic department provides opportunities for students to utilize the range of programs available with the more advanced TI Graphing Calculator series, and the World Language department utilizes programs that enable students to speak and record as they learn another language.

The Worcester Public School’s Strategic Plan, through the Office of Digital Learning, has outlined a plan to provide 1:1 classroom coverage for all school for the start of the 2024-2025 school year. These Chromebook devices will be leased. As such, each classroom will require appropriate charging stations (standard 110-120V outlets).

The acquisition and utilization of educational technology is coordinated by the district’s Information Technology Department. The responsibilities of this department include the maintenance and infrastructure support for every school and program in 55 locations. Further, the department supports:

- Over 1,500 computers, 14000 Chromebooks, and over 3,000 iPads;
- 75 servers, including file, domain, and backup servers;
- A district website with a content management system that allows schools, teachers, and administrators to modify their personal website;
- Cloud hosted email services for WPS employees and students;
- Internally developed and maintained student and employee information systems;
- Data analyst services providing data for research and evaluation purposes.

The district utilizes CIPA compliant web filtering, email archiving, backup data protection, fiber wide-area connectivity to all sites, and a 10 Gbps internet connection.

The IT Department, as part of the district’s Strategic Plan for Education, has set goals and benchmarks to positively affect all schools, including Doherty. These goals include:

- The acquisition, implementation, and support of an updated student information system. Currently the district utilizes an internally developed system maintained by district employed programmers. The adoption and implementation of a commercial, industry-standard student information platform would provide additional features and benefits for families, students, staff and administrators at all levels.
- The improvement in wireless access in school buildings. The goal is to develop and maintain a robust wireless infrastructure to support a 1:1 device initiative throughout the district. The current Doherty facility offers three levels of wireless access, though coverage is constrained by the physical layout. In any new design,
the campus will be equipped to offer industry-standard, up-to-date coverage throughout the entire campus.

- Address the digital divide outside of school. The goal is to improve after-school access to technology and the internet to support student learning.

The goal for the new facility is to ensure full wireless capacity. This will be accomplished with two network drops in each classroom space, two for the teacher’s main station, and ceiling mounted network access points. During the feasibility and visioning sessions, several community members raised concerns relating to the health effects of Wi-Fi. During a December 2016 School Committee meeting, the Standing Committee on Teaching, Learning and Student Supports made a report to the full group, part of which included a motion to develop a set of best practices relating to mobile devices. The presentation also stated that the City of Worcester, in policy practices and design decisions, follows the recommendations of the FCC, the governing body on Wi-Fi exposure.

As the Doherty community worked to develop this Feasibility Study, the goal is to increase the number of vocational offerings available for students. One identified vocation - Programming and Web Development - was chosen due to the demonstrable interest among students, as well as the expanding labor market in the local, state, and national regions.

As the school personnel, curriculum advisors, and the advisory council develop the Programming and Web Development program, the goal is to create a partnership with the district Information Technology office, establishing an in-school functional training center. This Information Technology office space would house the school-to-district networking infrastructure, include office and computer workspace for the district’s Information Technology Support Specialists, the personnel who maintain the school’s software and hardware needs. These Support Specialists would also serve as partners with the vocational program educators to provide practical experience, tutoring and training, and mentoring to the vocational program students. The Information Technology office would, in essence, function as a workspace for the school’s Support Specialists while doubling as an industry-standard worksite for students to apply their curriculum knowledge and skills from their coursework.

To welcome students, parents, community members, visitors, and others to the school, an interactive display is desired in the lobby near the main entrance. This display will provide branding and integrate the history of the school, but also provide valuable information, such as office locations, to visitors. The suggestion for an interactive welcoming display originated during the visioning process and then fortunately, we were able to observe an interactive display during one of our school visits to a newly constructed high school, Billerica Memorial. We envision this tool as a means to integrate technology, an identified priority, and we view this as an invaluable way to share information with visitors and members of our school community alike.
in an interesting and engaging manner. The entire branding package will support our desire to capture our sense of belonging, to foster school spirit, and to capture valuable connections between our school’s past, present, and future. We plan to have our students involved with the development of our branding package design. To strengthen partnerships and relationships throughout the school, students from the Programming and Web Development program will liaise with organizations, athletics, clubs, academic and support departments, etc., and create and maintain the displays available for viewing in the lobby.

The Information Technology space in total will encompass 5000 square feet, will house the school’s critical servers, networking, and related hardware, and will be comprised of the following:

- One secure access room to accommodate the Main Distribution Frame (MDF). At 150 square feet, this MDF includes the interface between the telecommunication utility’s and the school’s access connection (demarc to fiber connection), the primary routing switch for the building, as well as the network hardware enabling network access for the building. This technology requires 200 Volt service and must be climate controlled.

- A technical equipment storage room. At 500 square feet, this space would ideally connect the IT office space to the exterior of the building, allowing for deliveries and access to district personnel as needed. This space would double as the storage and maintenance location for the school’s generalized audio/visual needs (e.g. projectors, document cameras, video players, microphone and speaker equipment, etc.).

- A multi-use space.
  - At 2000 square feet, this space would be subdivided to house 8 individual work-stations for the Support Specialists and will enable multiple students to engage individually with professionals at the same time. Each work-station would include an individual home-run or link into the Main Distribution Frame, a computer station, and a workbench/desk. The station would require network access and be serviced with multiple 110 Volt outlets.
  - The remainder of the multi-use Information Technology space would be an open-concept conference set-up, so that a group of students can work together, but also enable Support Specialists and IT Staff from across the district to have a collaborative workspace.
  - The space would include Audio/Visual technologies for presentations, collaboration, etc.

All IT spaces will be accessed via ID cards, providing permissions for authorized personnel. The MDF/IDF and network will be supported by generator-provided back-up power if needed.
The Information Technology office, storage room, and MDF should be adjacent to the vocational Programming and Web Development classrooms due to the close integration of the functional workspace with the academic instruction and opportunities for practical experience.

The Information Technology Support Specialists maintain the school’s network infrastructure, but also service school equipment including desktop and Chromebook computers, projectors, switches and servers, etc. The Support Specialists, working in-house, would, in part, help ensure reliable access to network services throughout the day. Reliable access, and available personnel to troubleshoot issues, is vital as more and more classroom learning activities and standardized assessments are computerized. The design would therefore include a lavatory space-sink and toilet-adjacent to or within the Information Technology office space so that both students and school personnel can maintain hygienic conditions when working with this sensitive and costly equipment.

In addition, several spaces within the design will include Cable TV capacity. These include the main office, MDF/IDF rooms in the IT space, library, and the cafeteria. Access will not be wired to each classroom. There will be converters for broadcasting from the gym or auditorium through the network, as needed.

**Media Center/Library**

The Media Center/Library is located on the second floor of the existing school structure. The Media Center/Library houses a set of approximately 6,000 books, including fiction and non-fiction texts. These books are primarily used for student use, both recreationally and for classroom learning activities and assigned reading tasks. The Media Center also contains a variety of DVD and VHS videos supporting a range of curricular topics. These videos are available for teacher use. The Media Center offers an assortment of magazines as well, supported via donations from a variety of sources. Years ago, the Media Center also included a computer lab, available with reservations for classroom use.

There are currently two Chromebook carts, providing a total of 60 devices, available for student and/or educator use. There are three desktop computers which offer print capabilities to students working in the space. Currently, student Chromebooks do not offer direct-to-printer access. A projector and a portable white board are also available.

During the school day, students are able to get passes to come to the library. Typically, this occurs when a teacher is absent, and the student is able to sign in. Students often then use the available devices for research and for classroom assignments, or are able to work individually or in groups at one of the available tables in the space. There is no private collaborative workspace
however: student groups may be working and discussing project tasks next to students working privately on their own.

The Media Center is staffed by a full time, certified librarian, and is further supported by several staff members for which their duty is to assist and monitor students utilizing the space.

The Media Center opens approximately 30 minutes before the start of the school day. A staff member is assigned to supervise the space, and students are able to sign out Chromebooks, use the desktop computers to print as needed, to check out texts, and are able to get a pass for an instructional period later in the day, when available. Similarly, the Media Center is open for 40 minutes after school, again for students to have a space to complete homework, work on classwork activities, or collaborate with others. Another staff member is assigned to the space after school to provide supervision.

During the school day, the Media Center can be reserved by staff for classroom use. Most often, educators reserve the space and bring their classes to the Media Center in order to utilize the available Chromebooks. At times, educators will use the space to conduct student presentations. Administration occasionally reserves the space for district-level meetings, though due to the layout, available technology and limited on-site parking most administrative meetings are scheduled for another location with more readily available amenities. At times throughout the year, the Media Center is reserved in order to administer various standardized exams, including MCAS, AP Exams, ACCESS testing, etc.

Doherty Memorial High School is currently working on a repurposing of the existing Media Center space. With the removal of desktop-based computer labs across the school and the acquisition of mobile Chromebook carts, the frequency of staff bringing their classrooms to the space has decreased.

The school community envisions an up-to-date, flexible space that allows for student, staff, administrative, and community use. Increasingly, students are engaging in collaborative learning tasks requiring research, synthesis of skills and content knowledge, and the development of a presentation or a product to share with others. A flexible workspace providing appropriate technology, a level of privacy so as to not hinder the work of others, and with the convenience of access throughout the day will enable students to engage in rigorous, multi-disciplinary performance tasks. Similarly, a modernized space with audio/visual and presentation capabilities will allow for effective staff use, such as for collaborative conferences, administrative meetings, etc. In addition, Doherty will be able to make the Media Center available for student community use, including during non-school hours.
Moving forward, the Media Center still needs to serve as a repository for text materials. However, there is greater potential for the space. The design and implementation of a ‘learning commons’ space would enable all school and community members to have the flexibility to utilize the space based on the needs of their performance task. Additionally, the vision for the new facility includes a career center, a cafe, and multiple printing stations per each grade to be located in the media center area.

**Makerspace**

At the start of the 2019-20 school year all members of the Worcester Public Schools participated in the district’s fourth annual Opening of School Convening and Recognition of Excellence ceremony. Keynote speaker Jaime Casap challenged the audience to think about technology and reminded us not to “ask kids what they want to be when they grow up but what problems do they want to solve. This changes the conversation from what I want to work for to what do I need to learn to do that.” This challenges us to provide opportunities for students to explore and to create as part of the learning process.

As summarized in the 2018 Stem Learning Design Report, ‘Review and Recommendations of Best Practices for K-12 Learning Spaces,’ schools and districts are shifting educational decisions and methodologies to align with the ‘innovation economy model.’ Doherty Memorial High School readily agrees that students need learning opportunities that emphasize process skills, decision making, contextual and community-based problem-solving experiences, etc. The vocational engineering program offers a subset of the students’ ample opportunities to acquire content knowledge as well as practical, competencies and skills. The desire and goal are to increase the range of innovative learning models available to all students, regardless of their choice from the various educational programming options being proposed, and this is in agreement with the STEM Learning Spaces report:

> Schools have begun looking for opportunities across the curriculum to integrate more of a process focus, including engineering design and prototyping, to prepare students. Learning spaces to support this model focus on collaboration and sharing tools, inclusion of a wide variety of materials and small-scale mechanical and digital tools to quickly prototype and test solutions, and flexibility for regularly changing projects or contexts. (p. 12)

As students’ progress through the K-12 system, en route to college and/or careers, there is a clear demand to ensure that students have mastered a suite of readiness skills across a range of content areas. Currently, students have opportunities to engage in rigorous learning experiences that reflect interdisciplinary and integrated learning. Notably, within the Engineering Technology Academy, the school’s vocational Engineering Technology program, students complete several
‘learning fair’ projects. These projects are designed by an interdisciplinary team of educators representing Engineering, Science, Mathematics, English, and Social Studies. Over the course of weeks, students complete a variety of tasks within and across their courses, ultimately integrating all components and presenting their work in a family and community forum.

Figure 3

Figure 4

A student’s display containing elements from each of his five core academic classes: Engineering, Science, Mathematics, English, and Social Studies. All projects are then on display for students as they share and discuss their work with family and community members attending the learning fair showcase.

Figure 5

Figure 6

Each ETA student designed a parcel of land based on various zoning criteria. Combined, the students recreated the path of the Blackstone Canal, originally running through sections of Worcester. Students reimagined the Canal district, incorporating environmentally friendly designs and that accommodate the needs of a diverse community.
Outside of the teamed ETA, integrated learning is relatively new for many students and staff. This is mainly due to a lack of space for common planning and for interdisciplinary planning, existing space and technology limitations, and the lack of much needed adjacencies between and among various departments. Often, teachers within their individual classes will design learning activities that incorporate multiple domains of learning and that span content areas, but there are challenges to implementing true cross-disciplinary work that brings multiple classes and content educators together.

The vision for the new Doherty Memorial High School is to incorporate design features to enable students and staff opportunities to engage in interdisciplinary learning. For example, the feasibility design is planning for ninth grade academies or teams, where educators would share similar groups of students within a close set of rooms, allowing for greater flexibility regarding the schedule, mixing student groups, and accessing and sharing the strengths of staff and students alike. There will be improved common planning space and adjacencies between and among departments to foster collaboration, interdisciplinary connections, project-based learning and real-world applications, which were priorities that were identified through the visioning process.

To support this collaborative effort, and enable all staff the opportunity to work together, e.g. in STEAM based learning experiences, the new Doherty Memorial High School will include a Makerspace that will be accessible to all. The goal is to integrate the available classroom technology, including Chromebooks, with modern and industry-standard equipment that, to date, many students have not experienced or utilized. This equipment includes, for example, 3D printing technologies, hand and simple power tools, manufacturing technologies, presentation technologies, and a range of learning materials based on the varied projects and student activities occurring within the space. As supported in the STEM Learning Design (2018) report, the space will enable flexibility as educators can plan for varied projects, changing equipment utilization, and that enable all educators within their core academic programs to have opportunities to utilize the space with their students.

While Makerspaces are often associated with STEAM education, there are robust opportunities for all staff from all content areas to enable their students to work collaboratively. Due to the collaborative nature that promotes group work, the MakerSpace will ideally be adjacent to the Media Center, which is a site that allows additional flexibility relating to group or project work, as well as for student presentations and showcases of their work. The Media Center’s collections, technologies, and physical layout are designed to enable students to access resources and materials, along with instructional support from the educator and the Media Specialist/Librarian, as they engage in increasingly personalized learning activities. The adjacent MakerSpace supports student work as they hone their skills in preparing for entry into a 21st century workforce.
As the Media Center will be available for community usage, student work—both in progress and finished products—will be displayed, showcasing the students’ abilities and talents as they engage in rigorous curricular learning activities.

**H. Visual Art**

The [Visual Arts Program in the Worcester Public Schools](https://www.worcester.k12.ma.us/) offers students an in-depth exploration of the standards identified in the Massachusetts Arts Curriculum Frameworks (1999) and is informed by the National Core Arts Standards (2014). Support for classroom and after school activities are enhanced through partnerships with local and national cultural organizations.

At Doherty, in the Visual Arts department currently, there are three rooms dedicated to the teaching and learning of visual art. Consistently over time, we have received many more requests from students to participate in course offerings in Art than we have been able to accommodate. One credit in the Arts is required for graduation for all students in the Worcester Public Schools and we need to have appropriate space to offer additional courses to support student interest and fulfill this requirement. Beginning this year 2019-20, we are offering an Early College Course in Drawing on our campus as part of our partnership with Quinsigamond Community College.

Despite the recent staff increase from one Art teacher to three, the need for additional and more appropriate space continues for the study of visual art. Of the three classrooms dedicated to visual arts, only one of the rooms was actually designed for this purpose and is in need of updating. There is a need for increased number of working sinks, additional and flexible space for students in the art classes to work, and an improved centralized area to display their talents to the school community and the community at large. Despite the challenges of our current facility, our art students have won several different awards and have been recognized for their talent each year. Currently we have student work displayed in some areas of the school and we value the ability to showcase the incredible talent of our students, but much more space is needed to do so.

The vision for the new school includes increased staffing due to increased enrollment and additional and more appropriate space. In order to support teaching and learning in the visual arts we need classrooms with flexible furniture and adequate workspace, functional sinks and increased storage space. The art rooms should be located adjacent to one another in order to support collaboration and shared ideas and supplies. A digital art learning lab should be included to support several desired additional courses and to support the digital portfolio development needed for Advanced Placement Studio Drawing and for many college applications. These spaces would facilitate the implementation of our art education program and allow us to offer additional coursework such as AP 3D Art and Design, printmaking, graphic art, digital media art, digital photography, ceramics, sculpture, and digital illustration. As we move toward implementing the recently developed Arts Frameworks, which are currently posted for public
review and expected to be fully adopted in the very near future, it will be important to have appropriate space and technology. There is a need for additional collaborative space to support the design and implementation of a cohesive art program.

Additionally, we would be able to incorporate the visual arts will our STEAM subjects and to support our proposed Chapter 74 programming that involves STEM. One credit in the Arts is required for graduation for all students in the Worcester Public Schools.

Common areas within sightline of classrooms, designed to facilitate break-out sessions will support such opportunities and allow for shared presentations and collaboration among classes. Additionally, there needs to be spaces will provide areas for the Visual Arts Professional Learning Communities (PLCs) to meet to collaborate and to support professional learning, complete with areas for presentation and modeling classroom. The arts program would benefit from additional storage pace in this shared collaborative space with individual work areas for each art teacher and dedicated storage space for their course-specific media.

Students would benefit from an outdoor workspace that is within easy access to and within visual sightlines of art classrooms, and an interior community space beyond the classroom with glass enclosed shelving to exhibit 3D work and permanent and movable boards for students to exhibit 2D work. This space can be used for displays as well as for demonstrations and would benefit from furniture that allows for flexible seating arrangements. Classrooms should be neutral tones and have large windows for natural light with shades to darken classroom, interior multipurpose lighting, exhibit space, bulletin boards, white boards and a large space for students to create autonomously or in groups. Classrooms should have closets, deep sinks, long and wide countertops to work on big projects, large desks for students to allow for flexible seating arrangements, tables to accommodate multimedia and center working, drying racks, classroom cabinets with locks, and long, wide, and deep shelving for project storage. Each room should have easel space, technology space using both the distributive technology model (Chromecarts) as well a computer stations for a digital art lab, several electrical outlets throughout the room, wall area for vertical drawing, interactive screens, bulletin boards and white boards.

Floor plan should include a digital graphic arts room, ceramics and kiln room which will be located in a space accessible to the instructional space that is able to be secured for safety reasons. Visual Arts classrooms need to be located in proximity to the performing arts neighborhood to support collaboration among classes in the arts.
I. Performing Arts

Doherty Memorial High School offers a variety of full year (1 credit) and semester (0.50 credit) music courses and full year (1 credit) courses in theater arts, both of which provide students with the opportunity to explore the history of the subject and/or develop their performance skills.

In 2018-19 the current 1-credit music course offerings included Chorus-Vocal I, Chorus-Vocal II, Chorus-Vocal III and Chorus-Vocal IV, Madrigal Singers I, Madrigal Singers II, Madrigal Singers III, and Madrigal Singers IV, Jazz Ensemble, Band-Orchestra I, Band-Orchestra II, Band-Orchestra III, and Band-Orchestra IV, Music Appreciation, and History of Rock and Roll. The semester-long 0.50 credit courses include Music Appreciation Part 1. The 1-credit theater courses include Theater I-IV.

The Worcester Public Schools’ strategic plan notes both student and educator requests to “increase course variety and the opportunity to delve deeply into subject matter and explore current topics” (12). In an effort to support this interest and to provide additional courses in the arts to meet the Massachusetts Department of Elementary and Secondary Education’s (DESE) MassCore and Worcester Public Schools (WPS) graduation requirements, additional courses were offered for students. This increase in course offerings was made possible by the addition of a second full-time music teacher.

During the 2018-2019 school year there were 341 students enrolled in music classes, either music history/appreciation or a performance class. Additionally, 69 students participated in theater arts courses. The school offered five sections of Theater Arts: three of these sections were Theater I while the additional two sections were comprised of a mix of students in Theater II-IV.

Figure 7
All of the performing arts classes are scheduled in the two classrooms in the music wing located behind the auditorium/stage. These classrooms were designed for use as music classrooms. The larger classroom (101) was designed for instrumental classes and the smaller room (103) was designed for vocal classes. Currently, the Theater Arts classes are held in these same classrooms.

Performing Arts classes utilize a variety of instruction methodologies including but not limited to whole group and small group instruction and modeling, small group activities, and individual exploration and rehearsal. Teachers work directly with students to instruct them to read music written in standard notation and to learn instrumental and vocal technique. Students are provided opportunities to perform individually and in small groups and large groups within the specific classes, within the school, and within the community at public performances. Students in the vocal classes have the opportunity to sing, alone and with others, a varied repertoire of music. Students in instrumental classes play instruments, alone and with others, to perform a varied repertoire of music. Students in music classes also engage in critical response through whole group instruction and modeling which includes activities such as listening to musical performances and participating in whole class, small group and individual reflections. Students utilize technology in order to access the course curriculum, explore musical pieces and music history and to engage in reflection of these topics utilizing technology. A Chromecart is available on the first floor to support this integration of technology but it is a shared cart and must be moved to the music wing for classroom use.

Within the theater arts classes curriculum is delivered through whole group instruction and modeling in includes activities such as viewing performances, both live and recorded. Students engage in blocking, rehearsing and performing scenes from and productions of entire works in order to demonstrate knowledge of the theater arts curriculum standards. Students work collaboratively in both large and small groups and require space to do so. Additionally, theater arts classes utilize space to demonstrate and to block scenes for class use and to rehearse. Theater classes perform formal dramatic productions for a variety of audiences including their peers within their class and the school as well as public performances both during and after the school day.

The music wing, in addition to the two classrooms, has four small practice rooms, a music office that currently doubles for small group rehearsal space and storage and an additional practice room that was designed and predominantly used for costume storage.

The stage is located directly in front of the orchestra-instrumental room (101) and is used to as part of the instructional space for all performing arts classes. While the stage is an essential part of the auditorium and is often utilized for presentations and small-scale school assemblies, it is also an instructional space which provides opportunities for the students to learn and practice
blocking, home their technical theater skills and musical presentation skills, and allow them to have authentic real-world application of these skills.

The orchestra room (101) is located directly behind the stage and provides the only access backstage to the right wing of the stage. The lighting board is located in the left wing of the stage but its current location limits space in the wings as well as a clear view of the full stage during performances. The catwalk is only accessible by ladder through a side hallway off of the auditorium and as a result is inaccessible by students. The location and condition of these dated items make it difficult to address the curriculum standards, especially in theater arts which requires students not only to learn about the technical theater but also to participate in the technical aspect of the performances.

The vision for the performing arts space in the new school includes additional classroom, rehearsal, and performance space to successfully deliver the performing arts curriculum (music and theater) and grow both the music and theater programs at Doherty Memorial High School. We would like to add AP Music Theory to the course offerings in the music department. This course was taught as part of the music department in past years but has not been offered for several years. There also is a desire to expand the theater course offerings. Increased staffing and the availability of additional classroom space in the Performing Arts neighborhood would facilitate the ability to offer these courses. The current layout of the music wing and its classrooms limits the number and type of classes that can be offered at the same time. Room 103 is designed for chorus/vocal classes only. The room is constructed with tiered flooring (mimicking risers) /rows for seating for vocal practice with limited, narrow floor space making it difficult for instruction in other types of classes. This room currently is used for theater classes but the tiered flooring and limited level space at the front of the room makes it difficult to implement the theater arts curriculum. There is limited space for blocking scenes, modeling techniques, and conducting small or large group performances in-class or for other classes in the school. It cannot be used for small-scale public performances either. This classroom is also used for courses such as music appreciation and History of Rock and Roll. The current configuration of the room makes it difficult to arrange the room for discussion or to implement instructional strategies/activities that require students to move around the room (e.g. gallery walk, inside-outside circle. etc.)

The existing design of music wing allows for only one instrumental class to be offered at a time. Room 101 is designed with tiered flooring arranged to allow for orchestral instruction/rehearsal. This is the only room designed for instrumental use/instruction. There are only four small practice rooms in this wing, and they are at the end of the hall, away from the classrooms and lack visibility from the classrooms. There is a need for individual/small group rehearsal/collaborative space for all students in the music courses. This space needs to be designed to
reduce sound distractions during rehearsals yet still be within the sightline/hearing of the classroom teacher.

There needs to be additional classroom space for theater classes. This space needs to have room to model acting techniques, demonstrate/teach blocking, and engage in individual and group scene work. There is a need for space to allow for small-group collaboration and rehearsal.

All of the performing arts classes require visual access to rehearsal areas and open spaces where small groups can collaborate and rehearse. Additionally, there needs to be easy access to public spaces such as the stage and its adjacent seating (auditorium). These areas are public areas and there needs to be a way to keep the classroom/educational spaces secure and yet easily accessible when needed.

The Massachusetts Arts Curriculum Frameworks indicates that music students need to be engaged in improvisation and composition, demonstrate the ability to rehearse an ensemble of peers, and conduct live performances. As a result, there is a need for a variety of performance venues for class and school use. Providing multiple performance areas in the design of the new facility was also a priority that was identified through the visioning process. A “black box” theater area within the performing arts wing with flexible stage area, moveable seating, sound, projection screen, and a flexible lighting system would allow an additional performance space for small-scale performances. This area can be used for presentations/demonstrations with music, vocal, and theater classes and the flexibility of this space would allow students to demonstrate knowledge of the curriculum standards, especially the advanced theater standards which require students to demonstrate knowledge of technical theaters and the ability to lead a technical crew, create and implement a major design element (scenics, lighting, sound) for a production, coordinate all aspects of a production by stage managing a theatrical event, and apply technical knowledge of safety procedures and practices in the use of theatre equipment, tools, and raw materials.

Locating the performing arts neighborhood in close proximity to the auditorium and stage will enhance the learning opportunities for students. The auditorium can be used for in-school and public performances and presentations and should have a capacity of 800 or 900 or half of the school population. The stage itself needs to have adequate space in the wings to accommodate scene changes and cast and crew access to the stage, curtains and other performance technology. A space needs to be designated for the stage manager to coordinate backstage/production details.

A large overhead door on the back wall of the stage is necessary to provide access to the makerspace, loading dock or street. Any large door in this area with street access should be insulated both for weather and acoustic isolation.
The stage needs to be large enough to accommodate large ensemble casts, orchestral groups and choral groups. Sightlines on stage need to be considered in the stage layout in order to provide a full view of the stage from throughout the audience/seating area. The proscenium needs to be large enough accommodate the appropriate fly area, rigging, lighting, and curtains.

A lighting booth should be located at the back of the auditorium to allow for a clear view of the stage and allow lighting crew to control the lights on the stage and in the house. Dimmable house lights are needed to accommodate the various types of presentations that will occur in the auditorium. This lighting booth may also be used to run the sound board and is a needed instructional space allowing students to gain first-hand experience with the aspects of technical theater.

Auditoriums are incredibly sound-sensitive, so no matter the size or scope, a theater space’s mechanical, electrical and plumbing system should be designed by engineers who have prior theater design experience. Ductwork must be oversized (and often lined) to eliminate objectionable fan and air velocity noise. In addition, plumbing chases should be independent of both house and stage perimeter walls. Acoustics and placement of lighting needs to be taken into consideration when designing the ceiling of the auditorium.

The theater classes partner with classes in the music department and these programs need to be in close proximity/adjacency to these courses to allow for collaboration and rehearsal. A performing Arts neighborhood would allow for such collaboration between these courses and with other arts course within this arts neighborhood. In addition, the performing arts programs require additional spaces for performance preparation. They need to be in close proximity to restrooms and have a space that can be provide privacy for costume changes. A dressing area, including a sink, with ten to fourteen private stalls (based on the average number of most current productions) could accommodate an ensemble cast while also provide a dressing area for student performers who might have more frequent or fast costume changes. in addition to areas to store costumes. There is also a need to have access to sinks for cleaning and working on sets. Additionally, the theater department needs adjacency to the visual arts department to allow for collaboration and to maximize the use of creative space for set design and construction.

As we design a facility that enables students to engage in rigorous learning activities and contextual innovative projects within their core academic settings, the goal is to implement a Maker Space style area within the performing arts region to support the students' ability to apply technical knowledge of safety procedures and practices in the use of theatre equipment, tools, and raw materials. Students need space to be able to develop and refine artistic techniques and work for presentation that support organizing and leading the production of technical elements such as scenic, lighting, props, costumes, sound, or makeup design in a dramatic
presentation (Massachusetts Arts Frameworks- T.T.5). This area should be located close to the stage to allow for easy access and to support the creation and implementation of these major design elements for a main stage production. Large/oversized doors in this area stage will facilitate access to the stage.

Storage space is essential in the performing arts neighborhood. Music and theater classes both require specific and often over-sized materials, whether they be instruments, music scores or large props such as furniture or multiple small props. These materials are used as part of the instruction and to support the delivery of the curriculum, allowing students to have a hands-on, authentic performing arts experience. Space that is easily accessible with appropriate storage methods (shelves, cabinets, closets/wardrobes, instrument storage, prop storage, and set piece storage, set construction materials such as lumber, paints and tools) and can be used to secure materials

Access to technology is becoming increasingly important in all areas of the curriculum, including the performing arts. This collaborative space can also house the piano lab which will allow for increased opportunities for students to learn and practice the piano as well as experiment with music composition and arrangement and explore music theory. Piano labs that are equipped with a teacher-student communication system supports differentiated instruction in the music classroom allowing the teacher to instruct and support students with varying levels of proficiency within the same class. Students may work individually and in small groups in this setting to practice and refine their keyboard skills. Standard piano labs support between eight to sixteen students and need to be equipped to provide the teacher with a controller and headphones to monitor/listen to student progress. The lab needs to have individual student workstations/keyboards with headphones for each student.

The piano lab will be staffed by the music teachers and when a specific class is not scheduled into the piano lab during the regular seven-period day, it can be used on a rotating basis, under teacher supervision, to allow students the opportunity to work individually and in small groups to practice their skills both during and after the school day. As the lab will be staffed/supervised by the music teachers, there needs to be a teacher station with a conferencing system that allows the teacher to communicate with students and to supervise student progress. A standard piano lab with sixteen workstations requires a room that is at least 29’ x 24’ to accommodate each 5’x 5’ workstation and a 4’ walkway and teacher workspaces.
Sample Configuration:
Figure 8

https://www.musicarts.com/cms/Classroom-Piano-Labs

Collaborative spaces such as this can help students to listen to music and identify the parts of the composition as well as to learn to build their own musical compositions. This can be accomplished by establishing lab within the neighborhood than also can house desktop computers used for composition and can be shared with other performing and visual arts classes. This shared arts computer lab will provide opportunities for students to experiment with sound and composition through Musical Instrument Digital Interface (MIDI) software programs such as GarageBand. This program allows students to explore music at their own pace while benefiting from teacher support in a group setting. Using GarageBand will allow students to build their own songs and to collaborate with their peers on compositions, experiment using virtual software instruments. This will require a computer lab space with room for desktop (Mac) computers to support this program. GarageBand allows students to record and listen to themselves. This shared lab will be used during the music classes and will be staffed/supervised by the music teachers. When not being used for specific music instruction, this lab will provide an opportunity for cross-disciplinary sharing and collaboration as students and teachers from other departments can utilize this space and program to record and listen to themselves to support fluency. Speaking skills are essential as noted in the districts’ High Quality Reading, Writing and Discourse document and access to this program will benefit all students.
J. Physical Education/Health

The goal of the Worcester Public Schools Health and Physical Education Department is to provide students with the necessary skills which enable them to make safe and healthy choices in a variety of situations. In addition, students are given those skills which are needed to make fitness a life-long habit. The Health and Physical Education Curriculum, which is aligned with the Massachusetts Comprehensive Health Curriculum Framework, is taught by certified Health and Physical Education teachers.

Doherty Memorial High School offers a semester (0.50 credit) courses in health and quarter (0.25 credit) courses in physical education (PE). The current 0.25-credit physical education course offerings include Physical Education I-IV.

At Doherty, Grade 9 students participate in Health I classes for a semester. The health classroom is not in close enough proximity to the gymnasium which precludes the type of collaboration that we would like to support between the Health and Physical Education teachers. The vision for the new school is to increase the number of health teachers and the number of classrooms to support the growth of the health course offerings. The School Adjustment Counselors deliver the Signs of Suicide (SOS) Curriculum through the health classes each semester in collaboration with the health teachers. We view this particular program as a vital component of social-emotional learning for our students since the content literally can be life-saving as the topics focus on recognizing and reporting signs of distress, depression and suicide prevention through the application of Acknowledge, Care, Tell (ACT).

All students participate in Physical education classes each of their four years for a duration of ten weeks per year and earn 0.25 credits. Students must participate in Physical Education each year in the state of Massachusetts and participation all four years is needed in order to graduate from the Worcester Public Schools. Currently, there are three Physical Education teachers who teach these courses in our gymnasium. The gym area is divided into three areas: the large gym, and two smaller spaces, one with a few treadmills, and the other with weightlifting areas and cardio machines. The majority of the weights and machines have been donated to the school, and the number of machines and weightlifting stations are insufficient given the number of students enrolled in these courses. The area is not large enough to fully implement the types of course offerings and fitness training that we would like to offer to our students. There is some office space for male and female physical education teachers, but these spaces need to be improved.

The vision for the new school is to substantially increase the size of our gym and the areas adjacent to it in order to increase the array of possibilities for our physical education courses and to better support our successful and well-established athletic programs. The number of teaching stations will increase to five and dramatically improve the space that is dedicated to physical
education and health fitness habits. The office space for these teachers will be improved and expanded. There will be classes in team sports offered in the large gym area with a variety of activities in order to provide our students with options and to differentiate the concepts they are learning in order to meet their diverse needs. Storage space for equipment for these areas needs to be provided. There will be an area dedicated to weight training and conditioning sufficient to accommodate the number of students who wish to participate in these types of activities. Additionally, there will be a space dedicated to classes including but not limited to yoga, Pilates, and mindfulness. As a result of these vastly improved spaces, we also plan to offer personal fitness, cardiovascular fitness, and conditioning courses. Also, we will be able to allow students to participate in additional physical education classes beyond the required, annual ten-week interval which is important to promote healthy habits and necessary for students who are unable to afford a gym membership in the community and for those who cannot stay after school for physical activities or athletics due to other responsibilities such as work or caring for younger siblings.

This expanded space will also support an array of after school programming. Many students participate in weightlifting activities after school. A powerlifting club was started last year and has generated much interest and participation among our students. We also have evidence of a strong interest among our students in yoga as this was offered as a club activity after school and was well-attended by staff and students. We also have had dance clubs who could benefit from this new space after school and the choreography for the musical could be done in this wellness center rather than in the front lobby or in the cafeteria where choreography has been done historically due to a lack of appropriate space. Students will have a voice in selecting activities within which to participate and a wider array of physical activities from which to choose. The improved space will allow us to work with our students to develop the knowledge and skills needed for lifelong wellness, healthy habits for life, strength training and stress reduction.

Additionally, there needs to be a space for Adaptive Physical Education as the number of students in need of this service will increase as the new school will be fully handicapped accessible, while currently the school is not. As a result of the lack of accessibility in the current facility, many students who need Adaptive Physical Education attend other schools in the district as their needs cannot currently be accommodated. We are also seeking to add a Unified Physical Education program to build upon our current participation in Special Olympics and to involve our students with disabilities by pairing them with their peers during physical education classes as well as during our after-school programming. This space would also be used to host unified physical education with the younger students in our quadrant, to build and to strengthen the relationships between and among our neighborhood schools, and to increase our participation in Special Olympics especially during vacation and summer school programs.
Athletics

Our athletic program is extensive, and our athletes are successful. Our students are participants on 49 sports teams sanctioned by the Massachusetts Interscholastic Athletic Association, MIAA: 18 in the fall season, 14 during the winter season, and 17 during the spring. Not only does our participation in athletics support the success of our student-athletes and their ability to compete and to continually develop and improve their skills, both on and off the courts and fields, but it also fosters a strong sense of community, school spirit and pride among our student body, staff and members of the community at large. DMHS has a long history of success in athletic competitions and our school has had the highest rate of participation in athletic programming over time in our district as shown in the tables below for all three seasons. (Figures 9-11)
Several of our student-athletes have gone on to participate in athletics at the college, semi-pro, and professional levels. Among our alumni, staff members and coaches, there are many who have been inducted into the Worcester Public Schools Athletic Hall of Fame. However, our
current facility does not support the athletic programming in a manner that is both desired and deserved.
The images below identify some of our recent student-athletes who went on to compete at the collegiate or professional levels.

Figure 12
<table>
<thead>
<tr>
<th>Name</th>
<th>College</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adam Goldstein</td>
<td>Denton College</td>
<td>University of Miami</td>
</tr>
<tr>
<td>Evan Brunelle</td>
<td>University of Rhode Island</td>
<td>Drafted by Cincinnati Reds</td>
</tr>
<tr>
<td>Tyler Sterner</td>
<td>Temple University</td>
<td></td>
</tr>
<tr>
<td>Aaron Adu</td>
<td>Franklin Pierce College</td>
<td>University of South Carolina</td>
</tr>
<tr>
<td>Jewel White</td>
<td></td>
<td>(NCAA Champion)</td>
</tr>
<tr>
<td>Wadeline Jonathas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Francesca Hammond</td>
<td>Anna Maria College</td>
<td></td>
</tr>
<tr>
<td>Kaiya Saunders</td>
<td>University of Virginia</td>
<td></td>
</tr>
<tr>
<td>Rahkim Williams</td>
<td>University of Connecticut</td>
<td></td>
</tr>
</tbody>
</table>
During the fall season, the only team who can practice outside on our campus is the football team. This team practices on a non-regulation field that measures approximately 85 yards in length, rather than the 100 yards of a regulation football field on which they compete. The junior varsity and varsity teams practice together which is not an optimal situation. The boys’ and girls’ varsity and junior varsity soccer teams practice and compete at Foley Stadium and they have to walk there in order to do so. The field hockey team practices on a small patch of land outside of the stadium at Foley Stadium. It is approximately one mile from the school and having the athletes walk from school to the stadium presents an ongoing safety concern. During the fall season our student-athletes also participate in field hockey, cross-country track, boys’ golf, crew, girls’ volleyball, and cheerleading. During inclement weather many of these groups compete for indoor practice time as our current gym is too small for them to schedule practice simultaneously.
The issues of the inadequate size of our gym are most evident during the winter season when practice is scheduled in two-hour intervals from 2:00 p.m. until 9:00 p.m. During the winter season, our student-athletes participate in boys’ and girls’ varsity and junior varsity basketball, hockey, swimming, wrestling, cheerleading and boys’ and girls’ indoor track. From 2014 to 2018, we housed wrestling practice at our school, but that program has since been relocated to another high school within the district due to lack of space despite high rates of participation by our students. This results in the need for the team to travel for practice and competitions. The girls’ and boys’ track teams both practice in the gym for hurdles, high jump and shot-put but run throughout the hallways of the school as there is no track in our facility. Not only does this practice jeopardize the safety of these student-athletes, but it is also unsafe for any student and/or teacher who has remained after school to walk safely through the building as they go from one location to another or simply exit the building upon the completion of their after school extra help session or club activity. It is unsafe for the night custodians who work from 2:00 p.m. to 10:00 p.m. and/or any school plant employee who may be in the building making repairs so as not to disrupt the school day. There is a dire need for an indoor track, elevated or at ground level, that is at least 133 meters in length to be a part of the new school design to safely accommodate the large number of students, (75 last year), who participate in this sport at Doherty.

During the spring season, our student-athletes participate in varsity and junior varsity baseball and softball, boys’ volleyball, tennis, boys’ and girls’ lacrosse, boys’ and girls’ crew, and boys’ and girls’ outdoor track. The boys’ volleyball team has limited space within which to practice especially during inclement weather as the softball and baseball teams need to use the net in order to practice indoors safely and the net needs to be removed for volleyball practice and games. To install the net and up then to remove it requires 30 minutes which leads to even less time for the teams. Similar to what occurs during many of the fall sports, the student-athletes who participate in baseball, softball, lacrosse and track have to walk to Foley Stadium or to Beaver Brook Park for practice and/or be driven to other locations for practice, games and competitions. This is an ongoing safety concern. The boys’ and girls’ tennis teams practice at the public courts at Newton Square adjacent to the school but not on our property.

Despite these conditions, our teams have been and continue to be successful. In 2013, the football team won the state championship at Gillette stadium. That was a wonderful event for the athletes, their families, the students, and our entire school community. Our teams compete and qualify for district play in varsity sports every year and often secure winning titles.

Often, we are forced to disallow large numbers of our fans, students and family members alike, from attending our games due to the inadequate capacity of our gymnasium and the need to respect the limits needed to comply with fire code and to avoid safety concerns that result from overcrowding. Not only does this deny the school and district of much needed revenue for our
sports programs, more importantly it disallows all members of our school community to gather together in order to support our teams.

Equally disappointing, when our students have qualified for home court advantage they have been forced to compete at gymnasiums located in other high schools in the district that are larger but certainly not our “home.” The boys’ basketball team has been one of the top basketball programs in central Massachusetts for the past 25 years, but they have yet to play a quarterfinal playoff game in our gym due to the attendance rules of the MIAA and the capacity of our facility. This injustice has occurred in 1997, 1998, 2008, 2010, and 2011 and our team has had to find alternate sites to “host” a home court advantage playoff game each time.

The vision for the new facility includes a space large enough for us to gather the entire school population not only for games but for assemblies and academic recognition ceremonies, guest speakers, special events and to provide trainings. There needs to be a way to secure the gym area from the academic areas of the building so it can be utilized as a community space without compromising the safety and security of the building. Currently, we are unable to secure the gym area due to the necessary fire egress so anyone who enters the gym area has access to the entire building which is a concern for the security of the school. Some of the locker room areas, the small gym area and some shower spaces have been converted to be used as a weight room with weights and equipment that have been donated from Good Sports and Planet Fitness. While we appreciate their generosity, the equipment is being used in a less than an optimal space and much of our equipment is less than state of the art. Our students deserve to have a state-of-the-art facility with proper equipment.

In the new facility, we envision our students having space for weightlifting, conditioning, adequate locker rooms for home and visiting teams with showers and white boards, and a wellness center with good sight lines to all areas to ensure the proper supervision of students. We would like to have three full courts to allow more than one team to be able to effectively practice simultaneously. Our physical education classes will also benefit from this improved space as they also need lockers, boys and girls locker rooms and access to showers. There is also a need for storage space for team equipment in addition to storage needed for the equipment used by the Physical Education teachers.

Also, we are seeking to add fields in the new facility. The football team would benefit from having a regulation field on site with lights, bleachers, and a press box that could be used for games and practices. The track program would benefit from having a track outlining the football field. The vision includes another 80-100-yard multi-purpose field to be used for soccer and field hockey during the fall season and to be used for lacrosse in the spring and the inclusion of baseball and softball diamonds with bleachers and lights. Finally, the addition of two outdoor
basketball courts and two tennis courts would allow us to keep our students on campus and end
the practice of having to walk anywhere which we see as a safety concern.

All external spaces, including the fields, would be supported with WiFi access.

K. Special Education

The mission of the Worcester Public Schools [Special Education Department](#) is to provide
support, technical assistance and service to schools, staff, students, families and community
stakeholders as we work collaboratively to promote safe schools where all children learn. The
department is committed to partnering with parents and schools to ensure the fidelity of
specialized instruction, inclusion opportunities, professional learning and rigorous outcomes for
students with disabilities. Doherty Memorial High School offers a variety of full year (1 credit)
courses to support student needs to access the curriculum and to make academic progress.
Students receive services in accordance with their Individual Education Plan (IEP). Some
students receive classroom services in dedicated Special Education classrooms: resource class,
Structured Therapeutic Education Programs (STEP), and Life Skills. Other students are served
by the inclusion model (either full or partial) with support in general education classrooms. In
addition, some students receive supports such Occupational Therapy, Physical Therapy, Speech
and Language therapy, Learning Disability support (LD) or a combination of such supports an
indicated in their IEP. Additional supports such as Adaptive Physical Education are taking place
in the school’s gymnasium.

The curriculum is delivered in the Special Education classrooms using varied, individualized and
differentiated strategies to meet the needs of all learners. Instructional methods include whole-
and small-group -instruction, modeling of strategies, use of both oral and written use of
language, use of manipulatives and other hands-on learning tools, whole- and small-group
discussion such as modeling read-aloud and think-aloud skills, collaborative activities, project-
based exploration of topics, and the integration of technology using the distributive technology to
engage in critical reading and multi-draft writing and editing activities to improve
communication skills. While this is the goal in all classes in the Special Education department,
limited classroom and laboratory space often impacts the ability two fully implement these
strategies/activities on a more frequent basis.

Students’ IEPs identify specific academic and/or social and emotional needs and these students
receive a specific number of hours of support as indicated in their plan. Table 15 indicates the
number /hours of students receiving Special Education services as of August 2019. Disabilities
currently addressed include autism, communication impairment, intellectual impairment,
neurological impairment, emotional impairment, health impairment, and specific learning
disability, and/or multiple disabilities. We anticipate this number to grow as the enrollment in the
new Americans with Disabilities Act (ADA) compliant school increases and we are able to serve more students with identified needs.

Figure 14

In accordance with Massachusetts education laws and regulations (603 CMR 28.06) students with disabilities, to the maximum extent appropriate, are educated in the least restrictive environment (LRE) and supporting an inclusive environment for students. The Special Education classes at Doherty Memorial High School are not all located exclusively in one area of the building in order for eligible students to maximize their inclusion into the life of the school as noted in the MSBA Special Education Rubric and Regulations. While these classrooms are integrated into the general education classroom areas, they are not integrated as well as they could and should be to support the needs of our students in our current facility. Currently, students with IEPs have access to school facilities including but not limited to implement the students’ IEPs. While the present resource rooms and separate classrooms for students with disabilities (STEP, Life Skills) are given the same priority as general education programs, including access to and use of instructional and other space /facilities in the school, this could be improved to better serve the expanding student population and anticipated needs of future students once when we are in the new school which will be ADA compliant.

Three of our current classrooms that are used for resource rooms are divided into two semi-separate spaces and shared by two teachers. While this may foster some level of collaboration more often it serves as a distraction for students, such as an open classroom concept would do. One of these “shared” spaces is home to two of our three STEP classrooms. The third STEP
classroom (104) is located near the music and theater areas and those performances serve as a distraction to students as well.

The clinician, who is an integral member of the team to support the STEP students, is housed in an area that was converted to an office space located near, but not next to the split STEP classroom. We anticipate increasing the number of clinicians to two in the new facility. In order to truly provide support, the clinicians each need a larger space and one that is more centrally located among the current three and anticipated four STEP classroom spaces. These spaces need to be equipped with appropriate technology and be large enough to accommodate meetings with members of the Special Education department, community service providers, parents and students as well as individual and small-group counseling sessions and provide a comfortable safe-space for students in crisis.

The Life Skills students are currently housed in one of the smallest spaces in the school and must enter that space by passing through a different classroom, something that poses a distraction to both the students in the classroom and the Life Skills students. The students in this program need an expanded space to effectively meet their needs and access to additional space to successfully teach the adult learning skills.

The vision for the new school is to have intentionally placed classrooms, sufficient space and learning centers to effectively meet the academic and social emotional needs of our students. We will not add any additional programs nor will we eliminate any current programs. We will maintain the current programming but will be ADA compliant. DESE suggests that instruction group sizes be kept small (ten to twelve students) indicating a need for classrooms that are approximately one half the size of other classrooms in the building but large enough to accommodate this recommended size group with flexible seating to accommodate student and instructional needs, access to technology, using both the distributive and stationary model (desktop computers to meet student needs as identified in IEPs) and adequate storage for materials to support individualized and differentiated instruction. Additional space needs to be dedicated to accommodate the anticipated increased programming and staffing. As we move into a more inclusive model there is a need for more inclusion classrooms and collaborative learning spaces. Additionally, we need a place for the Evaluation Team Chairperson, (ETC) and for the additional clinician that we expect to add to support those students with social-emotional needs. We anticipate the number of students enrolled in our STEP program to increase necessitating the change from three to four classes given the number of students involved in this type of program currently throughout the district and across the grade levels, K-12.

A conference room is needed to hold IEP and progress meetings to engage the families, team chair, regular and special education teachers in a welcoming and private space to respect confidentiality and the integrity of the team process. A designated, private meeting area needs to
be included to hold Special Education meetings with teachers, specialists, and parents. The Special Education Department head requires office space with access to technology and storage for materials to support differentiated and individualized instruction within the department.

The School Psychologist is responsible for psychological testing and evaluation students. The school psychologist, working in conjunction with members of the Special Education departments, in addition to the Evaluation Team Chair (ETC) requires a private, quiet space for testing with access to appropriate technology and meeting rooms for consultation.

Additionally, the ETC needs office/meeting space with access to technology to plan and coordinate student IEP meetings which is in close proximity to Special Education conference room/meeting space in order to facilitate meetings with teachers, school psychologist, adjustment counselors, Special Education teachers, and parents.

With the planned addition of the Grade 9 academy, there will be a need to incorporate Special Education classrooms into this neighborhood to provide appropriate support for these students. In order to support the special education needs we are planning to attach one learning center (resource room) teacher and one inclusion teacher to each of the four Grade 9 academies. For students in Grades 10-12 we plan to have a learning center specialist (resource room) and inclusion space attached to each of the four major subject areas: ELA, Social Studies, Mathematics and Science in each of the three Grades 10, 11, 12. We are striving for the most inclusive environment while providing all of the support needed for success and in full compliance with all IEP’s which supports the need for additional and flexible space which will allow for grouping and supports. Common spaces in each of these academies/neighborhoods will be used to support small group instruction as well as pullout instruction provided by special education teachers and other Special Education staff/counselors. Multiple settings for small group and individualized instruction and supports, located in the various neighborhoods and in close proximity to general education classrooms will support an inclusive environment for all students with or without disabilities and promote greater equity and access to instruction and school programs.

Within each area there needs to be space designated for different levels of special education services/classrooms: full inclusion, partial inclusion, and resource classroom. These classroom spaces will be outfitted, with respect to technology and infrastructure, like all other classrooms in the building, and will follow a consistent room numbering scheme that will be identified later in the design process. Within the Special Education classrooms there needs to be space to allow for flexible grouping including areas for students who need to work one-to-one with a teacher or have a quiet space, free from distractions, to work individually in accordance with the students' IEP. Classrooms need to be equipped with appropriate furniture and equipment to support identified student needs including but not limited to flexible furniture, lavatory facilities, and
accommodate spatial requirements as well as acoustical and lighting treatments to remove physical communication barriers for students who are visually impaired, deaf, or hard of hearing. The classrooms also need to have access to technology and use both the distributive technology model as well as stations with desktop computers to support student needs as indicated in the IEPs. Classrooms need to be equipped with appropriate technology including Epson bright link short throw projector, LED display is desired with screens that support both independent or mirroring displays, document camera, Chromecast/apple TV and speech reinforcement. These rooms also need to have adequate and appropriate storage for materials needed for teachers to support differentiated and individualized instruction. No specific signage identifying rooms as “resource room” or “special education” will be used.

Learning Disabilities classrooms need to provide pull-out space, complete with access to technology, for teachers to work with students. We currently have one full-time and part-time LD teacher. With the anticipated increased enrollment in the new school, there will be a need to expand the LD supports to meet the needs of the expanding student population. As a result, an additional LD space will be needed. One such LD space needs to be located in the Grade 9 Academy neighborhood to provide academic support for these students, especially as they struggle to make the transition from middle school to high school.

There needs to be an improved space for Occupational Therapy and Physical Therapy as these services will be expanding as the new DMHS will meet ADA requirements and students whose IEPs indicate that they require these services will no longer need to attend other high schools in the district due to accessibility issues at the current building. A designated space is needed to provide Occupational Therapy for students. This area will provide services for students with identified special needs in fine and perceptual motor skills development. There is a need to support the OT specialist to provide evaluation, consultation and direct services for students. Additionally, there needs to be a space dedicated to providing Physical Therapy services for students with demonstrated special needs in gross motor development. The PT specialist provides evaluation, consultation and direct services to students in accordance to the student’s IEPs. A Speech and Language therapy area/classroom is needed to allow the speech pathologist to provide speech and language therapy for students with receptive and expressive language interferences which affect their ability to make effective progress. This area needs to be able to accommodate both individual and small- group sessions. Each of these spaces (OT, PT, and Speech/Language) need to have appropriate access to technology and space for the specialist to store and secure materials.

With the anticipated increased enrollment in the new school there is a need to increase the space needed to service students with these identified needs. The Life Skills classroom needs to be fully ADA compliant with direct grade level access to outside areas to support interaction with
the school’s outdoor spaces which can enhance instruction through interaction with outdoor educational spaces such as the school garden.

The addition of an Adult Daily Living (ADL) Center to enhance student independence in their living and work environment is an integral part of the plan for the new school. The center would provide an area to support students in the Life Skills class that would teach skills for day-to-day living. This area would need to provide model areas where students can learn such skills as using a washer/dryer, dishwasher, stovetop, oven, and other household appliances, as well as basic work skills. While students would have the opportunity to practice work skills in the school store, the ADL would provide workstations to teach skills needed for working with cash registers, and learning skills such as sorting, folding, labeling, and packing items.

Vocational Learning Center

Vocational training provides students with the opportunity to master the skills needed in order to be successful not only in school but in life. The vision for the new facility is to design learning opportunities for our special education students to engage in real-world experiences throughout the school. The licensed staff will teach and practice the specific job-related skills during their class time and these students will utilize this knowledge both in their classroom and in a variety of locations throughout the building. For example, students may work in the school store, the offices, and help to maintain the school garden. By doing so, they will be prepared to participate in our community as they develop vocational skills needed for their futures.

Study Skills

Study Skills is a course taught by licensed Special Education teachers that is often included as a part of a student’s IEP. During this class, students learn note-taking strategies, test-taking tips and skills associated with time management. These skills assist these students in their academic coursework as they are able to apply this knowledge to their other coursework with the support of a special education teacher who can clarify any misconceptions and help students to review and practice using the skills and academic concepts from their other classes. This class time can also serve to allow for extended time for academic tasks as is also often a part of an IEP.

Coping Room

The coping room is a space where students can receive academic and social and emotional support. To be assigned to the coping room, students would have received a referral from an administrator for a certain amount of time. During this assigned interval, students would complete academic tasks as assigned by their teachers while also receiving the support and coping strategies and proactive problem-solving skills needed to successfully transition and return to their regularly assigned schedule of classes.
L. Vocational and Technical Programs

Chapter 74 Programming

With the proposed new Doherty Memorial High School, the Worcester Public Schools is looking to strengthen and expand the Chapter 74 offerings. A formal Chapter 74 Programming Submission was created and submitted to the MSBA.

Doherty Memorial High School currently offers an Engineering and Technology Chapter 74 Program. The goal is to offer three additional trade programs within the new design.

Table 9

<table>
<thead>
<tr>
<th>Chapter 74 Program Offerings</th>
<th>Current Enrollment</th>
<th>Proposed Capacity</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering &amp; Technology</td>
<td>380</td>
<td>400</td>
<td>Existing Program, space to be expanded</td>
</tr>
<tr>
<td>Programming &amp; Web Development</td>
<td>0</td>
<td>200</td>
<td>New Program</td>
</tr>
<tr>
<td>Marketing Management &amp; Finance</td>
<td>0</td>
<td>200</td>
<td>New Program</td>
</tr>
<tr>
<td>Construction Craft Laborer</td>
<td>0</td>
<td>150</td>
<td>New Program</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>380</strong></td>
<td><strong>950</strong></td>
<td></td>
</tr>
</tbody>
</table>

Each vocational program will be available to all students from across the district. Similar to current policy, all Worcester residents in grade 8 will be eligible to apply for admission to any of these four programs. There is no plan to create a ninth-grade exploratory program. Rather, the application will ask students to identify their desired program, and if there are multiple areas of interest to then provide a ranking in order of their preference.

Engineering and Technology

The Engineering and Technology Academy (ETA) vocational program serves students from across the district, and each year has more students applying than the current space can accommodate.

The ETA vocational program was certified 10 years ago and utilizes an approach to integrate the trade skills and knowledge within the academics. Students in the ETA are teamed, meaning they
share the same Engineering, Science, and Mathematics teacher. These teacher blend curriculum, cross-train skills, align standards and expectations, etc. and as such when combined the students are engaging with their vocational curriculum for 3 out of 7 periods of their day. While the vocational program calls for the integrated academics of math and science specifically, our ETA program also teams the Social Studies and English Language Arts classes, resulting in a thematic alignment for almost 70% of the students’ day. Doherty does not run a week-on, week-off schedule.

The ETA program will serve approximately 100 students in each grade – up to 400 total. This comprises approximately 24% of the expected population of 1670 students. Students completing all CVTE requirements receive a technical certificate, in addition to their diploma. Given the complex content knowledge required for work in the career, our primary goal is to provide students with a strong foundation in content knowledge along with skills so that, as students enter college, they are well prepared to continue their engineering/technology education. From a review of local (Massachusetts) and national labor market projections, there is a clear demonstrable need to students to enter this profession, albeit by first earning some level of post-secondary education.

The ETA serves approximately 100 students per grade. This corresponds to a 20:1 student to teacher ratio. In the Worcester schools, teachers are assigned five classes each year, and the ETA currently has four CVTE Engineering teachers. There is no planned change to this enrollment pattern for the new school.

The minimum required laboratory space for a class of 20 students is 2200 square feet. There will be four educators, and at times throughout the school day all four will be engaging with students at the same time. The proposed program will be implemented with four related-theory engineering classroom spaces paired with three shared laboratory spaces. Given the nature of the curriculum, each of the four related-theory engineering classrooms will require a 1:1 desktop computer to student ratio. It is necessary to have desktop computers in this area as the necessary software cannot be run on the Chromebooks. In order for students to engage with the curriculum in a range of rigorous and differentiated learning activities, additional space and furniture is needed for students-when not utilizing the computers-to work collaboratively. The desired classroom/laboratory layout would establish the computer stations together, paired with an educator’s desk and presentation space, at one end of the classroom. The other end of the room would include desk/table space, supported by technology, presentation space, wall space, etc. where students can work collaboratively on project-based work in variable-sized groups.

Within this team model, students in the ETA are also receiving vocational instruction within their science and mathematics courses. Thus, the engineering classrooms (four) and associated science and mathematics classrooms that compose the vocational program need to be adjacent to
each other. These classrooms are considered related-theory classroom spaces. Based on the teaming models and other factors, the goal within this design proposal is to establish four related theory classrooms with adjacency to the engineering classrooms. Two would serve the Science integration, while two would provide space for the Mathematics.

Throughout the four years, students are interacting with varied tools and equipment as they engage with the curriculum. Some of this laboratory work is reinforced and strengthened from year-to-year, and so the engineering technology program requires multiple laboratory spaces, each outfitted to support the different skills being developed. These spaces can be accessed and shared by all educators within the program. Current industry and post-secondary trends, and as identified within the curriculum, demonstrate the need for three distinct shop spaces: one to support manufacturing and fabrication skills, such as wood-working or machining; a second laboratory space to support the electrical engineering, circuit design, robotics and programmable logic controllers, and testing; and a third to enable students to engage with 3-D printing, prototyping and CNC technologies. As industry and post-secondary trends change, these three spaces can change and be updated accordingly.

To promote professional collaboration and support, the four program classrooms and 3 shared laboratory spaces should be in proximity with each other. Given the numerous and varied consumable materials, tools and equipment needed to effectively implement the curriculum, each laboratory and classroom space needs appropriate storage options. Staff will need a common educator office and planning space. These program classrooms, laboratory spaces, storage and staff spaces should be designed together, and this vocational program will be adjacent to a ninth and tenth grade cluster of academic classrooms. The Engineering Technology vocational program area should also have adjacency to the proposed Construction Craft Laborer vocational program as students and staff will be able to utilize both sets of laboratory spaces as appropriate within the curriculum. In addition, the laboratory spaces should have exterior access so that large materials, machines or equipment can be delivered and stored or installed. Two of the laboratory spaces (manufacturing/fabrication space as well as the CNC space) should have dust collection systems, and shop sinks.

There are no plans to contract or discontinue the Engineering program at Doherty Memorial High School. Rather, the goal is to create a space that builds upon our existing program in this area, enables students to work safely, with up-to-date technology, and in a space that enables students to work collaboratively in a range of learning activities. The goal is also to provide space so that the class does not have to be broken into groups, each under additional supervision, or to have to identify work-around solutions to the current set of deficiencies as explained in the Chapter 74 Programming Submission.
Programming and Web Development

Students enrolled in this program will receive skills training that falls under the Professional and Tech Services industries. The program curriculum includes programming fundamentals, algorithm-based thinking, visual programming and game development, professional applications, robotics, and will include Advanced Placement coursework in Computer Science Principles as well as Computer Science A.

The Programming and Web Development program anticipates serving 200 students—approximately 50 students per grade. This corresponds to approximately 12% of the expected population of 1670 students. Chapter 74 regulations outline a 20:1 student to teacher ratio as a maximum. In the Worcester schools, teachers are assigned five classes each year each with an average of 27 students, with a total student load not to exceed 125 students. With a 20:1 ratio, educators within the Programming and Web Development program will not exceed this maximum student load.

Per Massachusetts DESE Chapter 74 policy, “a program designed to provide students with the requisite experience and training to successfully complete the requirements of a Chapter 74 program as outlined in the curriculum frameworks would include at least 900 hours of program-related instruction for each participating student.” Further, this program-related instructional time could be comprised of ‘shop’ time as well as program-related classroom time, referred to as Related Theory coursework in the Worcester Public Schools. Given Doherty’s expected bell schedule and with the length of each instructional period, this proposed program anticipates two periods of program-related instruction each day: one period of ‘shop’ time followed by another period of related theory supporting the curriculum.

As students are engaging in a double-block of vocational and related theory work, Programming and Web Development program will include 4 classroom/laboratory spaces. Each space will include 1:1 desktop computers, as industry-standard software programs supporting this curriculum are not supported on Chromebook devices.

The Worcester Public Schools anticipates hiring four new teachers to serve all students within this program. This will correspond to 1 teacher per grade, with each teacher implementing lessons that enable students to engage with the vocational, as well as the related theory curriculum. For the 2019-2020 school year, Doherty Memorial High School laid the foundation for this program by offering introductory courses in Information Technology. With the addition of one teacher for 2019-2020 school year, Doherty students can capitalize off their skills and industry knowledge as the program gains momentum.
A team, supported by the Programming and Web Development Advisory Council, will develop the 4-year curriculum. This team will include Doherty Memorial High educators, students, guidance and administrative staff. This curriculum development work will take place during the 2019-2020 school year and will have an expected completion date of May 1, 2020.

As part of this curriculum sequence, students will partner with district Information Technology personnel to gain practical knowledge and skills. The new school design will include space to house computer-support devices, servers, network hubs, and related technological infrastructure. Students within this trade program will learn about the varied hardware and software within, and exterior tools that support the school. District IT personnel will be able to train students as they maintain and service the technological infrastructure. During their academic and vocational coursework, students within the Programming and Web Development course will therefore gain valuable career readiness skills from current professionals.

The minimum required laboratory space for a class of 20 students is 2200 square feet. There will be four educators, and at times throughout the school day all four will be engaging with students at the same time. The proposed program will be implemented with four combination laboratory space/classrooms. Given the nature of the curriculum, each laboratory space will require a 1:1 desktop computer to student ratio. In order for students to engage with the curriculum in a range of rigorous and differentiated learning activities, additional space and furniture is needed for students-when not utilizing the computers-to work collaboratively. The desired classroom/laboratory layout would establish the computer stations together, paired with an educator’s desk and presentation space, at one end of the classroom. The other end of the room would include desk/table space, supported by technology, presentation space, wall space, etc. where students can work collaboratively on project-based work in variable-sized groups.

To promote professional collaboration and support, the four program classrooms/laboratory spaces should be in proximity with each other. These four classrooms can be supported with a centralized storage room as well as a common educator office and planning space. While these program classrooms, storage and staff spaces should be designed together, there is then no required adjacency to any other program within the school.

**Construction Craft Laborer**

The Construction Craft Labor pathway provides training for all students in all areas of the construction field, including carpentry and framing, rigging, blueprint reading, and masonry. Students will work with all types of hand tools, power tools to build projects. The Construction Craft pathway provides hands on training for students in the Construction Industry with opportunities to work in the fields of carpentry, construction, masonry, and tile setting, among others.
Skills training received in this program fits the Construction Industry and Occupations. These occupations (so called ‘hard trades’) include Apprenticeship trades, high employer need and engagement, strong wages and require little formal education and therefore present low barriers. Workers in these trades are often affiliated with organized labor unions and employer sponsored associations offering apprenticeship opportunities leading to post-secondary education and portable industry credentialing. Additionally, as evidenced by the employer survey conducted for the Central MA Regional Blueprint, entry level laborer is the number one occupation facing significant employee/candidate shortages.

The Construction Craft Laborer program anticipates serving 150 students—approximately 35-40 students per grade. This is close to 9% of the expected population of 1670 students. Chapter 74 regulations outline a 15:1 student to teacher ratio as a maximum. In the Worcester schools, teachers are assigned five classes each year each with an average of 27 students, with a total student load not to exceed 125 students. With a 15:1 ratio, educators within the Construction Craft Laborer program will not exceed this maximum student load.

Per Massachusetts DESE Chapter 74 policy, “a program designed to provide students with the requisite experience and training to successfully complete the requirements of a Chapter 74 program as outlined in the curriculum frameworks would include at least 900 hours of program-related instruction for each participating student.” Further, this program-related instructional time could be comprised of ‘shop’ time as well as program-related classroom time, referred to as Related Theory coursework in the Worcester Public Schools. Given Doherty’s expected bell schedule and with the length of each instructional period, this proposed program anticipates two periods of program-related instruction each day: one period of ‘shop’ time followed by another period of related theory supporting the curriculum.

As students are engaging in a double-block of vocational and related theory work, the Construction Craft Laborer program will include four related-theory classroom spaces as well as a common shop space for the practice and development of physical skills.

The Worcester Public Schools anticipates hiring four new teachers to serve all students within this program. This will correspond to one teacher per grade, with each teacher implementing lessons that enable students to engage with the vocational, as well as the related theory curriculum. In preparation for the development and expansion of this program, Doherty Memorial High School has begun offering courses that align with some of the vocational standards, especially those within Strand 4 (Employability and Career Readiness Knowledge and Skills) and Strand 5 (Management and Entrepreneurship Knowledge and Skills). For example, the school is now offering College and Career Readiness courses that, in part, enable students to “participate in a variety of experiences that will assist them in the development of personal,
academic and career/vocational skills.” For the 2019-2020 school year, Doherty Memorial High school hired personnel to offer and expand these elective course offerings to students. This course curriculum will serve as the foundation for students entering the Construction Craft Laborer program.

A team, supported by the Construction Craft Laborer Advisory Council, will develop the 4-year curriculum. This team will include Doherty Memorial High educators, students, guidance and administrative staff. This curriculum development work will take place during the 2019-2020 school year and will have an expected completion date of May 1, 2020.

The minimum required laboratory space for a class of 15 students is 3375 square feet. There will be four educators, and at times throughout the school day all four will be engaging with students at the same time. The proposed program will be implemented with four combination laboratory space/classrooms. Given the nature of the curriculum, each laboratory space would require traditional classroom space, allowing students to engage in group work, perform calculations, learn related theory, etc. This space would also support the student use of available, existing Chromebook technology. The adjacent laboratory space would then enable students to acquire practical skills within the trade. Given the varied range of tools and equipment, along with the varied project, hands-on work expected within the curriculum, the laboratory space will need to be versatile. Laboratory spaces will require shop sinks.

To promote professional collaboration and support, the four-program classroom/laboratory spaces should be in proximity with each other. Given the numerous and varied consumable materials, tools and equipment needed to effectively implement the curriculum, each laboratory and classroom space needs appropriate storage options. Staff will need a common educator office and planning space. These program classrooms, laboratory spaces, storage and staff spaces should be designed together, and this vocational program should be adjacent to the Engineering Technology vocational program area, as students and staff will be able to utilize both sets of laboratory spaces as appropriate within the curriculum. In addition, the laboratory spaces should have exterior access so that large materials, machines or equipment can be delivered and stored or installed.

There is no redundancy in trade programs within Doherty, i.e. no duplication of equipment, tools, or space. For example, several other vocational schools who implement the Construction Craft Laborer program also implement a range of other construction trades, including carpentry, welding, HVAC etc. For example, Medford Vocational Technical High School currently implements the Construction Craft Laborer vocational program for students. Medford also offers vocational programming in related trades including Carpentry, HVAC, and Metal Fabrication and Joining Technologies. These programs, including their equipment, staff, and space, are able to mutually support each other. Medford, and other similar schools, rather than duplicating the
space and equipment needs for Construction Craft Laborer and the other trades, have the option to work collaboratively to share the available resources. For example, when students in the Construction Craft Laborer program focus on the development of their welding skills, they are able to utilize the equipment and laboratory space in the Metal Fabrication and Joining Technologies program.

In contrast, the New England Laborers, in conjunction with the Cranston, RI Public Schools, designed and built the Construction Career Academy. In 2002, this facility opened and implements the RI vocational construction craft curriculum. As a stand-alone facility, with no other related shop spaces offering mutual support, almost 7200 square feet is dedicated to the effective implementation of the curriculum.

With the current and proposed CVTE programs for Doherty Memorial High School, there are no related shop areas that would allow for shared spaces and/or equipment. With Doherty’s current and anticipated bell schedule, there would be times throughout the day where multiple Construction Craft Laborer classes are simultaneously being run. Each individual class would be limited to 15 students, but with a total planned enrollment of 150 students there would likely be multiple needs for the classroom and related shop spaces.

Therefore, Doherty is planning for a shop space larger than the minimum 3375 square feet. The 4 associated related-theory classrooms would have adjacency to this shared shop space. The planned common shop space will encompass approximately 5000 square feet. The perimeter of this shop will include stations, with each focusing on a different skill set and providing space to utilize the equipment associated with that facet of the trade. As there are no redundant programs elsewhere in Doherty, these stations will be designed and equipped to ensure the needs of all vocational curriculum standards and competencies will be met.

While there are no related areas for the Construction Craft Laborer students to utilize, there would be ample opportunities for other school and community programs to benefit from the skills, equipment, space, and practical experiences of the Construction Craft Laborer program.

**Marketing, Management and Finance**

We currently offer CTE courses in Marketing and Business Doherty Memorial High School offers full year (1 credit) courses in Marketing I and II, Exploring Business Systems, Introduction to Business Systems and Accounting, all of which are scheduled for a 1-period block. In these courses students gain an overview of business operations and acquire computer application and presentation skills, learn essential communication skills applied to business development, entrepreneurship, management, career development and employability.
We are seeking to expand this CTE pathway to be approved as a Chapter 74 Marketing, Management and Finance CVTE certified program. CVTE programs can have a range of benefits including higher rates of college enrollment, and enhanced career skills and increased earnings as indicated by labor market research. The vision for the new building is to continue to grow these programs in a space with access to technology and hands-on opportunities for students to increase their understanding of the field.

This proposed vocational program provides skills training that fits with the Retail/Hospitality industry, which combined is the region’s second largest employment sector (19.5%). Marketing has evolved with the changes that the internet has brought to business. Professionals working in the marketing industry must be well rounded in sales, management, advertising, customer service, cultural diversity, and both qualitative and quantitative analysis. While no nationally-recognized credential is available for these skill sets, students can earn the following industry recognized credentials:

The Marketing, Management and Finance program anticipates serving 200 students, or 50 students per grade. This corresponds to approximately 12% of the expected population of 1670 students. Chapter 74 regulations outline a 20:1 student to teacher ratio as a maximum. In the Worcester schools, teachers are assigned five classes each year each with an average of 27 students, with a total student load not to exceed 125 students. With a 20:1 ratio, educators within the Marketing, Management and Finance program will not exceed this maximum student case load.

Per Massachusetts DESE Chapter 74 policy, “a program designed to provide students with the requisite experience and training to successfully complete the requirements of a Chapter 74 program as outlined in the curriculum frameworks would include at least 900 hours of program-related instruction for each participating student.” Further, this program-related instructional time could be comprised of ‘shop’ time as well as program-related classroom time, referred to as Related Theory coursework in the Worcester Public Schools. Given Doherty’s expected bell schedule and with the length of each instructional period, this proposed program anticipates two periods of program-related instruction each day: one period of ‘shop’ time followed by another period of related theory supporting the curriculum.

As students are engaging in a double-block of vocational and related theory work, the Marketing, Management and Finance program will include four classroom/laboratory spaces. Each space will include 1:1 desktop computers, as industry-standard software programs supporting this curriculum are not supported on Chromebook devices. Students will transfer these skills from the classroom to practical settings. The goal within this design process is to develop a School Store that supports students and builds culture, but that also empowers students as the School Store will be managed by students within this trade. Similarly, as the program curriculum is developed
and sequenced, the advisory team will expand the outreach and practical application opportunities for these students further into the school and community. For example, vocational students can oversee some of the logistical operations within the Doherty Cafe.

The Worcester Public Schools anticipates hiring four new teachers to serve all students within this program. This will correspond to one teacher per grade, with each teacher implementing lessons that enable students to engage with the vocational, as well as the related theory curriculum. For the 2019-2020 school year, Doherty Memorial High School laid the foundation for this program by offering introductory courses in Accounting and sections of Introduction to Business. With the hire of 1 teacher for this coming school year, Doherty students can capitalize off their skills and industry knowledge as the program gains momentum.

A team, supported by the Marketing, Management and Finance Advisory Council, will develop the 4-year curriculum. This team will include Doherty Memorial High educators, students, guidance and administrative staff. This curriculum development work will take place during the 2019-2020 school year and will have an expected completion date of May 1, 2020.

The minimum required laboratory space for a class of 20 students is 2200 square feet. There will be four educators, and at times throughout the school day all four will be engaging with students at the same time. The proposed program will be implemented with four combination laboratory space/classrooms. Given the nature of the curriculum, each laboratory space will require a 1:1 desktop computer to student ratio. In order for students to engage with the curriculum in a range of rigorous and differentiated learning activities, additional space and furniture is needed for students-when not utilizing the computers-to work collaboratively. The desired classroom/laboratory layout would establish the computer stations together, paired with an educator’s desk and presentation space, at one end of the classroom. The other end of the room would include desk/table space, supported by technology, presentation space, wall space, etc. where students can work collaboratively on project-based work in variable-sized groups.

To promote professional collaboration and support, the four program classrooms/laboratory spaces should be in proximity with each other. These four classrooms can be supported with a centralized storage room as well as a common educator office and planning space.

In addition, one of the goals of the vocational program is to provide opportunities for students to experience practical applications of the curriculum. This will be accomplished through vocational internships or coops in the community for students in the upper grades, but will include in-school opportunities as well. The Marketing, Management and Finance vocational program should have an adjacency to, or be in proximity with, the proposed school store. Students will be able to manage all aspects of this store, such as budgets and financial transactions, inventory control, marketing and awareness campaigns, personnel tracking, etc. In
addition, the new Doherty design includes a cafe, and this provides another school-based, student-centered and led enterprise.

CTE and College/Career Pathway Programming

Television Production

Doherty Memorial High School currently offers a CTE programming pathway in Television Production. Doherty’s Television (DTV) program offers students a 2-year sequence of courses. At this time, the DTV studio consists of a repurposed closet and storage room, along with a portion of a subdivided classroom. The current television studio at Doherty High School is approximately 350 square feet of renovated closet and storage space. The space is split into 2 rooms. There is a 225 square foot recording studio with insufficient overhead lighting and a green/blue backdrop unit for chroma-key recording. The second room, approximately 125 square feet, is used for editing. There are currently four desktop computers installed with power director software. The class utilizes 3 small Sony HD video cameras, a 4k Sony video camera, and two DSLR still cameras. All of the computers and cameras were obtained via fundraising, either in school or through community and crowd-funding based platforms. There has not been any funding of this equipment or studio since its last major upgrade in 2010.

The proposed new school facility would include a modernized space for students to engage with the curriculum. A modernized Television Production studio should include a space for film editing, enhancements, and would house computers and other specialized production equipment. Adjacent to this is the film studio. In addition, the space would have desks/chairs/tables for student use as they collaborate, conduct academic discourse, plan their productions and segments, receive journalism and production instruction, and engage in other varied learning activities. Current Massachusetts DESE Chapter 74 guidelines states that a Radio and Television Broadcasting vocational program would have a minimum space of 2500 square feet, providing 125 square feet of space for each of the 20 students working within the program. While Doherty’s Television Production programming pathway is not vocational, these DESE guidelines provide a sound baseline when designing a modernized, industry-standard program. Ideally, this studio would be located adjacent to the media center with green/blue screen capabilities and updated HD or 4K cameras, communication and recording equipment, desktop computer editing software, and the ability to broadcast throughout the school through multiple display areas.

Computer Science

The Massachusetts Curriculum, Frameworks for Digital Literacy and Computer Science state that “digital literacy and computer science knowledge, reasoning, and skills are essential both to prepare students for personal and civic efficacy in the twenty-first century and to prepare and
inspire a much larger and more diverse number of students to pursue the innovative and creative careers of the future. The abilities to effectively use and create technology to solve complex problems are the new and essential literacy skills of the twenty-first century” (p.7). These frameworks focus on four key domains: Computing and Society, Digital Tools and Collaboration, Computing Systems, and Computational Thinking. Students gain proficiency by integrating practices necessary to succeed in an ever-increasing technological world.

Doherty Memorial High School offers full year (1 credit) courses. The current 1-credit course offerings include Computer Science I, Computer Science II, and Introduction to Computer Programming and Advanced Placement Computer Science Principles, all of which are scheduled for a 1-period block. During the 2018-2019 school year, there were three sections of AP Computer Science Principles scheduled, serving a total of 70 students. Doherty will also offer the AP Computer Science A course during the 2019-2020 school year.

The Computer Science department is currently a part of the Mathematics Department. There are two rooms predominantly utilized for computer science courses and while these classrooms are adjacent to each other, they are not in close proximity to the majority of the mathematics classes. Both computer science classrooms have desktop computers, and the number of computers is maximized based on the safe availability of electrical connections. It is necessary to have desktop computers in order to utilize the programming software which cannot be supported on the Chromebooks. There are also a set of tablet-arm chairs available in each classroom, as non-computer science courses also are offered in these spaces due to the current lack of available classroom space for other courses.

Neither computer science classroom is designed to effectively support a 21st century STEM curriculum. The physical layout of these rooms discourages effective grouping practices, collaborative work, and flexibility. The computers are arranged on the perimeter walls, based on the pre-existing locations of the electrical outlets. Most students are not able to monitor the teacher’s work, demonstrations, etc. without being able to face their desk and/or device.

DMHS has a seven-period day, with no rotation or dropped periods. Each classroom is then available for use for seven periods each day. Therefore, there are fourteen instructional periods available in a room outfitted to some degree to support a computer science/programming curriculum.

During the 2018-2019 school year, there were two FTE staff members. Most teachers within the department provided computer-based instruction, though one had a general, non-departmentalized elective course as part of their assignment. In total, these staff provided a combined ten instructional periods of mathematics and general electives. In addition, there were several other non-mathematics classes scheduled into these rooms, due to the available space.
For the 2018-2019 school year, these twelve ‘computer’ rooms had a combined usage rate of 86% (twelve used periods out of fourteen available periods).

With the addition of new staff members to the department this year, and the addition of new courses, there is a lack of available classroom space within the computer science area, requiring classes to be scheduled in available rooms outside of the department area. This poses additional scheduling challenges as certain courses require specific software necessitating the use of desktop computers. As enrollment increases and the department continues to grow with additional staff and course offerings, the school will be challenged to find appropriate classroom space to meet these needs.

The vision for the computer science courses in the new building includes additional classrooms with advanced technology to support changes and trends in the growing field of computer science. With the anticipation of computer science becoming a graduation requirement in Massachusetts in the near future, there is a need to include flexibility to add more classes and have additional staff to meet this need. This will require consideration in the planning to meet the technical and electrical needs to support the expansion of this department and the ability to make changes to meet the advances in this rapidly growing field.

**Innovation Pathways Program (IPP)**

The Innovation Pathways Program was developed to help expand career field exploration through technical education within the Worcester Public Schools. Students participating in the program will experience an in-depth look at a career field of their interest; work towards industry recognized credentials in that area; engage in college and career planning activities; and gain experience through a summer internship or a capstone project. Worcester Public Schools has worked with many organizations and businesses to develop a program that meets the needs and interests of students as well as future labor market demands. We are proud partners with: MassHire Central Region Workforce Board, One8 Foundation, and the Worcester Regional Chamber of Commerce and Business Partners. The IPP coordinator will need an office space to meet with students in the new school design.

(Appendix C)

**Dual Enrollment/Early College**

Students who wish to pursue advanced or specialized courses beyond those offered at the school may take courses at area colleges including Assumption College, Becker College, College of the Holy Cross, Quinsigamond Community College, and Worcester State University. With our district’s participation in Early College, our students have additional opportunities to take courses through Quinsigamond Community College and Worcester State University both at the
college campus locations and at our own school. The Early College/Dual Enrollment Coordinator will require an office space in the new facility. (Appendix D)

Internships/Community Service

During the 2019-20 school year, we have been fortunate to add a full-time internship coordinator to our staff. The addition of this position has allowed us to expand the learning opportunities for students to extend beyond the walls of our school and beyond the school day. This teacher is responsible for developing and monitoring our students who are involved in internship opportunities that vary in nature, throughout our community. Additionally, although many members of our staff help to engage our students in community service projects, the addition of this position allows us to have a central location within which to organize and schedule this type of community involvement while increasing the breadth and depth of our participation. Currently, there is an office space afforded for this purpose in order to meet with students and we envision an office space in the new facility.

Virtual High School (VHS)/Edmentum

Consistent with our school and district’s mission statements, the mission of the Virtual High School is to provide students and teachers with collaborative and engaging learning opportunities and the vision is to prepare students to be successful in college, careers and life. Students and teachers at our school participate in the virtual high school program and have been involved in this program for many years. Virtual High School allows our students to participate in courses that we may not offer at our school and/or to take a course online that may not have been able to fit into their schedule. Students who participate in these courses receive support their progress is monitored by our staff. Similarly, our students use the Edmentum online platform to engage in coursework for which they may need to recover credits and/or need additional time for course mastery. Participation in this online learning helps students to achieve academically and contributes to college and career readiness. Currently, the he online learning coordinator has an office space in order to meet with students and will need office space in the new facility in order to be able to continue to offer online options for our students.
### M. Description of Core Academic Educational Activities

**Table 10**

<table>
<thead>
<tr>
<th>English Language Arts</th>
<th>ELA is a graduate requirement in the Worcester Public Schools and all students in Grades 9-12 take ELA each year. Students will gain mastery of a range of skills and applications so that they can read, comprehend and analyze increasingly rigorous literary texts representing a variety of genres, cultures, and perspectives. They will draft and edit clearly written and logically organized arguments, informative/explanatory, critical, comparative, and analytical essays, and narratives using evidence from texts and for a range of purposes, emphasizing clear, logical writing patterns; word choice; a variety of rhetorical strategies; and use of literary conventions and stylistic devices. Students utilize technology to research, write and publish their work. They participate in large- and small-group collaborative discussions and use the conventions of the English language correctly. Journalism and Creative Writing are offered as elective classes. Academic Literacy is a support class for students who need a double dose of ELA. Students who excel in the subject and have an interest in exploring literature and honing their rhetorical skills are encouraged to participate in AP Language and Composition and/or AP Literature and Composition.</th>
</tr>
</thead>
</table>
Mathematics

Math is a graduate requirement in the Worcester Public Schools and all students in Grades 9-12 earn four credits in mathematics including Algebra 1, Geometry, and Algebra 2. The mathematics program provides opportunities for all students to interpret and persevere in solving real world, complex mathematical problems using strategic thinking. Students will be effective communicators and collaborators who construct viable arguments and critique the reasoning of others in order to make decisions, draw conclusions and solve problems. The curriculum is delivered using varied and differentiated strategies to meet the needs of all learners. Instructional methods include whole- and small-group instruction, collaborative activities, hands-on, project-based lessons, modeling of strategies, integration of technology using the distributive technology model. While this is the goal in all classes in this department, limited classroom space often impacts the ability to fully implement these strategies/activities on a more frequent basis. Technology is integrated into the curriculum and students make use of graphic calculators, and Chromebooks to support individual and collaborative activities.

Upper level classes such as Statistics allow students to apply the problem solving skills they have acquired to real-life situations and focus on probability, analyzing numerical data, statistical studies, using recursion in models and decision making, using functions in models and decision making, decision making in finance, and networks and graphs. Courses such as AP Statistics, AP Calculus AB and AP Calculus BC rely incorporate technology such as graphing calculators and challenge students to learn through discovery.
| Science | Three credits of Lab Science are a required graduation requirement for all students. Courses provide students with opportunities for in-depth exploration of the standards identified in the Massachusetts Curriculum Frameworks. The curriculum is delivered using varied and differentiated strategies to meet the needs of all learners. Instructional methods include whole-and small-group -instruction, modeling of strategies, procedures and experimentation, whole- and small-group discussion, collaborative activities, project-based exploration of topics, laboratory experimentation, and the integration of technology using the distributive technology model. While this is the goal in all classes in this department, limited classroom and laboratory space often impacts the ability two fully implement these strategies/activities on a more frequent basis.

Students in lab science classes will conduct lab investigations, collect and analyze data, and explore content information from a variety of texts and media sources. Students who have a deeper interest in exploring specific aspect of science may opt to take Human Anatomy, AP Biology, AP Chemistry, AP Environmental Science and/or AP Physics. Science courses utilize dedicated laboratory space, flexible seating/grouping, as well as collaborative laboratory activities, small- and large-group class discussion and modeling of procedures, and results. Teachers incorporate technology into their classes as students use computers for research, collaboration and sharing. |
<table>
<thead>
<tr>
<th>Social Studies</th>
<th>Three credits in Social Studies (World History II, United States History I and II) are required for graduation. The Social Studies department has high expectations that all students will understand the political, social, economic, historical and legal developments throughout human history by guiding them to be critical thinkers, analytical readers, thoughtful communicators and independent learners. Educational activities implemented in the department include but are not limited to the use of differentiated instructional, whole-and small-group-instruction, modeling of strategies, whole- and small-group discussion including Socratic Seminars and debates, collaborative activities, project-based learning activities, and the integration of technology to support research skills, analysis of historical perspectives and cause and effect. These skills build upon critical reading (texts and primary and secondary source documents, charts, maps, and visuals) and thinking skills. Students are asked to analyze documents in order to prove their thesis in Document Based Questions (DBQ). Cross-disciplinary collaboration between Social Studies and English departments support the use of these skills. Students may choose to take one of the social studies electives: Legal Aspects, Psychology, and Sociology. Advanced Placement courses engage students in advanced-level course work. Students may elect to take AP World History, AP US History, AP Human Geography, AP Government and Politics, and AP Psychology. These classes build upon the skills presented in earlier courses and add to the levels of discourse, reading and writing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Language</td>
<td>The curriculum is delivered using varied and differentiated strategies to meet the needs of all learners and to support the use of the target language. Instructional methods include whole-and small-group-instruction, modeling of strategies and oral and written use of the target language, whole- and small-group discussion, collaborative activities, project-based exploration of topics, and the integration of technology using the distributive technology to research the culture and history of the countries associated with the target language and to practice speaking and listening skills using Audacity, a multi-track audio editor and recorder.</td>
</tr>
</tbody>
</table>
The curriculum is delivered using varied and differentiated strategies to meet the needs of all learners as they develop English fluency. Instructional methods include whole-and small-group instruction, modeling of and oral and written use of the English language, whole- and small-group discussion, collaborative activities, project-based exploration of topics, and the integration of technology using the distributive technology to engage in critical reading and multi-draft writing and editing activities to improve communication skills While this is the goal in all classes in the ELL department, limited classroom space often impacts the ability to fully implement these strategies/activities on a more frequent basis.

EL Students access the curriculum in content area classes taught by teachers Sheltered English Immersion certification who use a range of strategies to support EL students in content area classes. Students also participate in Language and/or Literature Labs A, B, C, or D taught by certified EL teachers who employ instructional strategies to support and increase student abilities in the four domains: speaking, listening, reading, and writing.
| Special Education | Special Education students are engaged core academic curriculum and are assigned a faculty advocate and scheduled into the appropriate classes as indicated in their IEP. The curriculum is delivered using varied, individualized and differentiated strategies to meet the needs of all learners. Instructional methods include whole-and small-group -instruction, modeling of strategies, use of both oral and written use of language, use of manipulatives and other hands-on learning tools, whole- and small-group discussion such as modeling read-aloud and think-aloud skills, collaborative activities, project-based exploration of topics, and the integration of technology using the distributive technology to engage in critical reading and multi-draft writing and editing activities to improve communication skills.

Inclusion students receive support from a certified Inclusion teacher in their general education classes. Study Skills class supports students in the use of individualized and differentiated strategies to support their ability to access content area curriculum. Students in the STEP classes engage in small group and individualized instruction using a variety of individualized and differentiated strategies in accordance with their IEPs. Technology is integrated into lessons and classroom activities are guided by the district’s High Quality Reading Writing, and Discourse document. Resource classrooms use individualized and differentiated strategies along with scaffolded instruction to support students’ ability to access the curriculum that meets their needs as identified in their IEP. Life Skills students work with dedicated and certified Life Skills teachers practicing the four domains of language acquisition: speaking, listening, reading and writing as well as in problem solving and numerical skills. |

### Coordinated Program Review

The last Coordinated Program Review for the Worcester Public School was on September 9, 2016, September 28, 2016 and October 21, 2016 (see Appendix E).

### Core Academic Educational Activities/Outdoor Connections
Doherty Memorial High School utilizes all of its space, both inside the building and outside the building to support learning opportunities for all students. Some of the student-centered clubs and activities utilize outdoor space throughout the year to engage students and help them to form life-long connections with outdoor activities and interactions with nature. Doherty’s Outdoor Club engages students in a variety of activities such as hiking, camping, and snowshoeing. The Envirothon Team is a hands-on environmental problem-solving competition for high school-aged students. Students in this group complete training and testing in five natural resource categories: i.e., soils/land use, aquatic ecology, forestry, wildlife, and current environmental issues. Students are involved in our school/community garden. In past years, vegetables grown in the garden have been shared with community members and with our own food service program.

The vision for the new school is to increase the use of outside space to support both curricular and extracurricular activities. During the visioning sessions involving members of the school and community, several members discussed the importance of students having access to outdoor spaces, including the opportunity to engage in classwork or learning activities outside. This could include having the science classes come out to the field to measure biodiversity, art students finding inspiration or capturing scenes from the community, theatrical productions or open-air stages affording differing venues for productions, and provide opportunities for other classes, groups, clubs, athletic teams, and community organizations to occupy this versatile space. Currently, we have a very active outdoor club and our Envirothon team is award winning and would benefit from and help to maintain this space along with those students who are active in community service.

Students in the Life Skills class will have access to outdoor space through a grade level entry. This will prove access to the garden which can be used as a teaching tool to support skills learned through the ADL Center. Other classes, such as science classes can also benefit from access to the garden as will classes in the Visual Arts department.

To support this need, the design of the new Doherty Memorial High School will include an exterior amphitheater style space, including a flat stage or production area. This exterior space will be supported by audio/visual technologies, including a large exterior projection screen, and the capacity to connect with microphones/speakers. A mobile projection cart can be brought to the space to support the needs of these varied organizations. The use of this projector/outdoor screen would be incorporated into all types of educational programming including core academic learning activities, student performances, and project presentations such as the ETA Learning Fairs, athletics, community building activities, and community use. Outdoor space with tables and seating would allow classes and clubs to access the grounds and to meet outside.
A Typical Day in the Life of a Student

Table 11

<table>
<thead>
<tr>
<th>Activity or Subject</th>
<th>Program Details and Educational Benefit*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Refer to descriptions of core academic educational activities</td>
</tr>
<tr>
<td><strong>Free Breakfast</strong></td>
<td>All students are eligible to participate in the breakfast program at school at no cost to the students or their families.</td>
</tr>
<tr>
<td><strong>Period 1</strong></td>
<td>Core Academic or Elective Class</td>
</tr>
<tr>
<td><strong>Period 2</strong></td>
<td>Core Academic or Elective Class</td>
</tr>
<tr>
<td><strong>Period 3</strong></td>
<td>Core Academic or Elective Class</td>
</tr>
<tr>
<td><strong>Period 4</strong></td>
<td>Core Academic or Elective Class</td>
</tr>
<tr>
<td><strong>Lunch</strong></td>
<td>All students are eligible to participate in the lunch program at school at no cost to the students or their families.</td>
</tr>
<tr>
<td><strong>Period 5</strong></td>
<td>Core Academic or Elective Class</td>
</tr>
<tr>
<td><strong>Period 6</strong></td>
<td>Core Academic or Elective Class</td>
</tr>
<tr>
<td><strong>Period 7</strong></td>
<td>Core Academic or Elective Class</td>
</tr>
<tr>
<td><strong>After-School</strong></td>
<td>Students may participate in extra help/tutoring sessions, clubs, activities and/or sports</td>
</tr>
</tbody>
</table>

Clubs and Activities

Doherty Memorial High School offers a range of clubs and activities to support student interests. Clubs are student-driven and are supported by volunteer faculty advisors. Clubs meet after school in different areas of the school. Depending upon the specific activity.

The vision for the new school includes space for student clubs to meet after-school in safe, supervised areas of the building. Since most of these activities occur after the school day designated meeting areas which would allow for supervision, access to restrooms, phones and technology would benefit these activities and help to support student involvement in their school. Students should be able to exit the building easily after participation in a club without having to walk through the entire building to reach the exit.
Some clubs and activities occur later in the day or early evening at the school indicating a need for meeting space close to the main entrance of the building. Storage space for club materials would benefit the groups as would a dedicated area to promote/advertise upcoming meetings and events. A calendar board or interactive screens dedicated to clubs and activities displayed in prominent spaces throughout the building (main foyer, cafeteria, media center, gym, and academic neighborhoods/academies).

Some of the student-centered clubs have included the outdoor club and the community garden. Outdoor space with tables and seating would allow clubs to access the grounds and to meet outside.

Clubs and Activities

Table 12

<table>
<thead>
<tr>
<th>Anime Club</th>
<th>Highlanders Who Code</th>
<th>Stand for the Silent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book Club</td>
<td>Humanities Scholars Collaborative</td>
<td>Student Council</td>
</tr>
<tr>
<td>Chorus*</td>
<td>Jazz Band*</td>
<td>Student Wellness Club</td>
</tr>
<tr>
<td>Class Officers</td>
<td>Madrigals*</td>
<td>Student Workroom</td>
</tr>
<tr>
<td>College Success Institute</td>
<td>Math Team</td>
<td>Superintendent’s Student Advisory</td>
</tr>
<tr>
<td>Community Service</td>
<td>Meditation Club</td>
<td>Theater Club</td>
</tr>
<tr>
<td>Cultural Dance</td>
<td>Mock Trial Team</td>
<td>UNICEF Club</td>
</tr>
<tr>
<td>DTV*</td>
<td>Model UN</td>
<td>United Nations Club</td>
</tr>
<tr>
<td>Envirothon</td>
<td>Musical</td>
<td>Vex Robotics</td>
</tr>
<tr>
<td>First Knights Chess Club</td>
<td>National Honor Society</td>
<td>Weightlifting Club</td>
</tr>
<tr>
<td>Food Drive</td>
<td>Outdoor Club</td>
<td>Yearbook*</td>
</tr>
<tr>
<td>Gamers Club</td>
<td>PEACH Club</td>
<td>Yoga Club</td>
</tr>
</tbody>
</table>
A Typical Week in the Life of a Student

Doherty Memorial High School operates on a seven-period day schedule with no variations. Every class meets every day.

Advanced Placement Course Enrollment Doherty Memorial High School

Table 13

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Total # AP Students</td>
<td>299</td>
<td>286</td>
<td>337</td>
<td>432</td>
<td>468</td>
<td>unknown</td>
</tr>
<tr>
<td>Number of Exams</td>
<td>554</td>
<td>482</td>
<td>561</td>
<td>722</td>
<td>805</td>
<td>741</td>
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<tr>
<td>Administered</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Number of Courses</td>
<td>18</td>
<td>18</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>Offered</td>
<td></td>
<td></td>
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<td>---------------------------------------</td>
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<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Art History (District-Wide)</td>
<td>1</td>
<td>2</td>
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</table>
### N. Transportation Policies

The Worcester Public Schools offers transportation (bus) services to eligible students. Based on geographical and population distributions, Worcester is broken into quadrants. Students, based on their address, are assigned to a comprehensive ‘home’ school. Students who live 2.0 or more miles away from their assigned home school are provided, without a fee, bus services. Students under the 2.0-mile limit are responsible for getting to and from school.

Students seeking to attend a comprehensive school other than their home school are able to apply for special permission. If granted this permission, students are required to provide their own transportation, even if their address is more than 2.0 miles from the school.

All students with a driver’s license are currently able to receive a parking sticker, without a fee, and park on campus. All parking lots are at, or over, capacity and therefore are available on a first-come, first-served policy. The number of students requesting parking stickers is steadily increasing, and in the near future the school administration will likely consider identifying and implementing selection criteria to better manage the limited parking spaces.

Doherty currently has one vocational program, and all eighth-grade students across all Worcester districts are eligible to apply for admission to this program. With the MSBA proposal, Doherty is working to add three additional trade programs. If successful, all Worcester students will again be eligible to apply for admission. Any student enrolled in a vocational program is provided bus transportation for as long as they remain in the program, and as long as they live 2.0 or more miles from the school. This policy extends to students from across the district.

With our current academic programming, including one vocational program serving students from across the district, and based on fairly steady population density and housing rates, the school has required nine large buses and five small buses to service the transportation needs of the students. This has remained steady for the past three years, and increased from eight and four

---

**United States History**

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<tr>
<th></th>
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<th>26</th>
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**World History**

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**Economics**

|          | Course not offered | Course not offered | Course not offered | Course not offered | Course not offered | 49 |
respectively. These figures will certainly increase as new vocational programs, as well as the advanced academy, become available. Similarly, the location of a potential new school would have ramifications for the transportation needs of the students.

Per their IEP or 504 plan, eligible students are also provided transportation services. Based on the individual needs and circumstances, these students are provided door-to-door transportation via small bus routes.

In total, 681 students were provided transportation services during the 2018-2019 school year.

At this time, there are no planned changes to the Worcester Public Schools’ transportation policies. However, the school’s final location and educational programming decisions may/will impact the transportation needs of the students in attendance.

O. Functional/Spatial Relationships

There are several functional and spatial relationships and adjacencies that we envision as important to the design and program development for the new/renovated Doherty Memorial High School. We have highlighted some of the priority areas below.

- The ninth-grade academies to be located adjacent to one another in a “neighborhood” in order to provide the necessary additional support to these students as they transition to high school. Each academy and team of teachers associated with the academy will have a common space to support increased collaboration, project-based learning, and interactive learning experiences.

- The Medical Suite to be located near the Principal’s office in order to be able to support the nurses when needed.

- The English Language Arts and Social Studies department areas, serving students in grades 10-12, to be adjacent and share a common area, “neighborhood”, in order to foster interdisciplinary connections in the humanities.

- The Mathematics and Science, Technology and Engineering department areas serving students in grades 10-12, to be adjacent and share a common area, “neighborhood”, in order to foster interdisciplinary connections in STEM/STEAM.
• The Performing and Visual Art areas, “neighborhood”, to be close in proximity to support the comprehensive Art program and to foster collaboration and be equally accessible to all students and staff.

• The gymnasium, the auditorium, and the cafeteria to be used not only by all students and staff, but also to be a community space for use after school hours that can be secured from the academic areas of the building.

• Special education classrooms/learning centers to be distributed and integrated throughout our fully handicapped accessible, ADA compliant, new/renovated facility.

• The Media Center, with the desired Maker Space, to be centrally located ensuring equitable access to all students and staff.

Building Systems

The design and construction of the new Doherty Memorial High School will include and reflect modern technologies, energy efficiencies, sustainable practices, and supportive infrastructure.

The mechanical system design for the school will reflect the needs identified above. The facility will be fully air-conditioned. Using gas as a primary energy source, the school will be supported by high-efficiency Lochinvar gas boilers. The boiler will be centrally located and include overhead, garage door style access. The school will include full mechanical system controls with easy to access systems. The roof will be accessible through a walkout access door, not a ladder.

The school’s plumbing needs will reflect current best practices. Students, staff and visitors will have access to gender neutral bathrooms utilizing low water urinals. The kitchen will have grease traps with easy cleanout capacity, and the facility will have oil separator traps with easy cleanout access.

Students, staff and visitors will have access to restroom facilities. Throughout the building and into key community spaces, the design will include numerous gender-neutral restroom facilities to support the needs of all in the building, as well as sets of male/female restrooms. In key spaces, the facility will provide personal shower capacity.

Doherty Memorial High School, seeking to implement sustainable and environmentally friendly practices, will install water stations throughout the building. These will allow for direct water access as well as a faucet for students, staff, and visitors to refill water bottles as needed.
To support an efficient facility, the electrical system will incorporate smart technologies and energy efficient options. The school will have fully controllable LED lighting. Staff will be able to raise and lower the auditorium lighting, e.g. light bars, thereby removing the need for a lift to replace bulbs. A generator providing back-up power will be stored on site.

P. Security and Visual Access

Security and visual access requirements are currently implemented at Doherty Memorial High School. There are approximately 55 working cameras that are strategically placed throughout the school building, an increase from 20 cameras from the 2017-2018 school year. The cameras are located in hallways, the cafeteria, several sections around the parking lot, and several of the school’s many entrance/exit doorways. The cameras are monitored in two administrative offices. There is a camera and electronic unlocking system, which includes a microphone and speaker feature, at the main entry door to the building. The main office staff has access to this camera and can provide access to visitors and students. Despite the number of functional cameras, there are numerous sections of the building for which there is no security coverage. The current layout of the building includes many 90-degree turns and mid-corridor doorways that limit visual access.

The WPS has standardized district-wide on the use of Genetec for video surveillance as well as AXIS brand surveillance cameras. This standardization allows the WPS to reduce on-going training for staff and lower maintenance costs and maintenance timeframes for hardware.

The design for the new building includes plans that all interior circulation and major spaces will have camera surveillance, as well as the outside perimeter around the school and in the parking lot, thereby providing full saturation of the campus. With the increased size of the new building, its expected student and staff utilization during non-school hours, and its increased public access and use, there will be the need for thorough state-of-the-art camera and security systems to cover all areas of the building and campus. Video surveillance cameras will be a combination of fixed view, panoramic and pan-tilt-zoom (PTZ). Camera location and required view will dictate the camera type. A conduit to be provided for cameras around athletic fields and locations not directly attached to the main structure such as parking garage/overhang.

The physical layout of the building design should eliminate blind spots under stairwells, so a dedicated camera is not required. Infrastructure for cameras at all locations should be provided, even if the funding is not in place immediately. Monitoring stations will be provided for the main office, SRO office, principal office and assistant principal offices.

The main office and principal’s office will have a large format display connected to the surveillance system for monitoring of multiple camera feeds at once. Remote access to the
camera feeds may be granted via the main Genetec system. The intent is to provide login access for Police Department to access the security system, per the existing Memorandum of Understanding (MOU). Data storage will be required for all camera footage capable of storing a minimum of 33 days of video. Server hardware will be required to process the archiving of all camera footage to data storage.

The access point to the school will be separated by an entrance corridor to the main office and will be monitored and controlled by personnel in the main office. This main building entrance will be adjacent to the main office and within a line of sight to the office. Access through these doors will be controlled via a video intercom/intelligent door controller connected to the district’s main access control system and will be controlled via main office staff. Entry will be allowed to the school through exterior and interior vestibule doors at the start of the school day. After the start of school, the interior vestibule doors will be locked.

A door from the vestibule will provide direct access to the main office through the use of a video intercom and an intelligent door control unit that is tied into the district’s main access control system and is controlled by the main office staff. All visitors, during and after school, must go through the main office to access the school. After school, access to the building will also be through the main office.

All exterior doors, along with portions of Information Technology spaces, will utilize an electronic card access. The IT spaces housing the Main and Intermediate Distribution Frames (MDF and IDF respectively), the storage space, as well as the Support Specialist Office/Meeting spaces will be accessible via an electronic card access.

Across the district, the Worcester Public Schools is standardizing on the utilization of access cards, as opposed to key fobs, to leverage existing ID and timecard printing standards being used district-wide. If a card is lost the access rights to that card can be terminated. All exterior entrances will have a card reader to allow and log access. Critical facility locations (such as data closets and server room) will have a card reader to allow and log access. An added benefit to the ID access card protocol is that card reader access will be controlled centrally based on schedule or cardholder permissions.

Effective P.A. and phone communication systems is vital between all classes, laboratories, shops, and community spaces. This will be accomplished with a telephone/intercom system that allows direct calls to be made from one school space to another. In addition, the laboratory/shop spaces will include a visual cue when an incoming call is made. Often the noise levels in these spaces can prevent the staff member from hearing the intercom or call: a visual, such as a flashing light, in addition to the ring will ensure that all rooms can be contacted.
All classrooms and general spaces will include digital clock displays. These will have the capability of broadcasting messages, for example an emergency notification, when needed.

All communications (including bell system which is tied into phone) will be on emergency power generators. All phones in classrooms will have capabilities (with access code) to call out and to page. The Worcester Public Schools’ standard is the Shoretel/Mitel voice-over-ip phone system and phones. In addition, each classroom to have two emergency call switches, which opens a direct speaker from classroom to office.

Per existing code, a repeater system/signal booster will be provided for police and fire communications. Both Worcester Police and Fire Departments are recommended to use the same frequency for this DAS “repeater” system.

The design of the new school allows for vehicular access around the full perimeter of the building. Bollards, planters or a more welcoming design feature that provides similar security protections are desired at the front entry. To discourage after-hours access to the athletic fields by vehicles, the design calls for the potential use of bollards, gates or similar features will be used as deterrents.

The Worcester Fire department prefers that no key is required to access the grounds.

Appropriate representatives from various first responding emergency agencies, e.g. Worcester Fire, Worcester Police, and Worcester Emergency Management personnel, will be consulted in the planning process and associated requirements will be incorporated into the preferred solution.

Principals update and review the emergency response plan every year and train all faculty members. A minimum of two times a year, Doherty Memorial High School faculty and students participate in a mock light lock down and a full lock down. All district schools have adopted and implement the ALICE Model (Alert, Lockdown, Inform, Counter, and Evacuate) when responding to a crisis. Additionally, all administrators have In Force 911 installed on their cell phones which provides a means to contact all emergency personnel in the city within seconds should an emergency situation warranting that action were to occur. Principals and the school-based emergency team lead the faculty in practicing a medical emergency drill. Doherty High participated in their last Medical Emergency Drill on August 26, 2019.

Beginning in the 2015-16 school year, a School Resource Officer (SRO) was assigned to the building to support a safe and secure school environment. Doherty Memorial High School has one School Resource Officer (SRO) who is employed by the Worcester Police Department, as a police officer and is trained in the national SRO model of teacher/mentor/law enforcement triangle. The SRO requires a private office within the school to conduct mediations or meetings
with parents, the SRO may also use a conference room when necessary. The goal of the SRO is to establish positive relationships with students and faculty, to monitor and deter altercations in the cafeteria and hallways, and as a last resort to engage in an incident. The SRO works closely with school administrators and utilizes a community policing method to build positive relationships with students. However, the staff and teachers at Doherty High have the primary responsibility to intervene during in-school disputes.

The SRO currently has an office near the first-floor assistant principals' offices.

Our vision for the new school is to place the SRO’s office on the first floor adjacent to the principal’s office. The office needs to provide space for the officer to meet in private, with administrators, students, and families. The office will need access to technology as well as a separate and secure phone line.

Audio/Visual

Doherty currently has a variety of audio/visual and projection equipment throughout the building. Over the years, several classroom spaces have been outfitted with wall or ceiling mounted projectors. The school has acquired approximately 24 carts outfitted with a projector and a document camera. These carts are shared between all staff throughout each day.

The communal spaces, including the library, cafeteria, auditorium, and gymnasium have no wired infrastructure to support audio capabilities, such as speakers or microphones. Instead, the school has a portable unit that is brought to the location. Power, microphone and speaker cords are run along the floor and/or wall and typically are taped down or covered with a carpet swatch for safety purposes. The speakers and amplifier set-up are not fully compatible with the physical layout of the varied spaces; therefore the audio technology’s efficacy is limited.

The goal within a new facility is to provide effective, up-to-date technological access for all stakeholders - students, staff, district personnel, and community members - within all rooms and spaces in the school. Classroom spaces would include Epson bright link short-throw projectors, document cameras wired for use, Chromecast/Apple TV capacity, speech reinforcement technologies, and flat-screen televisions or monitors available for varied (independent or mirrored) displays in and around classrooms. Communal spaces, including the cafeteria, auditorium, library, common or meeting rooms, would have similar projection capacity, and the larger presentation spaces will provide audio technologies, including speakers, podiums, microphones, etc.

Like any facility utilizing technology, the school will require space to store equipment along with a space to maintain or repair damaged devices. The proposed design includes an
Information Technology Office serving many purposes: students will learn alongside district IT personnel as the professionals service the school network; the IT professionals have a dedicated workspace that enables collaboration; a computer network storage room; as well as a storage and maintenance space. The proposal is to utilize the IT storage and maintenance space in a dual capacity - serving the IT as well as the audio/visual needs of the school.

**Conclusion**

It is our hope that throughout this document we have been able to capture and communicate to you, the commitment, collaboration, community, culture and climate of our school and that you will support our desire to establish a new and more suitable home for the Doherty family and for our surrounding community. We are grateful to the MSBA to have been given this opportunity. As Jim Rohn states, “Whatever good things we build end up building us” and it is our hope that the new building will support the programs we will offer and help us to prepare our students to be capable and contributing members of our community, both locally and globally.
References
AVID (n.d.) AVID. Retrieved from https://www.avid.org/


Music and Arts (n.d.) Classroom Piano and keyboard labs https://www.musicarts.com/cms/Classroom-Piano-Labs

APPENDIX

Appendix A: Refer to Section 3.1.2.D.4

Appendix B

<table>
<thead>
<tr>
<th>Early College High School Program</th>
<th>Quick Reference Information Sheet</th>
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<tr>
<td><strong>Program Description</strong></td>
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<td>The Early College program is a secondary/post-secondary partnership involving Worcester State University, Quinsigamond Community College and Worcester Public Schools. This collaborative program enables high school students to participate in college/career readiness activities, in addition to taking academic and career credit course offerings at their high school or one of the college campuses. Students earn at least 3 college and high school credits simultaneously and graduate from high school with a high school diploma with up to 12 college credits. The goal of the program is not only to increase the percentage of college ready high school graduates, but also to provide students with a “head start” on earning a two to four year college degree. The collaborative program ensures that students receive support in both academics and advising in addition to wraparound services to promote success and completion. Family engagement activities will also be a component of the Early College Program.</td>
<td></td>
</tr>
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</table>

| **Program Requirements**          |                                   |
| High School students follow the traditional 9th and 10th grade course schedule and begin to explore career pathways by participating in the following: |
| • Introduction to College and Career Readiness Course (9th grade) |
| • College and Career Readiness Course (10th grade) |
| Beginning in the 11th grade, students choose a pathway. In addition, students participate in the following: |
| • College and Career Readiness II Course |
| • 1-2 college courses at their high school or on one of the college campuses |
| In 12th grade students fulfill high school requirements through the completion of both high school and college courses. Upon graduation students transfer 12 college credits to their college of choice and continue their study to complete an associate or bachelor’s degree program. |

| **Program Participation/Commitment** |                                   |
| Program participation is open to any student enrolled in a WPS high school. Students commit to complete a minimum of 12 college credits prior to completing high school. |

| **Pathway Offerings**             |                                   |
| • Healthcare – Nurse Education |
| • Advanced Manufacturing |
| • Computer & Information Technology |
| • Engineering & Biotechnology |
| • Elementary Education Transfer Option |
| • Hospitality and Recreation Management |
| • 100 Males to College |
| • General Studies |

| **Program Capacity**              |                                   |
| Year 1 – 120 students participate in dual enrollment |
| Year 2 – 240 students participate in dual enrollment |
| Year 3 – 300 students participate in dual enrollment |

| **Application Process**           |                                   |
| Students complete an Early College Program application in their 9th grade. If the number of applicants exceeds the number of seats available, selection will be made by lottery. |

Worcester Public Schools
October 5, 2018
Appendix C

Worcester Public Schools  
Innovation Pathways Quick Reference Sheet

Empowering students with a career vision and the skills to pursue it with confidence.

Program Description

The Innovation Pathways Program was developed to help expand career field exploration through technical education within the Worcester Public Schools. Students participating in the program will experience an in-depth look at a career field of their interest; work towards industry recognized credentials in that area; engage in college and career planning activities; and gain experience through a summer internship or a capstone project. Worcester Public Schools has worked with many organizations and businesses to develop a program that meets the needs and interests of students as well as future labor market demands. We are proud partners with:
- Workforce Central Region Workforce Board
- One8 Foundation
- Worcester Regional Chamber of Commerce and Business Partners

Program Requirements

- College and Career Readiness I and II – classes taken at home high school
  - provides student support, college and career planning, industry connections, technology knowledge and skills, management and entrepreneurship, employability skills, and financial skills
- 2 Technical Classes from Program List below
  - 100-hour Paid Internship or Capstone
    - After successful completion of both technical courses
    - Internships will be targeted for summer months based on industry availability
    - Students receive WPS credit on their transcript
- 2 Courses that qualify as College Level
  - AP or Dual Enrollment classes

Program Participation/Commitment

Program participation is open to any student enrolled in a WPS comprehensive high school. Preference will be given to 9th graders during the application period. After acceptance, students will complete one technical class each of the following two years and then a summer internship or capstone.

Created: October 5, 2018

Appendix D  Family and Community Guide

Appendix E Coordinated Program Review

Additionally, Refer to section 3.1.2.D.9 & 10
Appendix F: Refer to 3.1.2.C Chapter 74 Program

Chapter 74 Programming Submission

Appendix G: Refer to 3.1.2.D.11

C. Chapter 74 Program
   Submission
July 19, 2019

Ms. Jessica Deleconio
Massachusetts School Building Authority
40 Broad Street, Suite 500
Boston, Massachusetts 02109

Via; Email

Dear Ms. Deleconio:

The District is proposing four Chapter 74 programs for the new Doherty Memorial High School. This submission for the Educational Vision for Chapter 74 Programming is provided in advance of the Preliminary Design Proposal (PDP) anticipated to be submitted to the MSBA on September 10, 2019.

The following are attached per the 'Submittal Requirements':

1. Chapter 74 programming submission form for the four programs.
2. MSBA signature form on WPS letter head
3. Certified copy of the School Committee meeting minutes for Chapter 74 programming

I have reviewed the attached documents and confirm that the District's School Committee has officially voted and approved the attached submission.

Sincerely,

TISHMAN CONSTRUCTION CORPORATION OF MASSACHUSETTS

[Signature]

Eugene Caruso
Owner's Project Manager

cc: Russ Adams, City of Worcester
Maureen Binienda, Superintendent of Schools
Robert Poltrast, TCCMA,
Katie Crockett, LPA
Chapter 74 Programming Submission

Educational Vision for Chapter 74 Programming
Provide a description of the District's vision for its education delivery methodology for Chapter 74 Programming.

Programs to be Included in the Proposed Project

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<tr>
<th>Chapter 74 Program Offerings</th>
<th>Current Enrollment</th>
<th>Proposed Capacity</th>
<th>Comment</th>
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<td>Engineering &amp; Technology</td>
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<td>Existing Program, space to be expanded</td>
</tr>
<tr>
<td>Programming &amp; Web Development</td>
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<td>New Program</td>
</tr>
<tr>
<td>Marketing Management &amp; Finance</td>
<td>0</td>
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</tr>
<tr>
<td>Construction Craft Laborer</td>
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<tr>
<td><strong>Total</strong></td>
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<td><strong>950</strong></td>
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</table>

Programs to be Expanded or Contracted

<table>
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<tr>
<th>Program</th>
<th>Current Enrollment</th>
<th>Approved Capacity</th>
<th>Proposed Capacity</th>
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<td>Engineering &amp; Technology</td>
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<td><strong>Total</strong></td>
<td><strong>380</strong></td>
<td><strong>400</strong></td>
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</table>

Instructions – Using Narratives and/or tables provide the following by program for all programs that are to be added, expanded, or contracted. Supplement the information with attachments as appropriate.

CVTE Engineering & Technology
- Description of deficiencies in the existing program (if applicable);
- Description of how deficiencies will be addressed (if applicable);
- Rationale for adding, expanding, contracting or discontinuing;
Evidence that a Program Advisory Committee is in place for new or modified programs;
- Documentation that the proposed program adjustments and additions were planned in consultation with its advisory committee based on adequate and timely information regarding student, workforce, and job development demands or job market trends; and
- Planned budget for updated program offering;

Engineering and Technology Academy (ETA)

Doherty Memorial High School is a comprehensive high school which currently houses one CVTE program – Engineering. The Engineering and Technology Academy (ETA) vocational program serves students from across the district, and each year has more students applying than the current space can accommodate.

The ETA program serves approximately 100 students in each grade – up to 400 total. This accounts for approximately 25% of the current school population. Students completing all CVTE requirements receive a technical certificate, in addition to their diploma. Given the complex content knowledge required for work in the career, our primary goal is to provide students with a strong foundation in content knowledge along with skills so that, as students enter college, they are well prepared to continue their engineering/technology education. From a review of local (Massachusetts) and national labor market projections, there is a clear demonstrable need to students to enter this profession, albeit by first earning some level of post-secondary education.

CVTE Engineering Program – Occupational Projections

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Employment 2016</th>
<th>Employment 2026</th>
<th>Percent Change</th>
<th>Typical Education needed for Entry</th>
<th>2018 Mean Annual Wage</th>
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</thead>
<tbody>
<tr>
<td>Civil Engineers</td>
<td>7,733</td>
<td>8,494</td>
<td>+9.8%</td>
<td>Bachelor's degree</td>
<td>$94,210</td>
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<tr>
<td>Electrical Engineers</td>
<td>8,317</td>
<td>9,068</td>
<td>+9.0%</td>
<td>Bachelor's degree</td>
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<tr>
<td>Mechanical Engineers</td>
<td>9,349</td>
<td>10,029</td>
<td>+7.3%</td>
<td>Bachelor's degree</td>
<td>$98,190</td>
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<tr>
<td>Engineering Teacher,</td>
<td>1,843</td>
<td>2,184</td>
<td>+18.5%</td>
<td>Doctoral or Professional</td>
<td>$135,140</td>
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<tr>
<td>Postsecondary</td>
<td>Employment 2016 (in thousands)</td>
<td>Employment 2026 (in thousands)</td>
<td>Percent Change</td>
<td>Typical Education needed for Entry</td>
<td>2018 Median Annual Wage</td>
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<tr>
<td>---------------</td>
<td>-------------------------------</td>
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<tr>
<td>Civil Engineer Technician</td>
<td>667</td>
<td>727</td>
<td>+9.0%</td>
<td>Associate's degree</td>
<td>$55,420</td>
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<tr>
<td>Electrical and Electronics Engineering Technician</td>
<td>4,023</td>
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<td>+0.7%</td>
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<tr>
<td>Mechanical Engineering Technician</td>
<td>1,038</td>
<td>1,082</td>
<td>+4.24%</td>
<td>Associate's degree</td>
<td>$60,100</td>
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</table>

United States Employment Projections – Engineering and Related Occupations
U.S. Department of Labor, Bureau of Labor Statistics

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Employment 2016 (in thousands)</th>
<th>Employment 2026 (in thousands)</th>
<th>Percent Change</th>
<th>Typical Education needed for Entry</th>
<th>2018 Median Annual Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Engineers</td>
<td>303.5</td>
<td>335.7</td>
<td>+10.6%</td>
<td>Bachelor's degree</td>
<td>$86,640</td>
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<tr>
<td>Electrical Engineers</td>
<td>188.3</td>
<td>204.5</td>
<td>+8.6%</td>
<td>Bachelor's degree</td>
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<tr>
<td>Mechanical Engineers</td>
<td>288.8</td>
<td>314.1</td>
<td>+8.8%</td>
<td>Bachelor's degree</td>
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<tr>
<td>Engineering Teacher, Postsecondary</td>
<td>47.6</td>
<td>54.6</td>
<td>+14.6%</td>
<td>Doctoral or Professional degree</td>
<td>$101,720</td>
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<tr>
<td>Civil Engineering Technician</td>
<td>74.5</td>
<td>81.1</td>
<td>+8.8%</td>
<td>Associate's degree</td>
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<tr>
<td>Electrical and</td>
<td>137.0</td>
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<td>+2.0%</td>
<td>Associate's degree</td>
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<tr>
<td>Field</td>
<td>ETA</td>
<td>ETE</td>
<td>Change %</td>
<td>Degree</td>
<td>Salary</td>
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<tr>
<td>----------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Mechanical Engineering Technician</td>
<td>46.1</td>
<td>48.4</td>
<td>+5.0%</td>
<td>Associate's degree</td>
<td>$56,250</td>
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<tr>
<td>Career/Technical Education teachers, secondary school</td>
<td>7.7</td>
<td>83.7</td>
<td>+6.4%</td>
<td>Bachelor's degree</td>
<td>$60,250</td>
</tr>
</tbody>
</table>

The number of available classrooms and laboratory spaces, combined with their physical layout and available equipment, create deficiencies that challenge the department’s attempted delivery of a 21st century engineering education:

- The ETA serves approximately 100 students per grade. This corresponds to a 20:1 student to teacher ratio. In the Worcester schools, teachers are assigned 5 classes each year, and the ETA currently has 4 CVTE Engineering teachers. There is no planned change to this enrollment pattern for the new school.

- The minimum required laboratory space for a class of 20 students is 2200 square feet. There are 2 laboratory spaces serving the students in the ETA: one space is approximately 645 square feet, and the other is approximately 1200 square feet. Even combined, there is not enough laboratory space allotted to meet the requirements. In this current space, teachers work together to ensure students are working safely: for example, a teacher on his/her prep period will come to the engineering classroom and supervise a portion of the students working in the classroom space while the CVTE teacher supervises a group of students into the laboratory space. The entire class cannot fit into either of the laboratory spaces at the same time. In the current space, there is no means to increase the square footage of the laboratory space.

- The classroom and laboratory spaces are accessible through standard sized exterior and interior doorways. There is no loading bay oversized door, for example. Thus, all equipment and machinery is limited in dimensions and size by the width and height of these doorways. In the current space, there is no means to change the dimensions of the entry doorways.

- Each engineering classroom doubles as a computer lab, as each course curriculum relies in part on the utilization of software/hardware. Given the relatively small classroom sizes (ranging from approximately 835 to 1100 square feet) paired with the fixed locations of the computers, there are challenges to having students work collaboratively in groups or with space...
available for them to use non-computer based instructional materials. Invariably, student groups can be observed working in the hallways, under the supervision of other staff, or in spaces without a lot of room. In the current space, there is no means to change the dimensions of the classrooms.

There are no plans to expand, contract, or discontinue the Engineering program at Doherty Memorial High School. Rather, the goal is to create a space that enables students to work safely, with up-to-date technology, and in a space that enables students to work collaboratively in a range of learning activities. The goal is also to provide space so that the class does not have to be broken into groups, each under additional supervision, or to have to identify work-around solutions to the current set of deficiencies.

The ETA, as one educational program within the larger comprehensive high school, is provided funding through the school based budgeting process. Doherty is allocated additional per pupil (CVTE students only) funding within the Instructional Materials account provided to each school during district budgeting sessions. ETA staff members, based on curriculum needs, suggestions from industry and post-secondary representatives regarding software and technology, as well as current industry trends, provide a list of requested materials and equipment to school personnel for procurement.

Refer to the following attachment for supplemental information:
   A. Engineering & Technology Program Advisory Committee Form

New Programs to be Added
Attach the following for each proposed new program from DESE's Application Package for Vocational Technical Education New Program Approval M.G.L.c.74:
   ● Completed School District and Program Information Page,
   ● Completed Statement of Assurances and Signature Block,
   ● District's responses to criteria 1, 2, and 3 on the Chapter 74 Vocational Technical Education Proposed Program Application Checklist.

See the following attachments for supplemental information:
   B. Labor Market and Student Demand Narrative
   C. Programming & Web Development
      1. DESE Part A Application
      2. Programming & Web Development Initial Program Advisory Committee Form
      3. Programming & Web Development Total Hours of Instruction Worksheet
   D. Marketing & Finance
      1. DESE Part A Application
      2. Marketing & Finance Initial Program Advisory Committee Form
3. Marketing & Finance Total Hours of Instruction Worksheet

E. Construction Craft Laborer
   1. DESE Part A Application
   2. Construction Craft Laborer Initial Program Advisory Committee Form
   3. Construction Craft Laborer Total Hours of Instruction Worksheet

F. Statement of Assurances and Superintendent Signature

Confirm that the District understands that this submittal documents the District’s desire to investigate potential changes to existing Chapter 74 programming as part of its Feasibility Study only, does not commit the District or the MSBA to any particular Chapter 74 Program offerings at the Doherty Memorial High School project, all local decisions and approvals regarding Chapter 74 programming offerings are to be finalized prior to the District submitting its Preferred Schematic Report to the MSBA, and that DESE review and acknowledgement of the District’s proposed additions, expansions, contractions, and/or discontinuations to its current Chapter 74 program offerings must be provided with the District Preferred Schematic Report.

Confirm that the District further understands that, among other things, program area associated with Chapter 74 programming and total square footage of the Doherty Memorial High School project shall be subject to the approval of the MSBA’s Board and that the final approval of a Proposed Project at the [insert school/project name] school project shall be within the sole discretion of the MSBA’s Board.
A. ENGINEERING & TECHNOLOGY

1. Program Advisory Committee
Program Advisory Committee for Vocational Technical Education Form

A school district official must complete this form and submit it with the Application for Vocational Technical Education New Program Approval M.G.L.c.74. Massachusetts Department of Elementary and Secondary Education staff will then review for compliance with the Vocational Technical Education Regulations.

<table>
<thead>
<tr>
<th>District: Worcester</th>
<th>School Year: 2019-2020</th>
<th>Program Name: Engineering and Technology Academy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitator: (May be school district staff) <strong>Annette Cochran</strong></td>
<td>Date of Completion: 7/4/2019</td>
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</table>

Provide the first and last name of all committee members. (NOTE: School district staff from ANY school district may not be members of the Program Advisory Committee. Do not list them below.)

Provide the address for each member including street name & number, city/town, state, zip code, daytime or cell phone telephone number and email address.

Provide the company name for each business/industry representative; the organizational title for the organized labor representative; the name of the school/college/university for the postsecondary representative and the organizational title for the registered apprenticeship program representative.

1Organized Labor representation is not required on individual PACs if the school’s General Advisory Committee includes such representation.

2Postsecondary representation is required on all PACs. That requirement can be met with representatives of postsecondary education institutions or registered apprenticeship programs.

3Prior to the approval of a new program, the parent/guardian and student representation requirement may be met by involving one or more parents and students not yet associated with the program. Their role is to ensure that the perspectives of parents and students are considered in the development of the program.

<table>
<thead>
<tr>
<th>COMPOSITION (check as applicable)</th>
<th>TYPE OF REPRESENTATION (check one box for each name listed)</th>
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</thead>
<tbody>
<tr>
<td>Person with Disabilities</td>
<td>Racial or Linguistic Minority</td>
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<table>
<thead>
<tr>
<th>Annette Cochran</th>
<th></th>
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<tbody>
<tr>
<td><a href="mailto:cochrang@worcesterschools.net">cochrang@worcesterschools.net</a></td>
<td>Doherty Memorial High School - Educator</td>
</tr>
<tr>
<td>DMHS</td>
<td></td>
</tr>
<tr>
<td>299 Highland St</td>
<td></td>
</tr>
<tr>
<td>Worcester, MA 01602</td>
<td></td>
</tr>
<tr>
<td>978-807-6539</td>
<td>X</td>
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</table>

<table>
<thead>
<tr>
<th>William Feraco</th>
<th></th>
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<tbody>
<tr>
<td><a href="mailto:FeracoW@worcesterschools.net">FeracoW@worcesterschools.net</a></td>
<td>Doherty Memorial High School – Educator</td>
</tr>
<tr>
<td>DMHS</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Email</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Ryan Hackenson</td>
<td><a href="mailto:HackensonR@worcesterschools.net">HackensonR@worcesterschools.net</a></td>
</tr>
<tr>
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<td>DMHS</td>
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<td>Worcester, MA 01602</td>
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<tr>
<td></td>
<td>508-246-6899</td>
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<tr>
<td>John Staley</td>
<td><a href="mailto:StaleyJ@worcesterschools.net">StaleyJ@worcesterschools.net</a></td>
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<td>Worcester, MA 01602</td>
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<tr>
<td></td>
<td>774-239-0236</td>
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<tr>
<td>Bradley Lauer</td>
<td>238 South Bolton Rd</td>
</tr>
<tr>
<td></td>
<td>Bolton, MA</td>
</tr>
<tr>
<td></td>
<td>978-779-0774</td>
</tr>
<tr>
<td>Dr. Martha Cyr</td>
<td><a href="mailto:mcyr@wpi.edu">mcyr@wpi.edu</a></td>
</tr>
<tr>
<td></td>
<td>Worcester Polytechnic Institute</td>
</tr>
<tr>
<td></td>
<td>508-831-6709</td>
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<tr>
<td>Theresa Adams</td>
<td><a href="mailto:tadams@wpi.edu">tadams@wpi.edu</a></td>
</tr>
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<td>Worcester Polytechnic Institute</td>
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<tr>
<td>Betty Lauer</td>
<td>670 West Boylston St</td>
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<tr>
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</tr>
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<td></td>
<td>508-854-4247</td>
</tr>
<tr>
<td>John Finlay</td>
<td>625 Chandler St</td>
</tr>
<tr>
<td></td>
<td>Worcester, MA 01602</td>
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<tr>
<td></td>
<td>508-757-1595</td>
</tr>
<tr>
<td>Sean Nodurft</td>
<td>65 Brantwood Rd</td>
</tr>
<tr>
<td></td>
<td>Worcester, MA 01602</td>
</tr>
<tr>
<td>Name</td>
<td>Relationship</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Kathleen Nodorft</td>
<td>Parent of Sean Nodorft, class of 2022</td>
</tr>
<tr>
<td>65 Brantwood Rd</td>
<td></td>
</tr>
<tr>
<td>Worcester, MA 01602</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:Knodurft65@gmail.com">Knodurft65@gmail.com</a></td>
<td></td>
</tr>
<tr>
<td>508-320-0123</td>
<td></td>
</tr>
<tr>
<td>Nana Kwasi Adu Peprah</td>
<td>Doherty Memorial High School Student, Class of 2022</td>
</tr>
<tr>
<td>56 Edgeworth St</td>
<td></td>
</tr>
<tr>
<td>Apt 15</td>
<td></td>
</tr>
<tr>
<td>Worcester, MA 01605</td>
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<tr>
<td><a href="mailto:gftyadu@msn.com">gftyadu@msn.com</a></td>
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<tr>
<td>508-615-0631</td>
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<tr>
<td>Gifty Adu</td>
<td>Parent of Nana Adu Peprah, class of 2022</td>
</tr>
<tr>
<td>56 Edgeworth St, Apt 15</td>
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<tr>
<td>Worcester, MA 01605</td>
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<tr>
<td>James Alicata</td>
<td>Industrial Technology – Dean</td>
</tr>
<tr>
<td>160 Pearl St</td>
<td>Fitchburg State University</td>
</tr>
<tr>
<td>Fitchburg, MA 01420</td>
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<tr>
<td><a href="mailto:jallicata@fitchburgstate.edu">jallicata@fitchburgstate.edu</a></td>
<td></td>
</tr>
<tr>
<td>978-665-3407</td>
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</tbody>
</table>

Add more rows as needed
B. LABOR MARKET & STUDENT DEMAND

1. Labor Market & Student Demand
   Narrative
Worcester Public Schools has recognized the success of Career Vocational Technical Education in providing students opportunities to be both College and Career Ready. This success is well documented in the success of students enrolled in Worcester Technical High School as well as the other Career Technical Programs in the district. As such WPS has worked diligently in providing the resources to ensure that these programs are at capacity and continue to operate with the latest materials and equipment. However, even with these efforts, WPS is still falling short of providing access to CTE/CVTE programming for all students. Data indicates that over 400 students annually are waitlisted for CTE/CVTE programming within the District. Thus WPS Central Administration convened a panel to expand access to these much needed and successful programs. Recent efforts of this panel have included the addition of CTE/CVTE programs at the new South Community High School facility (the expansion of a current Chapter 74 approved Diesel Technology program, Culinary Arts Program and Early Childhood Education Program); as well as the approval of an Innovation Pathways Program providing technical skills training in four areas (IT, Health, Civil Engineering, and Advanced Manufacturing) for students from all District conventional high schools (North, South, Doherty, Burncoat, UPCS, Claremont). The IPP program training takes advantage of the capital investment at WTHS. When Doherty Memorial High School was selected for a new building, the panel convened to assess the opportunity to again expand CTE/CVTE programming to meet the needs of both the labor market and student demand.

The panel selected programming based on detailed analysis of local industry needs, student demand, and the delivery capabilities and strengths of the current programs within the District and at area institutes of post-secondary education/training. This analysis was reinforced in both focus groups and surveys with Worcester Public School (WPS) students at Doherty Memorial High School. The analysis resulted in the selection of three areas of new programming for the new Doherty Memorial High School: Programing and Web Development, Construction Craft Laborer, and Marketing/Finance.

**Labor Market Demand**

The District team began with a review of the Central Massachusetts Regional Workforce Blueprint, dated April 6, 2018 to identify local industry demand. This document was created by the Local Workforce Development Board (MassHire) in partnership with local education and economic development partners to coordinate strategic workforce priorities. The specific goals of this panel were to:

- Identify the growing industries and occupations to be prioritized by system partners that will assist in the economic growth of the region.
- Develop a joint set of action steps to address skills gaps within these industries/occupations.
- Align and drive programming and service delivery across the three secretariats to meet the needs of the priority industries/occupations.
- Help more residents gain the credentials, education and job skills needed for successful careers within high-demand career pipelines.

The planning team met frequently to refine the population and labor market data used to make final decisions about priority industry sectors, priority occupations within those sectors, educational opportunities and economic development issues.
Using State and regional criteria set by the planning team, the following three industries were deemed priorities for the region:

1. Healthcare and Social Assisting
2. Manufacturing
3. Transportation, Warehousing, and Logistics

Additionally, the panel identified the following industries as critical for the region:

1. Professional and Tech Services
2. Construction
3. Retail and Hospitality
4. Education
Also from the Central MA Regional Blueprint:

"**Industries currently facing the most significant workforce development challenges:**

*The planning team has identified Healthcare & Social Assistance, Manufacturing, and Transportation, Warehousing, and Logistics as facing the most significant workforce development challenges, followed by the critical industries identified above, Professional and Technical Services, Construction, Retail/Hospitality, and Education."

The District deemed that the three priority industries were adequately covered through existing programming. Currently Allied Health career skills training is present through Chapter 74 programs at both WTHS and North High School as well as through the Innovations Pathway Program with a combined enrollment of 421 students (113 at WTHS, 16 at IP, and 292 at North). Manufacturing skills training is present with a Chapter 74 program at WTHS as well as in the Innovations Pathway Program with a combined enrollment of 43 students (34 at WTHS and 9 at IP). While a relatively low enrollment, the District and its partners continue to drive enrollment through various educational and advertisement strategies (i.e. Career Awareness, Manufacturing Day, tours, mailings, exploratory presentations, etc.). Lastly Transportation skills training is present through Chapter 74 Diesel Technology program at South Community High School, Chapter 74 Automotive Technology program at WTHS and a Career Technical Education (CTE) Automotive program at Burncoat High School with combined enrollment of 253 students (103 at WTHS, 42 at Burncoat, and 108 at South).

With the three priority industries being addressed sufficiently, the District turned its attention to the four critical industries for Central Massachusetts. A review of these industries and the relevant occupations was conducted against current educational pathways within the District as well as surrounding educational institutions. A review of current District offerings for each of the critical industries revealed the following programming:

- **Professional and Tech Services**
  - Chapter 74 Programming and Web Development at WTHS - 30 students
  - Chapter 74 Information Support Services and Networking at WTHS - 28 students
  - Information Technology Program in the Innovations Pathway Program - 14 students

- **Construction**
  - Chapter 74 Carpentry Program at WTHS - 71 students
  - Chapter 74 Plumbing Program at WTHS - 54 students
  - Chapter 74 Electrical Program at WTHS - 74 students
  - Chapter 74 HVAC/R Program at WTHS - 27 students
  - Chapter 74 Painting Design and Decorating Program at WTHS - 72 students

- **Retail and Hospitality**
  - Chapter 74 Marketing Finance and Banking Program at WTHS - 57 students
  - Chapter 74 Hospitality and Restaurant Management Program at WTHS - 73 students

- **Education**
  - Chapter 74 Early Childhood Education Program at WTHS - 76 students
  - Chapter 74 Early Childhood Education Program at South Community High School - 40 students
Currently the District offerings for skills training in the four critical industries is primarily restricted to students enrolled at WTHS (10 of the 12 programs are housed at WTHS). At this time, WTHS is at capacity for student enrollment further restricting access for students that did not get accepted to WTHS from accessing opportunities for skills training in these critical industries.

A review of the Pathway Mapping Tool, on the MA DESE Website revealed the following pathways in the vicinity of Doherty Memorial High School for:

- **Programming Web Development**
  - WTHS - Chapter 74 - 30 students
  - Baypath Regional High School - Chapter 74 - 57 students
  - Milford High School - Non-Chapter 74 - 179 Students

- **Marketing/Finance**
  - WTHS - Chapter 74 - 57 students
  - Millbury High School - Non-Chapter 74 - 9 students
  - Milford High School - Non-Chapter 74 - 183 students

- **Construction Craft Laborer**
  - None in central MA, needed to include search of all programming statewide
  - Medford Vocational High School - Chapter 74 - 6 students
  - Putnam Vocational High School - Non-Chapter 74 - 17 students
  - BMC Durfee High School - Non-Chapter 74 - 51 students

The District selection of the above three programs for inclusion in the new Doherty High School is in direct alignment with the Central MA Region Blueprint. These programs meet the State criteria for priority industries and occupations:

- High employer demand
- High demand and high wage
- Talent Gaps
- Career Pathways

Additionally, the programs fit the regional planning teams additional criteria to identify industries and occupations that best fit with higher need job seekers:

- Strong Employer engagement - employers willing to become actively engaged in working with workforce stakeholders
- Low barriers to employment - employment opportunities that do not exclude based on barriers to employment such as those that exclusively seek bachelor's degree or higher
- Alignment with high need job-seeker populations - employment opportunities available to those that are ready to enter the workforce or those with the ability to enter with short term education, training, or support.
Programming Web Development

Students enrolled in this program will receive skills training that falls under the Professional and Tech Services industries. Occupations in this industry include software, and Web developers, as well as Cyber security and IT technicians. Students will have the opportunity to earn industry recognized credentials, such as:

- **CertiPort MTA Certifications**
  - Development (Programming)
    - Exams Software Development Fundamentals (VB or C#)
    - Web Development Fundamentals (VB or C#)
    - Windows Development Fundamentals
    - .Net Fundamentals
    - Mobile Apps Development Fundamentals
    - Gaming Development Fundamentals
    - HTML 5 Application Development Fundamentals
    - Database Administration Exam Database Administration Fundamentals
    - IT Pro Exams Networking Fundamentals Windows OS Fundamentals
    - Security Fundamentals
    - Server Admin Fundamentals

- **CompTIA Certifications**
  - A+
  - CDIA+
  - CTP+
  - CTT+
  - Linux+
  - Network+
  - PDI+
  - Project+
  - Security+
  - Storage+
  - Server+
  - Cloud Essentials
  - Green IT
  - Healthcare IT
  - IT for Sales
  - IT Fundamentals

This industry enjoys an anticipated growth in STEM and IT fields and offers high average wages (Web Developers earn a mean annual salary of $108.4K according to job postings for the Worcester Metropolitan Statistical Area on Burning Glass).

Construction Craft Laborer

Skills training received in this program fits the Construction Industry and Occupations. These occupations (so called ‘hard trades’) include Apprenticeship trades, high employer need and
engagement, strong wages (Building trades $52.7K) and little formal education presenting low barriers. Workers in these trades are often affiliated with organized labor unions and employer sponsored associations offering apprenticeship opportunities leading to post secondary education and portable industry credentialing. Additionally, as evidenced by the employer survey conducted for the Central MA Regional Blueprint, entry level laborer is the number one occupation facing significant employee/candidate shortages.

Students enrolled in this program can earn the following industry recognized credentials:

- with successful completion of High School Program
  - Scaffold Builder – User
  - OSHA 10 Hour Construction Outreach
  - OSHA 30 Hour Construction Outreach
- with successful completion of High School Program and participation in Apprentice Program
  - American Welding Society – Vertical Fill-it Certification
  - American Welding Society – Horizontal Fill-it Certification
  - American Welding Society – Overhead Fill-it Certification
  - American Crane Institute Hoisting & Rigging Certification
  - Microbial Remediation
  - Department of Transportation Flagging
  - Masonry Contractors Association of America
  - Forklift Trainer Certification – Rough Terrain
  - Marr Elevator Work Platform Certification

Marketing/Finance

This program provides skills training that fits with the Retail/Hospitality industry, which combined is the region’s 2nd largest employment sector (19.5%). Marketing has evolved with the changes that the internet has brought to business. Professionals working in the marketing industry must be well rounded in sales, management, advertising, customer service, cultural diversity, and both qualitative and quantitative analysis. While no nationally-recognized credential is available for these skill sets, students can earn the following industry recognized credentials:

- Occupational Safety and Health Administration (OSHA) – Ten-hour General Industry
- Certification • National Retailers Federation Customer Service Certification

This industry has low educational barriers and multiple industry pathways (see appendix). Additionally, as identified in the Central MA Regional Blueprint survey sent to over 400 employers, Marketing and Sales growth showed prominently in the top three challenges facing employers, indicating a need for employees with strong marketing and sales skills. This survey also revealed that sales staff rank in the top ten occupations facing a significant shortage of employees/candidates.
Each of the above proposed programs also enjoy strong regional employer engagement as well as post secondary educational pathways leading to multiple industry pathways as evidenced by both the Program Advisory Committee members and industry pathways (see appendix).
Student Demand

The Worcester Public Schools' students utilize an online college and career readiness suite of tools called Naviance. In Naviance, students as early as middle school (Grade 6) begin their preparations for ultimately entering the workforce, whether directly upon graduation or, instead by continuing their education into some sort of post-secondary institution before then seeking employment. Within Naviance, students engage in varied structured learning activities - activities with one goal of aligning their interests and skill sets to occupations. The larger goal is to expose students to a wider range of current and expected employment opportunities, as often students are limited in their knowledge of the opportunities available to them. One set of learning activities, essentially a series of personality profiles, generates for students lists of occupations that match their current skills. Another set of tools looks at student interests-i.e. desired occupations-and identifies for students the suggested coursework needed for success in that specific field. These suggestions includes both secondary and post-secondary, if applicable, courses and trainings.

The Worcester Public Schools administration is able to generate reports from these Naviance tools. These reports allow the staff to export the results, searches, suggestions, profiles, etc. of the students, and from this the school personnel can make informed educational decisions with students.

Doherty currently offers a non-Chapter 74 CTE program in Marketing. During the 2018-2019 school year, there were 80 students taking the Marketing 1 course, with 3 sections offered. This course was limited to three sections due to the limitations in available staffing. For the 2019-2020 school year, three sections are again scheduled, with a similar student population. Currently, only students whose home school is Doherty are eligible to participate in this CTE program, and again Doherty can only offer three sections of this course currently. With additional personnel and space, the proposed CVTE Marketing, Management and Finance program will be able to serve the demand from Doherty's own population, but also draw on interested students from across the district.

Doherty also currently offers a non-CVTE, non-CTE sequence of courses in computer science and computer programming. Students can take the elective, and sequential, Computer Science I and Computer Science II courses. During the 2018-2019 school year, there were 90 students taking the Computer Science I course, with 3 sections offered. This course was limited to three sections due to the limitation of available staff, as well as by limited technology. There are currently 2 computer labs outfitted available for computer science and computer programming work that contain the necessary specifications to support the curriculum. In addition, given the nature of the curriculum, the capacity of each section is determined by the number of desktop computers within each room. While more readily available, the Chromebooks used within the school are not compatible with the software and associated hardware needed.

During the 2018-2019 school year, the school offered 2 sections of the Introduction to Computer Programming course, with 49 students enrolled. Again, the available staff and technology limited the number of sections scheduled, and therefore limited the number of students who could engage with this curriculum. Year to year, the school is running these Computer Science and Computer Programming courses at capacity. During the 2018-2019 school year, based on student interest and with a strong foundation provided by these two pathways, Doherty scheduled three sections of AP Computer Science Principles, with a combined load of 70 students. The number of interested students continues to grow.
Given the sustained interest in both introductory pathways, along with the large interest in the AP Computer Science Principles course, Doherty is running the AP Computer Science A course, for which these introductory courses, along with the AP Computer Science Principles course, serve to provide the pre-requisite skills and content knowledge necessary to successfully engage with the curriculum.

Additionally, the district’s Innovation Pathways Program, which provides vocational instructional opportunities for students from the comprehensive high schools, including Doherty, offers a program focusing on Information Technology, Programming, and Web Essentials. While this program is entering its second year, there are already more applicants for these IT based trades for which there is space. The Innovation Pathways Program serves students from across the district, and as such each school is allotted a set number of positions within each trade. While this program is fortunately running at capacity, there is still a demonstrable need for more programming. This need is evident from across the district, as again each comprehensive school effectively had more applicants for which the Innovation Pathways Program course could safely service.

With additional personnel and space, the proposed CVTE Programming and Web Development program will be able to serve the demand from Doherty’s own population, but also draw on interested students from across the district.

As previously indicated, the District reviewed existing data from current CTE/CVTE offerings as well as student focus groups and student surveys to gauge student interest in the proposed new CVTE/CTE offerings.

Existing data indicates that there has consistently (last 5+ years) been over 400 students ‘waitlisted’ for entry into current District CVTE/CTE programs. It is clear that students want the opportunity to be both College and Career Ready. However, to confirm student interest in future offerings, student focus groups and an electronic survey of students were conducted specifically at Doherty Memorial High School.

The student focus groups were conducted in SY 2017-2018 as part of the planning process for the Innovation Pathways Program offerings. Students at Doherty Memorial High School were asked to rank four specific programs (based on Central MA Regional Blueprint priority industries) from 1 through 5 with 5 assigned the highest interest. Results of these focus groups indicate that of the 130+ students surveyed 37% and 40% ranked Information Technology and Construction programming, respectively, with either a 4 or a 5.

To further gauge student interest an electronic survey was administered to 8th grade students at Forest Grove Middle School (feeder school to Doherty) as well as 9th and 10th grade Doherty students. The survey was administered through Naviance and garnered 1,255 student responses. As indicated in the chart presented below, Business/Marketing/Finance was overwhelmingly the program field of choice.
The following chart represents data gathered from the Naviance Career Cluster Finder and is based on the responses of 1255 students. These students include the 9th and 10 grade from Doherty and 8th grade at Forest Grove Middle School.

Naviance Career Cluster Finder Responses

Part of the mission of the Worcester Public Schools is to provide each student with opportunities to engage with a rigorous, academically excellent curriculum. Further, the faculty and staff place an emphasis on educating the whole child. For many students, there is a demonstrable need for vocational opportunities beyond what is currently offered within Doherty, and the Worcester Public Schools as a district. This need is evident based on several factors:

- there is more student interest in Doherty's current CVTE/CTE programs than there is room available;
- there is more student interest in Worcester's vocational/technical high school than there is room available;
- labor market trends, as identified in the Central MA Regional Blueprint, show a favorable projection in many occupations, notably those occupations for which Doherty proposes to create and implement CVTE/CTE programming;
- professionally, educators recognize the value of providing skills-based curriculum, in addition to an emphasis on college preparatory academics; and
- students clearly desire a pathway to college and/or a career. Their occupational interests are varied, and there are currently gaps in their desired interests with what Doherty and the Worcester Public Schools currently provides.
The Worcester Public School population is steadily increasing. With investments in the city infrastructure, housing and entertainment, and the educational offerings available for families, the expected rise in the student population necessitates a wider range of offerings.

In conclusion, the creation of additional CVTE/CTE offerings within the new Doherty Memorial High School in the areas of Programming/Web Development, Marketing/Finance, and Construction Craft Laborer is in alignment with local workforce needs and projections as evidenced by the data presented from the Central MA Regional Blueprint. The proposed CVTE/CTE programming meets student demands and interest in pursuing career pathways in Information Technology, Construction, and Marketing/Finance. Additionally, these programs enjoy strong employer engagement leading to opportunities for internships/co-operative education and hands on learning to reinforce and build upon a students employability and technical skills. As well as, the opportunity to earn and learn. The proposed programs align with registered pre-apprentice and apprenticeship programs again offering students the opportunity to earn industry recognized credentials. Lastly, for students seeking it, these programs feed pathways to higher education with local post-secondary institutes. The latter is often with accumulated college credit earned while in high school through dual enrollment and articulation agreements with Quinsigamond Community College, Worcester State University and other local colleges/universities/technical schools.
Appendix - Career Pathways

Construction

ENTRY LEVEL - Helpers, Entry-Level Trainees
High School Diploma/GED
General Math
Equipment Usage
Active Listening
Communication Skills
Average wage: $15/hr

ENTRY LEVEL - Laborers, Painters, Roofers, Construction & Maintenance
Successful Apprenticeship testing, HS/GED
Equipment operation, monitoring & repair
Geometry/Algebra
Technical Reading Comprehension
Average wage: $17/hr

MIDDLE SKILLS - Journeyman Laborer, Carpenters, Plumbers, Electricians, Masons
Successful completion of Apprenticeship training program
Time Management, Installation, Repair, Mathematics
Active Listening, Reading Comprehension
Average wage: $20-30/hr

MIDDLE SKILLS - Job Site Foreman, Supervisor, Superintendent
Journeyperson plus experience
Computer Skills Including CAD and MS Office
Communication Skills, Leadership Skills, Organization & Interpersonal Skills
Average wage: $38-40/hr

EXECUTIVE LEVEL - Engineers, Project Managers, Managers
Bachelor's Degree and/or exp. or applicable technical certification/degree
Reading Comprehension, Critical Thinking, Coordination, Instructing, Mathematics
Time Management, Personnel Management, Logistics Management, Budget Management
Average wage: $50-52/hr

Note: All salary data taken from Salary.com for Worcester, MA area.
Information Technology

ENTRY LEVEL — Technical Support Analyst
- Help Desk Experience
- Problem Solving Skills
- Excellent Communication Skills
- Strong Customer Service Skills
- Operating Systems
  Average Wage: $16/hr

ENTRY LEVEL — Programmer
- Analyzing Information
- Problem Solving Skills
- Software Development Fundamentals
- Attention to Detail
  Average Wage: $21/hr

MIDDLE SKILLS — Web Developer
- Javascript, JQuery, HTML
- HTML5, CSS, CSS3
- Ability to Meet Strict Deadlines
- Security Principles
  Average Wage: $33/hr

MIDDLE SKILLS — Database Administrator
- Bachelor's Degree in Computer Science
- Certifications Preferred
- Database Security, Promoting Process Improvement, Problem Solving, Preventing Technical Information, Operating Systems
  Average Wage: $34/hr

MIDDLE SKILLS — Software Engineer
- Master's Degree / MBA Preferred
  Average Wage: $39/hr

Note: All salary data taken from Salary.com for Worcester, MA area.
Retail

**ENTRY LEVEL – Retail Salesperson, Sales Associate, Cashier**
- Customer Service Skills
- Meeting Sales Goals
- Product Knowledge
- Basic Knowledge of Mathematics
- Excellent Communication Skills

**ENTRY LEVEL – Account Representative**
- BA/BS degree in Business Administration, Sales or relevant field
- Develop trusted advisor relationships with key accounts
- Exp. with CRM software (e.g., Salesforce, CRM or Hubspot) and MS Office
- Excellent listening, negotiation and presentation abilities

**MIDDLE SKILLS – Assistant Store Manager**
- BSc/BA in Business Administration or relevant field; MSc/MA is a plus
- Good math skills with the ability to create and analyze reports, spreadsheets and sales statistics
- Coordinate daily customer service operations, evaluates employee performance and identifies hiring and training needs

**MIDDLE SKILLS – Head Store Manager**
- BS degree in Business Administration or relevant field
- Customer management skills, strong organizational skills, good communication and interpersonal skills
- Develop business strategies to make customers' pool, expand store traffic and optimize profitability
- Meet sales goals by planning, motivating, mentoring and providing feedback to sales and store leaders; Business acumen

**LEVEL 5**

**Executive Level – Area Manager**
- BS/BA in business administration, retail management, or similar field
- Lead a team of store managers towards effective collaboration and alignment of goals
- Exercise sound financial management skills to ensure stores are profitable and stay within budget
- Knowledge of performance evaluation metrics and principles
- Strong understanding of optimization of store operations and standards for success
- Working knowledge of ERP software

Average wage: $45/hr

Note: All salary data taken from Salary.com for Worcester, MA area.
C. PROGRAMMING & WEB DEVELOPMENT

1. DESE Part A Application
2. Initial Program Advisory Committee Form
3. Total Hours of Instruction Worksheet
Part A-Preliminary Application Package for Vocational Technical Education New Program Approval M.G.L.c.74

Updated: August 2018
New 2018 Part A Prelim

Chapter 74 New Program Application PART A (Preliminary)

Disclaimer: Sections of law, regulations and guidelines are referenced in this document. The official copies of the law, regulations and guidelines as filed with the Massachusetts Office of the Secretary of State are implemented by the Massachusetts Department of Elementary and Secondary Education (DESE). The Massachusetts Department of Elementary and Secondary Education does not represent this document as a replacement for the official law, regulations and guidelines documents.

Overview

The Application for Vocational Technical Education New Program Approval is submitted by a school district that seeks approval of a new vocational technical education program pursuant to Massachusetts General Law Chapter 74 (M.G.L.c.74) (Chapter 74) and the Vocational Technical Education Regulations (603 CMR 4.00). The application consists of Part A (Preliminary) and Part B (Concluding). An approved program is known as a Chapter 74-approved vocational technical education program. State aid is calculated on enrollment in programs that have approval status on November 1 of any given year. The Massachusetts Department of Elementary and Secondary Education cannot retroactively approve programs after November 1 for state aid or any other purpose.

Part B is not to be submitted unless the district has been notified in writing by the Department to proceed.

Part A

In order to ensure that school districts interested in developing new Chapter 74 programs are first establishing key foundational elements for those programs, the Department has created a three-step process.

1. Submission of an Intent to Apply comprises the first step. Submission of an Intent to Apply does not obligate the submission of a Part A application, but all Part A applicants must have first submitted an Intent by the published deadline.
2. The elements found in the Part A (Preliminary) Application Form below comprise the second step.
3. Applicants whose Part A applications are judged viable will be invited to submit Part B (Concluding) applications, the third step in the process.

Before Submitting Part A

Before submitting a Part A (Preliminary) application, school districts should undertake the following tasks.

1. Create a program advisory committee (PAC). The program advisory committee, including representatives from industry, postsecondary education, and organized labor (if applicable) will offer guidance and insight as potential applicants explore the feasibility of opening any new program. This body should play a leading role in examining labor market demand and student demand data in the context of other local considerations. The strongest new program
applications are those where industry experts and other partners are involved from the earliest stages of new program development. The Part A application requires that you provide evidence of an initial PAC which may lack some required members. An updated PAC listing with all required members must be submitted in Part B.

2. **Arrange a meeting** between your Program Advisory Committee and a representative from the Office for College, Career, and Technical Education. OCCTE staff can assist business/industry representatives and school leaders in understanding how to determine if the new program under consideration is feasible.

3. **Measure student demand for the program.** It is the obligation of applicant districts to make a compelling case that students are interested in enrolling in proposed programs. If the school or district currently offers the program as a non-Chapter 74 Perkins-funded program and reports students in the Commonwealth’s Student Information Management System (SIMS), enrollment information for previous years may be used as historical evidence of student demand. Historical enrollment data from courses that will become part of the proposed program and surveys of middle school and/or ninth grade students are legitimate methods of illustrating student demand. Applicant districts are free to present any and all evidence to demonstrate student demand. Additionally, if the proposed program duplicates one currently offered at the regional vocational technical school of which the applicant district is a member and/or the applicant's local county agricultural school, the applicant district must provide evidence that either/both of those school districts cannot accommodate student demand.

4. **Ensure that the program you are considering is of sufficient length.** The Department anticipates that a program designed to provide students with the requisite experience and training to successfully complete the requirements of a Chapter 74 program as outlined in the curriculum frameworks would include at least 900 hours of program-related instruction for each participating student. Consequently, please make every effort to ensure that the entire program you are proposing will provide students with no less than 900 hours of program-related instruction. Program-related instruction includes:
   - “Shop” time;
   - Program-related classroom time
   - Time devoted to work-based learning (e.g., cooperative education, internships, clinical rounds)
   - Any other classes or portions of classes that address VTE Frameworks Strands 4, 5, or 6

5. **Address any outstanding items.** A new program application can be delayed by outstanding Coordinated Program Review corrective action plans or progress reports related to admissions or safety, or outstanding civil rights Methods of Administration (MOA) voluntary action plans.

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**Timeline for Chapter 74 Applications**

**Notice of Intent to Apply:** A Notice of Intent to Apply may be submitted at any time on or prior to 5:00 PM on the last Friday in October of any calendar year. For this application cycle, that date is **October 26, 2018**. Notice is accomplished by completing a brief survey. Notice of Intent does not obligate submission of a Part A (Preliminary) application, but no Part A applications will be accepted if a Notice of Intent to Apply has not been submitted by the aforementioned deadline.

**Part A (Preliminary) applications** are accepted no later than 5:00 PM on the second Friday of December following. For this application cycle, that date is **December 14, 2018**.

**Part B (Concluding) applications** are only accepted upon invitation by DESE after Department review of the Part A application. Part B applications are due no later than 5:00 PM on the first Friday of April following. For this application cycle, that date is **April 5, 2019**.

**School District and Program Information**
School District Name:
**Worcester Public Schools**

School Name:
**Doherty Memorial High School**

LEA #
0348

What is the VTE Framework title for the proposed program?
**Programming & Web Development**

PLEASE NOTE: As a condition of approval, Chapter 74 Vocational Technical Education Cosmetology programs must first be approved by the Massachusetts Board of Registration of Cosmetology and Barbering. Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

PLEASE NOTE: The Board of Registry in Dentistry oversees the licensing of dental health care professionals in the state of Massachusetts, including those graduating from Chapter 74 programs. Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

PLEASE NOTE: If the Early Education and Care program under consideration will include an onsite early education facility, that facility must be licensed by the Massachusetts Department of Early Education and Care (DEEC). Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

PLEASE NOTE: The Massachusetts Board of State Examiners of Electricians examines and licenses electrician candidates, including those graduating from Chapter 74 programs. Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

PLEASE NOTE: As a condition of approval, Chapter 74 Vocational Technical Education Health Assisting programs must first be approved by the Massachusetts Department of Public Health (DPH). Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

PLEASE NOTE: The Board of State Examiners of Plumbers and Gas Fitters regulates the practice of plumbing occupations in the Commonwealth of Massachusetts. Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

PLEASE NOTE: As a condition of approval, Chapter 74 Vocational Technical Education Practical Nursing programs must first be approved by the Massachusetts Board of Registration in Nursing. Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

What is the program name (if different from VTE Framework Title)?
**Programming & Web Development**
Will this program be offered as a SECONDARY program or a POSTSECONDARY program?

X Secondary

Postsecondary

Will this program, if approved, offer combined instruction with any other Chapter 74 programs already in operation?

X Yes

No

Who is the school district contact person for this application?

Sally Maloney

What is the title of the school district contact person for this application?

Principal

What is the telephone number of the school district contact person for this application?

508-799-3270

xxx-xxx-xxxx (Include extension # if applicable)

What is the email address of the school district contact person for this application?

maloneys@worcesterschools.net

Name of school district superintendent

Maureen Binienda

Telephone number of school district superintendent

508-799-3117

xxx-xxx-xxxx (Include extension # if applicable)

Email address of school district superintendent

biniendam@worcesterschools.net

Name of school principal

Sally Maloney

Telephone number of school principal

508-799-3270

xxx-xxx-xxxx (Include extension # if applicable)

Email address of school principal

maloneys@worcesterschools.net
Name of vocational technical education director (if applicable)
Patricia Suomalap

Telephone number of vocational technical education director (if applicable)
508-799-1140

Email address of vocational technical education director (if applicable)
suomalap@worcesterschools.net

List any colleges/universities or apprenticeship training programs affiliated with the program
Becker College
Worcester Polytechnic Institute

List any areas of specialization in the proposed program
IT Fundamentals
Computer Science
Software Development
Cyber Security
Web Development

Statement of Assurances and Signature Block

Please upload a scanned Statement of Assurances with Superintendent's signature.

See attached

Download the Statement of Assurances form at http://www.doe.mass.edu/cte/programs/timeline.htm/

PART A DOCUMENTATION

CRITERION 1: Student and Labor Market Demand

[Legal Citation: M.G.L.c.74, §1,2 & 4; 603 CMR 4.03(1)(c)(1) and 4.04(1)]

REQUIREMENT: 1a. In order to receive vocational technical education program approval, the Superintendent shall submit an application to the Commissioner that provides clear evidence of secondary student and labor market demand for the program and demonstrates compliance with the approval criteria.

PLEASE NOTE: In cases where the proposed program aligns with regional industry-sector and/or occupational priorities, the applicant does not need to provide additional evidence of labor market demand but is still required to provide evidence of sufficient student demand. For more information, see the section above, Before Submitting Part A, and the section on student demand in the document "Guidelines for demonstrating student and labor market demand."
If the proposed program does not align with regional priorities, it is the obligation of the applicant to make a compelling case for the viability of the program with respect to labor market and student demand. Please refer to the document "Guidelines for demonstrating student and labor market demand." Please also consider asking your local MassHire Board for assistance.

(NOTE: Massachusetts is in the process of re-branding its Workforce Investment Boards, which are also known variously as Regional Employment Boards, or Workforce Development Boards. The new appellation, which will begin appearing in late Summer and early Fall 2018, is MassHire Board.)

1. Submit clear evidence of student and labor market demand for the program.

See attached
required

CRITERION 2: Organization (Program Advisory Committee)

[Legal Citations: M.G.L.c.74, §2 & 6; 603 CMR 4.03 and 4.04(1)(c)1]

REQUIREMENT: 2a. There must be a Program Advisory Committee for the proposed program.

2a. Submit an initial Program Advisory Committee Form for the proposed Vocational Technical Education program. [NOTE: A fully completed form with all required members must be submitted as part of the Part B application.]

See attached
required
View or download the document "Program Advisory Committee for VTE Form" at http://www.doe.mass.edu/cte/programs/timeline.html.

CRITERION 3: Sufficient Time to Address Vocational Technical Education Frameworks

REQUIREMENT: The program should attempt to provide students with a total of 900 or more hours of program-related instruction.

3. Submit a completed Total Hours of Instruction worksheet for the proposed VTE program.

See attached
required
View or download the document "Total Hours of Instruction Worksheet" at http://www.doe.mass.edu/cte/programs/timeline.html.
Program Advisory Committee for Vocational Technical Education Form

A school district official must complete this form and submit it with the Application for Vocational Technical Education New Program Approval M.G.L.c.74. Massachusetts Department of Elementary and Secondary Education staff will then review for compliance with the Vocational Technical Education Regulations.

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<th>School Year: 2019-2020</th>
<th>Program Name: Programming/WebDev</th>
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<tr>
<td><strong>Facilitator:</strong> (May be school district staff) <strong>Sally Maloney</strong></td>
<td><strong>Date of Completion:</strong></td>
<td><strong>COMPOSITION</strong>&lt;br&gt;(check as applicable)</td>
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Provide the first and last name of all committee members. (NOTE: School district staff from ANY school district may not be members of the Program Advisory Committee. Do not list them below.)

Provide the address for each member including street name & number, city/town, state, zip code, daytime or cell phone telephone number and email address.

Provide the company name for each business/industry representative; the organizational title for the organized labor representative; the name of the school/college/university for the postsecondary representative and the organizational title for the registered apprenticeship program representative.

1Organized Labor representation is not required on individual PACs if the school's General Advisory Committee includes such representation.

2Postsecondary representation is required on all PACs. That requirement can be met with representatives of postsecondary education institutions or registered apprenticeship programs.

3Prior to the approval of a new program, the parent/guardian and student representation requirement may be met by involving one or more parents and students not yet associated with the program. Their role is to ensure that the perspectives of parents and students are considered in the development of the program.

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<th><strong>Racial or Linguistic Minority</strong></th>
<th><strong>Non-traditional by gender</strong> (if applicable)</th>
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<th><strong>Postsecondary Institution</strong> 2</th>
<th><strong>Registered Apprenticeship</strong> 2</th>
<th><strong>Parent/Guardian</strong> 3</th>
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**List chairperson here**

Helder Machado, CEO/CISO
Machado Consulting
32 Franklin Street
Worcester, MA 01608
1-508-453-4700
helder@machadoconsulting.com

Machado Consulting

X
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<tr>
<td>Jeffrey Weisenberg</td>
<td>DMHS Teacher</td>
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Add more rows as needed
The Department anticipates that a program designed to provide students with the requisite experience and training to successfully complete the requirements of a Chapter 74 program as outlined in the curriculum frameworks would include at least 900 hours of program-related instruction for each participating student. Program-related instruction includes:

- "shop" time;
- Program-related classroom time
- Time devoted to work-based learning (e.g., cooperative education, internships, clinical rounds)
- Any other classes or portions of classes that address VTE Frameworks Strands 4, 5, or 6.

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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

* If applicable

If the district believes that it has designed a program that will provide students with the requisite experience and training that does not meet this minimum, the district should contact the Department to discuss the proposed program design prior to submitting a Part A application.
D. MARKETING & FINANCE

1. DESE Part A Application
2. Initial Program Advisory Committee Form
3. Total Hours of Instruction Worksheet
Part A-Preliminary Application Package for Vocational Technical Education New Program Approval M.G.L.c.74

Updated: August 2018

MASSACHUSETTS DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION
Office for College, Career, and Technical Education
75 Pleasant Street, Malden, MA 02148-4906
Phone 781-338-3901 TTY: N.E.T. Relay 800-439-2370
www.doe.mass.edu/cte
Chapter 74 New Program Application PART A (Preliminary)

Disclaimer: Sections of law, regulations and guidelines are referenced in this document. The official copies of the law, regulations and guidelines as filed with the Massachusetts Office of the Secretary of State are implemented by the Massachusetts Department of Elementary and Secondary Education (DESE). The Massachusetts Department of Elementary and Secondary Education does not represent this document as a replacement for the official law, regulations and guidelines documents.

Overview

The Application for Vocational Technical Education New Program Approval is submitted by a school district that seeks approval of a new vocational technical education program pursuant to Massachusetts General Law Chapter 74 (M.G.L.c.74) (Chapter 74) and the Vocational Technical Education Regulations (603 CMR 4.00). The application consists of Part A (Preliminary) and Part B (Concluding). An approved program is known as a Chapter 74-approved vocational technical education program. State aid is calculated on enrollment in programs that have approval status on November 1 of any given year. The Massachusetts Department of Elementary and Secondary Education cannot retroactively approve programs after November 1 for state aid or any other purpose.

Part B is not to be submitted unless the district has been notified in writing by the Department to proceed.

Part A

In order to ensure that school districts interested in developing new Chapter 74 programs are first establishing key foundational elements for those programs, the Department has created a three-step process.

1. Submission of an Intent to Apply comprises the first step. Submission of an Intent to Apply does not obligate the submission of a Part A application, but all Part A applicants must have first submitted an Intent by the published deadline.
2. The elements found in the Part A (Preliminary) Application Form below comprise the second step.
3. Applicants whose Part A applications are judged viable will be invited to submit Part B (Concluding) applications, the third step in the process.

Before Submitting Part A

Before submitting a Part A (Preliminary) application, school districts should undertake the following tasks.

1. Create a program advisory committee (PAC). The program advisory committee, including representatives from industry, postsecondary education, and organized labor (if applicable) will offer guidance and insight as potential applicants explore the feasibility of opening any new program. This body should play a leading role in examining labor market demand and student demand data in the context of other local considerations. The strongest new program
applications are those where industry experts and other partners are involved from the earliest stages of new program development. The Part A application requires that you provide evidence of an initial PAC which may lack some required members. An updated PAC listing with all required members must be submitted in Part B.

2. **Arrange a meeting** between your Program Advisory Committee and a representative from the Office for College, Career, and Technical Education. OCCTE staff can assist business/industry representatives and school leaders in understanding how to determine if the new program under consideration is feasible.

3. **Measure student demand for the program.** It is the obligation of applicant districts to make a compelling case that students are interested in enrolling in proposed programs. If the school or district currently offers the program as a non-Chapter 74 Perkins-funded program and reports students in the Commonwealth’s Student Information Management System (SIMS), enrollment information for previous years may be used as historical evidence of student demand. Historical enrollment data from courses that will become part of the proposed program and surveys of middle school and/or ninth grade students are legitimate methods of illustrating student demand. Applicant districts are free to present any and all evidence to demonstrate student demand. Additionally, if the proposed program duplicates one currently offered at the regional vocational technical school of which the applicant district is a member and/or the applicant’s local county agricultural school, the applicant district must provide evidence that either/both of those school districts cannot accommodate student demand.

4. **Ensure that the program you are considering is of sufficient length.** The Department anticipates that a program designed to provide students with the requisite experience and training to successfully complete the requirements of a Chapter 74 program as outlined in the curriculum frameworks would include at least 900 hours of program-related instruction for each participating student. Consequently, please make every effort to ensure that the entire program you are proposing will provide students with no less than 900 hours of program-related instruction. Program-related instruction includes:

- "Shop" time;
- Program-related classroom time
- Time devoted to work-based learning (e.g., cooperative education, internships, clinical rounds)
- Any other classes or portions of classes that address VTE Frameworks Strands 4, 5, or 6

5. **Address any outstanding items.** A new program application can be delayed by outstanding Coordinated Program Review corrective action plans or progress reports related to admissions or safety, or outstanding civil rights Methods of Administration (MOA) voluntary action plans.

---

**Timeline for Chapter 74 Applications**

**Notice of Intent to Apply:** A Notice of Intent to Apply may be submitted at any time on or prior to 5:00 PM on the last Friday in October of any calendar year. For this application cycle, that date is **October 26, 2018**. Notice is accomplished by completing a brief survey. Notice of Intent does not obligate submission of a Part A (Preliminary) application, but no Part A applications will be accepted if a Notice of Intent to Apply has not been submitted by the aforementioned deadline.

**Part A (Preliminary)** applications are accepted no later than 5:00 PM on the second Friday of December following. For this application cycle, that date is **December 14, 2018**.

**Part B (Concluding)** applications are only accepted upon invitation by DESE after Department review of the Part A application. Part B applications are due no later than 5:00 PM on the first Friday of April following. For this application cycle, that date is **April 5, 2019**.

---

School District and Program Information
School District Name:
Worcester Public Schools

School Name:
Doherty Memorial High School

LEA #
0348

What is the VTE Framework title for the proposed program? 
Marketing/Finance

PLEASE NOTE: As a condition of approval, Chapter 74 Vocational Technical Education Cosmetology programs must first be approved by the Massachusetts Board of Registration of Cosmetology and Barbering. Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

PLEASE NOTE: The Board of Registry in Dentistry oversees the licensing of dental health care professionals in the state of Massachusetts, including those graduating from Chapter 74 programs. Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

PLEASE NOTE: If the Early Education and Care program under consideration will include an onsite early education facility, that facility must be licensed by the Massachusetts Department of Early Education and Care (DEEC). Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

PLEASE NOTE: The Massachusetts Board of State Examiners of Electricians examines and licenses electrician candidates, including those graduating from Chapter 74 programs. Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

PLEASE NOTE: As a condition of approval, Chapter 74 Vocational Technical Education Health Assisting programs must first be approved by the Massachusetts Department of Public Health (DPH). Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

PLEASE NOTE: The Board of State Examiners of Plumbers and Gas Fitters regulates the practice of plumbing occupations in the Commonwealth of Massachusetts. Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

PLEASE NOTE: As a condition of approval, Chapter 74 Vocational Technical Education Practical Nursing programs must first be approved by the Massachusetts Board of Registration in Nursing. Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

What is the program name (if different from VTE Framework Title)?
Marketing/Finance
Will this program be offered as a SECONDARY program or a POSTSECONDARY program?

X Secondary
Postsecondary

Will this program, if approved, offer combined instruction with any other Chapter 74 programs already in operation?

X Yes
No

Who is the school district contact person for this application?
Sally Maloney

What is the title of the school district contact person for this application?
Principal

What is the telephone number of the school district contact person for this application?
508-799-3270
xxx-xxxx-xxxx (Include extension # if applicable)

What is the email address of the school district contact person for this application?
maloneys@worcesterschools.net

Name of school district superintendent
Maureen Binienda

Telephone number of school district superintendent
508-799-3117
xxx-xxxx-xxxx (Include extension # if applicable)

Email address of school district superintendent
biniendam@worcesterschools.net

Name of school principal
Sally Maloney

Telephone number of school principal
508-799-3270
xxx-xxxx-xxxx (Include extension # if applicable)

Email address of school principal
maloneys@worcesterschools.net
Name of vocational technical education director (if applicable)

Patricia Suomala

Telephone number of vocational technical education director (if applicable)
508-799-1140
xxx-xxx-xxxx (include extension # if applicable)

Email address of vocational technical education director (if applicable)

suomala.p@worcesterschools.net

List any colleges/universities or apprenticeship training programs affiliated with the program

Quinsigamond Community College
Nichols College

List any areas of specialization in the proposed program
Customer Service
Cultural Diversity
Marketing – traditional/electronic (i.e. Web based/social media)
Financial Literacy
Electronic Database – data tracking/mining for inventory, sales, decisioning
Cost Benefit Analysis
Logistics/Channel Management
Accounting Practices and procedures
Entrepreneurship

Statement of Assurances and Signature Block

Please upload a scanned Statement of Assurances with Superintendent's signature.

See attached
Download the Statement of Assurances form at http://www.doe.mass.edu/ote/programs/timeline.html

PART A DOCUMENTATION

CRITERION 1: Student and Labor Market Demand

[Legal Citation: M.G.L.c.74, §1,2 & 4; 603 CMR 4.03(1)(c)(1) and 4.04(1)]

REQUIREMENT: 1a. In order to receive vocational technical education program approval, the Superintendent shall submit an application to the Commissioner that provides clear evidence of secondary student and labor market demand for the program and demonstrates compliance with the approval criteria.

PLEASE NOTE: In cases where the proposed program aligns with regional industry-sector and/or occupational priorities, the applicant does not need to provide additional evidence of labor market demand but is still required to provide evidence of sufficient student demand. For more information, see the section above, Before Submitting Part A, and the section on student demand in the document “Guidelines for demonstrating student and labor market demand.”
If the proposed program does not align with regional priorities, it is the obligation of the applicant to make a compelling case for the viability of the program with respect to labor market and student demand. Please refer to the document "Guidelines for demonstrating student and labor market demand." Please also consider asking your local MassHire Board for assistance.

(NOTE: Massachusetts is in the process of re-branding its Workforce Investment Boards, which are also known variously as Regional Employment Boards, or Workforce Development Boards. The new appellation, which will begin appearing in late Summer and early Fall 2018, is MassHire Board.)

1. Submit clear evidence of student and labor market demand for the program.
   See attached
   required

Download "Guidelines for preparing evidence of secondary student and labor market demand" at http://www.doe.mass.edu/cle/programs/timeline.html

CRITERION 2: Organization (Program Advisory Committee)

[Legal Citations: M.G.L.c.74, §2 & 6; 603 CMR 4.03 and 4.04(1)(c)1]

REQUIREMENT: 2a. There must be a Program Advisory Committee for the proposed program.

2a. Submit an initial Program Advisory Committee Form for the proposed Vocational Technical Education program. [NOTE: A fully completed form with all required members must be submitted as part of the Part B application.]
   See attached
   required

View or download the document "Program Advisory Committee for VTE Form" at http://www.doe.mass.edu/cle/programs/timeline.html

CRITERION 3: Sufficient Time to Address Vocational Technical Education Frameworks

REQUIREMENT: The program should attempt to provide students with a total of 900 or more hours of program-related instruction.

3. Submit a completed Total Hours of Instruction worksheet for the proposed VTE program.
   See attached
   required

View or download the document "Total Hours of Instruction Worksheet" at http://www.doe.mass.edu/cle/programs/timeline.html.
Program Advisory Committee for Vocational Technical Education Form

A school district official must complete this form and submit it with the Application for Vocational Technical Education New Program Approval M.G.L.c.74. Massachusetts Department of Elementary and Secondary Education staff will then review for compliance with the Vocational Technical Education Regulations.

<table>
<thead>
<tr>
<th>District: Worcester Public Schools</th>
<th>School Year: 2019-2020</th>
<th>Program Name: Marketing/Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facilitator:</strong> (May be school district staff) Sally Maloney</td>
<td><strong>Date of Completion:</strong></td>
<td></td>
</tr>
</tbody>
</table>

Provide the first and last name of all committee members. (*NOTE: School district staff from ANY school district may not be members of the Program Advisory Committee. Do not list them below.*)

Provide the address for each member including street name & number, city/town, state, zip code, daytime or cell phone telephone number and email address.

- **Organization:**
  - Provide the company name for each business/industry representative; the organizational title for the organized labor representative; the name of the school/college/university for the postsecondary representative and the organizational title for the registered apprenticeship program representative.
  - Organized Labor representation is not required on individual PACs if the school’s General Advisory Committee includes such representation.
  - Postsecondary representation is required on all PACs. That requirement can be met with representatives of postsecondary education institutions or registered apprenticeship programs.
  - Prior to the approval of a new program, the parent/guardian and student representation requirement may be met by involving one or more parents and students not yet associated with the program. Their role is to ensure that the perspectives of parents and students are considered in the development of the program.

<table>
<thead>
<tr>
<th><strong>COMPOSITION</strong> (check as applicable)</th>
<th><strong>TYPE OF REPRESENTATION</strong> (check one box for each name listed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person with Disabilities</td>
<td>Racial or Linguistic Minority</td>
</tr>
</tbody>
</table>

- **List chairperson here**

Stephen Bollus, Principal
89 Shrewsbury Street
Suite 200
Worcester, MA 01604
1-508-755-7107
slynch@bolluslynch.com

Bollus Lynch LLP

X
<table>
<thead>
<tr>
<th>Name</th>
<th>Title/Role</th>
<th>Institution</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>Kim Salmon</td>
<td>Fallon Health</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
| Director of Community Relations  
10 Chestnut Street  
Worcester, MA 01608  
1-508-368-9439  
kimberly.salmon@fallonhealth.org |                                  |       |
| Steven Small          | Human Resource Manager  
Notre Dame Health Care  
Worcester                        |                                   | X     |
| 12 Garden St  
Auburn, MA 01501  
508-713-2761 |                                  | X     |
| Florence Lucci,  
Professor of Business Administration  
Quinsigamond Community College  
670 West Boylston Street  
Worcester, MA 01606  
1-508-853-2300  
flucci@qcc.mass.edu | Quinsigamond Community College                  |                                   | X     |
| Kalu Anya             | Student @ DMHS                                 |                                   | X     |
| 105 Monadnock Rd  
Worcester, MA 01609  
774-701-9365  
student.134328@worcesterschools.net |                                   |       |
| Rose Anya             | DMHS Parent                                   |                                   | X     |
| 105 Monadnock Rd  
Worcester, MA 01609  
774-701-9365 |                                   |       |
| Katherine Simmarano   | DMHS Teacher                                  |                                   |       |
| 508-799-3270  
SimmaranoKJ@worcesterschools.net |                                   |       |

Add more rows as needed
The Department anticipates that a program designed to provide students with the requisite experience and training to successfully complete the requirements of a Chapter 74 program as outlined in the curriculum frameworks would include at least 900 hours of program-related instruction for each participating students. Program-related instruction includes:

- "shop" time;
- Program-related classroom time
- Time devoted to work-based learning (e.g., cooperative education, internships, clinical rounds)
- Any other classes or portions of classes that address VTE Frameworks Strands 4, 5, or 6.

<table>
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<tr>
<th>NAME OF OTHER CLASS</th>
<th>SHOP CLASS (including work-based learning during shop hours)</th>
<th>SHOP-RELATED CLASS</th>
<th>OTHER CLASS</th>
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<td>540</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

* If applicable

**GRAND TOTAL 1080**

If the district believes that it has designed a program that will provide students with the requisite experience and training that does not meet this minimum, the district should contact the Department to discuss the proposed program design prior to submitting a Part A application.
E. CONSTRUCTION CRAFT LABORER

1. DESE Part A Application
2. Initial Program Advisory Committee Form
3. Total Hours of Instruction Worksheet
Part A-Preliminary Application Package for Vocational Technical Education New Program Approval M.G.L.c.74

Updated: August 2018
Chapter 74 New Program Application PART A (Preliminary)

Disclaimer: Sections of law, regulations and guidelines are referenced in this document. The official copies of the law, regulations and guidelines as filed with the Massachusetts Office of the Secretary of State are implemented by the Massachusetts Department of Elementary and Secondary Education (DESE). The Massachusetts Department of Elementary and Secondary Education does not represent this document as a replacement for the official law, regulations and guidelines documents.

Overview

The Application for Vocational Technical Education New Program Approval is submitted by a school district that seeks approval of a new vocational technical education program pursuant to Massachusetts General Law Chapter 74 (M.G.L.c.74) (Chapter 74) and the Vocational Technical Education Regulations (603 CMR 4.00). The application consists of Part A (Preliminary) and Part B (Concluding). An approved program is known as a Chapter 74-approved vocational technical education program. State aid is calculated on enrollment in programs that have approval status on November 1 of any given year. The Massachusetts Department of Elementary and Secondary Education cannot retroactively approve programs after November 1 for state aid or any other purpose.

Part B is not to be submitted unless the district has been notified in writing by the Department to proceed.

Part A

In order to ensure that school districts interested in developing new Chapter 74 programs are first establishing key foundational elements for those programs, the Department has created a three-step process.

1. Submission of an Intent to Apply comprises the first step. Submission of an Intent to Apply does not obligate the submission of a Part A application, but all Part A applicants must have first submitted an Intent by the published deadline.
2. The elements found in the Part A (Preliminary) Application Form below comprise the second step.
3. Applicants whose Part A applications are judged viable will be invited to submit Part B (Concluding) applications, the third step in the process.

Before Submitting Part A

Before submitting a Part A (Preliminary) application, school districts should undertake the following tasks.

1. Create a program advisory committee (PAC). The program advisory committee, including representatives from industry, postsecondary education, and organized labor (if applicable) will offer guidance and insight as potential applicants explore the feasibility of opening any new program. This body should play a leading role in examining labor market demand and student demand data in the context of other local considerations. The strongest new program
applications are those where industry experts and other partners are involved from the earliest stages of new program development. The Part A application requires that you provide evidence of an initial PAC which may lack some required members. An updated PAC listing with all required members must be submitted in Part B.

2. **Arrange a meeting** between your Program Advisory Committee and a representative from the Office for College, Career, and Technical Education. OCCTE staff can assist business/industry representatives and school leaders in understanding how to determine if the new program under consideration is feasible.

3. **Measure student demand for the program.** It is the obligation of applicant districts to make a compelling case that students are interested in enrolling in proposed programs. If the school or district currently offers the program as a non-Chapter 74 Perkins-funded program and reports students in the Commonwealth's Student Information Management System (SIMS), enrollment information for previous years may be used as historical evidence of student demand. Historical enrollment data from courses that will become part of the proposed program and surveys of middle school and/or ninth grade students are legitimate methods of illustrating student demand. Applicant districts are free to present any and all evidence to demonstrate student demand. Additionally, if the proposed program duplicates one currently offered at the regional vocational technical school of which the applicant district is a member and/or the applicant's local county agricultural school, the applicant district must provide evidence that either/both of those school districts cannot accommodate student demand.

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   - "Shop" time;
   - Program-related classroom time
   - Time devoted to work-based learning (e.g., cooperative education, internships, clinical rounds)
   - Any other classes or portions of classes that address VTE Frameworks Strands 4, 5, or 6

5. **Address any outstanding items.** A new program application can be delayed by outstanding Coordinated Program Review corrective action plans or progress reports related to admissions or safety, or outstanding civil rights Methods of Administration (MOA) voluntary action plans.

---

**Timeline for Chapter 74 Applications**

**Notice of Intent to Apply:** A Notice of Intent to Apply may be submitted at any time on or prior to 5:00 PM on the last Friday in October of any calendar year. For this application cycle, that date is **October 26, 2018**. Notice is accomplished by completing a brief survey. Notice of Intent does not obligate submission of a Part A (Preliminary) application, but no Part A applications will be accepted if a Notice of Intent to Apply has not been submitted by the aforementioned deadline.

**Part A (Preliminary) applications** are accepted no later than 5:00 PM on the second Friday of December following. For this application cycle, that date is **December 14, 2018**.

**Part B (Concluding) applications** are only accepted upon invitation by DESE after Department review of the Part A application. Part B applications are due no later than 5:00 PM on the first Friday of April following. For this application cycle, that date is **April 5, 2019**.

**School District and Program Information**
School District Name:
Worcester Public Schools

School Name:
Doherty Memorial High School

LEA #
0348

What is the VTE Framework title for the proposed program?
Construction Craft Laborer

PLEASE NOTE: As a condition of approval, Chapter 74 Vocational Technical Education Cosmetology programs must first be approved by the Massachusetts Board of Registration of Cosmetology and Barbering. Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

PLEASE NOTE: The Board of Registry in Dentistry oversees the licensing of dental health care professionals in the state of Massachusetts, including those graduating from Chapter 74 programs. Please contact Marnie Jain in the Office for College, Career, and Technical Education for more information.

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What is the program name (if different from VTE Framework Title)?
Construction Craft Laborer
Will this program be offered as a SECONDARY program or a POSTSECONDARY program?
X Secondary
Postsecondary

Will this program, if approved, offer combined instruction with any other Chapter 74 programs already in operation?
X Yes
No

Who is the school district contact person for this application?
Sally Maloney

What is the title of the school district contact person for this application?
Principal

What is the telephone number of the school district contact person for this application?
508-799-3270
xxx-xxxx (include extension # if applicable)

What is the email address of the school district contact person for this application?
maloney@worcesterschools.net

Name of school district superintendent
Maureen Binienda

Telephone number of school district superintendent
508-799-3117
xxx-xxxx (include extension # if applicable)

Email address of school district superintendent
biniendam@worcesterschools.net

Name of school principal
Sally Maloney

Telephone number of school principal
508-799-3270
xxx-xxxx (include extension # if applicable)

Email address of school principal
maloney@worcesterschools.net
Name of vocational technical education director (if applicable)
	Patricia Suomala

Telephone number of vocational technical education director (if applicable)
	508-799-1140

Email address of vocational technical education director (if applicable)
	suomalap@worcesterschools.net

List any colleges/universities or apprenticeship training programs affiliated with the program
Worcester Polytechnic Institute
Quinsigamond Community College
Fitchburg State University
Mass Construction Career Development (MassCCD) – a registered pre-apprentice program
Construction Craft Laborers registered apprenticeship program
Millwrights registered apprenticeship program

List any areas of specialization in the proposed program
Construction & Building Site – commercial/residential
Infrastructure
Deconstruction
Heavy & Highways
Pipeline, Utilities, Tunneling
Masonry, Tile Setting
Environmental – remediation/abatement, confined spaces, erosion control

Statement of Assurances and Signature Block

Please upload a scanned Statement of Assurances with Superintendent's signature.

See attached

Download the Statement of Assurances form at http://www.doe.mass.edu/cte/programs/timeline.html

PART A DOCUMENTATION

CRITERION 1: Student and Labor Market Demand

[Legal Citation: M.G.L.c.74, §1,2 & 4; 603 CMR 4.03(1)(c)(1) and 4.04(1)]

REQUIREMENT: 1a. In order to receive vocational technical education program approval, the Superintendent shall submit an application to the Commissioner that provides clear evidence of secondary student and labor market demand for the program and demonstrates compliance with the approval criteria.

PLEASE NOTE: In cases where the proposed program aligns with regional industry-sector and/or occupational priorities, the applicant does not need to provide additional evidence of labor market demand but is still required to provide evidence of sufficient student demand. For more information, see the section above, Before Submitting Part A, and the section on student demand in the document "Guidelines for demonstrating student and labor market demand."
If the proposed program does not align with regional priorities, it is the obligation of the applicant to make a compelling case for the viability of the program with respect to labor market and student demand. Please refer to the document "Guidelines for demonstrating student and labor market demand." Please also consider asking your local MassHire Board for assistance.

(NOTE: Massachusetts is in the process of re-branding its Workforce Investment Boards, which are also known variously as Regional Employment Boards, or Workforce Development Boards. The new appellation, which will begin appearing in late Summer and early Fall 2018, is MassHire Board.)

1. Submit clear evidence of student and labor market demand for the program.
   
   See attached

   Download "Guidelines for preparing evidence of secondary student and labor market demand" at http://www.doe.mass.edu/cte/programs/timeline.html

CRITERION 2: Organization (Program Advisory Committee)

[Legal Citations: M.G.L.c.74, §2 & 6; 603 CMR 4.03 and 4.04(1)(c)1]

REQUIREMENT: 2a. There must be a Program Advisory Committee for the proposed program.

2a. Submit an initial Program Advisory Committee Form for the proposed Vocational Technical Education program. [NOTE: A fully completed form with all required members must be submitted as part of the Part B application.]
   
   See attached

   View or download the document "Program Advisory Committee for VTE Form" at http://www.doe.mass.edu/cte/programs/timeline.html

CRITERION 3: Sufficient Time to Address Vocational Technical Education Frameworks

REQUIREMENT: The program should attempt to provide students with a total of 900 or more hours of program-related instruction.

3. Submit a completed Total Hours of Instruction worksheet for the proposed VTE program.
   
   See attached

   View or download the document "Total Hours of Instruction Worksheet" at http://www.doe.mass.edu/cte/programs/timeline.html.
Program Advisory Committee for Vocational Technical Education Form

A school district official must complete this form and submit it with the Application for Vocational Technical Education New Program Approval M.G.L.c.74. Massachusetts Department of Elementary and Secondary Education staff will then review for compliance with the Vocational Technical Education Regulations.

<table>
<thead>
<tr>
<th>District: Worcester Public Schools</th>
<th>School Year: 2019-2020</th>
<th>Program Name: Construction Craft Laborer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facilitator:</strong> <em>(May be school district staff)</em> Sally Maloney</td>
<td><strong>Date of Completion:</strong></td>
<td></td>
</tr>
<tr>
<td>Provide the first and last name of all committee members. <em>(NOTE: School district staff from ANY school district may not be members of the Program Advisory Committee. Do not list them below.)</em></td>
<td>Provide the company name for each business/industry representative; the organizational title for the organized labor representative; the name of the school/college/university for the postsecondary representative and the organizational title for the registered apprenticeship program representative.</td>
<td></td>
</tr>
<tr>
<td>Provide the address for each member including street name &amp; number, city/town, state, zip code, daytime or cell phone telephone number and email address.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Organized Labor representation is not required on individual PACs if the school's General Advisory Committee includes such representation.

2 Postsecondary representation is required on all PACs. That requirement can be met with representatives of postsecondary education institutions or registered apprenticeship programs.

3 Prior to the approval of a new program, the parent/guardian and student representation requirement may be met by involving one or more parents and students not yet associated with the program. Their role is to ensure that the perspectives of parents and students are considered in the development of the program.

<table>
<thead>
<tr>
<th>COMPOSITION (check as applicable)</th>
<th>TYPE OF REPRESENTATION (check one box for each name listed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person with Disabilities</td>
<td>Racial or Linguistic Minority</td>
</tr>
</tbody>
</table>

| | | | | | | | | |

List chairperson here

Jeffery Cathcart
Dir. Pre-Apprentice & Voc Training NE Laborers Training Fund 
icher@cox.net

NE Laborers Training Fund

X
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>James Alicata</td>
<td>Fitchburg State University</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sean Clancey</td>
<td>Consigli Construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian Rivera</td>
<td>DMHS Student</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jose Rivera</td>
<td>DMHS Parent</td>
<td></td>
</tr>
<tr>
<td>William Feraco</td>
<td>Teacher</td>
<td></td>
</tr>
</tbody>
</table>

Add more rows as needed
The Department anticipates that a program designed to provide students with the requisite experience and training to successfully complete the requirements of a Chapter 74 program as outlined in the curriculum frameworks would include at least 900 hours of program-related instruction for each participating students. Program-related instruction includes:

- “shop” time;
- Program-related classroom time
- Time devoted to work-based learning (e.g., cooperative education, internships, clinical rounds)
- Any other classes or portions of classes that address VTE Frameworks Strands 4, 5, or 6.

<table>
<thead>
<tr>
<th>NAME OF OTHER CLASS</th>
<th>SHOP CLASS (INCLUDING WORK-BASED LEARNING DURING SHOP HOURS)</th>
<th>SHOP-RELATED CLASS</th>
<th>OTHER CLASS</th>
<th>OTHER CLASS</th>
<th>OTHER CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROGRAM YEAR 1</td>
<td>135</td>
<td>135</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PROGRAM YEAR 2</td>
<td>135</td>
<td>135</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PROGRAM YEAR 3*</td>
<td>135</td>
<td>135</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PROGRAM YEAR 4*</td>
<td>135</td>
<td>135</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>COLUMN TOTALS</td>
<td>540</td>
<td>540</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

* If applicable

GRAND TOTAL 1080

If the district believes that it has designed a program that will provide students with the requisite experience and training that does not meet this minimum, the district should contact the Department to discuss the proposed program design prior to submitting a Part A application.
Statement of Assurances and Signature Block

(for applicant school district)

This block applies to a school district that seeks approval of the proposed vocational technical education program under M.G.L.c.74 and serves as an assurance by the Superintendent of the applicant district that the information in the application is factual and that the district will adhere to the applicable state and federal laws and regulations.

I attest that the information presented in this application is factual and that the school district will implement the approved program in accordance with applicable state and federal laws, regulations, and guidelines, including but not limited to the following:

- Massachusetts General Law Chapter 74
- Massachusetts Vocational Technical Education Regulations 603 CMR 4.00
- Federal Guidelines for Eliminating Discrimination and Denial of Services on the Basis of Race, Color, National Origin, Sex and Handicap in Vocational Education Programs (34 CFR, Part 100, Appendix B)

[Signature]

Signature of Superintendent

[Date]

7/10/19
G. APPENDIX

1. Letter of Support from MassHire
G. APPENDIX

1. Letter of Support from MassHire
July 9, 2019

Maureen F. Binienda, Superintendent
Worcester Public Schools
20 Irving Street
Worcester, MA 01609

To Ms. Binienda,

The MassHire Central Region Workforce Board (MCRWB) is pleased to offer this letter of support for the Worcester Public Schools' application for new Chapter 74 career vocational technical education program applications for the new Doherty High School in Programming and Web Development, Construction Craft Laborers, and Marketing/Finance, as well as expansion of its Engineering Technology program.

As the region's public/private partnership serving needs of both employers and employees the MassHire Central Region Workforce Board (MCRWB) collaboratively develops and implements strategies for job readiness and skills advancement, leveraging community resources that promote economic wellness within the region's 38 cities and towns. Our Board is made up of individuals from the private sector, labor, education, community-based organizations and a number of state agencies. As you are aware, the MCRWB recently completed a regional workforce blueprint with our partners throughout the Central and North Central MA Workforce Development Areas (WDA) to identify priority industries and occupations. The result of this extensive review of labor market information and stakeholder engagement is occupations and occupational groups in which the region is facing the most significant employee shortages.

We appreciate that your new Chapter 74 program development included consultation with the MCRWB regarding our regional workforce blueprint and the need for the suggested new programs. As we have discussed we agree that these programs are in full alignment with our blueprint’s critical occupations and will significantly help us meet our regional workforce needs.

Furthermore, the MCRWB will offer ongoing support as these new programs are developed, including inclusion of these programs into our regional School to Career Connecting Activities efforts, program curricula guidance, and employer partner outreach.

We look forward to working with you on the development and implementation of these new programs. Please let us know if there is anything further we can do to be of assistance.

Sincerely,

Jeffrey Turgeon
Executive Director
MassHire Central Region Workforce Board

www.MassHireCentral.com
July 19, 2019

Ms. Mary Pichetti
Director of Capital Planning
40 Broad Street
Boston, Massachusetts 02109

Dear Ms. Pichetti:

The Worcester School Committee (“SC”) has completed its review of the Feasibility Study, Chapter 74 Programming Submission for the Doherty Memorial High School project (the “Project”), and on July 18, 2019, the SC voted to approve and authorize the Owner’s Project Manager to submit the Feasibility Study, Chapter 74 Programming submission related materials to the MSBA for its consideration. A certified copy of the SC meeting minutes, which includes the specific language of the vote and the number of votes in favor, opposed, and abstained, are attached.

Since the MSBA’s Board of Directors invited the District to conduct a Feasibility Study on June 1, 2017, the SC has held one (1) meeting regarding the proposed project, in compliance with the state Open Meeting Law. These meetings include:

School Committee Meetings for Doherty Memorial High School
July 18, 2019 6:30PM;
299 Highland St. Presented by Maureen Binienda, Superintendent.
Meeting focused on presentation of the Chapter 74 programming to be offered at the Doherty Memorial High School.

In addition to the SC meetings listed above, the District held four (4) public meetings, which were posted in compliance with the state Open Meeting Law, at which the Project was discussed. These meetings include:

Public Meetings for Doherty Memorial High School
June 5, 2019 2-5PM
299 Highland St. Worcester Hosted by Russ Adams
Meeting focused on Learning Practices, Future ready learning and Strengths, Challenges, Opportunities and Goals (SCOOG) Analysis.
June 17, 2019 2-5PM
299 Highland St. Worcester Hosted by Russ Adams
Meeting focused on 21st Century Design Patterns, Blue Sky Ideas and Guiding Principals.

June 24, 2019 2-5PM
299 Highland St. Worcester, Hosted by Russ Adams
Meeting focused on Key Spaces and Adjacencies, Bubble Diagrams, Conceptual Design Directions and Community Talking Points.

June 24, 2019 6:30-8PM
299 Highland St. Worcester, Hosted by Russ Adams
Meeting focused on Key Spaces and Adjacencies, Bubble Diagrams, Conceptual Design Directions and Community Talking Points.

The presentation materials for each meeting, meeting minutes, and summary materials related to the Project are available locally for public review at the Doherty Memorial High School web site.

To the best of my knowledge and belief, each of the meetings listed above complied with the requirements of the Open Meeting Law, M.G.L. c. 30A, §§ 18-25 and 940 CMR 29 et seq.

If you have any questions or require any additional information, please contact Maureen Binienda, Superintendent, Worcester Public Schools; biniendam@worcesterschools.net

By signing this Local Action and Approval Certification, I hereby certify that, to the best of my knowledge and belief, the information supplied by the District in this Certification is true, complete, and accurate.

By: ____________________________
Title: Chief Executive Officer
Date: ________________

By: ____________________________
Title: Superintendent of Schools
Date: __________________________

By: ____________________________
Title: Chair of the School Committee
Date: __________________________

Massachusetts School Building Authority
Module 3 – Feasibility Study - Chapter 74 Programming
2. gb #9-234 - Administration
   (July 8, 2019)

   To consider approval of the Chapter 74 Programming for the new Doherty Memorial High School.

   Mayor Petty made the following motion:

   Request that the School Committee approve the Chapter 74 Programming for the new Doherty Memorial High School.

   On a roll call, the vote was as follows:

   For the motion: Miss Biancheria, Mr. Comparetto, Miss McCullough, Mr. Monfredo, Mr. O'Connell, Mayor Petty 6

   Against the motion: 0

   Absent: Mr. Foley 1

   The motion carried.

   Helen A. Friel, Ed.D.
   Clerk of the School Committee
3.1.2 EDUCATIONAL PROGRAM

D. Supporting Documents
1. Program Meeting Minutes
2. Teacher Survey, Responses & Summary
3. Tours of Similar School Facilities – Summary
4. Worcester Public Schools Strategic Plan
5. Emergency Shelter Narrative
6. WPS Safety and Security Risk and Vulnerability Assessment
7. Student Projects on the Ideal School
8. Program Adjacency Diagrams
9. DESE Coordinated Program Review Report
10. DESE Coordinated Program Review Mid-Cycle Report
Meeting Minutes | Kick-off Meeting

05.03.2019

Attendees:

- Paul Moosey | Commissioner | City of Worcester
- Russ Adams | Assistant Commissioner | City of Worcester
- Jim Bedard | Director of Environmental Management & Capital Projects | Worcester Public Schools
- Kathryn Crockett | Principal in Charge | LPA|A
- Rob Para Jr. | Project Architect | LPA|A
- Chris Lee | Project Manager | LPA|A
- Christina Bazelmans | Assistant Project Architect | LPA|A
- Eugene Caruso | Owner’s Project Manager | AECOM Tishman

Item: Description: Responsibility:

5.3.2019.01 Team & Communication
- Steering Committee will be comprised of Russ Adams (RA) Jim Bedard (JB), and Maureen Binienda (MB). Katie Crockett will reach out to MB to confirm her availability and the extent that Principal Sally Maloney (SM) will be involved.
- All communication should be directed to the Steering Committee, RA will involve Paul Moosey (PM) as required.

5.3.2019.02 Schedule
- A standing bi-weekly Steering Committee meeting will be scheduled. JB, RA, and MB will advise on a day/time
  - The meeting could be located at Doherty High if SM will be involved
- Eugene Caruso will distribute the draft Project schedule which was approved by MSBA.

5.3.2019.03 Public Meetings
- Public meetings are planned for May 13th, Mid-June and early September (for PDP Vote)
- The team discussed that this project will have significant public interest, as well as input from neighboring parks advocates.
- LPA|A will take direction from City on what is appropriate to disclose publicly at a Steering Committee meeting to be scheduled prior to each public meeting
## Meeting Minutes | Kick-off Meeting

05.03.2019

<table>
<thead>
<tr>
<th>Item: 5.3.2019.04</th>
<th>Preliminary Design Report (PDP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>LPA</td>
</tr>
<tr>
<td></td>
<td>To accommodate this compact schedule, LPA</td>
</tr>
<tr>
<td></td>
<td>PDP study will result in recommendations for further study, but require the team to review No Build, Add-Reno, New Construction.</td>
</tr>
<tr>
<td></td>
<td>The study will review New Construction on Occupied Site, New Construction on Vacant Site, and new construction on alternate site(s) to be determined.</td>
</tr>
<tr>
<td>Responsibility:</td>
<td>Info.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item: 5.3.2019.05</th>
<th>Programming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Scheduling of the Visioning Session and school programming meetings are time sensitive if to be completed before summer vacation.</td>
</tr>
<tr>
<td></td>
<td>KT noted that LPA</td>
</tr>
<tr>
<td></td>
<td>PM/RA agree that community involvement in the visioning session would be beneficial given the public interest in this project.</td>
</tr>
<tr>
<td>Responsibility:</td>
<td>LPA</td>
</tr>
</tbody>
</table>
## Meeting Minutes | Kick-off Meeting

### 5.3.2019.06 Alternative Site Selection

<table>
<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>o KT will contact MB regarding interest and scheduling of the visioning session.</td>
<td>Info.</td>
</tr>
<tr>
<td></td>
<td>o RA and JB should be invited to all programming meetings, and will attend when they are available.</td>
<td>Info.</td>
</tr>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>5.3.2019.07 Existing Site and Building Analysis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o LPA</td>
<td>A noted a discrepancy on the existing site property line. RA will review and provide deed.</td>
</tr>
<tr>
<td></td>
<td>o Hazardous Material Survey</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Universal Environmental Consultants hazmat survey will be scheduled during summer vacation.</td>
<td>LPA</td>
</tr>
<tr>
<td></td>
<td>o UEC will test for regulated materials only.</td>
<td>CoW</td>
</tr>
<tr>
<td></td>
<td>o City will provide all previous testing reports</td>
<td></td>
</tr>
<tr>
<td><strong>5.3.2019.08 City Input</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CoW/WPS to advise on potential locations for Swing Space</td>
<td>CoW</td>
</tr>
<tr>
<td></td>
<td>Implications to existing site if an alternate site is selected</td>
<td>CoW</td>
</tr>
<tr>
<td></td>
<td>City will advise on relocations costs specific to each site option</td>
<td>CoW</td>
</tr>
<tr>
<td>Item:</td>
<td>Description:</td>
<td>Responsibility:</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td></td>
<td>City to confirm if a swimming pool is being considered as part of this project.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o LPA</td>
<td>A noted that the MSBA requires that any swimming pool be separated from the rest of the school building, (with separate entrance, lockers and restrooms) which limits the site development opportunities.</td>
</tr>
</tbody>
</table>

Attachments:
Minutes by: Christina Bazelmans, LPA|A
Distribute to: Attendees, Maureen Biniedo, Superintendent
File location: 1904/Minutes/Owner/2019.05.03 Owner Kick-off Meeting
On June 3, 2019 the entire faculty of Doherty Memorial High School participated in one-and-a-half-hour Educational Visioning Workshop that explored their priority goals for the renovated and/or new Doherty Memorial High School educational program and facility, as well as their visions for the future of DMHS educational program and facility. The following notes have been grouped thematically and highlight DMHS faculty priorities recorded during the workshop.

Faculty Priorities

Improved Technology
- Quick access to technology in the arts including computers, cameras, printers, or similar, printers
- Classrooms that are technologically up to date and can be easily updated to stay current as new technologies become available.
- Technology Integration. Computers that teachers can install software on. NOT Chrome books without a functioning Operating System
- Easy to connect/project technology
- Technology in the classroom less paper
- Enough Classrooms for each teacher with technology in place and full resources at hand to complement students’ learning would be a nice objective.
- More technologically equipped classrooms (i.e., SmartBoard and projectors in every classroom.)
- Up to date with technology
- Properly sized and outfitted Labs for Engineering Technology Academy (ETA) - typical class size = 25 students per class
- Built in large screen smart TV’s to eliminate VCR etc. Be able to use National Geographic/Netflix etc.
- Full technological integration - smart boards/printers/copiers/non-chrome book computers accessible for all faculty and students.
- Visual learning: Video and technology to enable students to learn in an optimal manner
- Updated/modern/ high speed wireless classrooms with built in media
- Technology that will allow for monitoring work during class.
- Adequate, easy access to technology (mounted projectors/smart boards)
- Updated technology and resources for children with various disabilities
Faculty Priorities Continued

**Vocational Programming and Hands-On Learning**

- Hands on learning for students who are not going to college, using technology and/or hands on learning to develop skills needed to be successful in obtaining a job, e.g., plumbing, electrician, culinary, etc.
- A service learning curriculum with vocational components
- The opportunity for students to study or learn trades, as well as high tech training
- Skills training available for not only students planning on college, but programming for trades and other skill-sets
- Expansive shop area in new building with new programs for all students. Shop programs for students who don't get in to Tech
- Chapter 74 programs that students are most interested in taking (even if they're already offered at Worcester Voc or another WPS high school)
- Space to offer evolving programming needs that reflect labor trends
- Technical education options (woodworking, mechanics, cooking, photography etc...) that offer education for all different types of learners.
- Vocational/Tech type center, school store, bank, cafe etc. for real world life skills
- Safe and open work space for the engineering vocational program
- The addition of an auto tech/auto body shop
- Sufficient space for functional life skills classroom
- Common teacher workspace for shop teachers
- Common skills department for cooking, laundry, sewing, life skills
- Real world connections
- Student-led PBL and real-world connections using state of the art technology
- Increase of maker spaces that support multiple content areas such as areas to support entrepreneurship opportunities beyond STEM courses. (Business entrepreneurship, social services entrepreneurship, etc.)
- Real world courses - financial literacy, social skills, communication skills, etc.

**Agile Classrooms**

- Student access to different types of learning spaces (maker spaces, for example)
- A classroom for every teacher and extra for additional staff. Plenty of wall space for shelves, corkboards, ceiling projectors and screens.
- Functioning laboratory setting for the classroom
- Classroom space for the more than likely increase in number of students attending this school in years to come.
- An increased number of classrooms to give the majority of teachers their own classroom and hopefully cut down class sizes.
- White board space all around the room so students can move.
- Spaces for STEAM
- Adequate storage/organizers for project materials and student W.I.P.
- Project/lab based learning spaces in every room
- Designated testing areas for standardized tests and unit exams, available by department (2)
- Good use of wall space for whiteboards or corkboards. Increased whiteboard space to allow more information to be given to the students. Smart boards would be helpful
- Open classroom with pods, comfortable classrooms conducive to learning
- Doors between classrooms for safety, convenience among many other reasons. If we need to cover classes we can open the door or if we need help for some reason the door can be opened to cut down on response time.
- Space & layout to support differentiated instruction for students working at different paces.

**Collaboration and Connections**

- Work space/office space for prep and planning
- Room for curricular materials
- Dedicated space per department for teacher planning
- PLC/Teams/common planning time
Faculty Priorities Continued

• While space is great, make sure teachers in the same department are not spread out too much
• Teacher and students small meeting spaces
• Collaborative Space for Counselors/Student Support Services; group departments near one another
• A workroom for each department where students know they can always go for extra help. Peer tutors can be available there throughout the day and/or after school. Off of these rooms can be closets to store books, department photocopies, places for teachers to collaborate or work with students.
• More & larger rooms/community spaces/hallways
• Collaboration Spaces (cross curricular and vertical teams)
• Rooms for collaborating between teachers, students, and to make phone calls
• Book Room/common room for teachers per department
• Common space for teachers to be when they are not teaching during prep times
• A multidisciplinary space, to include guidance, health center, mental health, psychologist and adjustment counselors to work together.
• PLC/Team/Common Planning rooms/spaces for departments.
• Each teacher has their own classroom or individual "work space"/office within a collaborative teachers room
• Access to materials for both faculty and student
• Create a small school where students can take college level classes
• Meeting spaces for each department other than classrooms, for parent meetings, PLC meetings and department meetings
• Teacher office space to facilitate conversations with home
• A comprehensive teacher work area with access to printers copiers

Community Access and Use
• Community Friendly
• Group meeting spots other than cafeteria for parent/community meetings
• After-school usage
• Family Resources and support services
  o Food pantry for our students

Spaces for Performing and Visual Arts
• Integrated auditorium (fully functional) that has access to practice rooms (individual) and ensemble rooms
• A comfortable and modern theater with community theater capabilities (lights, special effects, catwalk, tech booth, etc.) and that is only used for productions.
• Create space where each art teacher has their own room and have the music and theater in the same space
• A Music Lab with 24 stations
• Mini auditoriums for 100-200 people
• An auditorium seat for every student at same time
• Increase the arts and options for elective courses. Video Recording Studio. Audio Recording Studio... Keep up with modern technology.

Improved Athletics and Physical Education
• A state-of-the-art gymnasium that can serve both the students and the community
• Improved/enlarged gym area/courts and adequate parking for faculty, students, and visitors.
• Bigger gym and bleachers
  o Gymnasium space large enough to have a dividing wall
• A gym that houses a regular size gym where our teams can play home games
  o In addition, the gym would need a sufficient weight room and cardio room where kids could work out and the area would not have to be put away each day like North High
  o The gym would need large closet space which we do not have in the present school
• A new athletic field house
• Racquetball and tennis courts etc.
Faculty Priorities Continued

- Weight and cardio rooms’ space and equipment
- A field House to accommodate PE/Athletics and city-wide activities
- Robust extracurricular/athletic/club spaces
- Sports spaces (of all kinds, not just “main” sports)
- Physical education equipment with proper storage space
- A locker room and complete indoor workout area, besides the gymnasium, with lockers for each student athlete on a sports team for that season as well as a second gymnasium

Dining and Food Service

- Enough seating for students in cafeteria
- Student centered spaces for lunch time
- A cafeteria that can handle the students in a normal length lunch, where all students can get a lunch and still have time to eat
- Cafeteria for Special ED students with emotional issues
- Teacher dining facilities

Gathering Spaces

- Large spaces for students to gather. ex-space for 150 students to gather for presentations (not the auditorium, necessary for ETA)
- Space to have group presentations...I teach in a small school and we need a space to do larger projects/presentations etc.
- Space for collaboration: Work rooms with white boards; for both educators and for students beyond special education.
- Space for hands on learning in all parts of the building
- White-board space everywhere! Teachers can observe multiple students working together or individually on the boards and provide instant feedback. This also allows students to observe how others have worked out their answers.
- An area for gifted and talented/ high achieving students
- Space/facilities that are available during the school day to teach skills, as well as available to the community after school hours i.e. teaching cooking during school, as well as kitchens/lessons available to the community after-hours
- A large group instruction area where teachers can bring classes to work on project that cannot be done in a typical classroom or where two or more classes can get together to collaborate.

Outdoor Connections Spaces

- Open space, green space, relaxation space, and recreational opportunity space to add to the ambience and the feeling Safe courtyards/ outdoor spaces that can be utilize to teach/ students can have lunch in. Students need to be out in nature more.
- Safe/monitored outdoor spaces for students to use
- Open flow common areas (including outdoor space for students to congregate at lunches) that promote ease of access and interaction among students
- of being in school is enjoyable.
- Courtyard
- Outdoor classroom space
- Outdoor space that can be accessed by students throughout the day

Flexibility

- Spaces that are flexible and adaptable to future technological, cultural, or geographic needs
- Rooms that allow for flexible seating and spaces for reading, writing, group work, independent space
- A school that can satisfy all of our needs academically, athletically, with the arts and as members of the community.
- Flexible space that allows for collaborative and can change and be reconfigured as student needs and educational needs change and evolve
- Open access at all times to important resources (photocopiers, printers, meeting space, etc.)
- Space for multisensory/relaxation/anti-anxiety/letting out stress (trampoline/punching bag/calming music)
Faculty Priorities Continued

- A room shape that allows a variety of seating arrangements, not just rows. A Square-ish room that would allow desks to be arranged in a u-shaped conversation class vs. group-work classes vs. test taking classes. Classrooms where kids can have stand-up desks or mats on the floor. It would be great to have flexibility with teacher’s desks placement.
- Privacy in our prep and lunch time
- Space design that provides options for various learning experiences
- Seating that is flexible for students
- Flexible spaces/furniture
- Variety of seating types (i.e. stand-up work spaces)

Innovative Building Features

- State of the art facility that truthfully exhibits the state of the art education the students already get here. Please check out Foise building at WPI for inspiration.
- I would like to see how the improvements in the new building create an environment that has more opportunity for academic growth between staff and with students. A building with an increased level of safety and comfort will create a work space that students and staff will appreciate being in.
- I would like to see a school that has the ability to adapt to future learning standards both technologically and academically.

Right Sizing

- A footprint for the school that is an appropriate size. At its present location, Doherty has never been able to host many indoor or mostly outdoor events. A new school would be roughly twice as big as the present school. As such, I think it needs to be put on an appropriate sized piece of land (similar to South and Burncoat).
- A building that can safely accommodate increasing enrollment based on current and realistic projections of growth rates in birth, migration, and immigration rates.
- Appropriate extracurricular space and student support space (e.g. guidance, office, administrative, meeting, testing rooms), and for example improved athletic space.
- New expansive building.
- Space available to comfortable fit all our students, with space for the growth of a larger school body with a variety of needs that exceed what is traditionally associated with school/education.
- Book Rooms for classroom texts.
- Wide/safe hallways.
- Space for English department to store novels and other auxiliary texts.
- Storage spaces for all departments: Book room(s) for English, chemical rooms for science, etc.
- Closed storage space in the classroom (no open cabinets) with shelving.
- Work space for each department that is convenient to classrooms and provides printing/copying/communicating with parent functions.
- Outdoor space that can be accessed by students throughout the day.
- Bigger bathrooms.
- Consideration for students who need space. Not just special ED students, but regular ED students too (for example, those who may not want to eat with several hundred others, and need a different environment).

Thermal Control

- Working windows.
- HVAC.
- Flexible classroom space with access to fresh air and natural light.
- Roof and windows that open.
- Working facility with above adequate technology and environment including temperature control both winter and summer.
- Plan for an increased student population, realizing that when the new school is built we anticipate an influx in students claiming residency in our quadrant.
Faculty Priorities Continued

- Heating/Cooling
- Having multiple sink areas/drying racks in that space
- Air Conditioning
- Climate control (heat and AC for instrument health and well-being)
- Ventilation system for paint and dust.

Handicapped and Universal Access
- Physical and technical accessibility for everyone
- More than one handicap-accessible entrance/exit via elevators (several) throughout building
- Multiple entrances/exit into each room
- Elevator

General
- Organize buildings by departments
- New not renovated

Media Center Library
- The library should be centrally located in the new school. Students, faculty and visitors should see it immediately when walking into the building and have it very accessible.
- A media room: newsroom, television studio, podcast, graphic arts...
- 21st century library
- The library should be reflective of the entire school. It should have room for small study groups for collaboration purposes, space for presentations, both big and small and quiet study areas.
- An up to date library/media center for students to use. One room with computers for students to use during the day, another room for quiet reading/working. Another room for groups of students to meet to work together.
- The library should be an information hub. It should include updated materials, books and magazines. Also, there should be permanent computer/laptop area to accommodate a full size class.

Adequate Parking
- Separate parking for students and teachers so it doesn’t take 20-30 min to leave school.
- Better TRAFFIC FLOW!!!!
- Covered parking that doubles as solar power gathering stations
- Ample parking

Safety and Security
- Security and safety: students should be paramount. This includes transportation drop off / pick up, video monitoring and hallway design that enables optimal use of space
- Metal detectors
- Improved hallway sightlines, supervision logistics (e.g. for security purposes). Additional logistics such as ensuring a single (or reduced number of) access points so that we can heighten building security. Having a more limited number of ingress/egress points will likely improve security for staff and students.
- Key access for teachers into building and every learning space

Up to Date Science Classrooms
- Science Lab for all teachers
- Working buns and burners and fume hoods
- Fully upgraded science labs and science classrooms where furniture does not need to be moved.
- Up-to-date science labs in the classroom with technology for each teacher (no room sharing) with gas, hoods, sinks, etc.
- Science classrooms that include class and lab space...NOT separate labs that must be shared/reserved/moved to.
Faculty Priorities Continued

- Appropriate lab space (think North/Tech)
- Virtual Reality Ready. Valve Index Base Stations in science labs
- Bigger (able to comfortably accommodate 30 students) science classrooms - perhaps half the class a "normal" classroom set up while the other half are lab benches.
- Common storage space for lab materials that makes items easy-to-see and easy-to-organize for sharing between teachers.
- Working hoods, working faucets/plumbing, working gas pipes for bunsen burners in every science classroom.

Special Needs Support

- Social emotional learning/ psychological/mental health space. Having cohesive but private spaces for school psychologist/school adjustment counselors/ guidance counselors to be able to collaborate. Privacy and confidentiality but ease of communicating within the department.
- A multisensory space for school psychologist/school adjustment counselors, meaning dimmed lights, music, low stimulating space, emotional regulating space, etc.
- A space for the lower SES students to be able to wash/dry clothes, etc.
- Space for each Special Ed. teacher and service provider, space for teachers to work 1:1 with students who need extra support
- Quiet, private areas for completing ED assessments with students
- Sufficient space for special ED classrooms, collaboration, clinical office
- Specialized equipment for students
- Sufficient space for life skills/ special education
- Counseling suite includes guidance/adjustment/school psychologist for easy consultation and student/family services
- Onsite facilities for both regular and chapter 74 curriculums.
- Adequate and dedicated space for special education and related service providers
- Larger classrooms for special education classes
- Larger classrooms for SPED/ designated SPED testing area
- A wing for the STEP program, with their classrooms and counselor
 Priority Goals

The following priority goals for the design of the renovated and/or new Doherty Memorial School were recorded during the participant introduction section of the Educational Working Group’s (EWG) Workshop One that took place on June 5, 2019. Priorities have been grouped by theme. The EWG is a group of approximately 20 participants that includes Worcester Public Schools leadership, as well as administrators, teachers, parents and community partners.

Community Use
- Multi-functional building
  - Community use / after school
  - A community area for gathering
- Community Resources
  - Food pantry
  - Clothing
  - Washer/dryer

Welcoming and Inclusive
- Build on inclusive / welcoming aspect of school
- Welcoming universal design
- Multi-lingual signage - environment of welcome
- Locker rooms / restrooms / bathrooms for all / LGBTQ – safety
- Confidential meeting spaces

Supporting Innovative Programming
- More classrooms that allow for flexible learning
- Adequate technology for all classroom spaces
- Designing spaces that adapt to future use
  - Tap into innovative thinking
- An area large enough for whole school assembly
- Library & media Increased support for grade 9 - important transitions
- A language room - for community and students
- Dedicated student study areas
- Large group instruction areas
- Distributed dining
- More showcase areas
- Spaces for clubs

Flexible, Adaptable and Sustainable
- Flexible enough to not be outdated quickly
  - Systems adaptability
- A building that seeks LEED certification
- A net zero building environmentally integrated into site
- A building that will stand the rest of time for 50 years
- A school with room to grow 1700+
- Adequate site - if on Doherty site - improved traffic, etc.
- A site that provides the appropriate space/footprint
- Make sure all info gathered makes it into design
Priority Goals Continued

Career Pathways
- Career pathways for post-secondary prep
- A design that accommodates different career pathways/trades
  - Multi-use labs-shops
  - A program for childhood education
- All the arts incorporated into the building
- More space dedicated to Radio Station, TV Studio, Instrumental, Podcasts
- Big and small opportunities
  - Greenhouse
  - Kiln
  - Fields

Wellness and Athletics
- Field house & gym
  - Address large number of kids doing track and field
- Having fields close to school
- A separate weight room/windows/lock
- Multi-purpose outdoor athletic complex
- A wellness facility that accommodates new health and wellness
- Room for yoga and relaxation

Thermal Comfort and Ease of Use
- All core systems work well
- Windows that open
- Ventilation systems as appropriate
- Wider hallways
- Improved traffic patterns
- Adequate parking for staff, students, visitors, deliveries
Future Ready Learning Goals 2.0

The following set of priority “21st Century Learning Goals 1.0 for Doherty Memorial High School students was developed by the Educational Working Group (EWG) during Workshop One. Four teams of five participants worked to create their own set of learning goals, after which each team presented to the larger group. Each team’s list was then grouped by like goals, with each Learning Goal receiving 5 votes for appearing on an original list.

1. **Civic Responsibility** (30 votes)
   - Empathy, Caring and Humility
   - Multi-Cultural Literacy and Global Awareness
   - Social Reasoning
   - Service and Compassion
   - Integrity and Ethical Decision Making
   - Respect

2. **Creativity** (30 votes)
   - Culture of Innovation
   - Curiosity and Imagination
   - Initiative and Entrepreneurship
   - Joy

3. **Critical Thinking and Problem Solving**
   - Assessing and Analyzing
   - Computational Thinking
   - Understand, Apply, Create

4. **Adaptability and Resilience** (25 votes)
   - Managing Complexity
   - Responsibility for Learning
   - Learning to Learn/Self Direction
   - Perspective

5. **Communication** (20 votes)
   - Digital Age Literacy
   - Global Communication
   - Asking Good Questions

6. **Collaboration and Leadership** (15 votes)
   - Learning to Live and Work Together
SCOG Analysis

The Educational Working Group (EWG) conducted a “SCOG Analysis” of what it sees as the current strengths, challenges, opportunities and goals with regard to Doherty Memorial High School’s academic programs and facilities. The EWG is a group of approximately 20 participants that includes Worcester Public Schools leadership, as well as administrators, teachers, parents and community partners.

STRENGTHS

- Talented and diverse student population
  - Good heads on their shoulders
- Teachers that go above and beyond
  - Knowledge
  - Dedication
- High expectations
- Strong reputation in community
- Close knit faculty - caring, responsive
- A faculty with the grit and motivation to meet challenges and work with what they have (NEASC pointed out the high level of success and approval that school achieves, especially given the limitations of budget and facility)
- Rigorous and meaningful academics across the whole school
- Welcoming community
  - Safe culture
- Special education integration
  - Life skills kids
  - LGBTQIA supports
- Peer learning communities that are working well
  - Professional Learning Communities are now departmental and will be expanding next school year
- Strong Engineering Department - students/teachers
- Strong Athletics Department - champions in many sports
- Very strong Visual Art and Performing Arts Programs
- Strong AVID (Advancement Via Individual Determination) Program
- Placement of students into higher education
  - 18 Different colleges in this years’ graduating class
  - Exceptionally strong guidance department
- Community services
  - Food pantry
  - Clothes bank
- Lots of students engagement in extra-curricular, clubs, athletics
  - A new building should provide spaces for that
- We do a lot with the community
  - Massive food drive
  - Newton Hill clean-up
- Central location
**CHALLENGES**

- 9th Grade students need a smaller community
  - They sometimes set themselves back in freshman year
- Need more things structured around ELL students
  - Need better support system
- Limitations in staff and budget
  - Only have 2 adjustment counselors
  - Need more mental health services for large population
- Limitations of space and challenges of location
  - Insane traffic patterns/noise
- Limited facilities and equipment for Athletics and Health
  - Indoors & outdoors

- Onsite athletic fields
- Hard to build community when always playing “away” games
- Lack of space and equipment for Performing Arts
- Hard to follow the standards
- Lack of conference and private meeting space
- Space for adequately testing kids
- A place to store books
- Limits of technology
- We don’t have a way to call other classrooms and find out where kids are
- Inadequate Health Suite
- Lack of drinking water
- Language LABS – we would like to increase the number of students with a Seal of Biliteracy

**OPPORTUNITIES & GOALS**

- Increase student pride
  - Give students the school they deserve
  - Match what we know the school is to what people see
  - A place where kids get a great education
- A new building that reduces the carbon footprint of district
  - Serve as model for sustainability
- Enhance present programs and creation of new ones
- Give teachers tools they need to diversify their teaching
- Offer new programs we presently don’t have space for
- Provide more and better spaces for
  - Athletics
  - Performing Arts
  - Visual Arts
  - Vocational Programs
- Offer something for everybody
- Attract families who have left Doherty back to the District
- Get the community into the building and using it
### Attendees:

- **Sally Maloney** | Principal | Doherty Memorial High School
- **Russ Adams** | Assistant Commissioner | City of Worcester
- **Jim Bedard** | Director of Environmental Management & Capital Projects | Worcester Public Schools
- **Sarah Kyriazis** | Manager of Instructional Technology and Digital Learning | Worcester Public Schools
- **Kay Seale** | Manager of Special Education & Intervention Services | WPS
- **Carmen Melendez-Quintero** | ELL Director | WPS
- **Sherri Blake** | English Department Head | DMHS
- **Adriana Dine** | World Language Department Head | DMHS
- **John Staley** | Assistant Principal | DMHS
- **Valerie Sanchez** | Science Department Head | DMHS
- **Mike Hargrove** | ESP Department Head | DMHS
- **Renah Razzak** | Math Department Head | DMHS
- **Steve Bucciaglia** | Social Studies Department Head | DMHS
- **Judy Fairfull** | Guidance Department Head | DMHS
- **DMHS Teachers** | See Attached Sign-In Sheet
- **Eugene Caruso** | Owner’s Project Manager | AECOM Tishman
- **Rob Para Jr.** | Project Architect | LPA|A
- **Chris Lee** | Project Manager | LPA|A
- **Christina Bazelmans** | Assistant Project Architect | LPA|A

### Item:

<table>
<thead>
<tr>
<th>Item: 06.12.2019.01</th>
<th>Description: Summer school program to continue, current enrollment is 100 students, but may increase. District (Stefani Stockwell) will advise on enrollment projections.</th>
<th>Responsibility: WPS</th>
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</table>

| Item: 06.12.2019.02 | Existing Enrollment is approximately evenly distributed by grade  
- 9th: 382 (400 prior to Worcester Tech acceptances)  
- 10th: 389  
- 11th: 377  
- 12th: 340  
- 1,488 total | Responsibility: Info. |
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| 06.12.2019.03 | ELL adjacency to World Language would be beneficial. Co-teaching would be desired. Existing Enrollment:  
                   - 9th: 88  
                   - 10th: 65  
                   - 11th: 55  
                   - 12th: 45 | Info.          |
| 06.12.2019.04 | World Language department has 9 teachers and 9 classrooms existing. Require 2–3 language labs and a common teacher planning area. | Info.          |
| 06.12.2019.05 | DMHS offers 22 AP programs, recently tripled enrollment to 800 students enrolled in at least 1 AP course.  
                   - Computer labs are required for some courses, DMHS to advise on any additional spaces that are required to serve AP programs. | DMHS          |
<p>| 06.12.2019.06 | DMHS currently has 13 Science teachers, and expect to grow to 14–15. Request 15 science labs in proposed program, exterior access would be beneficial. | Info.          |
| 06.12.2019.06 | Both departmental and interdisciplinary teacher planning spaces are desired. Short throw projector in each teacher planning room. DMHS will advise on the size and quantity | DMHS          |
| 06.12.2019.07 | Discussed the various uses of Common Rooms, DMHS will advise on the desired number, size and adjacencies | DMHS          |
| 06.12.2019.08 | Discussed the possibilities of 9th grade teams and departmental organization. DMHS will review and advise on the organization and number of classrooms desired for each team/department. | DMHS/WPS      |
| 06.12.2019.09 | Lockers are required for each student, but should not be located within departments, preferred location would be in primary circulation path. | Info.          |</p>
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<tr>
<td>06.12.2019.10</td>
<td>Special Education spaces are moving toward an inclusion model and noted that DESE discourages clustering SPED spaces together. Discussion of providing support for an increased number of students with Autism. District and school representatives will discuss and advise on the desired program. Preliminary list: Life Skills, STEP Classrooms / Clinician offices, OT/PT, Adult Daily Living / Vocational Learning Center, Specialized meeting and testing rooms dispersed, Breakout spaces with visual connections to classroom, Exterior Access</td>
<td>WPS/DMHS</td>
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<td>06.12.2019.11</td>
<td>Adjacency between English and ELL would be beneficial, large book storage area is desired.</td>
<td>Info.</td>
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<tr>
<td>06.12.2019.12</td>
<td>A single central entrance is desired for organization and security.</td>
<td>Info.</td>
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<tr>
<td>06.12.2019.13</td>
<td>Art and Music programs were not discussed, requirements will be determined at a future meeting.</td>
<td>Info.</td>
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Attachments: Sign-in Sheet
Minutes by: Christina Bazelmans, LPA
Distribute to: Steering Committee
File location: 1904/Minutes/Owner/2019.06.12 Academic Organization
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<td>Meghan Perez</td>
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</tr>
</tbody>
</table>
Attendees:

- Maureen Binienda | Superintendent | Worcester Public Schools
- Sally Maloney | Principal | Doherty Memorial High School
- Russ Adams | Assistant Commissioner | City of Worcester
- Jim Bedard | Director of Environmental Management & Capital Projects | Worcester Public Schools
- Kate Kerr | Superintendent Chief of Staff | Worcester Public Schools
- Todd Stewart | Superintendent Fellow
- John Staley | Assistant Principal | DMHS
- John O’Malley | Assistant Principal | DMHS
- Peter Bowler | Assistant Principal | DMHS
- Carolyn Waters | Instructional Coach | DMHS
- Martin Dyer | Worcester Fire Department
- David Shea | Athletic Director | WPS
- Carol Manning | Health and Physical Education Liaison | WPS
- Donna Lombardi | Director of School Nutrition | WPS
- Brian Corbley | School Nutrition | WPS
- Ed Whalen | Facilitator | WPS
- Colleen Kelly | Library Media Specialist Liaison | WPS
- Eugene Caruso | Owner’s Project Manager | AECOM Tishman
- Rob Para Jr. | Project Architect | LPA|A
- Chris Lee | Project Manager | LPA|A
- Christina Bazelmans | Assistant Project Architect | LPA|A

<table>
<thead>
<tr>
<th>Item: 06.14.2019.01</th>
<th>Description: Physical Education programs are shifting toward lifetime sports and wellness. Dance, Yoga, biking, golf,</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Gym to support 4 classes at one=120 students</td>
</tr>
<tr>
<td></td>
<td>- 4 PE teachers projected for future enrollment</td>
</tr>
<tr>
<td></td>
<td>- 2 Health Classrooms desired, near gymnasium</td>
</tr>
<tr>
<td></td>
<td>- Weight lifting and Wellness/alternative PE space desired</td>
</tr>
<tr>
<td></td>
<td>- Visual connection to gymnasium is critical</td>
</tr>
<tr>
<td></td>
<td>- Bleachers for full school assembly, motorized screen and full AV capabilities</td>
</tr>
<tr>
<td></td>
<td>- Exterior access required, adjacency to health suite desired</td>
</tr>
<tr>
<td>Item: 06.14.2019.02</td>
<td>Athletics interior requirements</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>• Gymnasium may be rented</td>
<td></td>
</tr>
<tr>
<td>• Indoor track is highly desirable, discussed MSBA policy on maximum gymnasium size. This must be discussed further with OPM and District</td>
<td></td>
</tr>
<tr>
<td>• Lockers and team rooms required, WPS will provide max number of students</td>
<td></td>
</tr>
<tr>
<td>• Athletic storage similar to South High.</td>
<td></td>
</tr>
<tr>
<td>• Gender neutral/family lockers/toilets/showers required</td>
<td></td>
</tr>
<tr>
<td>• Coach/referee locker rooms with showers required</td>
<td></td>
</tr>
<tr>
<td>Responsibility: WPS/OPM</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item: 06.14.2019.03</th>
<th>RA confirmed that Doherty will be a non-designated emergency shelter, and will follow the precedent established by South High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsibility: Info.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item: 06.14.2019.04</th>
<th>Auditorium</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Max 750 seats per MSBA policy (graduation held offsite)</td>
<td></td>
</tr>
<tr>
<td>• Technical theater class, requires full rigging and fly loft</td>
<td></td>
</tr>
<tr>
<td>• Requires dressing rooms and room for orchestra “pit”</td>
<td></td>
</tr>
<tr>
<td>• Set storage and large overhead door to stage is required</td>
<td></td>
</tr>
<tr>
<td>• Ticket booth required, could be located in lobby to serve gym and auditorium</td>
<td></td>
</tr>
<tr>
<td>• May be rented</td>
<td></td>
</tr>
<tr>
<td>Responsibility: Info.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item: 06.14.2019.05</th>
<th>(2) Theater classrooms required (larger than a classroom), possibly with an acoustic movable wall between so the space could double as an alternative performance space.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Access from the lobby required, for after-hours “black box” performances</td>
<td></td>
</tr>
<tr>
<td>Responsibility: Info.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item: 06.14.2019.06</th>
<th>Media Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>• CoW/WPS to confirm if the Doherty Media Center will be a One City One Library branch</td>
<td></td>
</tr>
<tr>
<td>• Space will be used for professional development; Flexible location or multiple locations of presentation walls.</td>
<td></td>
</tr>
<tr>
<td>• Need confirmation of small group/large group seminar rooms/computer labs</td>
<td></td>
</tr>
<tr>
<td>Responsibility: WPS/DMHS</td>
<td></td>
</tr>
<tr>
<td>Item: 06.14.2019.07</td>
<td>Description: Cafeteria</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>06.14.2019.07.01</td>
<td>Plan for 4 lunch seatings, cafeteria will also provide breakfast and evening meals</td>
</tr>
<tr>
<td>06.14.2019.07.02</td>
<td>Desire student toilet rooms in or adjacent to the cafeteria</td>
</tr>
<tr>
<td>06.14.2019.07.03</td>
<td>Will be used for Professional Development, requires drop down screen and AV capabilities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item: 06.14.2019.08</th>
<th>Description: Kitchen/Serving</th>
</tr>
</thead>
<tbody>
<tr>
<td>06.14.2019.08.01</td>
<td>Paper and dry storage</td>
</tr>
<tr>
<td>06.14.2019.08.02</td>
<td>(1) walk-in freezer and (2) refrigerated walk-ins.</td>
</tr>
<tr>
<td>06.14.2019.08.03</td>
<td>Dry food storage and dry prep area</td>
</tr>
<tr>
<td>06.14.2019.08.04</td>
<td>Lockers and bathrooms for staff</td>
</tr>
<tr>
<td>06.14.2019.08.05</td>
<td>Designated chemical storage/jan. closet</td>
</tr>
<tr>
<td>06.14.2019.08.06</td>
<td>Eye wash stations as required</td>
</tr>
<tr>
<td>06.14.2019.08.07</td>
<td>Office with (4) workstations</td>
</tr>
<tr>
<td>06.14.2019.08.08</td>
<td>Desire a satellite kitchen for heating and holding grab and go meals, to be located near entrance/after school programs</td>
</tr>
<tr>
<td>06.14.2019.08.09</td>
<td>Servery will be scramble style, 5 serving stations with a variety of offerings, two grab and go islands and 6 POS stations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item: 06.14.2019.09</th>
<th>Description: Loading Dock</th>
</tr>
</thead>
<tbody>
<tr>
<td>06.14.2019.09.01</td>
<td>Separate loading dock for cafeteria and general receiving</td>
</tr>
<tr>
<td>06.14.2019.09.02</td>
<td>Cafeteria: elevated dock with space for two trucks, (1) 30-yard compactor, two trash dumpsters, ramp access</td>
</tr>
<tr>
<td>06.14.2019.09.03</td>
<td>General Receiving: elevated dock with truck loading, overhead door access, adjacent building and outdoor storage, ramp access</td>
</tr>
<tr>
<td>06.14.2019.09.04</td>
<td>Outdoor equipment storage will be required</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item: 06.14.2019.10</th>
<th>Description: Vehicular Circulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>06.14.2019.10.01</td>
<td>400 Students ride buses, students that live within 2 miles walk, number fluctuates by season</td>
</tr>
<tr>
<td>06.14.2019.10.02</td>
<td>Parent drop off (hundreds) is higher in the AM</td>
</tr>
<tr>
<td>06.14.2019.10.03</td>
<td>(8) Morning buses, rolling drop off</td>
</tr>
</tbody>
</table>
Item | Description | Responsibility
--- | --- | ---
| (10) Afternoon buses that line up/park at dismissal | | 
| (5) Afternoon sped buses (may increase with additional SPED programming, WPS to advise) | | 
| o SPED drop-off must be in close proximity to entrance | | 
| Proposed: | | 
| o 250 student/visitor parking spaces | | 
| o 180 Staff/Faculty spaces | | 
| 06.14.2019.12 Utilities | School is currently served by natural gas | Info. 
| 06.14.2019.13 Site Athletic | Goal would be to support all sports and practices on site; not to rely on Foley Stadium | Info. 
| Softball, Baseball, Boys and Girls Soccer, Lacrosse, Field hockey, football, track and tennis | | 
| Artificial turf and field lighting is preferred | | 
| Multi-vantage press box | | 
| Relative bleacher capacity for each game field | | 
| Restrooms and concessions required | | 
| 06.14.2019.14 An outdoor classroom is desired, logistics of use would need to be established | | Info.
<table>
<thead>
<tr>
<th>Name</th>
<th>Department/Role</th>
<th>Email</th>
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</thead>
<tbody>
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<td>buskepg.</td>
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<td>Ed Whalen</td>
<td>Facilitation</td>
<td>whalenw.</td>
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<td>Superintendent</td>
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- Kate Kerr | Superintendent Chief of Staff | Worcester Public Schools
- Todd Stewart | Superintendent Fellow
- John Staley | Assistant Principal | DMHS
- John O’Malley | Assistant Principal | DMHS
- Peter Bowler | Assistant Principal | DMHS
- Ed Capstick | Assistant Principal | DMHS
- Maria Tzikas | Guidance Counselor | DMHS
- Mary Knox | Guidance Counselor | DMHS
- Kristen Montgomery | Guidance Counselor | DMHS
- Judy Fairfull | Guidance Counselor | DMHS
- Eugene Caruso | Owner’s Project Manager | AECOM Tishman
- Katie Crockett | Principal in Charge | LPA|A
- Rob Para Jr. | Project Architect | LPA|A
- Chris Lee | Project Manager | LPA|A
- Christina Bazelmans | Assistant Project Architect | LPA|A

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<tr>
<th>Item: 06.17.2019.01</th>
<th>Description: Main Administration required spaces (at main entrance)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Reception desk with (4) counter workstations</td>
</tr>
<tr>
<td></td>
<td>• (1) Principal office</td>
</tr>
<tr>
<td></td>
<td>• (1) SRO office, with visibility to lobby</td>
</tr>
<tr>
<td></td>
<td>• (1) Secure walk in vault (double existing)</td>
</tr>
<tr>
<td></td>
<td>• (1) Conference room for 20 staff</td>
</tr>
<tr>
<td></td>
<td>• (2) Instructional Coach (IC) offices: desk table for 4</td>
</tr>
<tr>
<td></td>
<td>(may want to be distributed in academic wing; by floor,</td>
</tr>
<tr>
<td></td>
<td>depending on the building organization)</td>
</tr>
<tr>
<td></td>
<td>• (1) MCAS office requires desk and worktable to sort</td>
</tr>
<tr>
<td></td>
<td>materials</td>
</tr>
<tr>
<td></td>
<td>• (1) conference room for 12 shared by IC and MCAS</td>
</tr>
<tr>
<td></td>
<td>DMHS</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Item: 06.17.2019.02</th>
<th>Description: Satellite/distributed Admin (distribution to be confirmed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• (6) AP offices</td>
</tr>
<tr>
<td></td>
<td>Info.</td>
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</tbody>
</table>
Meeting Minutes | Admin, Guidance Medical & Media Center 06.17.2019

- AP offices should be in groups of at least 2 with shared admin, (1) conference room for 6 people, and possibly an adjustment counselor office.

06.17.2019.03 Guidance

- (1) Guidance secretary
- (8) Guidance counselor offices
- (1) MassEdCo office
- (1) School psychologist with table
- (1) College and Career Center for 30 students w/ flexible tables, projector, visibility from guidance office. Will also be used as guidance conference/meeting room.
- (4) Adjustment counselors

Guidance and AP’s work very closely together, and may provide coverage for a student in need when the other busy. DMHS will review advise on the desired adjacencies or dispersion of the guidance/adjustment counselors.

06.17.2019.04 Special Education Admin

- (1) SPED Team Chair office
- (1) SPED Department head office
- (1) SPED Conference room
- (1) STEP Clinician (confirm proposed number)
- (1) 9th Grade Team Clinician (anticipated)

06.17.2019.05 Medical Suite

- Existing medical suite is undersized and supports both the school nurse and Family Health Center (FHC) clinic. Some distinction/separation between the two is desired.
- Nurses see, on average, 80 students per day, 12 students take medication at school
- 780 students enrolled at the clinic currently
- No after-school hours or public access proposed for clinic.
- Exterior door required for ambulance access
- Proposed spaces to be confirmed with WPS and FHC, direction given to carry the area allocated for the South High Medical suite for now.
Meeting Minutes | Admin, Guidance Medical & Media Center  

06.17.2019.06 Nurse Office  
- (2) existing nurses, propose (3) for future enrollment  
- (1) Medicine distribution area required  
- (1) food pantry desired associated with school nurse  
- Proposed program to be confirmed by Deb McGovern (WPS Coordinator of Nursing Services)

06.17.2019.07 Family Health Services Clinic  
- Currently (1) Nurse practitioner, (1) Secretary and (1) Behavioral health clinician on site  
- Proposed program to be confirmed by Sue Sleigh (FSC)

06.17.2019.08 Media Center  
- Centrally located  
- Media center may be used for full school professional development, if it could fit 150. LPA|A will review the area allocated by the MSBA Guidelines  
- Large group seminar space could be used for staff meetings  
- A maker space associated with the Media Center would be desirable.

06.17.2019.09 Social Emotional Learning Center (In-school suspension) should be located near Adjustment counselors, classroom for 20 students.

06.17.2019.10 School store would be part of the Ch. 74 Business and Marketing program, and would be located near the main entrance. Related classrooms may be strategically located for community use.

Attachments: Sign-in Sheet  
Minutes by: Christina Bazelmans, LPA|A  
Distribute to: Steering Committee  
File location: 1904/Minutes/Owner/2019.06.14 Core Community Use & Site
<table>
<thead>
<tr>
<th>Name</th>
<th>Department/Role</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jim Bedard</td>
<td>WPS Facilities</td>
<td><a href="mailto:bedardy@worcesterschools.net">bedardy@worcesterschools.net</a></td>
</tr>
<tr>
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<tr>
<td>Mary Knox</td>
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<tr>
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<tr>
<td>Judy Fairchild</td>
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<td>John Stely</td>
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<td><a href="mailto:stelyj@worcesterschools.net">stelyj@worcesterschools.net</a></td>
</tr>
<tr>
<td>Todd Sturgill</td>
<td>Superintendent - WPS</td>
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</tr>
<tr>
<td>Russ Adams</td>
<td>CSH - DPHP</td>
<td><a href="mailto:adamske@worcesterma.gov">adamske@worcesterma.gov</a></td>
</tr>
<tr>
<td>Michelle Anderson</td>
<td>Superintendent - WPS</td>
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</tr>
<tr>
<td>Lisa Bowles</td>
<td>Asst. Principal - HHS</td>
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</tr>
<tr>
<td>John J. O’Malley</td>
<td>Asst. Principal - NC</td>
<td><a href="mailto:omalleye@worcesterschools.net">omalleye@worcesterschools.net</a></td>
</tr>
<tr>
<td>Eugene Caruso</td>
<td>TCC</td>
<td><a href="mailto:caruso@worcesterschools.net">caruso@worcesterschools.net</a></td>
</tr>
<tr>
<td>Rob Para Jr.</td>
<td>LPPAA</td>
<td><a href="mailto:raparaa@paa.com">raparaa@paa.com</a></td>
</tr>
<tr>
<td>Chris Lee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Victor Krachta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catherine Bardin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyndi Capstick</td>
<td>Assist Prin</td>
<td><a href="mailto:capstickc2@worcesterschools.net">capstickc2@worcesterschools.net</a></td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Attendees:

- Maureen Binienda | Superintendent | Worcester Public Schools
- Sally Maloney | Principal | Doherty Memorial High School
- Russ Adams | Assistant Commissioner | City of Worcester
- Jim Bedard | Director of Environmental Management & Capital Projects | Worcester Public Schools
- Kate Kerr | Superintendent Chief of Staff | Worcester Public Schools
- Todd Stewart | Superintendent Fellow
- Laurie Denis | CVTE Instructional Coach | Worcester Public Schools
- John Staley | Assistant Principal | DMHS
- Anette Cochran | Engineering Teacher | DMHS
- Eugene Caruso | Owner’s Project Manager | AECOM Tishman
- Katie Crockett | Principal in Charge | LPA|A
- Rob Para Jr. | Project Architect | LPA|A
- Chris Lee | Project Manager | LPA|A
- Christina Bazelmans | Assistant Project Architect | LPA|A

Item: Description: Responsibility:

06.17.2019.01 ETA program currently enrolls 350 students, proposed enrollment is 400 students and 4 teachers.

- 300 incoming 9th grade students from throughout the school district apply annually (similar to other technical school models) 100 are accepted
- Student teacher ratio is 20:1 per Ch. 74 Guidelines
- Potential adjacencies would be with Art/Theatre

Info.

06.17.2019.02 Existing program is undersized, includes 4 computer labs and 2 shops

Info.

06.17.2019.03 Required spaces for Proposed Program:

- (4) computer labs with 20 hardwired desktops, due to the hardware and software requirements.
- (3) flexible shop spaces
  - (1) Woodworking/metalworking (“dirty”) shop
  - (1) 3D Printing and CNC shop
  - (1) Digital Electronics lab/testing lab

Info.
<table>
<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Would require a dedicated robotics testing arena—VEX robotics may garner more student interest</td>
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<tr>
<td></td>
<td>Student access storage areas with flexible shelving for projects associated with each shop.</td>
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<tr>
<td></td>
<td>Teacher access only storage for raw materials</td>
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<td></td>
<td>Flexible Pin-up/presentation area</td>
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</tr>
<tr>
<td></td>
<td>Exterior access and double door for material deliveries</td>
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</tr>
<tr>
<td></td>
<td>Faculty toilet rooms</td>
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</tr>
<tr>
<td></td>
<td>No locker rooms or student toilet rooms are required if general toilet rooms are nearby.</td>
<td></td>
</tr>
<tr>
<td>06.17.2019.04</td>
<td>Lab spaces should connect to each other with communicating doors, and have visual/supervision connections to computer labs to allow teacher supervision of all phases of design-build projects.</td>
<td>Info.</td>
</tr>
<tr>
<td>06.17.2019.05</td>
<td>DMHS teachers will provide a list of desired equipment (band saws, large format printers, vinyl cutters) for LPA</td>
<td>A to determine the minimum shop sizes</td>
</tr>
<tr>
<td>06.17.2019.06</td>
<td>ETA wing runs on a different schedule from the balance of the school.</td>
<td>WPS</td>
</tr>
<tr>
<td></td>
<td>Laurie Denis (LD) noted that an alternative method would be to dedicate 2 periods per day to shop time.</td>
<td></td>
</tr>
<tr>
<td>06.17.2019.07</td>
<td>Currently 8 dedicated academic classrooms are associated with the ETA program. Math and science courses are considered “integrated academics” and may be able to be considered vocational space; LD will confirm.</td>
<td>Info.</td>
</tr>
<tr>
<td></td>
<td>9th graders spend most of their time in ETA classes</td>
<td></td>
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<tr>
<td></td>
<td>This organization results in a 9th grade ETA “team”</td>
<td></td>
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<tr>
<td></td>
<td>10th Graders spend half time in ETA classes, half time in general academic classrooms</td>
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<tr>
<td></td>
<td>11th and 12th graders spend the majority of their time outside of ETA in AP academic courses</td>
<td></td>
</tr>
</tbody>
</table>

Doherty Memorial High School
| Item: 06.17.2019.08 | Description: LPA|A suggested that the steering committee tour a high school with a new engineering program, suggestions were Monty Tech, Tri–County and Minuteman. | Responsibility: LPA|A |
| --- | --- | --- |
| Item: 06.17.2019.09 | Description: ETA program operates as a “school within a school” but connections with the theater and arts departments would be beneficial. | Responsibility: Info. |
| Item: 06.17.2019.09 | Description: Maureen Binienda advised that the Advanced Academy concept mentioned in the RFS was superseded/replaced by the AP Capstone program at Doherty. MB does not anticipate an Advanced Academy program at the new DMHS. | Responsibility: Info. |

Attachments: Sign-in Sheet, Sketches from Anette Cochran

Minutes by: Christina Bazelmans., LPA|A

Distribute to: Steering Committee

File location: 1904/Minutes/Owner/2019.06.17 ETA Program
<table>
<thead>
<tr>
<th>Name</th>
<th>Department/Role</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Staley</td>
<td>Director - Asst. Principal</td>
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</tr>
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<td>WPS - Facilities</td>
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<tr>
<td>Jim Bedard</td>
<td></td>
<td><a href="mailto:bedardj@worcesterschools.net">bedardj@worcesterschools.net</a></td>
</tr>
<tr>
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</tr>
<tr>
<td>Chris Lee</td>
<td>LPAA</td>
<td></td>
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<tr>
<td>Christina Buzelnan</td>
<td></td>
<td></td>
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<tr>
<td>Sally Malory</td>
<td></td>
<td></td>
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<tr>
<td>Kues Adams</td>
<td></td>
<td></td>
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<tr>
<td>Kati Kerr</td>
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</tr>
</tbody>
</table>
CURRENT EPA

OUT FOR OTHER
Out for other Classes 2 Classes

10TH
Math, Hist, Sci, Eng, Engineering

OUT FOR REST
Out for rest

11TH
ENGINEERING 1 CLASS

12TH
ENGINEERING 2 CLASSES

ADVISORY
Look kid other plans

SPED ROOM SPACE?
CTA SCI+MATH, Hist, English
Count as Integrated Academics

→ How many kids in a lab at once?

→ How many work stations in shop? I.e., bandsaws, etc.

→ Storage! Size How much space? for student VICA/skill's USA?

CIE
Future Ready Learning Goals 2.0

The following set of priority “21st Century Learning Goals 2.0 for Doherty Memorial High School students was developed by the Educational Working Group (EWG) during Workshop One and further refined during Workshop Two.

<table>
<thead>
<tr>
<th>Civic Responsibility</th>
<th>Mastery of Academic Content</th>
<th>Collaboration and Leadership</th>
<th>Communication</th>
<th>Adaptability and Resilience</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Empathy, Caring and Humility</td>
<td>o Academic Excellence and Diversity</td>
<td>o Learning to Live and Work Together</td>
<td>o Digital Age Literacy</td>
<td>o Managing Complexity</td>
</tr>
<tr>
<td>o Multi-Cultural Literacy and Global Awareness</td>
<td>o Career Pathways</td>
<td>o Embracing Diversity</td>
<td>o Global Communication</td>
<td>o Responsibility for Learning</td>
</tr>
<tr>
<td>o Social Skills and Reasoning</td>
<td></td>
<td></td>
<td>o Oral, Written and Presentation Skills</td>
<td>o Learning to Learn/Self Direction</td>
</tr>
<tr>
<td>o Service and Compassion</td>
<td></td>
<td></td>
<td></td>
<td>o Perspective</td>
</tr>
<tr>
<td>o Integrity and Ethical Decision Making</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>o Respect and Inclusion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Culture of Innovation</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>o Curiosity and Imagination</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>o Initiative and Entrepreneurship</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>o Joy</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Critical Thinking and Problem Solving</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>o Assessing and Analyzing</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>o Computational Thinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Understand, Apply, Create</td>
<td></td>
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</tbody>
</table>
SCOG Analysis

The Educational Working Group (EWG) conducted a “SCOG Analysis” of what it sees as the current strengths, challenges, opportunities and goals with regard to Doherty Memorial High School’s academic programs and facilities during Workshop One. The Opportunities and Goals section was further refined during Workshop Two.

Opportunities and Goals 2.0

- Create a space where all students feel that they belong and can contribute to the school community
- Increase student pride
  - Give students the school they deserve
  - Match what we know the school is to what people see
  - A place where kids get a great education
- Make the building accessible to all students (handicapped access and Universal Design)
- Enhance present programs and creation of new ones
- Give teachers tools they need to diversify their teaching
- Provide a robust technology infrastructure throughout the buildings
- Offer new programs we presently don’t have space for
- Provide opportunities for student to gain real-world experience
- Create more space, better spaces and more flexible spaces
- Provide a new building that reduces the carbon footprint of district
  - Serve as model for sustainability
  - Think about recycling and reduction of food waste
- Provide family resources in the form of a food pantry and clothes exchange
- Provide more and better spaces for
  - Athletics and Physical Education
  - Performing Arts – teaching and not just performance spaces
  - Visual Arts
  - Vocational Programs
- Provide a flexible and 21st century Media Space
- Centrally locate all large amenities (Gym, Media Center, Cafeteria, Auditorium) and public spaces for ease of community access
- Offer something for everybody
- Attract families who have left Doherty back to the District
- Get the community into the building and using it
Priority Future Ready Design Patterns 1.0

The following set of priority “Future Ready Design Patterns 1.0” for the design of the renovated and/or new Doherty Memorial High School was developed by the Educational Working Group (EWG) during Workshop Two. The EWG is a group of approximately 20-25 participants that includes Worcester Public Schools leadership, as well as administrators, teachers, parents and community partners. Five teams of participants each worked to create their own set of priority Design Patterns, after which each team presented to the larger group. Participants were then given the opportunity to prioritize their top six Design Patterns. These are listed below in order of the number of votes they received, with each Design Pattern given five votes for appearing on one of the original team lists, and each subsequent priority vote given one point.

Clusters of Learning (42 votes)
- Teacher Teaming
- Classroom Neighborhoods
- Teacher Work Areas (Teams, Grade)
- Special Education Spaces

Sustainability (40 votes)
- Natural Light

Display and Exhibition (39 votes)
- Gallery Space Too
- Storytelling and Displays
- Classroom as 2nd Teacher

Welcoming Arrival (30 votes)
- Greeting and Gatekeeping
- Curb Appeal

Community Access (31 votes)
- Public Space
- Opportunity for Events
- Rentable Space
- Media Center, Cafeteria and Guidance as Commons Area
Agile Classrooms (29 votes)
  o Multiple White Boards
  o Maker Classrooms
  o Technology

Safety and Security (27 votes)
  o Single Entry with Security
  o Locks, Buzzer System and Cameras

Indoor/Outdoor Connections (26 votes)
  o Outdoor Learning Environments

Break Out Spaces (25 votes)
  o Informal Collaboration

Gathering Hubs (24 votes)
  o Forum Space
  o Dining Hall

Flexible Furniture (19 votes)

Maker Spaces (19 votes)
  o Marker Spaces
  o Marker Spaces as Art Rooms

Varied Performance Venues (18 votes)

Learning Commons/Media Center (15 votes)
  o Consider More Than One

Effective Storage (11 votes)

Professional Work Areas (10 votes)

Branding and Identity (5 votes)

Building as Teacher (5 votes)
  o Visible Systems

Universal Design (5 votes)

Quiet Spaces (11 votes)
  o Not Too Small

Wayfinding and Streetscapes (5 votes)
Guiding Design Principles 1.0

The following set of DRAFT “Guiding Design Principles 1.0” for design of the design of the renovated and/or new Doherty Memorial High School was developed by the Educational Working Group (EWG) during Workshop Two. The EWG is a group of approximately 20-25 participants that includes Worcester Public Schools leadership, as well as administrators, teachers, parents and community partners. Five teams of participants each worked to create their own set of priority Guiding Design Principals, after which each team presented to the larger group. These are listed below in order of the number of votes they received, with each Design Pattern given five votes for appearing on one of the original team lists, and each subsequent priority vote given one point.

Guiding Design Principles offer a framework of educational priorities that prove invaluable in helping stakeholders and design team members to set design goals and focus their work. This first iteration of Guiding Principles may continue to develop as the design process unfolds.

<table>
<thead>
<tr>
<th>Guiding Design Principles 1.0</th>
<th>Votes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Real World Education</strong></td>
<td>35</td>
</tr>
<tr>
<td>- Innovation, Creativity and Diversity</td>
<td></td>
</tr>
<tr>
<td>- Authentic Learning</td>
<td></td>
</tr>
<tr>
<td>- Real World Education</td>
<td></td>
</tr>
<tr>
<td>- Citizens of the World</td>
<td></td>
</tr>
<tr>
<td>- Teaching All Students</td>
<td></td>
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<tr>
<td>- Internships</td>
<td></td>
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<tr>
<td>- STEM and STEAM</td>
<td></td>
</tr>
<tr>
<td><strong>2. Mastery Based Learning</strong></td>
<td>30</td>
</tr>
<tr>
<td>- Citizen, Artist Scholar</td>
<td></td>
</tr>
<tr>
<td>- Academic Excellence</td>
<td></td>
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<tr>
<td>- Academic Diversity</td>
<td></td>
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<tr>
<td>- Career Pathways</td>
<td></td>
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<tr>
<td>- Career and College Readiness</td>
<td></td>
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<tr>
<td><strong>3. Personalization and Ownership</strong></td>
<td>30</td>
</tr>
<tr>
<td>- Engagement in School Culture</td>
<td></td>
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<tr>
<td>- Visible Learning and Transparency</td>
<td></td>
</tr>
<tr>
<td>- Keep it Fun and Engaging!</td>
<td></td>
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<tr>
<td><strong>4. School as Community Resource</strong></td>
<td>25</td>
</tr>
<tr>
<td>- Community Access</td>
<td></td>
</tr>
<tr>
<td>- Community Space to Learn, Play and Connect</td>
<td></td>
</tr>
<tr>
<td>- Community Connections</td>
<td></td>
</tr>
<tr>
<td><strong>5. Flexibility and Utility</strong></td>
<td>20</td>
</tr>
<tr>
<td>- Adaptability and Evolution</td>
<td></td>
</tr>
<tr>
<td>- Technology Integration</td>
<td></td>
</tr>
<tr>
<td><strong>6. Outdoor Connections</strong></td>
<td>15</td>
</tr>
<tr>
<td>- Sustainability</td>
<td></td>
</tr>
</tbody>
</table>
Attendees:

- **Brian Allen** | Chief Financial and Operations Officer | WPS
- **Russ Adams** | Assistant Commissioner | City of Worcester
- **Jim Bedard** | Director of Environmental Management & Capital Projects | Worcester Public Schools
- **John Hennessey** | Director of Transportation | WPS
- **Bob Walton** | Information Technology Officer | WPS
- **Donna Lombardi** | Director of School Nutrition | WPS
- **Debra Seymour** | Director of Payroll and Supply Management | WPS
- **Sara Consalvo** | Budget Director | WPS
- **Paul Comerford** | Director of Facilities | WPS
- **Michael Freeman** | Transportation | WPS
- **Leah Lambert** | Finance & Operations | WPS
- **Katie Crockett** | Principal in Charge | LPA|A
- **Rob Para Jr.** | Project Architect | LPA|A
- **Christopher Lee** | Project Manager | LPA|A
- **Christina Bazelmans** | Assistant Project Architect | LPA|A

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<thead>
<tr>
<th>Item:</th>
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</tr>
</thead>
<tbody>
<tr>
<td>06.17.2019.01</td>
<td>LPA</td>
<td>A reviewed the schedule, overview of PDP deliverables, and programming process to date. Two visioning workshops and several focus group meetings have taken place.</td>
</tr>
</tbody>
</table>
| 06.17.2019.02 | The District is currently considering the following Chapter 74 Programs  
  - Engineering & Technology (existing to remain and expand)  
  - Electrical  
  - Programming and Web Development  
  - Marketing  
  A School Building Committee vote is required to approve the proposed Chapter 74 programs for Doherty HS. Maureen Binienda is working to add this item to the agenda for the meeting scheduled on July 18th. The steering committee will confirm if WTHS’s Electrical program is under-enrolled. | WPS |
| 06.17.2019.03 | Russ Adams has scheduled a meeting with the Superintendent and City manager on Thursday June 27th to discuss the potential | Info. |
06.17.2019.04  Distributed Dining was a topic at both visioning sessions.

- Donna Lombardi (DL) noted that having a central kitchen with satellite serving areas would be the most cost-effective option. Distance to the satellite dining area would need to be as short as possible.
- A satellite holding and warming station significantly decreases the variety and quality of food that can be offered.
- Two separate kitchens that each serve half the population would require double the equipment and staff, and would be very costly.
- LPA|A suggests touring a high school facility that has distributed dining.

06.17.2019.05  LPA|A was directed to carry the systems, equipment and IT for South High as a basis of design, these items will be revisited in greater detail later in the project.

06.17.2019.06  Site Program

- Program meetings with the school and district personnel have led to a significant list of desired site features, including:
  - 430 Parking Spaces, 8–10 buses, 5 SPED buses, separate traffic flow
  - Kitchen and general receiving
  - Artificial turf Football, Soccer, Field hockey, Softball, Baseball, tennis courts and practice fields.
    - Bleachers, storage, multi-vantage press box and concessions required
  - 380000 GSF school, +/- 150,000 SF footprint

06.17.2019.07  LPA|A noted that the program will be test fit on each potential site, if the site cannot support the full site program, the city and district will need to determine which items are the highest priority.

- Discussed the potential benefits of a city-wide athletic complex
06.17.2019.08  Alternate Sites
- LPA|A reviewed the quadrant map highlighting all parcels greater than 10 acres, large sites that are not park land or Massport are very limited.
- The most promising sites are being reviewed in greater depth.

06.17.2019.09  Swing Space
- LPA noted that swing space can represent significant cost, and is not reimbursable by the MSBA
- For the PDP cost estimate, the district will need to provide approximate costs for swing space for the various options.

06.17.2019.10  PDP Deliverables
- LPA|A Distributed the attached PDP deliverables checklist, sorted by responsible party.
- The most significant owner deliverables are:
  o The Educational Program
  o Budget implications on swing space
  o Capital Budget Statement

Attachments: PDP Deliverables Checklist
Minutes by: Christina Bazelmans, LPA|A
Distribute to: Steering Committee
File location: 1904/Minutes/Owner/2019.06.14 Core Community Use & Site
**Doherty Memorial High School PDP Deliverables Checklist**

<table>
<thead>
<tr>
<th>Item</th>
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<td><strong>Project Directory</strong> with Contact Information for Representatives of All District Stakeholders (i.e. Board of Selectmen, Superintendent, SBC, Designer (Point of Contact, Key Support Staff and Sub-Consultants) and OPM (and Key Support Staff)).</td>
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<td>Not Started</td>
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<td><strong>Updated Project Schedule</strong> including: 1) Projected MSBA Board of Directors meeting for approval to proceed into Schematic Design; 2) Projected MSBA Board of Directors meeting for approval of Project Scope and Budget Agreement; and 3) Projected Town/City Vote for Project Scope and Budget Agreement. Identify any variances from the schedule outlined in the District’s Feasibility Study Agreement with the MSBA</td>
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### Supporting Documents

| 3.1.2.C | **Supporting Documents**                                                   |                 |                   |          |          |            |         |                              |
|---------|---------------------------------------------------------------------------|----------------|-------------------|----------|          |            |         |                              |
| 3.1.2.C.1 | Programming Meeting Minutes (all categories)                              | LPA|A           | 8/23/2019 | Pending   | Bazelmans |         |                              |
| 3.1.2.C.2 | Survey/Questionaire Responses                                              | LPA|A           | 8/23/2019 | Pending   | Bazelmans |         |                              |
| 3.1.2.C.3 | Tours of Similar School Facilities                                         | LPA|A           | 6/1/2019   | Not Started | Bazelmans |         |                              |
| 3.1.2.C.4 | Emergency Shelter and Security Requirements                                | LPA|A           | 6/28/2019 | Not Started | Bazelmans |         |                              |
| 3.1.2.C.5 | Program Adjacency Diagrams                                                 | LPA|A           | 6/28/2019 | Pending   | Bazelmans |         |                              |

### INITIAL SPACE SUMMARY
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<td>LPA/A</td>
<td>MSBA Template</td>
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<td>LPA/SPS</td>
<td>Drawings</td>
<td>8/9/2019</td>
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<td><strong>Narratives</strong> Describing Reasons for any Variances Between Proposed and MSBA Space Guidelines <strong>Program Diagram – Existing vs. Proposed</strong></td>
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<td>Doherty site Rec’d, is a executive transfer, File as rec’d ,should MSBA comment, City noted they will adress, Alternate sites, will also need deed info, or meno or pending transfer</td>
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<td>Deeds of Existing Site, Restrictions and covenants</td>
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<td>talk to Matt and scheduling Survey Crew</td>
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<td><strong>Determination that the property is available for development</strong></td>
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<td><strong>Determination of any Historical Registrations, and/or potential</strong></td>
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3.1.6 PRELIMINARY EVALUATION OF ALTERNATIVES

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<th>8/9/2019</th>
<th>Not Started</th>
<th>Binienda</th>
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<td>Tuition Agreements with Adjacent School Districts (per MGL c.70B §8)</td>
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<td>Rental or Acquisition of Existing Buildings that could be made available for school use</td>
<td>WPS/CoW</td>
<td>Narrative</td>
<td>8/9/2019</td>
<td>Not Started</td>
<td>Bedard</td>
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</table>

3.1.6.B Code Upgrade (No-Build) Option that includes repair of systems and/or code compliance scope with no modification of existing spaces or their function. Comparative Analysis including:

| 3.1.6.B | Extent to which the alternative fulfills the Educational Program                                               | LPA|A       | Narrative & Graphics | 8/9/2019 | Not Started | Lee       |
|----------|-----------------------------------------------------------------------------------------------------------------|---------|-----------------------|----------|------------|-----------|
|          | How each alternative addresses site and facility goals/objectives                                             | LPA|A       | Narrative & Graphics  | 8/9/2019 | Not Started | Lee       |
|          | Assessment of impact of construction phasing                                                                   | LPA|A       | Narrative & Graphics  | 8/9/2019 | Not Started | Lee       |

3.1.6.C Existing Site Options – New Construction & Renovations and/or Additions of Varying Degrees to the Existing Building. Comparative Analysis including:

<p>| 3.1.6.C | Extent to which the alternative fulfills the Educational Program                                               | LPA|A       | Narrative &amp; Graphics | 8/9/2019 | Not Started | Para      |
|----------|-----------------------------------------------------------------------------------------------------------------|---------|-----------------------|----------|------------|-----------|
|          | How each alternative addresses site and facility goals/objectives                                             | LPA|A       | Narrative &amp; Graphics  | 8/9/2019 | Not Started | Para      |
|          | Assessment of impact of construction phasing                                                                   | LPA|A       | Narrative &amp; Graphics  | 8/9/2019 | Not Started | Para      |</p>
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<th>Due Date</th>
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<th>Lead</th>
<th>Filed</th>
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<td>Extent to which the alternative fulfills the Educational Program</td>
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<td>Narrative &amp; Graphics</td>
<td>8/9/2019</td>
<td>Not Started</td>
<td>Para</td>
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<td></td>
<td>Description of space variations identified in Space Summary</td>
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<td>A</td>
<td>Narrative &amp; Graphics</td>
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<td>Not Started</td>
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<td>How each alternative addresses site and facility goals/objectives</td>
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<td>Narrative &amp; Graphics</td>
<td>8/9/2019</td>
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<td>Assessment of impact of construction phasing</td>
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<td>A</td>
<td>Narrative &amp; Graphics</td>
<td>8/9/2019</td>
<td>Not Started</td>
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<td>Preliminary Environmental Assessment</td>
<td>CRE</td>
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<td></td>
<td>8/9/2019</td>
<td>Not Started</td>
<td>Cogswell</td>
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**3.1.7 LOCAL ACTIONS AND APPROVAL CERTIFICATION**

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<tr>
<td>3.1.7.A</td>
<td>Narrative</td>
<td>LPA</td>
<td>A</td>
<td>Narrative</td>
<td>8/23/2019</td>
<td>Not Started</td>
<td>Bazelmans</td>
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<tr>
<td></td>
<td>Local Actions and Approvals Certification; Signed by Chief Executive Officer, Superintendent of Schools and Chair of the School Committee</td>
<td>WPS/Co/WOPM</td>
<td>Signed Certificate</td>
<td>8/23/2019</td>
<td>Not Started</td>
<td>Caruso</td>
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<td>3.1.7.B</td>
<td>Provide Certified Copy of SBC Meeting Minutes where the</td>
<td>WPS/Co/WOPM</td>
<td>Copy</td>
<td>8/23/2019</td>
<td>Not Started</td>
<td>Caruso</td>
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<tr>
<td></td>
<td>Feasibility Study Related Materials were Approved for Submittal to</td>
<td></td>
<td></td>
<td>8/23/2019</td>
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<td>Caruso</td>
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<td></td>
<td>the MSBA</td>
<td></td>
<td></td>
<td>8/23/2019</td>
<td>Not Started</td>
<td>Caruso</td>
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<tr>
<td>3.1.7.C</td>
<td>List Relevant SBC Meeting Dates and Provide Copies of Agendas for such Meetings; List Names/Affiliations of Specific Stakeholders in Attendance; List What Materials are Available for Public Review and Where</td>
<td>WPS/Co/WOPM</td>
<td>Copy &amp; Narrative</td>
<td>8/23/2019</td>
<td>Not Started</td>
<td>Caruso</td>
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<td>3.1.7.D</td>
<td>Provide Similar Information for Public Meetings and Presentations</td>
<td>WPS/Co/WOPM</td>
<td>Copy &amp; Narrative</td>
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<td></td>
<td>Conducted in Connection with the Proposed Project</td>
<td></td>
<td></td>
<td>8/23/2019</td>
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**APPENDIX**

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<tr>
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<tr>
<td></td>
<td>A. Phase I Site Assessment– Appendices– Alternative Sites</td>
<td>LPA</td>
<td>A</td>
<td>Graphics</td>
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<td></td>
<td>B. Geotechnical – Alternative Sites</td>
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<td>Graphics</td>
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<td>Item</td>
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<tr>
<td>0.0.0.0</td>
<td>All Documents/Materials must be submitted to the OPM for compilation/coordination prior to delivery to MSBA</td>
<td>LPA</td>
<td>A</td>
<td>3-Ring Binder</td>
<td>9/11/2019</td>
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<td>Witkos</td>
<td></td>
</tr>
<tr>
<td>0.0.0.0</td>
<td>OPM to certify that they have reviewed the materials, found them to be complete and in conformance with MSBA requirements, and that the District has approved the materials for submission to MSBA</td>
<td>OPM</td>
<td>Letter</td>
<td>9/6/2019</td>
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<td>Caruso</td>
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<tr>
<td>0.0.0.0</td>
<td>Submit six (6) binders with hard-copies of materials</td>
<td>LPA</td>
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<td>PMA</td>
<td>3-Ring Binder</td>
<td>9/11/2019</td>
<td>Not Started</td>
<td>Witkos</td>
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<tr>
<td>0.0.0.0</td>
<td>Submit six (6) compact disks with electronic file in PDF format</td>
<td>LPA</td>
<td>A</td>
<td>PMA</td>
<td>CD</td>
<td>9/11/2019</td>
<td>Not Started</td>
<td>Witkos</td>
</tr>
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</table>

END OF MSBA CHECKLIST REQ’S
Attendees:

- Maureen Binienda | Superintendent | Worcester Public Schools
- Sally Maloney | Principal | Doherty Memorial High School
- Russ Adams | Assistant Commissioner | City of Worcester
- Jim Bedard | Director of Environmental Management & Capital Projects | Worcester Public Schools
- Todd Stewart | Superintendent Fellow
- John Staley | Assistant Principal | DMHS
- John O’Malley | Assistant Principal | DMHS
- Ed Capstick | Assistant Principal | DMHS
- Eugene Caruso | Owner’s Project Manager | AECOM Tishman
- Katie Crockett | Principal in Charge | LPA|A
- Rob Para Jr. | Project Architect | LPA|A
- Chris Lee | Project Manager | LPA|A
- Christina Bazelmans | Assistant Project Architect | LPA|A

<table>
<thead>
<tr>
<th>Item: Description:</th>
<th>Responsibility:</th>
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<tbody>
<tr>
<td>06.24.2019.01</td>
<td>Discussed the number of general classrooms given the desired ratio of 24 students per class:</td>
</tr>
<tr>
<td></td>
<td>- World Language (9)</td>
</tr>
<tr>
<td></td>
<td>- English (16)</td>
</tr>
<tr>
<td></td>
<td>- Math (16)</td>
</tr>
<tr>
<td></td>
<td>- History (15)</td>
</tr>
<tr>
<td></td>
<td>- Science (16)</td>
</tr>
</tbody>
</table>

<p>| 06.24.2019.02 | The 9th grade will be divided into four teams, each containing +/- 105 students. One team will be within the Engineering and Technology Academy (ETA) with 100 students (max). |
| | - Each team will contain English, Math, History and Science Lab, teacher planning and common room. |
| | - The 10th grade will not be teamed, but the ETA 10th graders will attend related academic classes within the ETA wing. 11th and 12th grade ETA students will go outside of the ETA wing for general academic classes. |</p>
<table>
<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
</tr>
</thead>
<tbody>
<tr>
<td>06.24.2019.03</td>
<td>Each department and 9th grade team should include a teacher planning room and common room if space allows.</td>
<td>Info.</td>
</tr>
<tr>
<td></td>
<td>- Cross-discipline teacher planning spaces between math/science and English/history are desired</td>
<td></td>
</tr>
<tr>
<td>06.24.2019.04</td>
<td>Computer labs are required for mandatory computer science classes as well as for certain AP courses. The program requires (3) computer labs located with the Media Center</td>
<td>Info.</td>
</tr>
<tr>
<td>06.24.2019.05</td>
<td>ELL will require (4) full sized classrooms to support the proposed enrollment. ELL should be grouped together with a teacher planning space; no common room is required.</td>
<td>Info.</td>
</tr>
<tr>
<td>06.24.2019.06</td>
<td>A large group seminar room is desired to hold full staff meetings, professional development, multiple classes and ETA student presentations.</td>
<td>Info.</td>
</tr>
<tr>
<td></td>
<td>- Space should accommodate 120 occupants, and should be centralized with the Media Center</td>
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</tr>
<tr>
<td></td>
<td>- Space could double as an alternative performance space</td>
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<tr>
<td>06.24.2019.07</td>
<td>Music</td>
<td>DMHS</td>
</tr>
<tr>
<td></td>
<td>- 400 Students involved currently, will increase in future</td>
<td></td>
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<tr>
<td></td>
<td>- Chorus</td>
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<tr>
<td></td>
<td>- Assume 100 students in chorus, elite chorus, acapella</td>
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<td></td>
<td>- Instrumental</td>
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<td></td>
<td>- 40–50 students, but may increase. DMHS has Orchestra, jazz band, no marching band</td>
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<td></td>
<td>- Additional instrumental program may be desired</td>
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<td></td>
<td>- Jazz band requires ensemble practice rooms for 3–4 students</td>
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<td></td>
<td>- Sally Maloney (SM) will advise on the proposed enrollment numbers for the music programs, as well as any requirements for additional instrumental or music appreciation programs</td>
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<tr>
<td>06.24.2019.08</td>
<td>Art</td>
<td>Info.</td>
</tr>
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</table>
### Item: Description: Responsibility:

- The program will require (3) Art classrooms.
- Adjacency to music and theater desired, possible adjacency with ETA would be beneficial

| 06.24.2019.09 | DMHS has a PLATO program for students to make up missed class time. This must be separate from the Social Emotional Learning Center, and should be one classroom for 25 students. | Info. |

| 06.24.2019.10 | SM advised that the guidance and adjustment counselors should be centralized with the Media Center. | Info. |

| 06.24.2019.11 | SM noted that currently 30–50 students prefer to eat lunch in a smaller quite space, other than the cafeteria, and she anticipates that more IEP’s will require this in the future.  
- In the existing building these students eat lunch in an adjacent classroom. LPA|A will review design opportunities. | LPA|A |

Attachments: Sign-in Sheet
Minutes by: Christina Bazelmans., LPA|A
Distribute to: Steering Committee
File location: 1904/Minutes/Owner/2019.06.24 PDP Program Wrap-up
<table>
<thead>
<tr>
<th>Name</th>
<th>Department/Role</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Staley</td>
<td>DHHS Asst. Principal</td>
<td><a href="mailto:staley.jwlcra@worcester.ma.us">staley.jwlcra@worcester.ma.us</a></td>
</tr>
<tr>
<td>John O'Malley</td>
<td>Asst. Principal</td>
<td>o'<a href="mailto:malley.j@worcester.sch.us">malley.j@worcester.sch.us</a></td>
</tr>
<tr>
<td>Ed Cashell</td>
<td>Admin. OHS</td>
<td><a href="mailto:cashell.e2@worcester.sch.us">cashell.e2@worcester.sch.us</a></td>
</tr>
<tr>
<td>Jim Bedard</td>
<td>WPS. Facilities</td>
<td><a href="mailto:bedard.j@worcester.sch.us">bedard.j@worcester.sch.us</a></td>
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<tr>
<td>Sally Mckenzie</td>
<td>Doherty</td>
<td></td>
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<tr>
<td>Rob Rafter Jr.</td>
<td>NPA</td>
<td></td>
</tr>
<tr>
<td>Eugene Caruso</td>
<td>TCC</td>
<td><a href="mailto:caruso.e@acp.com">caruso.e@acp.com</a></td>
</tr>
<tr>
<td>Ross Adams</td>
<td>CQK DPhil/P</td>
<td><a href="mailto:adams.rk@worcester.ma.us">adams.rk@worcester.ma.us</a></td>
</tr>
<tr>
<td>Todd Stewart</td>
<td>Superintendent</td>
<td><a href="mailto:stewart.td@worcester.sch.us">stewart.td@worcester.sch.us</a></td>
</tr>
<tr>
<td>Michael Amendt</td>
<td></td>
<td><a href="mailto:amendt.m@worcester.sch.us">amendt.m@worcester.sch.us</a></td>
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Guiding Design Principles 2.0

The following set of DRAFT “Guiding Design Principles 2.0” for design of the design of the renovated and/or new Doherty Memorial High School was developed by the Educational Working Group (EWG) during Workshop Two and further refined during Workshop Two. The EWG is a group of approximately 20-25 participants that includes Worcester Public Schools leadership, as well as administrators, teachers, parents and community partners.

Guiding Design Principles offer a framework of educational priorities that prove invaluable in helping stakeholders and design team members to set design goals and focus their work. This first iteration of Guiding Principles may continue to develop as the design process unfolds.

1. Mastery Based Learning
   - Citizen, Artist Scholar
   - Academic Excellence
   - Academic Diversity
   - Career Pathways
   - Career and College Readiness

2. Real World Education
   - Innovation, Creativity and Diversity
   - Authentic Learning
   - Real World Education
   - Citizens of the World
   - Teaching All Students
   - Internships
   - STEM and STEAM

3. Personalization and Ownership
   - A Comprehensive School Community with Everything on One Site
   - Engagement in School Culture
   - Visible Learning and Transparency
   - Keep it Fun and Engaging!

4. School as Community Resource
   - Community Access
   - Community Space to Learn, Play and Connect
   - Community Connections

5. Flexibility and Utility
   - Adaptability and Evolution
   - Technology Integration

6. Sustainability
   - Outdoor Connections and Learning
   - Building as Teacher
Blue Sky Ideas

The following “Blue Sky” ideas for the design of the renovated and/or new Doherty Memorial High School were recorded during Workshop Three. Individual participants wrote about their own Blue-Sky Ideas and then shared them with the larger group. Ideas have been grouped together by like-themes.

Blue Sky Ideas, though sometime not feasible due to budget or design constraints, often hold the seeds of aspirational ideas and design approaches that can be implemented on some level within the design.

Visual and Performing Arts
- A school that can encourage gatherings: arts, shows, performances, debates
- Several functional rehearsal spaces for the arts: music, theatre
- Easy access to stage for scenery and construction (large doors, workshop)
- Theatre workshop (near area for construction for sets, props, costumes)
- Dressing room areas that offer privacy for costume changes
- Large venue for the entire school to gather for programs
  - Large auditorium (capacity for 800)
- Multiple performance spaces that can be easily adapted for a variety of purposes (black box theater)
- State of the art auditorium
- Multi-use performance space

Dining
- Healthy meals with various options (vegan, gluten-free)
- ‘Alternative’ lunch spaces
- Other places for students to eat lunch

Space for Clubs
- The activity/clubs should be accessible from the ground floor

Community Access
- Gym, cafeteria, auditorium, media center, administrative offices locked off from educational areas, for use by the community

Athletics and Physical Education
- Athletics and grounds should surround the school with plenty of activity (nature walkways, etc.)
- Smaller gym for yoga/zumba/dance/etc.
- Weight room; exercise equipment room
- Large gymnasium with track
  - Large enough to hold whole school population (1670)
- Multi-use fields on same campus (baseball, softball, field hockey, lacrosse)
- Field House - seat whole school population (1670)
- Outside Fields
- 3 Basketball courts
- A school that encourages health, fitness, team work over the traditional competition of athletics
- Sports complex that offers space for competitive and intramural activities
- Health wellness area for all students and staff to use
- Faculty locker room

Agile Classrooms
- Flexible furniture that can be used for varied student groupings
- Calming paint colors in the classroom, nothing bold
- Classrooms should be neat and organized
- Every teacher should have their own room
- Science classrooms that encourage going out to the natural world
Blue Sky Ideas Continued

Gathering and Multi-Purpose Spaces
- Student gathering spaces especially before or after school where they can do homework or informally internet - might be in learning clusters where teachers are nearby
- This space would have
  - Comfortable and flexible furniture for group work
  - Computers for internet / research
- Might be like the "cafe" concept shown last week
- Might also be multiple spaces in learning clusters
- Professional learning centers - can easily be used to meet and to model classroom practices
- I love the idea of DIY Pop-up spaces.
- A space large enough for assemblies
- Multi-purpose space (maker spaces) to support CH 74 Programs

Innovative Learning Spaces
- Curriculum or innovative learning foci - e.g. science labs or engineering resource spaces (for ETA - engineering/technology academy)
- Maker spaces in multiple center areas (business classes, arts, etc.)

Design Features
- Main entrance that shows students are entering a place of learning/excellence but also welcoming
- Inside of school should be spacious and promote comfort and calm
- Lots of open spaces with light, plants, and water elements
- Common spaces should be varied and interesting
- Spaces should be catered to different learning styles and personalities
- Large group instruction areas/large gathering spaces
- More whiteboard space and display space
- Place for students to wait for rides after school
- Phone system to call out or room to room
- TVs in common areas, cafeteria (news/display upcoming events)
- Conference room (administration, guidance, teachers)
- A "green" wall of vines (?) welcoming visitors at the entrance? Very calming

Interactive History
- An interactive hall/space that aims at capturing the history/traditions/achievements of DHS and its community
- I envision digital displays that are interactive (touch screen) and various displays of art/science/sports/etc.
- Ideally it would be located in its main entrance along a hallway
- The purpose of this feature would be to celebrate the culture/traditions of DHS as well as teach about these traditions to students/staff/community members
- Similar to the Blackstone River Valley Visitors Center
- Historical connections with the city/state/nation

Library/Media Center
- A school that also encourages quiet reflection/reading/listening: library, commons, etc.
- Library/media center modeled on colleges
- Larger library
  - Media center with computer lab/tech space
  - Study rooms for groups to meet
  - Silent study area
  - Books
- Fully functioning library/media center with
  - Contemporary texts
  - Printers/scanners
  - View into rooms (like in-home theaters)

Outdoor Connections
- Green roof/garden
- There should be connections to the outdoors (rooftop access)

Parking
- Parking for staff, students, visitors

Real World Connections
- Students ability to gain real-world experience within the building

Teacher Collaboration and Office Spaces
- English classes near each other and social studies with collaborative space and time
Blue Sky Ideas Continued

Large Sprawling School

- Welcoming entry with security
- Commons Rooms
- Student and faculty parking lot
- 9th grade program with four teams
- Chapter 74
  - Engineering and Technology
  - Marketing and Business
- Web Design
- Electrical
- Theater, Music and Art studios
- Large Gymnasium with indoor track
- Fields for soccer, softball and baseball
- Flexible Media Center
- Only three floors
Whole School Diagram One

This Whole School Adjacency Diagram was created by a small group of workshop participants in order to communicate their ideas about space adjacencies for the renovated and/or new Doherty Memorial High School.
Whole School Diagram Two

This Whole School Adjacency Diagram was created by a small group of workshop participants in order to communicate their ideas about space adjacencies for the renovated and/or new Doherty Memorial High School.
Entry Area Diagram One

This Entry Area Adjacency Diagram was created by a small group of workshop participants in order to communicate their ideas about space adjacencies for the renovated and/or new Doherty Memorial High School.
Entry Area Diagram Two

This Entry Area Adjacency Diagram was created by a small group of workshop participants in order to communicate their ideas about space adjacencies for the renovated and/or new Doherty Memorial High School.
Community Access Diagram

This Community Access Adjacency Diagram was created by a small group of workshop participants in order to communicate their ideas about space adjacencies for the renovated and/or new Doherty Memorial High School.
Media Center Library Diagram

This Media Center Library Diagram was created by a small group of workshop participants in order to communicate their ideas about space adjacencies for the renovated and/or new Doherty Memorial High School.
Performing and Visual Arts Diagram

This Performing and Visual Arts Adjacency Diagram was created by a small group of workshop participants in order to communicate their ideas about space adjacencies for the renovated and/or new Doherty Memorial High School.
Playing Fields Diagram One

This Playing Fields Adjacency Diagram was created by a small group of workshop participants in order to communicate their ideas about space adjacencies for the renovated and/or new Doherty Memorial High School.
Playing Fields Diagram Two

This Playing Fields Adjacency Diagram was created by a small group of workshop participants in order to communicate their ideas about space adjacencies for the renovated and/or new Doherty Memorial High School.
Community Talking Points

The following Talking Points were developed by the Doherty Memorial High School Educational Working Group during Workshop Three. They attempt to distill important ideas and messaging that the group would like to share with the Worcester community in an effort to build awareness of, buy-in to, and excitement about the renovated and/or new DMHS facility.

1. Your child matters and deserves to have a school facility that will facilitate development of their best self.
2. In order to achieve academically, students first have to feel valued and safe.
3. The students, staff and families of our city deserve spaces that honor the aspirational work of teaching and learning, while contributing to our sense of the community.
4. Our current Doherty facility is outdated and does not offer the technology, learning environments, or spaces that our students and community need and deserve.
5. Doherty needs a building that provides space and flexibility to grow our programs to meet emerging needs of our students, as well as supports the strong academic and athletic programs that it currently has.
6. A community investment is being realized by our city leaders who depend on the engagement and development of future students and families.
7. The diversity, opportunities, culture, and institutions of Worcester weave a rich tapestry on which we can draw.
8. We are working envision a flexible and adaptable school facility that will evolve over the coming decades to support our intended uses now and actual uses over time.
9. The renovated and/or new school facility will celebrate the city’s history, culture and traditions, as well as facilitate connections to the city.
10. Our city is a tremendous resource for learning in and of itself!
11. The new school facility aims to meet student and teacher needs and provide a variety of opportunities for all students.
12. The design of the school will maximize outdoor space, sustainability, and community access.
13. The new facility will meet needs of today but also aims to provide for future flexibility.
14. A renovated and/or new Doherty facility will help us to support strong academic programming, as well as expanded Chapter 74 programming.
15. The current faculty were involved in brainstorming Doherty’s educational needs and design goals. We also reach out to alumni and families to envision and embrace this path.
16. Architects and designers have heard about what we value today about Doherty, so those values and excellence can be built into the new project.
The following Agenda items were presented and discussed:

- **Introduction:** Russ Adams (CoW) welcomed all attendees and gave a brief overview of the project. He noted that this meeting is intended to focus on the educational programming and that the site selection is still an ongoing task. He introduced Katie Crockett (LPA) and she introduced all project team members and elaborated on the various deadlines for the Feasibility Study schedule. This included the Chapter 74 submission to the MSBA on July 19 and the Preliminary Design Proposal (PDP) submission to the MSBA in early September. She then handed the session over to David Stephen from New Vista Design.

- **Overview of Visioning Sessions:** David Stephen further explained the process and intended outcome from the Visioning sessions. He discussed the emphasis on basic components for the new school that include natural lighting, heating, air conditioning, bathrooms appropriately located, special education spaces and technology throughout as some on the core MSBA criteria for new schools. He provided a comprehensive handout that summarized the first two visioning sessions. These sessions included Learning Goals and Best Practices and Design Patterns & Guiding Principles. He explained the third and final session was held earlier today and covered Key Spaces, Adjacencies & Conceptual Design Directions. The attendees were asked to participate in two different activities during the presentation that included their input on Priorities and Learning Goals for the new school. David noted that he would be incorporating all the input from this meeting and putting it together as part of the visioning session outcomes.

**CLOSING:**

Russ Adams thanked everyone for coming and stated there will be another meeting on July 15, 2019 at 6:30PM.
Getting to Know Your School

- What you value
- How you work
- What you do well
- What you struggle with
- What’s new on the school’s horizon and how you see yourself growing
- How you imagine your school in 10 or 20 years

Developing a Narrative

- Shared language about educational and design priorities
- Thorough exploration of design needs and goals
- Understanding of how to best optimize the MSBA template
- Illustrations of key spaces and desired adjacencies
- Language that adds depth to your Ed Plan and helps you to describe and advocate for your design needs
Building Off Of 2018-23 Strategic Plan

Priorities
For Doherty’s Academic Program and Facility
Doherty’s Priorities

- Community Use
- Welcome and Inclusivity
- Thermal Comfort and Ease of Use
- Support for Innovative Programming
- Better and More Robust Technology

Doherty’s Priorities

- More Real World Learning Opportunities
- Career Pathways
- Wellness and Athletics
- Flexible, Adaptable and Sustainable Space

What are your Priorities For Doherty’s Academic Program and Facility?

Future Ready Learning Goals
Future Ready Teaching and Learning

The 6 Rs
- Leading
- Wi/ing
- Rigor
- Relevance
- Relationship

The 4 Cs
- Critical Thinking
- Communication
- Collaboration
- Creativity

Head & Hand
Growth Mindset

Future Ready Themes

Changing Delivery

Where are you now?
Where do you want to be?

Teacher-Centric  ➔  Student-Centric
Passive Learning  ➔  Active Learning
Classrooms  ➔  Flexible Learning Environments
Conventional Technology  ➔  1:1 Technology Environments
Individual  ➔  Collaborative
Subject-Based  ➔  Project-Based

Future Ready Themes

- Real World Connections
- Technology Integration
- STEM and STEAM
- Core Values
- Hands-On and Project-Based Instruction
- Internships and Field Studies
- Social Emotional Learning
- Team Teaching
Doherty’s

**What Future Ready Skills & Learning Goals do you think are most important for Doherty High School students?**

**Design Patterns**

*to Support Doherty’s Academic Program and Goals*
New School Design Patterns

Classroom Neighborhoods

West Bridgewater MHS – Flansburgh with New Vista

New School Design Patterns

Sustainability

High Tech High – NTD and New Vista

New School Design Patterns

Natural Light

The Field School – Perkins Eastman

New School Design Patterns

Display and Exhibition

High Tech Middle Chula Vista – Studio E
New School Design Patterns

Welcoming Arrival

Essex Tech - Perkins Eastman with New Vista

Envisioning Future Ready Schools

New School Design Patterns

Welcoming Entry

HTMA – Carrier Johnson with New Vista

Envisioning Future Ready Schools

Community Access

West Bridgewater HHS2 - Flansburgh with New Vista

New School Design Patterns

Agile Classrooms

Oracle d.Tech High School – DES with New Vista

Envisioning Future Ready Schools
New School Design Patterns

Flexible Furniture

Maker Spaces

Maker Classrooms

Varied Performance Venues
New School Design Patterns

Quiet Spaces

The Roeper School – HMFH

Collegiate School – Studios of New Vista

Visible Learning and Transparency

City Neighbors K-12 - Issacson

Chula Vista Middle – Studio E

New School Design Patterns

STEM/STEAM Adjacencies

West Bridgewater HHS – Flansburgh with New Vista

Outdoor Learning

SMMA

HMFH Architects
Which Design Patterns are most important to you?

Guiding Principles

Doherty’s

1. Real World Education (35 votes)
   - Innovation, Creativity, and Diversity
   - Authentic Learning
   - Citizens of the World
   - Teaching All Students
   - Internships
   - STEM and STEAM

2. Mastery Based Learning (10 votes)
   - Academic Excellence
   - Academic Diversity
   - Career Pathways
   - Career and College Readiness

3. Personalization and Ownership (10 votes)
   - Engagement in School Culture
   - Visible Learning and Transparency
   - Keep it Fun and Engaging

4. School as Community Resource (25 votes)
   - Community Access
   - Community Space to Learn, Play and Connect
   - Community Connections

5. Flexibility and Utility (10 votes)
   - Adaptability and Evolution
   - Technology Integration

6. Outdoor Connections (15 votes)
   - Sustainability

What Guiding Principles are most important to you?
The Visioning Process

Doherty’s Priorities

- Community Use
- Welcome and Inclusivity
- Thermal Comfort and Ease of Use
- Support for Innovative Programming
- Better and More Robust Technology
- More Real World Learning Opportunities
- Career Pathways
- Wellness and Athletics
- Flexible, Adaptable and Sustainable Space
Doherty’s

Civic Responsibility
- Empathy, Caring and Humility
- Multi-Cultural Literacy and Global Awareness
- Social Skills and Reasoning
- Service and Compassion
- Integrity and Ethical Decision Making
- Respect and Inclusion

Creativity
- Culture of Innovation
- Curiosity and Imagination
- Initiative and Entrepreneurship
- Joy

Critical Thinking and Problem Solving
- Assessing and Analyzing
- Computational Thinking
- Understand, Apply, Create

Mastery of Academic Content
- Academic Excellence and Diversity
- Career Pathways

Collaboration and Leadership
- Learning to Live and Work Together
- Embracing Diversity

Communication
- Digital Age Literacy
- Global Communication
- Oral, Written and Presentation Skills
- Expression of Identity & Mental Health

Adaptability and Resilience
- Managing Complexity
- Responsibility for Learning
- Learning to Learn/Self Direction
- Perspective

Future Ready Learning Goals 2.0

Doherty’s

1. Real World Education (25 votes)
   - Innovation, Creativity and Diversity
   - Authentic Learning
   - Real World Education
   - Citizens of the World
   - Teaching All Students
   - Internships
   - STEM and STEAM

2. Mastery Based Learning (30 votes)
   - Citizen, Artist Scholar
   - Academic Excellence
   - Academic Diversity
   - Career Pathways
   - Career and College Readiness

3. Personalization and Ownership (30 votes)
   - Engagement in School Culture
   - Visible Learning and Transparency
   - Keep it Fun and Engaging!

4. School as Community Resource (25 votes)
   - Community Access
   - Community Space to Learn, Play and Connect
   - Community Connections

5. Flexibility and Utility (20 votes)
   - Adaptability and Evolution
   - Technology Integration

6. Outdoor Connections (15 votes)
   - Sustainability

Guiding Principles for Design 1.0
Attendees:

- **Sally Maloney** | Principal | Doherty Memorial High School  
- **John Staley** | Assistant Principal | DMHS  
- **Kay Seale** | Manager of Special Education & Intervention Services | Worcester Public Schools  
- **Rob Para Jr.** | Project Architect | LPA|A  
- **Chris Lee** | Project Manager | LPA|A  
- **Christina Bazelmans** | Assistant Project Architect | LPA|A

<table>
<thead>
<tr>
<th>Item:</th>
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</table>
| **06.25.2019.01** | Discussed that the existing Doherty school has very limited space and has been historically unable to support many staff members. Existing spaces include:  
- (8) Resource rooms  
- (2) STEP Classrooms and (1) STEP Clinician  
- (1) Learning Disability Program  
- (1) Life Skills classroom | **Info.** |
| **06.25.2019.02** | Enrollment and Students with special needs are increasing, Kay Seale estimates that the proposed school will support 275 students with special needs. | **Info** |
| **06.25.2019.03** | Learning Centers (LC) / Inclusion Classroom needs:  
- (1) LC and (1) Inclusion classroom per 9th grade team  
- (1) LC and (2) Inclusion classrooms per department  
  - 12 Math Classrooms  
  - 12 English Classrooms  
  - 11 History Classrooms  
  - 12 Science Labs  
- Kay Seale (KS) will review staffing projections and will confirm the number of LC and Inclusion classrooms.  
- SPED Classrooms should be integrated within the classroom neighborhoods. | **WPS** |
<table>
<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
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<tbody>
<tr>
<td>06.25.2019.04</td>
<td>Disabilities Learning Center</td>
<td>Info.</td>
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<tr>
<td></td>
<td>▪ Program requires (2) 750 SF classrooms for reading and written language services</td>
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<td></td>
<td>▪ One will serve grades 9 and 10, the other will serve grades 11 and 12.</td>
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<tr>
<td>06.25.2019.05</td>
<td>STEP</td>
<td>Info.</td>
</tr>
<tr>
<td></td>
<td>▪ With increased enrollment, the school will require (4) STEP classrooms and (2) STEP Clinicians</td>
<td></td>
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<tr>
<td></td>
<td>▪ Each classroom requires an alcove for a dysregulated student to safely cool down, with visual connection to the teacher.</td>
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<tr>
<td></td>
<td>▪ STEP Clinician offices should be adjacent to two of the classrooms, with desk and chairs for small meetings.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ STEP teachers are departmental, and students rotate throughout the day. Although they should not be clustered, it would be beneficial if they were stacked vertically with easy access.</td>
<td></td>
</tr>
<tr>
<td>06.25.2019.06</td>
<td>Adult Daily Living (ADL)</td>
<td>Info.</td>
</tr>
<tr>
<td></td>
<td>▪ An ADL classroom is desired for the Life Skills Students, as well as for general population use.</td>
<td></td>
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<tr>
<td></td>
<td>▪ Room should have an accessible kitchen, washer dryer and large toilet room to practice hygiene, and should be large enough to hold 24 students.</td>
<td></td>
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<tr>
<td></td>
<td>▪ Suggested location is adjacent to nurse, so that the Life skills student have increased exposure to same age peers and may assist with food pantry/clothing distribution.</td>
<td></td>
</tr>
<tr>
<td>06.25.2019.07</td>
<td>Vocational Learning Center</td>
<td>Info.</td>
</tr>
<tr>
<td></td>
<td>▪ This room should be a large space (two classrooms) where special education students can receive assistance with college and career prep/applications.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Locate near the Media Center/Guidance and career center.</td>
<td></td>
</tr>
<tr>
<td>Item: 06.25.2019.08</td>
<td>Description: Life Skills</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------</td>
<td></td>
</tr>
<tr>
<td>Proposed school should include (2) Life Skills classrooms, with district approved model of toilet rooms, observation room and therapeutic planning room in between.</td>
<td>Info.</td>
<td></td>
</tr>
<tr>
<td>Adjacent exterior access would be beneficial for egress.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item: 06.25.2019.09</th>
<th>Description: OT/PT / Speech</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) OT/PT Sensory room is required, the size of a typical classroom. DMHS to advise on preferred adjacencies.</td>
<td>DMHS</td>
</tr>
<tr>
<td>(1) Speech room is required, 450 SF. DMHS to advise on preferred adjacencies.</td>
<td></td>
</tr>
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<table>
<thead>
<tr>
<th>Item: 06.25.2019.10</th>
<th>Description: SPED Admin</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2) SPED Offices and (1) SPED conference room located with main office</td>
<td>Info.</td>
</tr>
<tr>
<td>(1) SPED Teacher Planning office required, centrally located between SPED spaces if possible.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item: 06.25.2019.11</th>
<th>Description: ELL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELL spaces are not regulated by DESE.</td>
<td>Info.</td>
</tr>
<tr>
<td>(4) ELL classrooms are desired, group together in a department with a teacher planning space (no common room required)</td>
<td></td>
</tr>
</tbody>
</table>

Attachments: Draft Space Summary Template–SPED Category
Minutes by: Christina Bazelmans., LPA|A
Distribute to: Attendees, Russ Adams, Jim Bedard, Maureen Binienda, Katie Crockett
File location: 1904/Minutes/Owner/2019.06.25 PDP Program Wrap-up
# Proposed Space Summary - High Schools

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Existing Conditions</th>
<th>New</th>
<th>MSBA Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPED Planning</td>
<td>0</td>
<td>1</td>
<td>260</td>
</tr>
<tr>
<td>Self-Contained SPED (Life Skills)</td>
<td>1</td>
<td>2</td>
<td>950</td>
</tr>
<tr>
<td>Therapeutic Planning</td>
<td>0</td>
<td>1</td>
<td>95</td>
</tr>
<tr>
<td>Observation</td>
<td>0</td>
<td>1</td>
<td>85</td>
</tr>
<tr>
<td>Adult Daily Living (ADL)</td>
<td>1</td>
<td>1</td>
<td>214</td>
</tr>
<tr>
<td>Learning Disability Center</td>
<td>0</td>
<td>1</td>
<td>1,200</td>
</tr>
<tr>
<td>STEP Classroom</td>
<td>1</td>
<td>4</td>
<td>805</td>
</tr>
<tr>
<td>Self-Contained SPED Toilet</td>
<td>0</td>
<td>5</td>
<td>39</td>
</tr>
<tr>
<td>Resource Room (Learning Center)</td>
<td>1</td>
<td>8</td>
<td>889</td>
</tr>
<tr>
<td>Small Group Room (Speech)</td>
<td>0</td>
<td>1</td>
<td>185</td>
</tr>
<tr>
<td>OT/PT</td>
<td>1</td>
<td>1</td>
<td>185</td>
</tr>
<tr>
<td>Inclusion SPED</td>
<td>4</td>
<td>12</td>
<td>705</td>
</tr>
<tr>
<td>Vocational Learning Center</td>
<td>0</td>
<td>1</td>
<td>1,550</td>
</tr>
<tr>
<td>SPED Office (Team Chair &amp; Dept. Head)</td>
<td>0</td>
<td>1</td>
<td>160</td>
</tr>
<tr>
<td>SPED Conference Room</td>
<td>0</td>
<td>1</td>
<td>260</td>
</tr>
</tbody>
</table>

## Special Education

- SPED Planning: 260
- Self-Contained SPED (Life Skills): 950
- Therapeutic Planning: 95
- Observation: 85
- Adult Daily Living (ADL): 214
- Learning Disability Center: 1,200
- STEP Classroom: 805
- Self-Contained SPED Toilet: 39
- STEP Program (Behavior Modification): 970
- STEP Clinician: 270
- Resource Room (Learning Center): 889
- Small Group Room (Speech): 185
- OT/PT: 185
- Inclusion SPED: 705
- Vocational Learning Center: 1,550
- SPED Office (Team Chair & Dept. Head): 160
- SPED Conference Room: 260

## Proposed

- SPED Planning: 260
- Self-Contained SPED (Life Skills): 950
- Therapeutic Planning: 95
- Observation: 85
- Adult Daily Living (ADL): 214
- Learning Disability Center: 1,200
- STEP Classroom: 805
- Self-Contained SPED Toilet: 39
- STEP Program (Behavior Modification): 970
- STEP Clinician: 270
- Resource Room (Learning Center): 889
- Small Group Room (Speech): 185
- OT/PT: 185
- Inclusion SPED: 705
- Vocational Learning Center: 1,550
- SPED Office (Team Chair & Dept. Head): 160
- SPED Conference Room: 260

## MSBA Guidelines

- Life Skills Classroom: 950
- Therapeutic Planning: 95
- Observation: 85
- Vogational Learning Center 9th & 10th Grade: 950
- STEP Program (Behavior Modification): 970
- STEP Clinician: 270
- Resource Room (1 Gr. 9/1Gr10/Science/Math/Eng/Hist): 850
- Small Group Room (Speech): 500
- OT/PT: 850
- Inclusion SPED: 850
- Vocational Learning Center 11th & 12th: 1,550
- SPED Coordinator Office: 130
- SPED Conference Room: 260

SOUTH HIGH SPACE SUMMARY: FOR REFERENCE

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Proposed</th>
<th>MSBA Guidelines</th>
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<tbody>
<tr>
<td>Special Education</td>
<td>28,467</td>
<td>12,600</td>
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</tbody>
</table>
- Life Skills Classroom: 950
- Therapeutic Planning: 95
- Observation: 85
- Vogational Learning Center 9th & 10th Grade: 950
- STEP Program (Behavior Modification): 970
- STEP Clinician: 270
- Resource Room (1 Gr. 9/1Gr10/Science/Math/Eng/Hist): 850
- Small Group Room (Speech): 500
- OT/PT: 850
- Inclusion SPED: 850
- Vocational Learning Center 11th & 12th: 1,550
- SPED Coordinator Office: 130
- SPED Conference Room: 260
Attendees:

- Maureen Binienda | Superintendent | Worcester Public Schools
- Sally Maloney | Principal | Doherty Memorial High School
- Jim Bedard | Director of Environmental Management & Capital Projects | Worcester Public Schools
- Kyle Brenner | Principal | Worcester Technical High School
- Katie Crockett | Principal in Charge | LPA|A
- Rob Para Jr. | Project Architect | LPA|A
- Chris Lee | Project Manager | LPA|A
- Christina Bazelmans | Assistant Project Architect | LPA|A

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<tr>
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<tbody>
<tr>
<td>07.02.2019.01</td>
<td>Info.</td>
</tr>
<tr>
<td>Kyle Brenner (KB) Advised that Electrical, Cosmetology and Plumbing programs have special requirements for the number of hours of instruction with a licensed professional that cannot be achieved in a comprehensive high school schedule.</td>
<td></td>
</tr>
<tr>
<td>07.02.2019.02</td>
<td>Info.</td>
</tr>
<tr>
<td>The previously selected Electricity program must be replaced. Discussed alternative possibilities of Medical/Dental Assisting, Environmental Science, Electronics, Robotics, and Construction Craft Laborer. After reviewing the Regional Blueprint priorities, labor market demand and the need for a more “hands–on” vocational program, Construction Craft Laborer was selected as the fourth Chapter 74 program.</td>
<td></td>
</tr>
<tr>
<td>07.02.2019.03</td>
<td>LPA</td>
</tr>
<tr>
<td>Construction Craft Laborer</td>
<td></td>
</tr>
<tr>
<td>- A broad range of hands–on skills that lead to many different job opportunities in the construction industry</td>
<td></td>
</tr>
<tr>
<td>- Supported by the Regional Blueprint</td>
<td></td>
</tr>
<tr>
<td>- Potential local Dept. of Transportation connection</td>
<td></td>
</tr>
<tr>
<td>- Potential for shared workshop space with ETA program</td>
<td></td>
</tr>
<tr>
<td>- Requires (1) large construction shop area (LPA</td>
<td>A to confirm size) and (1) related classroom required</td>
</tr>
<tr>
<td>- Plan for (2) teachers and enrollment of 150 students</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o 15:1 student teacher ratio, 5 periods/ day</td>
</tr>
<tr>
<td>Item: 07.02.2019.04</td>
<td>Description: Marketing Management &amp; Finance</td>
</tr>
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<td>-------------------</td>
<td>------------------------------------------------</td>
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<tr>
<td></td>
<td>▪ High student interest and high labor market demand. Quinsigamond or Nichols Colleges would be potential higher ed. partners.</td>
</tr>
<tr>
<td></td>
<td>▪ Plan for (2) teachers and enrollment of 200 students</td>
</tr>
<tr>
<td></td>
<td>o 20:1 student teacher ratio, 5 periods/day</td>
</tr>
<tr>
<td></td>
<td>▪ KB suggests a larger school store as a lab space 1000 NSF</td>
</tr>
<tr>
<td></td>
<td>▪ (2) Related classrooms adjacent to the store, similar to the Andy’s Attic model at South High</td>
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<td>Info.</td>
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<th>Item: 07.02.2019.05</th>
<th>Description: Programming and Web Development</th>
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<tr>
<td></td>
<td>▪ Plan for (2) teachers and enrollment of 200 students</td>
</tr>
<tr>
<td></td>
<td>o 20:1 student teacher ratio, 5 periods/day</td>
</tr>
<tr>
<td></td>
<td>▪ Require (2) Computer labs connected by communicating door</td>
</tr>
<tr>
<td></td>
<td>▪ KB suggests the same size as B201 at WTHS, +/-1500 NSF</td>
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<tr>
<td></td>
<td>No related classroom is required</td>
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<td>Info.</td>
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<tr>
<th>Item: 07.02.2019.06</th>
<th>Description: Engineering &amp; Technology Academy</th>
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<tbody>
<tr>
<td></td>
<td>▪ Confirmed (4) teachers and enrollment of 400 students</td>
</tr>
<tr>
<td></td>
<td>o 20:1 student teacher ratio, 5 periods/day</td>
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<tr>
<td>Info.</td>
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<tr>
<th>Item: 07.02.2019.07</th>
<th>Description: Maureen Binienda advised that the Biotechnology program (Non-Chapter 74) will act as the “Advanced Academy” desired by the Mayor and City Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>▪ Program will utilize the same invitation process as Goddard Scholars</td>
</tr>
<tr>
<td></td>
<td>o 50 students in each grade will be invited from the whole district–will start in the 7th grade at Forrest Grove</td>
</tr>
<tr>
<td></td>
<td>▪ For Doherty a total of 200 students in whole school will take part in Biotechnology classes.</td>
</tr>
<tr>
<td></td>
<td>o 50 9th grade students will be part of one 9th grade cluster, but no additional dedicated space is required.</td>
</tr>
<tr>
<td>Item: 07.02.2019.08</td>
<td>Description: Reviewed the requirements for the MSBA Chapter 74 Program Template</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>- Criteria 1—Student and Labor Market Demand</td>
</tr>
<tr>
<td></td>
<td>- KB will pull student survey and labor market data, and will coordinate with Mass Hire rep</td>
</tr>
<tr>
<td></td>
<td>- Criteria 2—Initial Program Advisory Committee</td>
</tr>
<tr>
<td></td>
<td>- Criteria 3—Sufficient Time to Address Voc. Tech. Ed. Frameworks</td>
</tr>
<tr>
<td></td>
<td>- WPS will address each of these requirements with the goal of a final draft by 7/11, one week prior to the School committee vote on 7/18.</td>
</tr>
<tr>
<td></td>
<td>- LPA</td>
</tr>
<tr>
<td></td>
<td>Info.</td>
</tr>
<tr>
<td>07.02.2019.08</td>
<td>John Staley will complete the section on the existing programs to be expanded (ETA).</td>
</tr>
</tbody>
</table>

Attachments:
- Minutes by: Christina Bazelmans., LPA|A
- Distribute to: Attendees, Russ Adams, John Staley
- File location: 1904/Minutes/Owner/2019.07.02 Chapter 74 Programs
## Attendees:

- **Maureen Binienda** | Superintendent | Worcester Public Schools (via phone)
- **Sally Maloney** | Principal | Doherty Memorial High School
- **Russ Adams** | Assistant Commissioner | City of Worcester
- **Jim Bedard** | Director of Environmental Management & Capital Projects | Worcester Public Schools
- **Eugene Caruso** | Owner’s Project Manager | AECOM Tishman
- **Rob Para Jr.** | Project Architect | LPA|A
- **Chris Lee** | Project Manager | LPA|A
- **Christina Bazelmans** | Assistant Project Architect | LPA|A

## Item | Description: | Responsibility:

| 07.08.2019.01 | Confirmed the space summary will carry 900 SF classrooms (middle of the MSBA range of 825 min–950 mx) to allow space for inclusion services | Info. |
| 07.08.2019.02 | Direction to carry (16) history classrooms, same number as other departments, for a total of (57) general academic classrooms. | Info. |
| 07.08.2019.03 | Teacher planning spaces required for Math, English, History, Science, World Language, ELL, and each of the 9th grade teams (4).  
  - Direction to add two additional cross discipline teacher planning spaces–between Math and Science and English and History.  
  - Total of (12) teacher planning spaces, large enough to conference space with projector. | Info. |
| 07.08.2019.04 | Book storage is required for each department and each of the (4) 9th grade teams. | Info. |
| 07.08.2019.05 | Common rooms are desired with each department and with each 9th grade team and ETA. Sally Maloney noted the common rooms should be enclosed spaces for all departments except for ETA.  
  - Plan to accommodate 35 students | Info. |
<table>
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<tr>
<th>Item: 07.08.2019.06</th>
<th>Description:</th>
<th>Responsibility:</th>
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<tbody>
<tr>
<td></td>
<td>SPED category of the space summary and proposed staff is being reviewed by WPS Director of Special Education Services Kay Seale, LPA</td>
<td>A will follow up with her.</td>
</tr>
<tr>
<td>07.08.2019.07</td>
<td>Auditorium seating to accommodate half of student population is desired (835 seats). LPA</td>
<td>A will review the required area. LPA</td>
</tr>
<tr>
<td>07.08.2019.08</td>
<td>Additional program meetings will be scheduled for the Medical Suite, Systems &amp; Security, Building Services and Technology and Art/Music and Theater. LPA</td>
<td>A will coordinate with Kate Kerr to schedule.</td>
</tr>
<tr>
<td>07.08.2019.09</td>
<td>LPA</td>
<td>A will reach out to Donna Lombardi and Brian Corbley to confirm assumptions on the Kitchen and Servery area carried in the space summary.</td>
</tr>
<tr>
<td>07.08.2019.10</td>
<td>SM to confirm what space is required for the A/V program, as a small studio space is located in the existing school. WPS/DMHS</td>
<td>WPS/DMHS</td>
</tr>
<tr>
<td>07.08.2019.11</td>
<td>The project team also discussed the strategy for finalizing the upcoming MSBA Chapter 74 Program for approval by the school committee, and discussion points for the public meeting on 7/15.</td>
<td>Info.</td>
</tr>
</tbody>
</table>

Attachments: Draft Space Summary
Minutes by: Christina Bazelmans., LPA|A
Distribute to: Steering Committee
File location: 1904/Minutes/Owner/2019.07.08 Space Summary Review
## Proposed Space Summary - High Schools

### Core Academic Spaces

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Existing Conditions</th>
<th>New</th>
<th>Proposed</th>
<th>MSBA Guidelines</th>
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<tbody>
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### Special Education

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### Proposed Space Summary - High Schools

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<tr>
<td>Science Common</td>
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<td>Transitional Learning Center 9th &amp; 10th Grade</td>
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<tr>
<td>Resource Room (11th Gr.)</td>
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<tr>
<td>Small Group Room (Speech)</td>
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### SOUTH HIGH SPACE SUMMARY: FOR REFERENCE

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<td>76,119</td>
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<tr>
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<tr>
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<td>Pre-K Related Classroom (Gr. 7/8)</td>
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### Proposes South High Space Summary

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<tbody>
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<tr>
<td>Small Group Room (Speech)</td>
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## Proposed Space Summary - High Schools

### DOHERTY MEMORIAL HIGH SCHOOL

#### Existing Conditions

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#### New

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<th>area totals</th>
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#### MSBA Guidelines

(refer to MSBA Educational Program & Space Standard Guidelines)

### SOUTH HIGH SPACE SUMMARY: FOR REFERENCE

#### Proposed MSBA Guidelines

<table>
<thead>
<tr>
<th>ROOM TYPE</th>
<th>PROPOSED</th>
<th>MSBA GUIDELINES</th>
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<tbody>
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#### Proposed Space Summary - High Schools

<table>
<thead>
<tr>
<th>ART &amp; MUSIC</th>
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<tr>
<td>Art Classroom - 32 seats</td>
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<tr>
<td>Band - 50 - 100 seats</td>
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<td>Chorus - 50 - 100 seats</td>
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<td>Multi Storage</td>
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<td>Teacher Planning</td>
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#### VOCATIONS & TECHNOLOGY | 6,900 | 25,820 |
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<tr>
<td>Technology/Engineering Rooms</td>
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<td>AV Classroom</td>
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#### SOUTH HIGH SPACE SUMMARY: FOR REFERENCE

<table>
<thead>
<tr>
<th>Non-profit Bus, Store (Andy's Attic)</th>
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<th>1,200</th>
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<tr>
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<td>Non-profit Bus, Receiving/Dist</td>
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<td>Culinary Arts Kitchen &amp; Cafes(Pending Ch. 74)</td>
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<td>Culinary Arts Related Classroom (15 students)</td>
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<tr>
<td>Auto Locker/Clean up / Tools</td>
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<tr>
<td>Diesel Tech Shop (Pending Ch. 74)</td>
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<tr>
<td>Diesel Related Classroom (15 students or vehicle)</td>
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<td>Diesel Locker/Clean up / Tools</td>
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## Proposed Space Summary - High Schools

### Room Type

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<tr>
<td>Weight Room &amp; Storage</td>
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<tr>
<td>PE Alternatives (Wellness)</td>
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<td>Gym Boxroom</td>
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<td>Locker Rooms - Boys / Girls w/ Toilets</td>
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<td>Family Lockers/Toilets/Shower</td>
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<td>Outdoor Equipment Storage</td>
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<tr>
<td>Phx. Ed. Storage</td>
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<td>Athletic Director Office</td>
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<tr>
<td>Health Instructor's Office w/ Shower &amp; Toilet</td>
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<tr>
<td>Health Classroom</td>
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<td>Media Center</td>
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<td>Social Emotional Learning Center</td>
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<td>Auditorium / Drama</td>
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<td>Stage</td>
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<td>Theater Classroom / Performance</td>
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<td>Costume Storage</td>
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<tr>
<td>Make-up / Dressing Rooms / Green Room</td>
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<tr>
<td>Window Lighting / Projection</td>
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<tr>
<td>Performing Arts Maker Space</td>
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<tr>
<td>Dining &amp; Food Service</td>
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<td>18,784</td>
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<td>Cafeteria / Student Lounge / Break-out</td>
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<td>Chay / Tail Storage</td>
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<tr>
<td>Server Serving Area</td>
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<tr>
<td>Kitchen</td>
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<tr>
<td>Staff Lunch Room</td>
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<td>Satellite Grub &amp; Go</td>
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<tr>
<td>Medical</td>
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<td>Medical Suite Toilet</td>
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<td>Nurse's Office / Waiting Room</td>
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<tr>
<td>Interview Room</td>
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<tr>
<td>Examination Room / Reading</td>
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### Proposed Space Summary - High Schools

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Proposed</th>
<th>MSBA Guidelines</th>
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<tr>
<td>Physical Ed.</td>
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<tr>
<td>Gymnasium</td>
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<tr>
<td>Weight Room w/ Storage</td>
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<td>3,000</td>
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<tr>
<td>PE Alternatives (Wellness)</td>
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<tr>
<td>Community Aerosol Office / Room</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>Locker Rooms - Boys / Girls w/ Toilets/Visiting/Training</td>
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<td>5,000</td>
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<tr>
<td>Outdoor Equipment Storage</td>
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<td>0</td>
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<tr>
<td>Phys. Ed. Storage</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Athletic Director Office</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Health Instructor's Office w/ Shower &amp; Toilet</td>
<td>375</td>
<td>250</td>
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<tr>
<td>Health Classroom / Coach/Rec/Re/HR</td>
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<td>0</td>
</tr>
<tr>
<td>Media Center / Reading Room</td>
<td>8,650</td>
<td>8,775</td>
</tr>
<tr>
<td>Media Center / Reading Room / 2 Sml Grp Rms / Office / Work / Storage</td>
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<td>8,775</td>
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<tr>
<td>Computer Lab</td>
<td>950</td>
<td>950</td>
</tr>
<tr>
<td>Social Emotional Learning Center</td>
<td>900</td>
<td>900</td>
</tr>
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<td>10,400</td>
</tr>
<tr>
<td>Stage</td>
<td>1,909</td>
<td>2,700</td>
</tr>
<tr>
<td>Theater Classroom</td>
<td>600</td>
<td>300</td>
</tr>
<tr>
<td>Window Lighting / Projection</td>
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<td>200</td>
</tr>
<tr>
<td>Performing Arts Maker Space</td>
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<td>1,420</td>
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<tr>
<td>Dining &amp; Food Service</td>
<td>13,762</td>
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<td>Cafeteria / Student Lounge / Break-out</td>
<td>7,106</td>
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<tr>
<td>Chay / Tail Storage</td>
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<tr>
<td>Server Serving Area</td>
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<tr>
<td>Medical</td>
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High School Space Summary
### Proposed Space Summary - High Schools

#### South High Space Summary: For Reference

**Date:** 7/2/2019

**DOHERTY MEMORIAL HIGH SCHOOL**

<table>
<thead>
<tr>
<th>ROOM TYPE</th>
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<th>PROPOSED</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td># OF RMS</td>
</tr>
<tr>
<td>Resting Area (4 beds)</td>
<td>2  7</td>
<td>1  280</td>
</tr>
<tr>
<td>Clean/Snell Jan.</td>
<td>0  0</td>
<td>1  230</td>
</tr>
<tr>
<td>Clean Work</td>
<td>0  0</td>
<td>1  80</td>
</tr>
<tr>
<td>Medical/wheelchair stor.</td>
<td>0  0</td>
<td>1  175</td>
</tr>
<tr>
<td>Clinic Office</td>
<td>0  45</td>
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<tr>
<td>Multipurpose</td>
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<td>1  225</td>
</tr>
<tr>
<td>Food Pantry/Clothing Distribution</td>
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</table>

**ADMINISTRATION & GUIDANCE**

<table>
<thead>
<tr>
<th>ROOM TYPE</th>
<th>EXISTING CONDITIONS</th>
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<th>MSBA GUIDELINES</th>
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<tbody>
<tr>
<td></td>
<td>ROOM NFA</td>
<td># OF RMS</td>
<td>NFA</td>
</tr>
<tr>
<td>Administration</td>
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<td>1  280</td>
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<td>Custodian's Office</td>
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<td>1  230</td>
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<tr>
<td>Clean Work</td>
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<td>1  80</td>
<td>1  80</td>
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<tr>
<td>Medical/wheelchair stor.</td>
<td>0  0</td>
<td>1  175</td>
<td>1  175</td>
</tr>
<tr>
<td>Clinic Office</td>
<td>0  45</td>
<td>1  150</td>
<td>1  450</td>
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<tr>
<td>Multipurpose</td>
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<td>1  225</td>
<td>1  225</td>
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<tr>
<td>Food Pantry/Clothing Distribution</td>
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**DOHERTY MEMORIAL HIGH SCHOOL**

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<th>MSBA GUIDELINES</th>
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<td>ROOM NFA</td>
<td># OF RMS</td>
<td>NFA</td>
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<td>Resting Area (4 beds)</td>
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<td>1  280</td>
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<tr>
<td>Clean/Snell Jan.</td>
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<td>Medical/wheelchair stor.</td>
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**ADMINISTRATION & GUIDANCE**

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<tr>
<td>Medical/wheelchair stor.</td>
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<td>1  175</td>
<td>1  175</td>
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<tr>
<td>Clinic Office</td>
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**DOHERTY MEMORIAL HIGH SCHOOL**

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<tr>
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<tr>
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<td>1  80</td>
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<tr>
<td>Medical/wheelchair stor.</td>
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<td>1  175</td>
<td>1  175</td>
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<td>Clinic Office</td>
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**ADMINISTRATION & GUIDANCE**

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<td># OF RMS</td>
<td>NFA</td>
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<tr>
<td>Administration</td>
<td>2  7</td>
<td>1  280</td>
<td>1  280</td>
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<td>Custodian's Office</td>
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<td>1  230</td>
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<tr>
<td>Clean Work</td>
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<td>1  80</td>
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<tr>
<td>Medical/wheelchair stor.</td>
<td>0  0</td>
<td>1  175</td>
<td>1  175</td>
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<tr>
<td>Clinic Office</td>
<td>0  45</td>
<td>1  150</td>
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<td>Multipurpose</td>
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<td>Food Pantry/Clothing Distribution</td>
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**DOHERTY MEMORIAL HIGH SCHOOL**

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<tr>
<td></td>
<td>ROOM NFA</td>
<td># OF RMS</td>
<td>NFA</td>
</tr>
<tr>
<td>Resting Area (4 beds)</td>
<td>2  7</td>
<td>1  280</td>
<td>1  280</td>
</tr>
<tr>
<td>Clean/Snell Jan.</td>
<td>0  0</td>
<td>1  230</td>
<td>1  230</td>
</tr>
<tr>
<td>Clean Work</td>
<td>0  0</td>
<td>1  80</td>
<td>1  80</td>
</tr>
<tr>
<td>Medical/wheelchair stor.</td>
<td>0  0</td>
<td>1  175</td>
<td>1  175</td>
</tr>
<tr>
<td>Clinic Office</td>
<td>0  45</td>
<td>1  150</td>
<td>1  450</td>
</tr>
<tr>
<td>Multipurpose</td>
<td>0  0</td>
<td>1  225</td>
<td>1  225</td>
</tr>
<tr>
<td>Food Pantry/Clothing Distribution</td>
<td>0  0</td>
<td>1  240</td>
<td>1  240</td>
</tr>
</tbody>
</table>

**ADMINISTRATION & GUIDANCE**

<table>
<thead>
<tr>
<th>ROOM TYPE</th>
<th>EXISTING CONDITIONS</th>
<th>PROPOSED</th>
<th>MSBA GUIDELINES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ROOM NFA</td>
<td># OF RMS</td>
<td>NFA</td>
</tr>
<tr>
<td>Administration</td>
<td>2  7</td>
<td>1  280</td>
<td>1  280</td>
</tr>
<tr>
<td>Custodian's Office</td>
<td>0  0</td>
<td>1  230</td>
<td>1  230</td>
</tr>
<tr>
<td>Clean Work</td>
<td>0  0</td>
<td>1  80</td>
<td>1  80</td>
</tr>
<tr>
<td>Medical/wheelchair stor.</td>
<td>0  0</td>
<td>1  175</td>
<td>1  175</td>
</tr>
<tr>
<td>Clinic Office</td>
<td>0  45</td>
<td>1  150</td>
<td>1  450</td>
</tr>
<tr>
<td>Multipurpose</td>
<td>0  0</td>
<td>1  225</td>
<td>1  225</td>
</tr>
<tr>
<td>Food Pantry/Clothing Distribution</td>
<td>0  0</td>
<td>1  240</td>
<td>1  240</td>
</tr>
</tbody>
</table>
### Proposed Space Summary - High Schools

**DOHERTY MEMORIAL HIGH SCHOOL**

### Existing Conditions

<table>
<thead>
<tr>
<th>ROOM TYPE</th>
<th># OF RMS</th>
<th>NFA</th>
<th>Area totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

### New

<table>
<thead>
<tr>
<th>ROOM TYPE</th>
<th># OF RMS</th>
<th>NFA</th>
<th>Area totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Proposed Space Summary - High Schools

#### SOUTH HIGH SPACE SUMMARY: FOR REFERENCE

<table>
<thead>
<tr>
<th>ROOM TYPE</th>
<th>PROPOSED</th>
<th>MSBA-GUIDELINES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### MSBA Guidelines

(refer to MSBA Educational Program & Space Standard Guidelines)

### Proposed Student Capacity / Enrollment

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1,670</td>
<td>1,420</td>
<td></td>
</tr>
</tbody>
</table>

### Total Building Net Floor Area (NFA)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>115,887</td>
<td>270,172</td>
<td>190,224</td>
</tr>
</tbody>
</table>

### Total Building Gross Floor Area (GFA)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>239,059</td>
<td>171,350</td>
<td></td>
</tr>
</tbody>
</table>

### Grossing factor (GFA/NFA)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.50</td>
<td>1.41</td>
<td></td>
</tr>
</tbody>
</table>

### Non-Programmed Spaces

<table>
<thead>
<tr>
<th></th>
<th>% of GFA</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Occupied Rooms (not separately)</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Unoccupied MEP/FPP Spaces</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Unoccupied Vehicles, Supply Room, &amp; Storage Rooms</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Toilet Rooms</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Circulation (corridors, stairs, ramps &amp; elevators)</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Remaining1</td>
<td>129,828</td>
<td></td>
</tr>
</tbody>
</table>

### Total Building Gross Floor Area (GFA)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>168,000</td>
<td>400,000</td>
<td>270,540</td>
</tr>
</tbody>
</table>

### Grossing factor (GFA/NFA)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.48</td>
<td>1.42</td>
<td></td>
</tr>
</tbody>
</table>

---

1. Individual Room Net Floor Area (NFA) = such spaces as non-communal toilets and storage rooms.
2. Total Building Gross Floor Area (GFA) = gross square footage measured from the outside face of exterior walls.
3. Remaining = it is assumed to equal the difference between the Total Building Gross Floor Area and area not accounted for above.
Proposed Space Summary - High Schools

<table>
<thead>
<tr>
<th>ROOM TYPE</th>
<th>EXISTING CONDITIONS</th>
<th>PROPOSED</th>
<th>SOUTH HIGH SPACE SUMMARY: FOR REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROOM</td>
<td># OF RMS</td>
<td>NFA</td>
<td># OF RMS</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Architect Certification

I hereby certify that all of the information provided in this "Proposed Space Summary" is true, complete and accurate and, except as agreed in writing by the Massachusetts School Building Authority, in accordance with the guidelines, rules, regulations and policies of the Massachusetts School Building Authority to the best of my knowledge and belief. A true statement, made under the penalties of perjury.

Name of Architect Firm: ____________________________________________
Name of Principal Architect: _________________________________________
Signature of Principal Architect: ________________________________
Date: ______________

High School Space Summary
Attendees:

- Sally Maloney | Principal | Doherty Memorial High School
- Carolyn Waters | Instructional Coach | Doherty Memorial High School
- Lisa Leach | Performing Arts Curriculum Liaison | WPS
- Timmary Leary | Visual Arts Curriculum Liaison | WPS
- Amie Nemes | Art Teacher | Doherty Memorial High School
- Chris Lee | Project Manager | LPA|A
- Christina Bazelmans | Assistant Project Architect | LPA|A

<table>
<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
</tr>
</thead>
<tbody>
<tr>
<td>07.10.2019.01</td>
<td>The school and district noted that the limited space and staffing has impacted the enrollment of the Art, Music and Theater Programs. 3 Art classrooms and teachers cannot meet the student demand. DHMS has added a second music teacher and a full-time theater teacher, which will also increase interest.</td>
<td>Info.</td>
</tr>
<tr>
<td>07.10.2019.02</td>
<td>Estimated participation with the new staff, adequate space and expanded enrollment will be:</td>
<td>Info.</td>
</tr>
<tr>
<td></td>
<td>• Orchestra: 100 Students</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Jazz Band: 30 Students</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Chorus: 100 Students</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• General Music Courses: 110 Students</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Technical Theater: 125 Students</td>
<td></td>
</tr>
<tr>
<td>07.10.2019.03</td>
<td>Art</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Curriculum and student demand require (3) Art classrooms and (1) high power computer lab for digital media arts courses</td>
<td>Info.</td>
</tr>
<tr>
<td></td>
<td>o Scheduling results in class sizes up to 32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Computer lab should be sized and equipped the same as the other art classrooms for future flexibility</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• A Performing Arts Maker Space is desired between visual and performing arts.</td>
<td></td>
</tr>
</tbody>
</table>
### Meeting Minutes | Art, Music & Theater 07.10.2019

<table>
<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>o Goal is to have a “dirty” shop for Art and Set construction close to the art classrooms and stage (with overhead door)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Set building is in curriculum, during school hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Set storage is required, with overhead door</td>
<td></td>
</tr>
</tbody>
</table>

#### 07.10.2019.04 Auditorium

- School and district personnel agreed that auditorium seating capacity of half the student population (835) would be beneficial, as the minimum capacity for most rentals is 775–800 seats. Rentals would bring in revenue for the school.
- LPA|A noted that per MSBA policy, area for auditorium seating above 750 would be 100% district funded.
- Lighting/Control room should be large enough to teach half of a class (12) students. Approx. 450 SF.
- A ticket booth is desired in the lobby to serve the auditorium, blackbox theater and athletics events, or with a security station.

#### 07.10.2019.05 Stage/Dressing/Greenroom

- A greenroom is desired, with two bathrooms and a makeup counter w/sink, ensemble rooms could be used, if a sink is included; Dual use is ideal.
- Require boys and girls changing areas, with privacy stalls, sharing the gym locker rooms is not an option.
- Catwalks should be as accessible as possible, and safe for students to use to adjust lighting.
- Stage will be used as a teaching space, provide all the same technology as a classroom.
- Large overhead door should connect the stage and the prop storage and set building maker space area.

#### 07.10.2019.06 Technical Theater

- Program vision is two theater classrooms with an acoustic partition that could double as “Blackbox” theater.
<table>
<thead>
<tr>
<th>Item: 07.10.2019.07</th>
<th>Description: Music–Instrumental</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Instrumental program currently</td>
</tr>
<tr>
<td></td>
<td>includes orchestra and</td>
</tr>
<tr>
<td></td>
<td>jazz band, no marching band</td>
</tr>
<tr>
<td></td>
<td>currently or proposed</td>
</tr>
<tr>
<td></td>
<td>School provides instruments for</td>
</tr>
<tr>
<td></td>
<td>most students, requires</td>
</tr>
<tr>
<td></td>
<td>lockable storage. Lisa Leach (LL)</td>
</tr>
<tr>
<td></td>
<td>will provide a complete list of</td>
</tr>
<tr>
<td></td>
<td>instruments.</td>
</tr>
<tr>
<td></td>
<td>Require (2) larger ensemble</td>
</tr>
<tr>
<td></td>
<td>practice rooms (4–6 students) as</td>
</tr>
<tr>
<td></td>
<td>well as individual practice</td>
</tr>
<tr>
<td></td>
<td>rooms (1–2 students)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item: 07.10.2019.08</th>
<th>Description: Music–Choral</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flexible for various</td>
</tr>
<tr>
<td></td>
<td>ensemble sizes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item: 07.10.2019.09</th>
<th>Description: Music–General</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Music appreciation and</td>
</tr>
<tr>
<td></td>
<td>general music classes have</td>
</tr>
<tr>
<td></td>
<td>high enrollment. General</td>
</tr>
<tr>
<td></td>
<td>music requires a typical</td>
</tr>
<tr>
<td></td>
<td>classroom space with</td>
</tr>
<tr>
<td></td>
<td>storage closet for a variety</td>
</tr>
<tr>
<td></td>
<td>of large instruments.</td>
</tr>
<tr>
<td></td>
<td>A Piano lab/ Music Engineering class is desired in the new school, which will require a lab with 18 Mac computer stations and teaching space.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item: 07.10.2019.10</th>
<th>Description: General</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exterior access is</td>
</tr>
<tr>
<td></td>
<td>desired for Art, Music</td>
</tr>
<tr>
<td></td>
<td>and Theater if</td>
</tr>
<tr>
<td></td>
<td>possible.</td>
</tr>
</tbody>
</table>
### Item: Description: Responsibility:

- A collaborative teacher planning space is desired for the Art Music and Theater staff (8 staff members)

#### 07.10.2019.11

#### 07.10.2019.12

Sally Maloney also noted the following changes to the Space Summary:

- PLATO program requires an office for the director in the guidance, suite, with mobile technology, no separate classroom will be required
- Also add office for Internship/community service coordinator and Innovation Pathways Office
- A separate classroom is required for the AVID program, near the career center for 25 students. This program assists middle level students to succeed in AP courses of their strongest subject.

**Attachments:**  
Art Department Wish List, Preliminary List of Instruments  

**Minutes by:**  
Christina Bazelmans, LPAJA

**Distribute to:**  
Steering Committee

**File location:**  
1904/Minutes/Owner/2019.06.24 PDP Program Wrap-up
Dear Christina,

I will send you more shortly but this is what I have,
2 drum sets,
Bass drum
1-2 Marimba
Bells/chimes
4 sousaphone/tuba
4 trombone
8 saxophone alto and tenor
8 trumpet
8 flute
4 horns
2-4 bass
8 viola
8 cello
16 violin

--
Lisa M. Leach
She/Hers
Performing Arts Curriculum Liaison
Worcester Public Schools
Durkin Administration Building
20 Irving Street
Worcester, MA 01609
leachl@worcesterschools.net
"When a flower doesn't bloom, you fix the environment in which it grows, not the flower." Alexander Den Heijer
Doherty Memorial High School
Art Department Pie in the Sky Wish List:

Teacher Offices
Generous work surfaces with flexible seating plans
Table surfaces accommodate various materials
Technology Lab space
MACs and graphic design software
CAD Design Software
Table Paper Cutters/ Graphic Design paper cutter
Printers (Color, oversized printers, laminators)
Paper rolls storage
Good circulation
Deep Sinks with spacing between for easy access. (separate draining to avoid clogging)
Access to several electrical outlets throughout the spaces for varying purposes (drop ceiling/powerstrips under mount/wall mount etc.)
Innovative multiple storage solutions (student work, art supplies, lockable portfolio storage)
Open Shelving
Cupboards
Drying Racks
Moveable Carts/Stations with power
Flexible Teacher Wall Suits (interactive screens/sliding whiteboards/display boards)
Demonstration Areas
Innovative Artwork Display Areas (inside and outside of the classroom for both 2D/3D work)
Innovative Lighting Options for Fine Art/Technology (direct lighting vs. zoned lighting)
Art Gallery
Interactive wall drawing surfaces
Outdoor workspaces accessible to the art room
Centers
Collaborative Work Spaces
Multipurpose walls (interchangeable)
The floorplan allows for collaboration between performing and visual art dept.
Easel space
Ceramics studio space
Kiln Room with a proper ventilation system.
Overall Color Schemes: Neutral Tones
Flooring: Sealed surfaces
Windows and room darkening options

Courses: art appreciation
Graphics
Easel space
Accommodating Different learning styles in all art classes

Music--sound design
STEAM
CAD
Importance of lighting
2. **gb #9-234 - Administration (July 8, 2019)**

To consider approval of the Chapter 74 Programming for the new Doherty Memorial High School.

Mayor Petty made the following motion:

Request that the School Committee approve the Chapter 74 Programming for the new Doherty Memorial High School.

On a roll call, the vote was as follows:

For the motion: Miss Biancheria, Mr. Comparetto, Miss McCullough, Mr. Monfredo, Mr. O'Connell, Mayor Petty 6

Against the motion: 0

Absent: Mr. Foley 1

7

The motion carried.

Helen A. Friel, Ed.D.
Clerk of the School Committee
Attendees:

- Donna Lombardi | Director of School Nutrition | WPS
- Brian Corbley | Head Chef | WPS
- Rob Para Jr. | Project Architect | LPA|A
- Christopher Lee | Project Manager | LPA|A
- Christina Bazelmans | Assistant Project Architect | LPA|A

<table>
<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
</tr>
</thead>
<tbody>
<tr>
<td>07.25.2019.01</td>
<td>Scramble Serving Area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Donna Lombardi (DL) confirmed that the project should proceed with the assumption of 3 lunch seatings, in alignment with the MSBA space summary guidelines (Post note: this was confirmed with the Principal and Superintendent)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The scramble serving area and Point of Sale (POS) stations should be sized to efficiently serve 557 students, as lunch period is only 20 minutes.</td>
<td>Info.</td>
</tr>
<tr>
<td></td>
<td>• 75 students per POS is the desired ratio, DL directed to carry 6 POS stations, which could be double sided if necessary.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• (5) Serving stations will be more customized than at South High (i.e. taco, salad, sandwich and pizza stations)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• DL confirmed that the 3,000 NSF for the scramble serving area should be carried for the PDP Space Summary.</td>
<td></td>
</tr>
</tbody>
</table>

<p>| 07.25.2019.02 | Kitchen |  |
| | DL and Brian Corbley (BC) confirmed that the area for the kitchen should be the same as what was carried for South High (3,146 NSF). |  |
| | • In lieu of a conditioned prep area which was provided at South, the Doherty kitchen should have a Dry Prep area of a similar size | Info. |
| | o An elongated room with “pass through” doors, central tables for work/prep and dry storage shelving around the perimeter. |  |</p>
<table>
<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>o Location should be close to corridor/ loading dock (so prepared food ready for transport does not need to be tracked through the main kitchen)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Office with work stations for (6) workers is desired.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• A janitor’s closet for chemical use/storage is required.</td>
<td></td>
</tr>
</tbody>
</table>

**07.25.2019.03 Cafeteria**

- DL prefers the concept of smaller connected dining areas revolving around one central kitchen and serving area; advised that a separate dining area for some students often results in stigmatization.
- Visibility for supervision and daylighting is key
- Outdoor dining would be beneficial, could serve as a place for after school athletes to eat before practice, however, DL defers to the principal on logistics and security.

**07.25.2019.04 Satellite Grab & Go**

- A satellite “grab and go” station is desired at the entrance/main lobby of the school, close to after school activities
- Goal is to feed those students that are coming in late just before the first class, as well as students participating in after school athletics and extracurriculars.
- Requires a POS station, handwashing, refrigerated units, dry storage, and countertop heating cabinet, secured by a rolling overhead door.
- BC confirmed that the same size space as was allocated for the South High Culinary Arts café would be desired.

*Post note:* The area for the South High café was 170 SF, LPA|A will carry 200 SF in the PDP space summary.
### Attendees:

- **Jim Bedard** | Director of Environmental Management & Capital Projects | Worcester Public Schools
- **Ed Capstick** | Assistant Principal | DMHS
- **David Shea** | Athletic Director | WPS
- **Meghan McDonald** | PE Teacher | DMHS
- **Carol Manning** | WPS PE Liaison
- **Mike Pageau** | PE Teacher | DMHS
- **Wendy Marshall** | PE Teacher | DMHS
- **Eugene Caruso** | Project Manager | AECOM Tishman
- **Katie Crockett** | Principal in Charge | LPA|A
- **Rick Lamoureux** | Project Manager | LPA|A
- **Christina Bazelmans** | Assistant Project Architect | LPA|A
- **Chris Lee** | Project Manager | LPA|A

### Gymnasium:

<table>
<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
</tr>
</thead>
</table>
| 07.30.2019.01 | Gymnasium:  
- Full school assembly, 1200 in bleachers is reasonable, 500 on the floor.  
- Currently boys’ and girls’ games are over capacity—270 max in gym, need at least 800 for boys’ basketball game.  
- Need bleachers on both sides for coaches, players and cheerleaders.  
- Batting cage above, but still with visibility of scoreboard.  
- Volleyball interest is strong and would need one competition court and one practice secondary court. Could use more striping for PE.  
- Requirement for (2) health classrooms was confirmed.  
- What is the role of Technology in PE future? Wristband, heart rate monitors, screens. Watch a volleyball video and then go in to the gym for activity.  
- Wellness and weights could be locked, and therefore could be above/overlooking, with windows and visibility.  
- Master switch for all 6 basketball hoops with remote control. | Info. |

<p>| 07.30.2019.02 | SPED: 4–5 | LPA|A |</p>
<table>
<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>20–30 kids per classroom.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adaptive Phys Ed is currently offered at Doherty.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Would be good to have a flexible worktop surface.</td>
<td></td>
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<tr>
<td></td>
<td>Wellness for dance and yoga will be fully scheduled, will need additional space for SPED/Life Skills.</td>
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<tr>
<td></td>
<td>General gym class is too big. 4 periods with life skills students. There is already a part-time (1) adaptive PE teacher, 3 periods a week.</td>
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<tr>
<td></td>
<td>Discuss SPED Adaptive PE (Sensor/Motor) teaching station at 4000SF or 3000SF with Steering Committee.</td>
<td></td>
</tr>
<tr>
<td>07.30.2019.03</td>
<td>Lockers:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gym teacher offices should be adjacent to Gym and PE lockers with monitoring capabilities so teachers can hear what’s going on and have better access and supervision.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Team lockers can be remote.</td>
<td>Info.</td>
</tr>
<tr>
<td></td>
<td>Lockers on same floor as gym is a priority with built in internal locks. If keeping one locker for 10 weeks, then 150 on each side would be sufficient if its 1/3rd of a locker.</td>
<td></td>
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<tr>
<td>07.30.2019.04</td>
<td>Storage:</td>
<td></td>
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<tr>
<td></td>
<td>Anticipate community use – will need separate storage.</td>
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<tr>
<td></td>
<td>PE storage location should be right off the gym having twice the area, larger spaces with cages and maneuvering space, as opposed to the many small closets they have now.</td>
<td>LPA/A</td>
</tr>
<tr>
<td></td>
<td>For athletics storage, each team sport should have their own storage space.</td>
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<tr>
<td></td>
<td>Same size as Worcester Tech, right off the gym with a garage door would be ideal.</td>
<td></td>
</tr>
<tr>
<td>07.30.2019.05</td>
<td>Fields &amp; Facilities: Fall is highest use for fields in all ed facilities (college and high schools). Fall season is out for negotiation.</td>
<td></td>
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<tr>
<td></td>
<td>Order of priority for fields:</td>
<td>Info.</td>
</tr>
<tr>
<td></td>
<td>1. Lighted turf field 100 yard–football practice, soccer, lacrosse.</td>
<td></td>
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<tr>
<td>Item</td>
<td>Description</td>
<td>Responsibility</td>
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<tr>
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</tr>
<tr>
<td>2.</td>
<td>Softball diamond.</td>
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<tr>
<td>4.</td>
<td>(3) Tennis courts—minimum; Ideally 6—also lined for basketball.</td>
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</tr>
<tr>
<td>5.</td>
<td>Track.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Basketball courts</td>
<td></td>
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<tr>
<td></td>
<td>Currently softball uses Beaver Brook field. Worcester State allows field use at the end of the season.</td>
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<tr>
<td></td>
<td>Newton Hill could continue for tennis. New tennis courts could be striped for dual use (with basketball).</td>
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<td></td>
<td>Existing Doherty Field is in poor condition and gets beat up from early football use in August with continued multiple team use following.</td>
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<td></td>
<td>Auburn High Field referenced as ideal set up.</td>
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<td></td>
<td>Boys and Girls Club is rented for swimming. Closest schools are majority of the participants. Participation also tied to transportation availability. Renting a pool is a cost savings for WPS (about $4300/year)</td>
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<tr>
<td></td>
<td>There are concerns about losing indoor track at South and outdoor track at Foley if built there. District wide plan for indoor track needs to be addressed by City, especially if Foley is the chosen site. Doherty cannot have an indoor track within 18,000 sf, which is the MSBA maximum allowable sized gym.</td>
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<tr>
<td></td>
<td>Project Adventure is an outdoor classroom.</td>
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<td></td>
<td>Indoor Project Adventure is climbing.</td>
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<td></td>
<td>Outdoor activities: Hiking, cross country skiing.</td>
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</tbody>
</table>

**07.30.2019.06 Foley Stadium:**
- There are concerns about losing outdoor track at Foley if built there.
- 600 student athletes would be displaced, district wide.
- Foley is used by all high schools for fall and spring.
- All city Varsity Football teams uses Foley for games.
- Fall, strong soccer city wide presence.
- Division competitors have turf, St. John’s etc.
Foley is booked Friday and Saturday for games which puts limitations on scheduling practice times. Foley is a WPS funded and maintained field.

Current Doherty Seasonal Athletic Facility Uses:

Fall:
2. Cheerleading – practice in gym, cheer at Foley.
3. Field Hockey – practice and play at Foley.
5. Girls’ Soccer – play games at Foley, practice at Foley and Chandler Magnet.
7. Golf – practice and play at Green Hill.
10. All city Varsity Football teams uses Foley for games

Winter:
2. Girls’ basketball – practice and play at Doherty in gym.
4. Indoor Track – practice at Doherty, run meets at South (for now)
5. Hockey – practice and play at Buffone Ice Rink.
6. Swimming – practice and play at Boys & Girls Club

Spring:
1. Softball – practice at Doherty, play at Beaver Brook and Worcester State.
2. Baseball – practice and play at Foley, also use field behind Doherty to practice.
Meeting Minutes | PE & Athletics

<table>
<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Crew – practice and play at Lake Quinsigamond.</td>
<td></td>
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<tr>
<td>7.</td>
<td>All city track teams run meets at Foley, practice at their schools. Doherty practices at Foley and runs track meets at Foley.</td>
<td></td>
</tr>
</tbody>
</table>

**07.30.2019.07** Transportation & Parking:

- Outside of the walking area, transit becomes an issue, and participation drops.
- If school moves further from downtown, it would create more difficulty for students to access.
- Currently use Foley parking plus street parking and across the street, and Beaver Brook parking.
- 3000 parkers for mini Olympics at Foley Stadium.

Attachments: Gymnasium Studies.pdf

MSBA Memo: Staff Recommendation for policy revisions to allow for auditorium and gymnasium spaces in excess of the MSBA Space Summary Guidelines at the district’s sole expense

Minutes by: Christina Bazelmans/Chris Lee, LPA|A

Distribute to: Steering Committee

File location: 1904/Minutes/Owner/2019.07.30 Athletics & PE/1904-MO-PE & Athletics.docx
TO: Board of Directors, Massachusetts School Building Authority  
FROM: Maureen G. Valente, Chief Executive Officer  
        John K. McCarthy, Executive Director, Deputy Chief Executive Officer  
SUBJECT: Staff Recommendation for policy revisions to allow for auditorium and gymnasium spaces in excess of the MSBA Space Summary Guidelines at the district’s sole expense  
DATE: November 2, 2016

Based upon review of project data and discussions with the Board of Directors, staff is recommending a policy revision to the Massachusetts School Building Authority (the “MSBA”) space guidelines specifically for Auditorium and Gymnasium related spaces that are in excess of those included in the MSBA space summary guidelines.

Background

Based on project reviews in late fall 2015, the Board of Directors requested that staff provide information regarding the potential to revise the policies for space guidelines to allow for requests by districts for spaces in excess of the MSBA’s guidelines at the district’s sole expense. Staff presented an overview of current policies and practices at the March 16, 2016 Board of Directors meeting and followed with additional information regarding potential revisions at the March 30, 2016 Board of Directors meeting.

Based on the discussions and input received from the Board members, staff has prepared a Potential Revised Policy, included as Attachment A, which will allow districts to include spaces in excess of the MSBA’s space summary guidelines at the district’s sole expense for two program areas: auditorium and gymnasium. Staff has received favorable feedback regarding this proposed revision to the MSBA’s policies, and as noted at the September 29, 2016 Board of Directors meeting and further reviewed at the October 19, 2016 Facilities Assessment Subcommittee meeting, staff have prepared this recommendation to revise the MSBA’s policy for the Board of Directors approval.

Recommendation

Specific details are set forth in Attachment A: Potential Revised Policy – Auditorium and Gymnasium spaces above guidelines requested to support community use at district’s sole expense.

Key features of the policy revision include:
• Areas in excess of the MSBA guidelines will be at the sole expense of the district;
• Community support must be demonstrated prior to MSBA approval of a district’s proposed project scope and budget;
• The MSBA will exclude from its grant the cost of the total gross square foot (“gsf”) above guidelines for these areas as shown below in the sample calculation. This amount will not change over the term of the grant even if the bids come in at a lower amount.

• High Schools:
  o Upper limits on allowable nsf in excess of guidelines include:
    ▪ The district may choose to build an auditorium in excess of MSBA guidelines, but no more than 13,300 net square foot (“nsf”) (based upon an upper limit of 1,000 seats). The MSBA funding limit will vary depending on the agreed-upon design enrollment but will not exceed 10,400 nsf; and
    ▪ The district may choose to build a gymnasium and related spaces in excess of MSBA guidelines, but in no event shall the gymnasium exceed 18,000 nsf. The MSBA will participate in a gymnasium of up to 12,000 nsf unless adjusted by the MSBA to increase teaching stations for enrollment and/or the educational plan.

• Middle Schools/Elementary Schools:
  o Upper limits on allowable nsf in excess of guidelines include:
    ▪ The district may choose to build an auditorium even though the MSBA space guidelines do not include an auditorium and no portion of the design and construction of an auditorium will be reimbursed, including the stage, regardless of whether the district chooses not to include a stage in its cafetorium or gymnasium. If the district chooses to build an auditorium, the auditorium cannot be larger than 13,300 nsf; and
    ▪ The district may choose to build a gymnasium and related spaces in excess of MSBA guidelines, but in no event shall the gymnasium itself exceed 12,000 nsf. The MSBA will participate in a gymnasium up to no more than 6,000 nsf, unless adjusted by the MSBA to increase teaching stations for enrollment and/or the education plan.

• Sample Calculation for Auditorium space in a high school in excess of guidelines at the district’s sole expense:

<table>
<thead>
<tr>
<th>Total net square footage (nsf) requested by the District</th>
<th>13,300 nsf</th>
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<tbody>
<tr>
<td>Total nsf for Auditorium Category allowed as eligible by MSBA space guidelines</td>
<td>10,400 nsf</td>
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<tr>
<td>Excess net square footage equals District request minus net</td>
<td>2,900 nsf</td>
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</table>
square footage allowable by MSBA space guidelines

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<thead>
<tr>
<th>Description</th>
<th>Calculation</th>
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<tr>
<td>Gross square foot (gsf) exclusion = Excess net square feet times the project’s grossing factor. For illustration purposes, project’s sample grossing factor is 1.5</td>
<td>2,900 nsf x 1.5 = 4,350 gsf</td>
</tr>
<tr>
<td>Total cost of exclusion = Gross square foot times the project’s total construction cost/square foot. For illustration purposes, project’s total construction cost/square foot is $375 per square foot.</td>
<td>4,350 gsf x $375/gsf = $1,631,250</td>
</tr>
<tr>
<td>Total cost of exclusion</td>
<td>$1,631,250</td>
</tr>
</tbody>
</table>

**Recommendation**

MSBA staff is recommending a policy revision to the MSBA space guidelines specifically for Auditorium and Gymnasium related spaces that are in excess of those included in the MSBA space summary guidelines. This recommendation would be effective for districts that are approved to proceed into schematic design on or after January 1, 2017.
Attendees:

- **Sally Maloney** | Principal | Doherty Memorial High School
- **Jim Bedard** | Director of Environmental Management & Capital Projects | Worcester Public Schools
- **Rob Pezzella** | Police & Fire Department Liaison | WPS
- **Rob Para Jr.** | Project Architect | LPA|A
- **Christina Bazelmans** | Assistant Project Architect | LPA|A
- **Chris Lee** | Project Manager | LPA|A

| Item: 08.13.2019.01 | Description: LPA|A reviewed the project outline, 1670 students in grades 9–12 in a school building approximately 420,000 SF. The school is projected to open in the fall of 2024. | Responsibility: Info. |

| Item: 08.13.2019.02 | Description: LPA|A discussed that the security policies and procedures were discussed and vetted during the Nelson Place Elementary School (NPES) and South High Community School (SHCS) Projects. LPA|A requested any updates or deviations from those models. | Responsibility: Info. |

| Item: 08.13.2019.03 | Description: Entrance
- The same entrance sequence as was provided for NPES and SHCS is desired.
- Two sets of doors at vestibule. Video entry system at both.
- After hours, second vestibule doors are locked and entry to the school is via a door from the vestibule to the main office.
- No metal detectors are desired
- Welcoming Landscape features such as benches or planters are desired to serve as vehicle barriers in lieu of bollards. | Responsibility: Info. |

| Item: 08.13.2019.04 | Description: School Resource Officer
- (1) SRO office is required in the main office. Office should accommodate a desk and two guests. | Responsibility: Info. |

| Item: 08.13.2019.05 | Description: A security guard station is desired in the main lobby with view of the entrance (similar to South High) | Responsibility: Info. |
### 08.13.2019.06 Video Surveillance

- Video surveillance model should be the same as SHCS.
- Interior (all floors) and exterior video surveillance is desired.
- Maximize coverage and either provide cameras or avoid creating corners or nooks with limited visibility.
- Require the ability to record video, fish eye, fixed or movable as appropriate.
- Multiple cameras should be located in long hallways for appropriate coverage.
- Two camera monitoring stations are desired, one in principal’s office and one satellite location (depending on the final layout).
- The ability for a camera to read a license plate at the vehicle point of entrance is desired.
- The Genetech system currently used in the district is proprietary and will require approval.

### 08.13.2019.07 Exterior Features

- Exterior lighting on motion sensors is required for fields and parking lots.
- Speed Tables are preferred over speed bumps for maintenance, location(s) will depend on the final site plan.
- Currently the Newton Hill frisbee golf access and parking is via the Doherty student parking lot. Future discussions will be held regarding the security and liability of this access via school property.

### 08.13.2019.08 Lock Down

- WPS has trained teachers in active shooter protocol.
- Announcement clocks/displays will be used to display a lockdown notification (red screen with pre-recorded lockdown message).
- An audible alarm is desired in addition to a visual lockdown notification. Loud shops should also have flashing
<table>
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<th>Item:</th>
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</table>
| beacons.  
• Principals and AP’s should be able to activate a lock down from their phones.  
• Assume laminated glass and shades at side lites to all classrooms, similar to SHCS  
• Classroom doors should automatically lock when shut  
• Teachers may be asked to use the Enforce 911 App on their phones.  
• A panic button to secure the lobby from the balance of the school is desired.  
• Windows will be operable, but limiters will not allow egress or ingress.  
• Automated and pre-recorded instructions with automated lights for circumstantial events in Auditorium and similar spaces. |  |
| 08.13.2019.09 Door hardware/Access Control  
• Classrooms doors should be keyed the same by department/wing  
• Classroom doors should automatically lock when shut, but will unlock to allow exit at any time.  
• Communicating doors should be “passage hardware” with no locking capabilities.  
• Programmable fobs are desired for exterior door access | Info.  |
| 08.13.2019.10 Cell Phone/Repeaters  
• Cell phone service repeaters were included in select target areas at SHCS due to the high cost. The same model will be used for Doherty unless costs become more reasonable. Team will review again at future phases  
• Signal repeaters for Police & Fire radios are also required. | Info.  |
| 08.13.2019.11 Outdoor Dining  
• Outdoor dining desired depending on the cafeteria layout/location.  
• Outdoor dining should be enclosed in a courtyard or with attractive fencing, supervision of this area is essential. | Info.  |
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<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
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<tbody>
<tr>
<td>Minutes by:</td>
<td>Christina Bazelmans/Chris Lee, LPA/AA</td>
<td></td>
</tr>
<tr>
<td>Distribute to:</td>
<td>Attendees, Steering Committee, Tim Williams, Bob Walton, ART Engineering</td>
<td></td>
</tr>
</tbody>
</table>
### Attendees:

- **Maureen Binienda** | Superintendent | Worcester Public Schools
- **Sally Maloney** | Principal | Doherty Memorial High School
- **Todd Stewart** | WPS
- **Kay Seale** | Manager of Special Education & Intervention Services | WPS
- **Emily Lizano** | Acting Assistant Director | WPS
- **Katie Crockett** | Principal in Charge | LPA|A
- **Christina Bazelmans** | Assistant Project Architect | LPA|A

### Item: Description: Responsibility:

| Item: 08.20.2019.01 | Kay Seale (KS) and Emily Lizano reviewed the current and proposed staff numbers, and confirmed the number of Inclusion Classrooms and Learning Centers (LC):
| | (8) Total Learning Centers (LC)
| | o (1) LC per 9th grade team (4 teams)
| | o (1) LC per department (Math, Science, History, English)
| | (12) Total Inclusion Classrooms
| | o (1) Inclusion Classrooms per 9th grade team (4 teams)
| | o (2) Inclusion Classrooms per department (Math, Science, History, English) | Info. |

| Item: 08.20.2019.02 | EL will provide Sally with data on the number of special education students and the type of services required.
| | 234 Students required Special education in 2018
| | 84 ELL students also require SPED services.
| | The numbers for this year are still subject to changes during the enrollment period. | Info. |

| Item: 08.20.2019.03 | A 3000 SF Gymnasium teaching station is desired for SPED /Adaptive PE.
| | The number of students with physical disabilities will increase as Doherty is not currently accessible, these students are currently sent elsewhere in the district
| | This space will be used for Doherty’s adaptive PE teacher to allow for greater inclusion, Unified Sports and indoor special Olympics.
| | Kay Seale will provide a paragraph for the Teaching Philosophy statement. | Info. |

| Item: 08.20.2019.04 | ADL/Vocational Learning
<p>| | Discussed the location of Adult Daily Living, currently shown adjacent to medical suite. KS advised to avoid |</p>
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<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
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</thead>
<tbody>
<tr>
<td>08.20.2019.05</td>
<td>Upper grade Vocational Learning Center is confirmed, adjacent to</td>
<td>Info.</td>
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<tr>
<td></td>
<td>guidance and career center.</td>
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</tbody>
</table>

Minutes by: Christina Bazelmans, LPA
Distribute to: Attendees, Steering Committee
Attendees:

- Maureen Binienda | Superintendent | WPS
- Sally Maloney | Principal | Doherty Memorial High School
- Jim Bedard | Director of Environmental Management & Capital Projects | WPS
- Tim Williams | Network Systems Engineer | WPS
- Bob Walton | Information Technology Officer | WPS
- Sarah Kyriazis | Manager of Instructional Technology and Digital Learning | WPS
- Rob Para Jr. | Project Architect | LPA|A
- Christina Bazelmans | Assistant Project Architect | LPA|A

| Item: 08.22.2019.01 | Description: Discussed the concerns raised at public forums regarding the health effects of Wifi. |
| | • Bob Walton (BW) advised that the governing body on exposure is the FCC, and Worcester Public Schools follows their recommendations |
| | • BW noted that the Standing Committee on Teaching Learning and Student supports made a report to the School committee on this subject in December of 2016, the minutes of this meeting are attached. |
| | • BW directed for the project to plan on two network drops in each classroom, in addition to the two for the teacher’s stations (4 drops total, not including ceiling drops for wireless access points) |

| Item: 08.22.2019.02 | Description: Sarah Kyriazis (SK) confirmed that the Worcester public high schools will be 1:1 by the time of the school opening in 2024. |
| | • The mobile devices (Chromebooks) will be leased, and therefore will not need to be included in the FF&E budget. |
| | • Dedicated charging stations are required in each classroom |

| Item: 08.22.2019.03 | Description: Phones will be VOIP, using the proprietary Shoretell/Mytel system |

08.22.2019
<table>
<thead>
<tr>
<th>Item: 08.22.2019.04</th>
<th>Description: Cable TV is desired only at the main office and MDF/IDF rooms, and will not be wired to every classroom</th>
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<tbody>
<tr>
<td></td>
<td>• Converters for broadcasting from gym or auditorium through the network are available</td>
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<tr>
<td>Item: 08.22.2019.05</td>
<td>MDF/IDF location</td>
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<tr>
<td></td>
<td>• Centrally located and stacked floor to floor</td>
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<td>• Card swipe/fob controlled access is desired</td>
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<tr>
<td></td>
<td>• Standby power</td>
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<tr>
<td>Item: 08.22.2019.06</td>
<td>Technical Services Space</td>
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<tr>
<td></td>
<td>• Will require a public interface as well as an Overhead Door to an exterior loading area for deliveries</td>
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<td>• Will be tied into the Programming and Web Dev Chapter 74 program</td>
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<td>• May be an internship opportunity</td>
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<td></td>
<td>• Space to be similar to that at Worcester Technical High School (WTHS); server room with air-conditioned raised floor, offices and cubicles, bathrooms, conference room, receiving and storage</td>
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<td>• Noted that the fit out would not be part of the Doherty Project, as with the WTHS space, most of the area can be under other areas or internal to the building.</td>
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<td>• POST NOTE: On 8/26 the Steering Committee advised that 5,000 NSF will be carried for the PDP phase</td>
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<tr>
<td>Item: 08.22.2019.07</td>
<td>Classroom Technology</td>
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<tr>
<td></td>
<td>• Epson bright link short throw projector (laser or bulb-less per most recent product availability)</td>
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<td></td>
<td>• A second LED display is desired (similar to the system observed at Billerica High school.</td>
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<td>o Desire for screens to be independent or mirroring.</td>
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<td></td>
<td>• Document Camera</td>
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<td></td>
<td>• Chromecast/apple TV</td>
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<td></td>
<td>• Speech reinforcement</td>
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<td>Item:</td>
<td>Description:</td>
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</tbody>
</table>
| 08.22.2019.08 | At least two Z-Space tables are desired for the Biotech academy and the ETA.  
  • Will be procured as FF&E, ±80,000  
  • KS will provide specifications  
  • [https://zspace.com/](https://zspace.com/) | Info.           |
| 08.22.2019.09 | A large exterior projector screen (with mobile projector cart) is desired for outdoor presentations and events.                                                                                                   | Info.           |
| 08.22.2019.10 | Wifi capabilities are desired at the exterior athletic fields  
  • Potential for exterior Wifi to be served by City Wifi, Tim Williams (TW) will review and advise | Info.           |
| 08.22.2019.11 | Interactive dedication display is desired in the lobby, similar to Billerica High School Concept  
  • The branding and integration of history was very successful at Billerica, this may be desired at Doherty.                                      | Info.           |

**Balance of minutes are directions per Jim Bedard’s email on 08/23/19**

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<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
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</table>
| 08.22.2019.12 | Cameras  
  • All AXIS Cameras on the Genetec platform.  
  • 33 days of storage – dedicated servers  
  • Full Saturation of the facility (specific design to come later)  
  • Door(s) intercom system | Info.           |
| 08.22.2019.13 | Card Access (for IT purposes, may not be a comprehensive list)  
  • All exterior doors  
  • MDF Room  
  • IDF Rooms  
  • Technical services, including specific interior doors of that space | Info.           |

**BUILDING SYSTEMS—Follow the model established for South High**

<table>
<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
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</table>
| 08.22.2019.14 | Mechanical  
  • Building Fully Air conditioned | Info.           |
# Meeting Minutes | Building Systems & IT

**08.22.2019**

<table>
<thead>
<tr>
<th>Item:</th>
<th>Description:</th>
<th>Responsibility:</th>
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<tbody>
<tr>
<td>• High-Efficiency Lochinvar gas boilers</td>
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<tr>
<td>• Gas as a primary energy source</td>
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<td>• Boiler location centrally located with overhead door access</td>
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<tr>
<td>• Full mechanical system controls</td>
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<td></td>
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<tr>
<td>• Servicing Requirements</td>
<td></td>
<td></td>
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<tr>
<td>• Easy Access to systems</td>
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<td></td>
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<tr>
<td>• Walkout Roof Access – No ladder</td>
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<td></td>
</tr>
</tbody>
</table>

**08.22.2019.15 Plumbing**

- Gender Neutral Bathrooms
- Low Water Urinals (Not Waterless)
- Grease traps with easy cleanout
- Oil separator traps with easy cleanout access

**08.22.2019.16 Electrical**

- Fully Controllable LED Lighting
- Complete Exterior Lighting Package
- Auditorium lighting that lowers for bulb replacement (no lift needed)
- Generator – Back-Up Power
- Non – Designated Emergency Shelter

**SUSTAINABLE DESIGN**

**08.22.2019.17**

- Follow the model established for South High
- High-Performance Building Envelope
- Passive performance opportunities
- High-Performance Glazing
- Maximize PV opportunities
- LEED Silver (without “buying” points)
- Rebate & Incentive opportunities

**Attachments:**

- School Committee action-she–31–12–15–16

**Minutes by:** Christina Bazelmans, LPA|A

**Distribute to:** Attendees, Steering Committee, ART Engineering, SEC, Blueline Design

**File location:** 1904/Minutes/Owner/2019.08.22 Athletics & PE/1904–MO–Security 8.13.19.docx
Attendees:

- **Maureen Binienda** | Superintendent | Worcester Public Schools
- **Sally Maloney** | Principal | Doherty Memorial High School
- **Deb McGovern** | Coordinator of Nursing Services | WPS (via phone)
- **Susan Sleigh** | Director of School Based Health Centers | Family Health Center of Worcester
- **Rob Para Jr.** | Project Architect | LPA|A
- **Christina Bazelmans** | Assistant Project Architect | LPA|A

<table>
<thead>
<tr>
<th>Item: Description:</th>
<th>Responsibility:</th>
</tr>
</thead>
</table>
| 08.22.2019.01 The school clinic model relies on integrated relationships between the Family Health clinicians and the school nurses.  
  • The Doherty plan should be modeled after the South High plan, where the Clinic and the Nurse share common spaces  
  • South High’s plan circulated and attached for reference | Info. |
| 08.22.2019.02 Family Health’s revised contract includes an agreement see immediate family members of students and staff.  
  • Requires a separate entrance and waiting area for potential future public access after school hours  
  • The Health center should be located with exterior access for emergency transport | LPA|A |
| 08.22.2019.03 LPA|A reviewed the area requirements discussed at previous programming meetings.  
  • Office requirements  
    o (3) Nurses in a shared office (area must be increased from South with two nurses)  
    o (4) Clinician offices  
  • (5) Exam rooms  
    o One additional will double as cool down space for dysregulated students and lactation space for nursing moms  
  • Rest area with (4) beds–(shared with clinic)  
  • (4) Toilet Rooms for waiting room and near the exam rooms, | LPA|A |
# Meeting Minutes | Medical Suite Program

## 08.22.2019

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>one of which should include a shower.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Toilet rooms with pass through cabinet for specimen would be ideal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Clean work room/Soiled work room/Janitor—similar to South</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Records/copy requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Nurses require several 5 drawer file cabinets; Clinic is all digital</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- (1) Medicine distribution room</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Locate off of main waiting room with counter and refrigerator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Multipurpose Room—doubles as break/meeting room</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Storage—similar to South</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Food Pantry / Clothing Donations—Slightly larger space than South, as it will serve two purposes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Specimen drop-off in vestibule</td>
<td></td>
</tr>
</tbody>
</table>

**08.22.2019.04** Confirmed the health clinic will be certified as a Department of Public Health OP2 Small Neighborhood Clinic

**08.22.2019.05** Susan Sleigh (SS) will provide data to Sally Maloney confirming the number of students seen by the clinic at Doherty.

- 4000 visits over the year
- 3100 Medical visits
- 900 mental health visits
- 398 Students
- Half the students in the school are patients of the Family Health clinic.

---

**Attachments:**
- Revised Medical Space Summary, Floor Plan of South High Health Suite

**Minutes by:**
- Christina Bazelmans/ LPA/A

**Distribute to:**
- Attendees, Steering Committee

**File location:**
### Proposed Space Summary - High Schools

#### DOHERTY MEMORIAL HIGH SCHOOL

<table>
<thead>
<tr>
<th>ROOM TYPE</th>
<th>Existing Conditions</th>
<th>Proposed</th>
<th>MISSA Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEDICAL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Suite Toilet</td>
<td>1 30 75</td>
<td>1 30 75</td>
<td>2,725 1,210</td>
</tr>
<tr>
<td>Nurse's Office / Waiting Room</td>
<td>1 120 120</td>
<td>1 120 120</td>
<td>350 1 350</td>
</tr>
<tr>
<td>Examination Room</td>
<td>0 0 0</td>
<td>0 0 0 4</td>
<td>100 4 600</td>
</tr>
<tr>
<td>Interview Room</td>
<td>0 0 0</td>
<td>0 0 0 4</td>
<td>100 7 700</td>
</tr>
<tr>
<td>Resting Area (4 beds)</td>
<td>2 37 17</td>
<td>2 37 17</td>
<td>280 1 280</td>
</tr>
<tr>
<td>Clinic/Distributors</td>
<td>0 0 0</td>
<td>0 0 0 4</td>
<td>60 1 62</td>
</tr>
<tr>
<td>Class / Work</td>
<td>0 0 0</td>
<td>0 0 0 4</td>
<td>120 4 500</td>
</tr>
<tr>
<td>Clinic / Office</td>
<td>2 45 90</td>
<td>2 45 90</td>
<td>235 1 235</td>
</tr>
<tr>
<td><strong>Multipurpose</strong></td>
<td>0 0 0</td>
<td>0 0 0 4</td>
<td>350 1 350</td>
</tr>
<tr>
<td><strong>Food Pantry / Clothing Distribution</strong></td>
<td>0 0 0</td>
<td>0 0 0 4</td>
<td>225 1 225</td>
</tr>
</tbody>
</table>

**Total:** 3,097 m²

### South High Space Summary: For Reference

- **PROPOSED**
  - Medical Suite Toilet: 2,725 m²
  - Nurse's Office / Waiting Room: 350 m²
  - Interview Room: 100 m²
  - Examination Room: 100 m²
  - Resting Area: 280 m²
  - Clinic / Distributors: 60 m²
  - Class / Work: 120 m²
  - Clinic / Office: 150 m²
  - Multipurpose: 225 m²
  - Food Pantry: 225 m²

- **MISSA GUIDELINES**
  - Medical Suite Toilet: 1,210 m²
  - Nurse's Office / Waiting Room: 350 m²
  - Interview Room: 100 m²
  - Examination Room: 100 m²
  - Resting Area: 280 m²
  - Clinic / Distributors: 60 m²
  - Class / Work: 120 m²
  - Clinic / Office: 150 m²
  - Multipurpose: 225 m²
  - Food Pantry: 225 m²
Doherty Memorial High School Visioning

Staff & Teacher Survey

Lamoureux Pagano Associates Architects (LPA|A) is excited to be selected as the architect to conduct a Feasibility Study for the Doherty Memorial High School improvements. Through the study process, it will be determined if an addition/renovation or a new construction option is best for a 1670 student high school.

In order to develop the program for this important project, we ask that you share your vision of Doherty’s future educational goals and priorities through the questionnaire below. The questionnaire should take about 15 minutes to complete, please provide your input by May 31, 2019.

1. What is your name?

2. What is your Department? *
   Mark only one oval.
   - Math
   - Science
   - Social Studies/History
   - World Language
   - English
   - Art
   - Physical Education
   - Music/Theater
   - Admin/Guidance
   - Special Education
   - ELL
   - Engineering/Technology

3. Which grade(s) do you teach?
   Check all that apply.
   - 9th
   - 10th
   - 11th
   - 12th
4. What or how are you most excited about teaching now?


5. What or how are you most excited about teaching in the future?


6. What do you see as the top academic priorities for the future Doherty Memorial High School?
   Check all that apply.
   
   - [ ] Core Values
   - [ ] Differentiated Instruction
   - [ ] Team Teaching
   - [ ] Cross Discipline Instruction
   - [ ] Student-Centered Learning
   - [ ] Social Emotional Learning
   - [ ] Professional Learning Communities
   - [ ] Technology Integration
   - [ ] Real World Connections
   - [ ] Service Learning
   - [ ] Internships and Field Studies
   - [ ] Community Service
   - [ ] Flexibility & Adaptability
   - [ ] Diverse Educational Opportunities
   - [ ] Career Pathways
   - [ ] Hands on / Project-based learning
   - [ ] STEM and STEAM
   - [ ] 9th Grade Teams/Transition Support
   - [ ] Sustainability / Connections with Park
   - [ ] Other: ________________________________
Doherty Memorial High School Visioning
83 responses

Staff & Teacher Survey

What is your name?
66 responses

Phil Spellane
Kristen Montgomery
Liz Fife
Renah Razzaq
Maria Tzikas
John J. O'Malley Jr
Sherri Blake
Jake
Hargrove, Michael
Cassandra Treat
Kathleen Nodurft
Allisen Menchaca
Mary Knox
John Creamer
Kathryn Richard
Pat Peters
Jessica Collins
Ronald Mariano
John Staley
Burison
What is your Department?

83 responses
Which grade(s) do you teach?

77 responses

- 9th: 53 (68.8%)
- 10th: 58 (75.3%)
- 11th: 56 (72.7%)
- 12th: 52 (67.5%)

What or how are you most excited about teaching now?

64 responses

Biology

resource rooms

More access to technology

Getting back to fundamentals in Algebra

More course options are available to students regarding classes and college and career programs. Naviance lessons and college and career readiness classes are helpful with getting students to start thinking about their college/career options early.

world literature and current events

I am excited to enrich the students with new literature

I teach English and enjoy watching students develop as readers and writers.

Lab-based science

Supporting students and families to help them learn and progress.

content learning in ESL

Effectively connecting with students and parents across my caseload.

Engaging students in new and relatable literature
I am most excited about teaching all of my levels of Spanish by using games and other authentic material in my classes.

I like meeting with students and helping them plan for their future

Innovations Pathways Program

The students

WW II

We are beginning a new chemistry curriculum that is very hands on and project-based, with units centered on real-life examples of themes affected by chemistry (i.e., weather). I am really excited, but a bit worried, as my classroom/lab area are quite small for my class sizes and it's difficult to run labs at times, especially because I teach multiple lab-based courses.

USI and USII

Sociology

Character Ed

A building with more space and advanced technology.

Algebra 1

approaching retirement

World History II in relation to current events.

Assisting students with IEP's in all subjects

I am still passionate and excited to teach American History to the youth of city!

Group project opportunities with other teachers.

Talking about great books; getting kids excited about reading/thinking; teaching them to communicate; watching them grow and improve

The integration of Google Classroom has been an exciting addition to our current teaching practices.

AP Classes

Incorporating technology

My students make whatever I teach exciting and fun

I enjoy finding new readings/novels/paired texts to bring into my classroom to relate literature to students. I enjoy helping students find their voice when they're writing, or assisting them in finding the interesting or different perspective when they're creating an argument. I enjoy finding new ways to bring technology into my classroom.

I am excited about using different ways for students to collaborate both face-to-face and online.

I am motivated and excited by students who try new activities and lab experiments and are inspired by them. I get excited about students who want to learn more.
Technology has changed the way we are able to teach and interact with students. Having Chromebooks available has been fabulous!

Helping, teaching and interacting with students

Helping out students and finding a way to bring out their best abilities in the classroom.

Delivering instruction integrating technology in the classroom

Programming

Providing my students with the supports they need to be successful in school and graduate.

I enjoy the relationships I foster with students and colleagues

Engaging with the student while educating them. No day ever the same.

Health Education

I am very excited about the new Computer AP classes we are offering.

I do not understand the question at hand.

Higher level ESL / History

I am excited about exploring different art materials with students. I am excited about creating an environment where students enjoy the process of art making and where they can think critically during that process. I enjoy getting students to think about all the artwork that is around them and exposing them to contemporary artists.

I am really excited by the technology integration into the classroom. I think it is very important that each room has access to chrome books and projectors as well as some having access to smart boards and smart TV's. I am excited to keep exploring the support Naviance has to offer to my class. I wish that there were more space for small group instruction though as that would help with SEI strategies.

Instructional technology

I enjoy working with young adults, helping them to understand how to break down difficult problems, and to create real solutions.

All history courses

Project based learning

College admissions

Chemistry and biochemistry,

Chromebooks

Project Lead the Way. This builds great opportunities for students building resumes and grants.

I'm excited to teach my students. They are the best.

English

All the available technology that benefits students learning English as a second language.

AP Lit
What or how are you most excited about teaching in the future?
64 responses

increased co-teaching in inclusion

Expanding our computer science program and learning more about how technology can be used effectively in the classroom, particularly for our less engaged students

I really enjoy teaching algebra 2

Continuing to help all students with their college and career plans.

same/higher grade levels

Finishing my master's and learning new strategies to teach

In a classroom that is not split in half and is equipped with a smart board and projector of it's own.

Lab-based science

Same as now, with the hope that there will be more opportunities for students to learn and acquire real-world skills and abilities that will result in tangible rewards and benefits for themselves and our community.

Co-Teaching, Higher level ELL's

Being more efficient with use of updated technology, reaching more students at a more in depth level across grades.

Finding more resources to help more of my students access their reading

I am most excited for the possibility of more technology integration in the future.

Students have access to many opportunities to help them achieve their goals. I want less time with paper work, more time with students and parents.

Vocational Programming for all students

A safe building that won't be detrimental to my health

WW II Google classroom

Eventually having a large enough classroom to facilitate labs comfortably and safely.

Legal aspects

Sociology

Character Ed through dystopian literature.

Integrating the technology in the classroom and a wider variety of activities with more space within the room.
AP Economics

Forensics and possibly AP Bio at some point

working in a new building

A new school.

Using the new technology available to us

I am cautiously optimistic about using and keeping up with technology in the classroom.

Looking forward to the new curriculum.

Same as above

I’m looking forward to having additional classroom space to better accommodate student numbers while supporting a diverse population.

AP Classes

more project based learning

I am pretty excited that I just donors chose a graphic novel...Hey Kiddo

Classrooms that are geared for 21st Century learning. Continuing to prepare students to succeed at the college level.

I would like to see more space for collaboration and more flexible space that can easily be adapted as our needs change throughout the school year as well as over the years. I would like to be able to have large spaces available for big groups to work together as well as small study areas for groups to meet with teachers. I would like to continue to expand the use of technology and to expand the media center to provide the students more of a collegiate experience for research.

I am excited to explore new resources and technologies to implement them into education

Having more infrastructure to support technology would be great!

Making the transition from instructional assistant to a full time teacher. I am excited to be able to have my own classroom and create a place where students can be their best in a school setting.

Hands-on/Project-based learning. Focusing on student-centered learning.

Programming

I see more focus on our students social and emotional needs.

I'm looking forward to being a part of Doherty's new building project.

Engaging with the students while educating them. No day ever the same.

Health Education

I think the new technology that the schools will have is great for preapring students for the future.

I do not understand the question at hand.

An updated ESL curriculum
I am excited to have my own physical space so students can explore these materials in a creative environment where they can spread out on tables instead of small desks, have storage for their art work, have access to all art mediums/materials instead of what can only be transported on a cart, and to be able to utilize more class time with students (instead of 3-5 minutes to unpack at the beginning and 5-7 minutes for packing up to transport at the end.)

I am excited to see the rollout of the sophomore career and college readiness, and how I can continue to utilize technology in the classroom. I wish that there was a book room for the English department. We have a HUGE selection of texts and nowhere to store them and keep inventory.

Game-based learning

Frankly, this is my last year!

same

Additional material and methods for increasing student learning and responsibility.

Biology and Human Anatomy and Physiology

College and career exploration

AP

Working in a state of the art building hopefully!

The Engineering Program is at a crossroads to offer students the opportunity to receive a college transcript up to 5 engineering course. The 9th and 10 grades are a full teacher load of 5 courses. Junior and senior year should be revised to accommodate the variety of learning and course offerings. not just one cookie cutter pathway for all. A suggestion would be to offer 4 course choices to 11 and 12th offering these courses as honors level. These course are also now tied to AP Board. Students receive a certificate. Students are constantly asking for other topics such as civil engineering and computer integrated manufacturing not offered as honors. Business is good lets make it great!

Teaching with technology and hands on learning

Similarly to my previous answer, my students make my job not feel like work.

English

the available technology and project-based learning that integrates knowledge and skills from different content areas that students need to apply in their own student-led learning in order to tackle a real-world problem

AP Lit

What do you see as the top academic priorities for the future Doherty Memorial High School?

81 responses
<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Values</td>
<td>38.3%</td>
</tr>
<tr>
<td>Team Teaching</td>
<td>29.6%</td>
</tr>
<tr>
<td>Student-Centered Learning</td>
<td>19.8%</td>
</tr>
<tr>
<td>Professional Learning</td>
<td>40.7%</td>
</tr>
<tr>
<td>Communities</td>
<td>38.3%</td>
</tr>
<tr>
<td>Real World Connections</td>
<td>58%</td>
</tr>
<tr>
<td>Internships and Field Studies</td>
<td>22.2%</td>
</tr>
<tr>
<td>Flexibility &amp; Adaptability</td>
<td>29.6%</td>
</tr>
<tr>
<td>Career Pathways</td>
<td>37%</td>
</tr>
<tr>
<td>STEM and STEAM</td>
<td>43.2%</td>
</tr>
<tr>
<td>Sustainability / Connections</td>
<td>27.2%</td>
</tr>
<tr>
<td>Vocational</td>
<td>1.2%</td>
</tr>
<tr>
<td>Vocational Programs</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

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Google Forms
In May of 2019, LPA|A and New Vista Designs collaborated with the Doherty Memorial High School (DMSH) administration to distribute an online survey to the faculty and staff. Over 80 members of the faculty responded across all disciplines, representing all grade levels.

The focus of the survey was to gather information about what current and future teaching methods the teachers are most excited about, and to learn what the staff view as the top priorities for the new Doherty Memorial High School. A summary of the common threads found in these open response questions are listed below:

What or how are you most excited about teaching now?
- Integrating the recently acquired Chrome Books into the classroom
- Teaching new and relevant content
- A variety Advanced Placement classes
- Connecting with and enriching the Doherty students to helping them to succeed after high school

What or how are you most excited about teaching in the future?
- Effective use of technology throughout all classrooms, with the infrastructure to support it
- Real-world skills and Project-Based learning
- Vocational Programs and Career Pathways for all students
- College and Career Readiness
- Adequate high school level Science Labs
- Additional AP Offerings
What do you see as the top academic priorities for the future Doherty Memorial High School?

The top three staff Academic Priorities were as follows:
1. Real World Connections (51 Votes)
2. Technology Integration (45 Votes)
3. Hands on / Project Based Learning (32 Votes)

LPA|A and New Vista Design presented this data to a full staff Visioning Workshop June 5th, 2019 (refer to 3.1.2.C.1 for a copy of the meeting notes) and to be presented as an update to the staff at the beginning of the school year in September 2019. These three priorities were echoed many times in the individual responses as well as in subsequent programming and visioning meetings for the Doherty Memorial High School Project.
The design team and members of the Steering Committee and Doherty Memorial High School staff toured several similar school facilities as part of the educational program research efforts for this project. The following three schools were selected and toured based upon recommendations from MSBA and New Vista Design.

1. **West Bridgewater Middle Senior High School** | August 15, 2019
2. **Billerica Memorial High School** | August 16, 2019
3. **Dearborn STEM Academy** | August 16, 2019

Below is a list of the attendees, summary of each of the school facilities and key takeaways from each of the tours.

**ATTENDEES:**

- **Maureen Binienda**\(^{123}\) | Superintendent | Worcester Public Schools
- **Sally Maloney**\(^{123}\) | Principal | Doherty Memorial High School
- **John O’Malley**\(^{1}\) | Assistant Principal | DMHS
- **Renah Razzaq**\(^{123}\) | Math Department Head | DMHS
- **Sheri Blake**\(^{13}\) | English Department Head | DMHS
- **Steve Bucciaglia**\(^{1}\) | History Department Head | DMHS
- **Adriana Dine**\(^{2}\) | World Language Department Head | DMHS
- **Eugene Caruso**\(^{123}\) | OPM | Tishman AECOM
- **Katie Crockett**\(^{123}\) | Principal in Charge | LPA|A
- **Rob Para Jr.**\(^{1}\) | Project Architect | LPA|A
- **Chris Lee**\(^{123}\) | Project Manager | LPA|A
- **Christina Bazelmans**\(^{123}\) | Assistant Project Architect | LPA|A

\(^{123}\)Superscript indicates which tours each individual was able to attend.
### 1. West Bridgewater Middle Senior High School

- **Architect:** Flansburgh Associates Inc.
- **Completion Date:** 2016
- **Type:** New Construction on Occupied site
- **Delivery Method:** DBB
- **General Contractor:** CTA Construction
- **Grades:** 7–12
- **Enrollment:** 619 students
- **Area:** 141,000 gsf
- **Cost:** $49.6 Million or $328/SF

### GENERAL IMPRESSIONS / NOTES:

- Secure separation between community use and academic spaces
- Careful consideration of massing and daylighting
- Interior color palette of neutral colors and wood have a timeless aesthetic
- Tasteful recognition of old school, with “Retro Room” and Preservation/display of the mascot from the old gym floor, reproduction of artwork
- “Goggle Stair” is a prominent feature for gathering and vertical circulation

### COMMENTS:

- Cafeteria has large motorized projector screen, round tables, dishwash station turned into a grab-and-go, water bottle fill station.
- Cyber Café (used by seniors), outdoor dining with mesh tables, and tables located next to the stair offer alternative dining areas.
- Cafeteria is open, accessible directly from main entry/lobby, may be a security issue for DMHS
- Sliding “barn type” doors to servery allows the opening to be larger, with a decorative feature
- Outdoor dining area adjacent to cafeteria, particularly with fixed outdoor tables and benches
- Visual connection from weight room to gym and exterior
- Elevated viewing area and mullion padding in gymnasium
- Auditorium has interesting lighting, tiered seating for various assembly sizes and a third-floor control room large enough to teach students.
- Control room on the third floor has compromised views to stage.
- Dressing rooms with adjacent costume storage
- No lecture hall was included in the project, the administrators wished one was included.
- More surveillance cameras are desired (± 40 total)
- Two level loading dock central to stage/custodial suite and kitchen.
- Music Engineering/piano lab for 25 students
<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acoustic instrument storage with cage doors</td>
<td></td>
</tr>
<tr>
<td>Interactive screen at lobby for visitors</td>
<td>(potential for history display), History Wall alcove</td>
</tr>
<tr>
<td>TV Studio called “video editing” and “video lab” on the space summary</td>
<td>responsible for morning news broadcasted to all classrooms</td>
</tr>
<tr>
<td>Cantilever chairs with rocking bases</td>
<td></td>
</tr>
<tr>
<td>Classroom tables were custom made to the sizes that worked best for</td>
<td>them, and were flexible in arrangement</td>
</tr>
<tr>
<td>STEAM Commons is across from Robotics classroom and CAD Lab</td>
<td>two story space for physics experiments is beneficial. Adjacent gallery</td>
</tr>
<tr>
<td>No doors in bathrooms and built in trash/recycle alcoves, wide corridors</td>
<td>connecting the commons to an art classroom is heavily used.</td>
</tr>
<tr>
<td>Flexible furniture in SPED classrooms, including study carols, bean</td>
<td>bag chairs, desks</td>
</tr>
<tr>
<td>Limited lighting control (two-bay on/off switches)</td>
<td></td>
</tr>
<tr>
<td>No bulletin boards or displays in corridors/common rooms</td>
<td></td>
</tr>
<tr>
<td>Cool Down room in Nurse suite allows for any student to regulate</td>
<td>during the day</td>
</tr>
<tr>
<td>No private exit from nurse office for ambulance</td>
<td></td>
</tr>
<tr>
<td>Language Lab called “Global learning” on space summary–study carols are good for testing</td>
<td></td>
</tr>
<tr>
<td>Stainless Fire extinguisher cabinets and AED cabinets, with beacons</td>
<td></td>
</tr>
<tr>
<td>Fire alarm panels are in main office rather than vestibule</td>
<td></td>
</tr>
<tr>
<td>Common room hard ceilings resulted in poor acoustics</td>
<td></td>
</tr>
</tbody>
</table>
PHOTOS:

Cafeteria, Projector screen & perimeter counter seating

"Google Stair"

Interactive Lobby Display

Classroom Furniture
MSBA Module 3
Feasibility Study PDP

3.1.2 EDUCATIONAL PROGRAM
D.3 Tours of Similar Facilities

- Auditorium
- Control Room
- Piano (MIDI) Lab
- Retro Room
- Cyber Cafe
- Teacher Furniture

Doherty Memorial High School
3.1.2 EDUCATIONAL PROGRAM

D.3 Tours of Similar Facilities

- STEAM Commons
- Science lab
- Media Center
- Teacher Planning

Doherty Memorial High School
2. Billerica Memorial High School

- Architect: Perkins & Will
- Completion Date: 2019 Building/2020 Site
- Type: New Construction on Occupied site
- Delivery Method: CM@R
- General Contractor: Shawmut
- Grades: 8–12
- Enrollment: 1610 students
- Area: 325,000 SF
- Cost: $140 Million or $434/SF
- [https://www.perkinswillvtx.com/billerica](https://www.perkinswillvtx.com/billerica)

**GENERAL IMPRESSIONS / NOTES:**

- Enrollment and scale of school is similar to the proposed Doherty High school
- Integration of Billerica branding and history was very well received
- The administration highly recommends the construction of a full mockup classroom very early in the construction process, to fine tune the layout and location of speakers, phones, switches, receptacles, etc.
- Separation between civic and academic spaces is through the use of accordion fire doors.
- Administration recommended hiring a facilities director exclusively for the new high school.

**COMMENTS:**

- A smaller alternative dining area with lower ceiling and calming finishes, connected with larger dining area via an overhead door
- Grab and go and open server
- Metal and wood finishes
- Large Gymnasium w/ natural light, three courts, elevated track for track practice & walking
- Civic entrance has a map of the town inlaid in the floor, a ticket booth and black box theater.
- Main lobby has an interactive dedication feature with touch screen
- Auditorium has limited accessible seats with direct access to the stage.
- Art rooms have excellent daylighting, but polished concrete is flawed
- Cafeteria has good daylight, and several dining areas and mixed furniture
- Main Cafeteria dining area in a 3-story atrium
- Media center has an “innovations café” which is a satellite grab and go run by the kitchen staff. This space doubles as a career center. Cleanable flooring indicates the boundary where food/drink is to remain. Alcove with fliers for handouts. Adjacency to TV Studio.
- Repurposed tin ceilings from old building as acoustic fins
- Includes a well-equipped TV studio
- Robotics lab tables have built in locker bases
- Rotating white board walls open some classrooms to the common areas.
### Educational Program

#### D.3 Tours of Similar Facilities

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each classroom has a second digital display at the back of the room;</td>
<td>used for announcements from the office and emergency messages.</td>
</tr>
<tr>
<td>Dry erase desks with backpack hook</td>
<td></td>
</tr>
<tr>
<td>Mobile teacher desk has a lifting work surface and a cup holder (by</td>
<td>Steelcase)</td>
</tr>
<tr>
<td>No communicating doors</td>
<td></td>
</tr>
<tr>
<td>Teachers do not have their own classrooms; each has a dedicated space</td>
<td>with work surface and cabinet above in the teacher planning area.</td>
</tr>
<tr>
<td>Teacher planning refrigerators have water connections for ice</td>
<td></td>
</tr>
<tr>
<td>Admin (assistant principal and two guidance counselors) are</td>
<td>distributed through the building</td>
</tr>
<tr>
<td>Fume hoods were reduced by half as a value engineering item.</td>
<td></td>
</tr>
<tr>
<td>Life skills room is very well equipped, but is in an isolated location</td>
<td></td>
</tr>
<tr>
<td>Branding/Wayfinding</td>
<td></td>
</tr>
</tbody>
</table>

**Photos:**

- Cafeteria, Media bridge above
- Alternative dining
MSBA Module 3
Feasibility Study PDP

3.1.2 EDUCATIONAL PROGRAM
D.3 Tours of Similar Facilities

Media Bridge

Classroom Furniture

Open Servery

Gymnasium

Auditorium

Elevated Track

Doherty Memorial High School
3.1.2 EDUCATIONAL PROGRAM
D.3 Tours of Similar Facilities

Media Center Cafe

Teacher Furniture

Common room

Science lab

Black Box Theater

Teacher Planning

Doherty Memorial High School
MSBA Module 3
Feasibility Study PDP

D.3 Tours of Similar Facilities

Branding/History Large group meeting room

Branding/Lobby

Brick detail—toward historic town center

Façade design

Doherty Memorial High School
3. Dearborn STEM Academy

- **Architect:** Johnathan Levi Architects
- **Completion Date:** 2018
- **Type:** New Construction
- **Delivery Method:** CM@R
- **General Contractor:** Gilbane / Janey
- **Grades:** 6–12
- **Enrollment:** 600 students
- **Area:** 128,000 SF
- **Cost:** $60.6 Million or $471/SF
- **Website:** [http://www.leviar.com/dearborn-stem-academy.html](http://www.leviar.com/dearborn-stem-academy.html)

**GENERAL IMPRESSIONS / NOTES:**
- Central atrium provides significant natural light on a tight site, though the interior has significant glazing which may not be desired for Doherty
- Four story building does not seem as large from the interior
- STEM integration was a high priority
- School as a teaching tool with mechanical room on the top floor with windows
- Middle school students on top floor, high school students below.

**COMMENTS:**
- **FAB LAB & Maker Space** have operable glass wall to exterior patio
- **Clean lab/dirty lab** for different projects
- Collaboration space with counter/seats at perimeter with white board walls
- **Nice wellness room** for dance/yoga etc
- Exterior patios are a safe place for students to go outdoors, with water connection for plants and solar panel experiments
- **Admin corner on each floor** doubles as a college and career center.
- Attractive materials for lockers and interior finishes, each floor has a distinct color
- **Common room** at each floor with flexible tables and seating
- Cafeteria is open to atrium, 4–stories, acoustics may be problematic, server is very undersized
- Double office adjoining two classrooms is interesting, may be used for pull out services or group work
- **10,000 SF gym** has no mullion pads on the gym windows, ceiling layout
- Mesh ceilings may be a maintenance issue
- Significant ramp on the exterior to accomplish accessible entrance
PHOTOS:

Cafeteria, servery beyond

Patio

Fab Lab

Operable glass wall
3.1.2 EDUCATIONAL PROGRAM
D.3 Tours of Similar Facilities

Clean lab
Gymnasium
Alternative PE
Media Center
Main Entrance Ramp
Glass–Teacher office between two classrooms

Doherty Memorial High School
3.1.2 EDUCATIONAL PROGRAM
D.3 Tours of Similar Facilities

Teacher office

Common Room

Admin cluster on each floor

Outdoor Patio

Façade design

Monumental Stair

Doherty Memorial High School
Defining our Path

A STRATEGIC PLAN FOR EDUCATION IN WORCESTER

2018–2023
LETTER TO THE WORCESTER COMMUNITY

INTRODUCTION

DISTRICT OVERVIEW

MISSION

VISION

THE STRATEGIC PLANNING PROCESS

CULTURE OF INNOVATION

ACADEMIC EXCELLENCE

WELCOMING SCHOOLS

INVESTING IN EDUCATORS

TECHNOLOGY & OPERATIONS

CONCLUSION: WORCESTER IN 2023

ACKNOWLEDGMENTS
Dear Worcester Students, Families, and Community,

It is with great pleasure that we share Defining Our Path: A Strategic Plan for Education in Worcester. Worcester Public Schools (WPS) is well-known for many of its successful practices, which foster real-world skills and student achievement. While we celebrate our district’s progress, we also recognize that there is a continuous need for improvement in our schools and in the outcomes for all our students. We understand that the continued success of the district’s mission can only be accomplished through a community-wide vision coupled with a commitment to action and sustained engagement.

The strategic planning process was a unique experience. In many strategic plans, the school district is the singular driving force. However, our community seized the opportunity to assemble a diverse group of community leaders—with invaluable support from the school district—to consider ways to address the needs of Worcester students. Our approach recognizes the central role of the schools in the life of our community. It acknowledges the vital need for all sectors of the city to fully support WPS, as well as the shared work required to achieve educational excellence in all schools for all students.

Conversations among community leaders, families, educators, and students during the process forged new relationships and deepened existing networks. We also expanded our community's capacity to consider a broad range of perspectives, data, and outstanding educational practices. Through subcommittees, representative of multiple stakeholder groups, we explored critical areas of need identified by the community and developed recommendations for improvement. We engaged state and national education leaders to highlight a range of education best practices that could be replicated. Our work was effective, but not without challenges. We delved into the nuances of quantitative data; considered the experiences, hopes, and concerns of stakeholders; and wrestled with very real financial and contractual constraints. We worked beyond mere accommodation to deep consensus. Our most important takeaways were that policies, practices, and initiatives should drive toward the district’s student-centered goals and that substantive changes in the finances of the district are essential for high-quality, system-wide improvements.

Our plan is aspirational, inspirational, and innovative. In some cases, it is admittedly but intentionally ambitious. It considers new approaches to school and district design, teaching and learning, and finances. The plan recognizes that the work of schools is about both the transfer of knowledge, skills, and information and the fostering of safe and nurturing learning environments that support social and emotional skills critical for student well-being.

Defining Our Path: A Strategic Plan for Education in Worcester articulates a commitment to continue Worcester's renaissance by placing the city’s children, and the future that they represent, at the center of our shared work. It calls for the resources of a community, not just a school district, to fulfill that mission. Achieving the goals of the plan will demand hard work and unflagging support from each sector of the city. It will also require the dedicated involvement of the state. We must ensure state funding levels realize the vision of the 1993 Education Reform Act and guarantee equitable outcomes in both high-wealth and low-wealth communities. The result of these actions will be well worth the effort—a system of schools focused on and able to educate every child for sound futures as positive contributors to our community and beyond.

Toward a Brighter Future,

Jennifer Davis Carey & Timothy J. McGourthy
Strategic Plan Co-Chairs

In Collaboration with
Maureen Binienda
Superintendent, Worcester Public Schools
Worcester, the Heart of the Commonwealth, is the second-largest city in Massachusetts. It is a community with a history of innovation and progress. Modern-day Worcester is rich in assets, home to leaders in education, healthcare, and technology, with more than 5,000 local businesses, 70 cultural institutions, nine colleges/universities, and the third-largest public-school system in the Commonwealth. A forward-looking community, Worcester seeks to cultivate the success of the next generation to ensure that it continues to thrive for years to come.

Worcester is a growing global community. Since 1990, the population has increased 8%, bringing shifts in the racial, ethnic, age, gender, and household composition of the city. The city’s international community has grown more than 200%, enhancing both the linguistic and cultural vibrancy of the city. The growth of Worcester’s racial and ethnic communities also exceed national trends. The number of residents of Latino, African American, and Asian descent has grown by more than 150% since 1990, while the number of residents of European descent has declined 13%.

With growth in the population, Worcester has experienced new challenges. Nearly one-third of the city’s youth are living in poverty. In addition, the student population is frequently changing. In 2017, the percent of students moving in and out of the school district during the year was 17.8%, which indicates a highly transitional learning population and impacts funding designations. The effects of youth experiencing significant trauma have also become more apparent. Educators report a high frequency of student exposure to childhood adversity, ranging from housing instability to the statewide opioid crisis. Worcester is also a leading resettlement community for refugees, serving populations particularly vulnerable to increased hardships as they adapt to their new community. Worcester’s growth and the presence of new challenges demands consideration of new ways to support and educate an increasingly diverse and global population.

Through the first strategic plan in 26 years, district and community leaders are looking to set a new vision for the education of the city’s youth. Worcester Public Schools (WPS) sits at the center of these community-level changes and strives to play a positive and important role in cultivating the city’s future creators, reformers, healers, and leaders. The success of WPS is critical to the economic vitality of the city. By 2024, 75% of jobs in the region’s fastest growing industries (health, technology, management, and services) will require a postsecondary credential (professional certificate, bachelor’s degree, or graduate degree). While 84% of Worcester residents over 25 have a high school diploma or equivalent, only 37% hold a postsecondary credential (associate degree or higher). Ensuring student success in public schools—and a pathway to and through a postsecondary credential—will help meet regional labor needs while creating a highly skilled and educated workforce that enhances the vitality of the city.

However, the complex workplace that our students will face in years ahead cannot be addressed by WPS alone. Both the depth of need and the absence of necessary financial resources to operate the school district demands the collective action of the entire community. This strategic plan, collaboratively designed and with a commitment to collaborative implementation, addresses persistent challenges in the district and offers supports to schools in the interest of creating an environment for teaching and learning that fosters student success. As the priority of the district is excellence in WPS regardless of the financial climate, the plan incorporates actions that can be implemented immediately and calls attention to ones that will require significant financial support and collaboration to realize.

\(^{A}\) The most common nations of origin for recent immigrants are Vietnam, Ghana, Dominican Republic, Albania, and Liberia.
WORCESTER PUBLIC SCHOOLS OVERVIEW

25,306 STUDENTS

- HIGH NEEDS: 77.5%
- FIRST LANGUAGE NOT ENGLISH: 55.4%
- ENGLISH LANGUAGE LEARNER: 34.4%
- STUDENTS W/ DISABILITIES: 18.8%

Community

183,677 RESIDENTS

- 83% OF SCHOOL-AGE RESIDENTS ATTEND WPS
- 35% SPEAK A LANGUAGE OTHER THAN ENGLISH

Schools

44 K–12 SCHOOLS

- 7 INNOVATION SCHOOLS
- 22 SCHOOLS MET STATE TARGETS

Outcomes

2.2% DROPOUT

- 86% FIVE-YEAR HIGH SCHOOL GRADUATION RATE
- 94% ATTENDANCE RATE

90+ LANGUAGES

13 CAREER PATHWAY PROGRAMS

4.3% Dropout for English Language Learners
Mission of Worcester Public Schools

To provide all students the opportunity to advance their scholarship with a rigorous core curriculum and high-quality instruction. This enables students to discover the expanse of their academic talents, shape the quality of their character, and develop the confidence to become conscientious, reflective citizens who are empowered to better our community and our world.14

Our Vision for 2023

Worcester Public Schools will be a national leader in education, offering high-quality learning experiences, ensuring that all young people are prepared to thrive, and equipping them to become engaged citizens in their community.

Theory of Change

**IF** we embrace a student-centered approach that:
- fosters innovation in schools;
- provides vital supports for teaching and learning;
- ensures access to modern technology;
- develops the critical thinking and technical skills of all students; and
- leverages the input of families and community;

**THEN** we will build a system of diverse, high-performing schools that can equip all students with the academic, social, and technical skills necessary to thrive.

Focus Areas

- **CULTURE OF INNOVATION**
- **ACADEMIC EXCELLENCE**
- **WELCOMING SCHOOLS**
- **INVESTMENT IN EDUCATORS**
- **TECHNOLOGY & OPERATIONS**

Where We’re Headed13

**WPS STUDENTS WILL**

<table>
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<th>Current</th>
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<td>31%</td>
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<tr>
<td>MEET/EXCEED EXPECTATIONS ON 3RD GRADE ELA MCAS</td>
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</tr>
<tr>
<td>65%</td>
<td>76%</td>
</tr>
<tr>
<td>ENROLL IN POSTSECONDARY OPPORTUNITIES</td>
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</tr>
<tr>
<td>17%</td>
<td>14%</td>
</tr>
<tr>
<td>REDUCE CHRONIC ABSENTEEISM</td>
<td></td>
</tr>
<tr>
<td>1:4</td>
<td>1:1</td>
</tr>
<tr>
<td>ACCESS TECHNOLOGY (STUDENT-TO-DEVICE RATIO)</td>
<td></td>
</tr>
</tbody>
</table>

**WPS WILL**

- INCREASE PER-PUPIL EXPENDITURE BY ↑ 20%
- INCREASE NUMBER OF HIGH-PERFORMING SCHOOLS BY ↑ 20%
- INCREASE DIVERSITY OF NEW HIRES BY ↑ 25%

_B Students attending a private or public 2 or 4-year college within 16 months of graduation_
About the Strategic Planning Process

Launched in June 2017, the strategic planning process was a community-driven effort led by Worcester Education Collaborative (WEC) and Worcester Regional Research Bureau (WRRB) in collaboration with WPS. Organizers recognized the need for a jointly developed strategic plan able to address the growth and demographic changes of the community, new economic demands, new expectations and methods in teaching and learning, and achievement gaps that persist despite concerted efforts for improvement. These organizations, representative of multiple sectors of the community, and others with a vested interest in education assumed collective responsibility for charting a course toward success for WPS.

CONTEXT

WPS has made progress in improving several outcomes, including significant gains in attendance and noteworthy services for English Language Learners, resulting in the lowest dropout rate for a large urban district in the Commonwealth. However, gaps in students’ academic proficiency, growth, and achievement remain. Spurred by these findings and the transition in district leadership, the 2016 report, *The Urgency for Excellence: Considerations for the School Committee and New Superintendent of Schools in Worcester*, called for a new approach to fostering student success: the development of a city-wide vision and plan for educational improvement.

Following the report’s release, community leaders representing businesses, foundations, nonprofits, and service agencies signed the Worcester Compact for Public Education (Worcester Compact), a public document detailing their commitment to educational improvement in the city. The group secured private financial support for the strategic planning process and engaged students, alumni, parents, educators, and community-based organizations to participate. The strategies listed in the plan are designed to enhance success for all students and include action steps for the whole community. The collaborative model established through the Worcester Compact and continued through this process was foundational to our approach, and differentiating this document from any other known resource.

PARTICIPANTS

The strategic planning process was informed by voices throughout the community. From June 2017 to January 2018 community and district organizers along with strategic planning facilitators from the Rennie Center for Education Research and Policy met with more than 400 Worcester residents in focus groups and forums. In response to community requests, one forum, attended by more than 100 participants, was conducted "café-style" to assure maximum opportunity for small group discussion and input. Throughout the process, all who sought an opportunity for input or to participate were included.
Events were held throughout the district and offered in multiple languages to maximize participation and ease of access. Individuals also had the chance to share their input through surveys on their experiences with WPS and education in the City of Worcester more broadly. Respondents included students, families, educators, and community members.

Finally, the strategic planning process featured a multi-tiered committee system that engaged stakeholders from diverse backgrounds and roles in the community. More than 70 community members participated in one or more committees. The planning groups included an Advisory and a Coordinating Committee as well as five subcommittees focused on high-priority areas for the city: Access to Availability of Higher-Level Learning; Educator Resources and Development; Governance, Finance, and Operations; Instructional Resources and Technology; and Social and Emotional Learning and School Climate. With the help of the Rennie Center, these committees reviewed more than 40 data sets from state and district systems, along with 30 local and national journal publications providing insights on budget, population demographics, discipline, culture, and educational best practices.

Lessons Learned

Committee members considered the themes and trends that emerged from the conversations, meetings, and data review to refine and prioritize the recommendations of the strategic plan. Key learnings included:

- Worcester’s residents are dedicated to high-quality education for all its students. The commitment of teachers, staff, and the community to support students is what allows the district to operate and succeed despite challenges.
- Offering high-quality learning options for all students—regardless of age, ability, language, background, and/or neighborhood—is paramount. It is critical that improvements in learning experiences address needs from early childhood education through high school and benefit the whole student population, including advanced learners, students with disabilities, and English language learners.
- Improvements must also address complementary learning needs, such as developing social and emotional skills, cultivating a welcoming and supportive environment in schools, enhancing communication and partnership with families, and overcoming any barriers that hinder student success.
- Specific calls to action include increased options for advanced learning, better access to technology, greater support for postsecondary transitions, new and enhanced facilities, and more collaborative learning opportunities for educators.
- All stakeholders described the dire need to increase the district’s operating budget, including through additional funds from an improved Chapter 70 state funding formula.

These lessons inform a new vision for the district, which calls on all sectors of the city to support Worcester in becoming a national leader in urban education.

Example local reports reviewed by subcommittees include Report of the Dialogues on Race, The Schools We Deserve, and Not Present, Not Accounted For.
Orientation to the Plan

The strategic plan is divided into five sections aligned with the focus areas. Each section includes information on:

**What We Heard:** Reflects the findings from focus groups, document reviews, surveys, and subcommittee reports related to the focus area. This information provides insights on key challenges that the strategic plan's objectives and strategies are designed to address.

**Making it Count for All Students:** Highlights outcomes from comparable urban districts and state averages on key indicators. Reported metrics are based on data from the Massachusetts Department of Elementary and Secondary Education and reflect the top-performing comparison district in each category. Metrics are intended as a guide, rather than an expressed goal for Worcester. The list of communities was drawn from participants in the Urban Superintendents Network, based on size and demographics, and vetted by strategic plan organizers. The full list of comparison districts and additional measures are included in Appendix A.

**Benchmarks for Success in 2023:** Features priority benchmarks for expected improvement (e.g., growth in students' ELA and Math performance) based on the successful implementation of this plan's strategies. A full list of improvement benchmarks associated with each section is included in Appendix B.

**Current Resources and Initiatives:** Worcester has many resources and initiatives that exist to support the action steps of the plan. This section acknowledges the ongoing work to address core challenges and highlights initiatives that may need to be scaled to achieve maximum impact.

Subsequent pages detail objectives and action steps that will guide improvement efforts over the next five years. Each objective includes feasibility metrics established in collaboration with district and community leaders that delineate the level of effort and financial cost.

**Investment:** The financial investment needed to implement the objective

- $0-$100,000 No or minimal additional cost for implementation
- $100,000 - $499,000 Seed funding required for implementation
- $500,000+ Substantial funding must be added for implementation

**Level of Effort:** The amount of resources, coordination, or operational change that would be required

- Minimal effort required to implement objective (resources already exist)
- Medium effort required to implement objective (resources already exist, but may need to be coordinated or repurposed)
- Maximum effort required to implement objective (new resources must be developed or brought on)
Culture of Innovation

The achievement gap is a persistent and critical obstacle to ensuring the future personal, academic, and career success of today’s youth. In Worcester, the gap exists primarily for students with disabilities and those from low-income, Latino, and/or language-diverse backgrounds, who are less likely than their peers to reach grade-level benchmarks and graduate from high school.

In Massachusetts, research shows that practices focused on school leadership, collective teacher efficacy, rigorous instruction, and high expectations for all students are critical to turning the tide in schools. Worcester has undertaken numerous initiatives to support the needs of students, with localized success. To see systemwide change, structures must be established so that effective practices can be tested and brought to scale. By developing a culture of innovation that supports the incorporation of established and emerging best practices, the district will make the necessary adjustments that enable all students to learn and thrive, while ensuring enhancements (and lessons learned from them) benefit the entire school system.

WHAT WE HEARD

• Worcester residents and its education professionals value community schools and specialized or focused programs as opportunities to bring educators, families, and community partners together to offer broad opportunities, supports, and services to students and their champions.

• New approaches are needed to address student achievement gaps and foster improvement.

CURRENT RESOURCES & INITIATIVES

• Principal Learning Network

• New Principals’ Institute and Mentoring

MAKING IT COUNT FOR ALL STUDENTS

Our actions will drive improvement for all students and—most critically—change the course for our highest-need students. In the 2016-2017 school year:

49% of the 44 schools in Worcester ranked in the top 80% statewide

91% of the 11 schools in a comparable urban district ranked in the top 80% statewide

69% of the 1514 schools in Massachusetts met or exceeded state learning targets
**OBJECTIVES AND STRATEGIES**

1. Embrace a culture of innovation that develops and pilots evidence-based approaches and allocates resources to address chronic student achievement gaps and underperforming schools

   • **Target District Supports for High Needs Schools:** Create a Superintendent Schools designation, afforded to consistently underperforming settings, that provides increased supports coupled with enhanced accountability, trainings, and resources for the school to implement transformative learning approaches

   • **Proactive Supports to Enable School Improvements:** Identify and develop aggressive improvement strategies for lower-performing schools prior to required state intervention, incorporating successful turnaround practices from across Massachusetts and providing necessary operational flexibility for successful implementation

   Investment: $$$  
   Effort: ★★★

2. Increase the capacity of school leadership to leverage existing resources for school improvement

   With support from the community we will:

   • **Enhance School Leader Training Initiatives:** Expand the New Principals Institute through a third year of practice in partnership with community organizations, allowing aspiring and experienced principals to collaborate and catalyze innovative management practices that foster improvement and student success

   • **Provide Supports and New Learning Experiences for Veteran Leaders:** Develop an Institute for veteran principals to support continued growth and development in school management and classroom pedagogy

   Investment: $$  
   Effort: ★★★

3. Identify demonstrated best practices regionally and across the globe that can be adapted to Worcester’s unique conditions to alleviate achievement gaps

   • **Expand Early Learning Supports:** Increase implementation of, and access to, early literacy and math interventions for all students through the 6th grade

   • **Scale Early Learning Solutions:** Pilot early literacy initiatives in select elementary schools to determine the best fit for a district-wide approach

   • **Sustain High Performance in Thriving Schools:** Engage and support the continued success of on-track and high-performing schools by establishing a process to set next-level targets for student learning and spread effective practices

   With support from the community, we will:

   • **Develop a Network of Schools to Pilot and Scale Evidence-Based Practice:** Design an Incubation Hub drawing on tested, effective, and transferable practices from multiple school models (e.g., community and pathways schools). The hub will focus on scaling these practices in the district and be supported by a body of community members and elected officials

   Investment: $$  
   Effort: ★★★

**BENCHMARKS FOR SUCCESS IN 2023**

<table>
<thead>
<tr>
<th>REDUCE NUMBER OF SCHOOLS PERFORMING AT OR BELOW THE 10TH PERCENTILE STATEWIDE</th>
<th>CURRENT</th>
<th>2019</th>
<th>2021</th>
<th>2023</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>10</td>
<td>9</td>
<td>7</td>
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**Strategies in Action: Incubation Hub**

Worcester Public Schools will create an Incubation Hub in the District. The Hub will consider the current elementary and secondary school feeder system and serve as the pilot site for innovative and best practices, drawing significantly from those of community schools and special academic programs, and leverage parent, educator, and community expertise and resources. These practices will be refined and scaled across the district.
Academic Excellence

As the third-largest school district in the state, WPS makes an important contribution in equipping today’s students with knowledge and skills to become tomorrow’s engaged community and productive workforce. As the district builds on a legacy of success in preparing students with real-world skills, it must expand its offerings to accommodate the learning needs and interests of its diverse population, ensuring that all students can chart a path to a meaningful postsecondary opportunity. In addition, it must equip students with the digital skills necessary for success in the modern workplace.

Academic excellence starts with universal access to the learning environment and a focus on foundational skills at the elementary level. This ensures that essential building blocks for knowledge are well-established, laying the groundwork for more advanced courses in later years. Given the importance of rigorous learning experiences across all grades, WPS will focus on enhancing early education, expanding the breadth and depth of coursework, increasing options for demonstrating knowledge, developing students’ technological skills, and providing additional supports for students’ college or career aspirations.

WHAT WE HEARD

- Students and educators wanted increased course variety and the opportunity to delve deeply into subject matter and explore current topics.
- Students need more opportunities to develop real-world skills such as financial literacy, career skills, and civics.
- College and career decisions are at the forefront of discussion for middle and high school students; students and parents want planning supports for college and career decision making to start earlier (e.g., middle school) so that youth can be intentional about the learning opportunities they select.

MAKING IT COUNT FOR ALL STUDENTS

Our actions will drive improvement for all students and—most critically—change the course for our highest-need students. Currently:

- 31% of 3rd graders in Worcester meet grade-level benchmarks in English Language Arts MCAS
- 49% of 3rd graders in a comparable urban district meet grade-level benchmarks in English Language Arts MCAS
- 47% of 3rd Graders in MA meet grade-level benchmarks in English Language Arts MCAS
Students and parents advocated for more variety in programming inside and outside the school day, including sports, additional advanced courses, and the arts.

Students and educators need increased access to technology and its full and sustainable integration in classrooms to enhance digital skills.

Parents and residents noted the importance of expanded partnerships with the community to address district needs, including enrichment initiatives, technology deficits, and transportation.

**CURRENT RESOURCES & INITIATIVES**

- Targeted, evidence-based literacy and math interventions in elementary schools
- Early college opportunities (e.g., 100 Males to College, dual enrollment initiatives)
- Career technical education pathways throughout the district
- 2018 donation to support 2:1 technology access for students in grades 4-8

**BENCHMARKS FOR SUCCESS IN 2023**

<table>
<thead>
<tr>
<th></th>
<th>CURRENT</th>
<th>2019</th>
<th>2021</th>
<th>2023</th>
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<td>47% OF 3RD GRADERS WILL MEET OR EXCEED BENCHMARKS IN READING</td>
<td>31%</td>
<td>36%</td>
<td>41%</td>
<td>47%</td>
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<td>49%</td>
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<td>100% OF STUDENTS CAN ENGAGE IN A DIGITAL LEARNING EXPERIENCE (Course or skill-building activity)</td>
<td>30%</td>
<td>53%</td>
<td>76%</td>
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**Strategies in Action: Worcester City Enrichment Academy**

Worcester Public Schools—in collaboration with local universities, cultural institutions, and community organizations—will lay the groundwork for the creation of a year-long enrichment program providing instruction, academic support, and experiential learning opportunities for advanced learners.

Based on national models of accelerated learning, this program will be available to WPS students in grades 7-12 to enhance their academic knowledge and skills while providing opportunities to pursue specific subject areas in depth and cultivate their expertise. The program will offer mentoring from local college students and learning activities throughout the school year hosted by the city’s cultural and community organizations. In the summer, grade cohorts will participate in intensive seminars on Worcester’s college campuses. Juniors will participate in a short summer residency.

More than 300 qualified students will be able to participate in the Academy each year (with an expected enrollment of five students per grade, per school). Students will be accepted by application or nomination from each middle and high school. The program is anticipated to begin in the 2022-2023 school year.
OBJECTIVES AND STRATEGIES

1. Increase opportunities for students to develop critical thinking and problem-solving skills and demonstrate knowledge

   • **Implement Community-Based Learning Opportunities**: Strengthen experiential learning options across grades K-12, providing students with multiple strategies to acquire and demonstrate understanding of concepts
   
   • **Employ Demonstrated College and Career Academic Sequence**: Align class offerings to state requirements and ensure all students can access learning opportunities to fulfill the state's recommended course sequence for college and career readiness (MassCORE)
   
   • **Offer More Advanced Course Options**: Increase the number of advanced learning options and enrichment opportunities in 9th grade to better prepare students to succeed in advanced courses throughout high school
   
   • **Diversify and Increase High School Electives**: Foster deeper and broader subject matter exploration in areas relevant to student interests and societal needs by increasing the variety of electives in grades 9-12

   **Investment:** $$  
   **Effort:** ★★

2. Develop students' technology fluency and ensure access to digital learning and computer science (DLCS) curricula

   • **Develop Digital Learning and Computer Science Options**: Create course curricula to meet state standards for DLCS and provide learning opportunities at the elementary, middle, and high school levels
   
   • **Implement Digital Skill-Building Opportunities**: Develop learning opportunities for students and their families to develop foundational digital skills
   
   • **Increase Access to Digital Learning Options and Courses**: Align curricula to include effective technology integration strategies and blended learning opportunities and ensure all students have the opportunity to participate in at least one digital learning experience each year

   **Investment:** $$$  
   **Effort:** ★★
3. Increase career awareness and exploration at all grade levels through integrated coursework and a tiered career learning program

- **Foster Career Skills Development**: Vertically align career exploration experiences from elementary through high school, creating age-appropriate learning opportunities that are rigorous, skill-building, and linked to meaningful postsecondary options
- **Implement My Career and Academic Plan and Mentoring**: Increase relevance of learning experiences by aligning options to students’ skills and interests through personalized learning plans and partnerships with students, families, and the community
- **Increased Availability and Access of Career Learning Experiences**: Create opportunities for students to develop real-world skills through integrated academic and career pathway initiatives in their own or other district schools
- **Enhance Career Exploration and Planning Process through Technology**: Use technology to streamline and support the postsecondary planning process by increasing access to career resources, assessments, and a digital portfolio of students’ accomplishments

With support from the community, we will:

- **Increase Community-Based Career Learning Options**: Expand career learning opportunities for students by scaling existing pathways and developing new initiatives in partnership with business and community organizations
- **Develop Afterschool Career Learning Opportunities**: Enhance in-school and out-of-school-time options for students to participate in career exploration programs
- **Increase Accessibility of Career Learning**: Increase access to vocational learning opportunities by identifying operational resources to support student participation (e.g., schedule, transportation)
- **Implement Skill-Building Opportunities in Digital Literacy**: Develop learning opportunities for families to build foundational digital skills

**Investment: $$$**  **Effort: ★★★★**

4. Leverage Worcester’s distinct community assets to increase choices in learning options and academic support through partnerships with higher education and community organizations

With support from the community, we will:

- **Document Effective Programs and Monitor Barriers to Access**: Establish partnerships with local universities and/or research centers to document existing advanced learning opportunities (e.g., dual enrollment, STEM programs), identify barriers to access, and monitor program impacts as well as effects of improvements
- **Monitor Student Interest to Design Relevant Coursework**: Develop and maintain an information system that monitors student interest and course needs to inform future learning options as well as academic supports
- **Collaborate with Community Leaders for Comprehensive Student Supports**: Establish a body that includes representatives from youth-serving organizations to develop strategies for supporting students’ needs beyond the school schedule (e.g., after school, summer, and vacations)
- **Offer Credit-Bearing Courses in Partnership with Colleges and Universities**: Partner with local colleges and universities to offer high school students access to additional credit-bearing course opportunities through dual enrollment
- **Identify District Liaison to Organize and Manage Community Partnerships**: Develop a comprehensive and coordinated approach to community partnerships that is managed and executed by district liaison
- **Develop an Enrichment Academy Supported by Learning Institutions in the Community**: Develop a public/private enrichment academy to support advanced learners, including after-school and summer opportunities for children in grades 7-12, that leverages Worcester’s distinct community, STEM, and civic assets

**Investment: $$**  **Effort: ★★★**
Welcoming Schools

Students sit at the center of a network of individuals vested in their success. Parents, educators, and community leaders know the value of developing the talent and skills of Worcester’s youth so that they can become thriving adults and strong community members capable of addressing the demands of the workforce. A whole-child approach ensures that education accounts for many of the challenges that extend beyond the schools but have an impact on students’ ability to learn. Research shows that an emphasis on social-emotional learning aids the development of the skills needed for advancing academically, building positive relationships, communicating effectively, and thriving in the face of adversity, thereby increasing the likelihood of success in college and career.32

Schools that foster positive culture—and build partnerships between families and the community—create effective learning environments that can address whole-child learning needs. Leveraging citywide assets for student success, Worcester will foster positive school culture by increasing resources to address students’ social-emotional needs, raising awareness about trauma, and enhancing wraparound supports. As Worcester is a community rich in the ethnic and cultural diversity that characterizes our increasingly globalized world, each school will develop, as a part of its accountability plan, a program for ensuring cultural competence among the staff consistent with its student population. Worcester will also focus on enhancing communication efforts with families and the community to ensure that this work is coordinated and allows students, their families, and educators to feel confident, nurtured, and able to thrive in school.

WHAT WE HEARD

• Students and educators report that schools can be stressful environments. All stakeholders request additional resources to support social-emotional learning and problem-solving skills.
• A notable number of students and parents express a need for schools to provide warm and welcoming environments, as well as a need to identify and alter practices and policies that have a negative effect on school culture (e.g. limited family outreach, lack of recognition protocols for school visitors).
• All participants describe a need for increased sensitivity to cultural and individual differences, especially when communicating about life circumstances influencing school performance and adjustment.
• Parents need increased connections with educators through two-way communication and easier access to student information, such as grades.
Tackling a National Challenge

Experts increasingly highlight the disproportionate application of disciplinary measures to students from different racial and ethnic backgrounds. Addressing potential bias and resolving non-violent confrontations prior to the application of disciplinary measures for these subgroups offers an opportunity for WPS to substantially reduce overall disciplinary actions and address long-term inequitable outcomes. Worcester boasts a diverse student body and is cognizant that discipline must be appropriate and equitably implemented. As schools work to improve school climate and student engagement and reduce the overall need for disciplinary measures, the application of discipline in the African-American, Latino, and Special Education populations deserves special consideration. According to data reported by the Massachusetts Department of Elementary and Secondary Education:

More than 70% of Worcester’s disciplinary actions in the 2016-2017 school year were for non-drug, non-violent, and non-criminal offenses, exceeding state averages and most comparable urban districts.

Youth of color represented 80% of discipline actions for non-drug, non-violent, and non-criminal offenses, although they represent just 70% of the total population.
OBJECTIVES AND STRATEGIES

1. **Prioritize development of systems that support a shared vision for social and emotional development across the district**
   - **Engage Working Group to Design and Implement Whole-Child Support System:** Convene district and building leaders to create a 3-year multi-tiered system of support (MTSS) implementation plan
   - **Employ a System to Proactively Respond to Student Needs:** Develop an early warning system to identify students’ needs, establish benchmarks for intervention, and provide personalized and proactive support for high-risk students
   - **Monitor and Take Action to Improve Differences in Outcomes Among Student Groups:** Develop a district approach to monitor differences among groups in academic performance, absenteeism, and behavior referrals and take corrective actions if gaps between groups exceed a specific threshold (e.g., 25%)
   - **Monitor Student Needs and Allocate Appropriate Supports:** Establish a consistent process for data conversations among educators and administrators to monitor student progress and determine necessary supports and interventions
   - **Support Behavioral and Mental Health of Students and Educators:** Implement an internal comprehensive behavioral health program for all schools
   - **Increase Availability of Wraparound Resources:** Develop a wraparound coordinator position in all buildings, beginning with secondary and Superintendent’s Schools

   **Investment:** $$$  
   **Effort:** ★★★

2. **Implement comprehensive, district-wide approach to monitoring and measuring social and emotional growth and school climate**
   - **Measure Social-Emotional Learning and School Climate:** Employ validated measures of social-emotional development and school climate in each building
   - **Develop District-wide Expectations for Social-Emotional Learning:** Articulate district goals for social-emotional competencies, to be achieved through school-based initiatives
   - **Increase Staff Capacity to Address Trauma:** Provide training on trauma intervention and trauma-sensitive practices at each school
   - **Scale Tested Trauma Supports to All Schools:** Pending results of the Worcester HEARS initiative, share best practices from the program framework at all schools (beginning with Superintendent’s Schools) to monitor students’ social-emotional growth

   **Investment:** $$$  
   **Effort:** ★★★
3. Foster and monitor positive school climate through articulation of shared values/goals and implementation of effective practices in schools

- **Develop District-wide Expectations for School Culture**: Articulate shared values and expectations for school climate in all public schools in Worcester and provide resources for schools to localize best practices
- **Incorporate Student Participation in School Improvements**: Provide opportunities for students to participate in age-appropriate decision making at the school level
- **Review Discipline Practices to Ensure Equitable Outcomes**: Implement system-wide review and training on school and classroom management practices to ensure that the use of exclusionary discipline is limited, appropriate, targeted, and equitably implemented
- **Reduce Suspension Rates Across the District**: Build upon best practices from WPS, community-based programs, and beyond to include instructional and environmental supports that offer alternative consequences to suspension for non-drug, non-weapon, and non-criminal behaviors

**Investment**: $$$  
**Effort**: ★★★

4. Increase opportunities for family engagement and participation in decision making at the school level

- **Enhance and Increase Positive Parent Engagement Experiences**: Partner with community organizations to strengthen engagement with constituents and foster a welcoming, culturally sensitive environment in each school
- **Increase Parent Engagement in School-Level Decision Making**: Increase parent awareness and engagement in school planning and decision-making opportunities by providing training to participate in school leadership initiatives (e.g., site councils, parent-teacher organizations, and CPPAC)
- **Increase Collaboration Between Parents and Teachers**: Provide co-trainings for parents and teachers on how to collaborate effectively for student success and school improvement
- **Increase Understanding of the Impact of Operational Decisions on Student Experience**: Explore including an analyst, hired by CPPAC, to consider the impact of contract provisions on students
- **Increase Ease of Access to District Information**: Develop standardized communication protocols for families’ ease of access including: regular updates to the district website, multilingual communications across all contact types (e.g., phone, email), a tool for sharing sensitive information, and annual updates to contact lists (to make sure families are receiving district communications)
- **Increase Ease of Access to Student Information**: Provide timely and secure access to student information and progress indicators for families and students
- **Develop a Bilingual Parent Advisory Council**: Establish a parent advisory group that represents the diverse language community of Worcester and can contribute to school-level decision making

**Investment**: $$$  
**Effort**: ★★★★

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**Strategies in Action: Systems for Support**

Worcester has an established reputation of providing critical supports to students with demonstrated need. As the district improves, the focus will shift to more proactively supporting all students. Early Warning Systems monitor student outcomes and flag areas of potential concern early on, so that course adjustments can be readily made and supports can be provided. Similarly, a multi-tiered system of support allocates resources such that all students receive high-quality basic interventions and more intensive supports are provided as needed. Worcester will prioritize the development of both systems and use data to ensure that more students remain on track throughout their academic careers by monitoring key indicators such as attendance, grades, test scores, and behavior.
Investing in Educators

Educators are the life force of schools. In considering how to best support students, we must also reflect on support for educators, including classroom teachers, aides, specialists, and service providers. Worcester students have a variety of learning needs that require educators to apply new approaches, such as trauma-informed instruction and personalized learning. As educators and students cultivate relationships, it is beneficial to have a workforce with a variety of life experiences that can inspire and support students. The district will focus on recruiting a diverse, highly qualified teacher and administrative workforce, offering professional development in key instructional and support areas, and creating professional ladders and lattices to ensure career opportunities throughout an educator’s tenure.

WHAT WE HEARD

- Educators are seeking increased opportunities to collaborate within their grade levels or departments as well as with special educators and specialists.
- Educators need additional funding for classroom resources and learning materials.
- Educators want increased supports for the integration and use of technology.
- Educators need increased support, including staffing, to allow for personalized and differentiated instruction in the face of increasing class sizes.

CURRENT RESOURCES & INITIATIVES

- Student Centered Coaching Workshops
- First Year Teacher Induction Program
- Partnerships in teacher education with 11 colleges in surrounding areas
- Future District Administrators training program
BENCHMARKS FOR SUCCESS IN 2023

<table>
<thead>
<tr>
<th>INCREASE DIVERSITY OF NEW HIRES TO 25%</th>
<th>2019</th>
<th>2021</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
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<td>8%</td>
<td>17%</td>
<td>25%</td>
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OBJECTIVES AND STRATEGIES

1. Review teacher recruitment and retention approach and implement strategies that will increase access to a highly qualified, diverse teacher workforce
   - Increase the Number of Highly Qualified Teacher Candidates: Partner with local teacher preparation programs to provide career pathways for top educators to train and remain in Worcester
   - Recruit Educators Knowledgeable in Instruction in Urban Environments: Identify and develop partnerships between the district and exemplary teacher preparation programs in urban education
   - Expand and Enhance Recruitment of Diverse Educator Candidates: Review recruitment and retention processes to maximize the district's ability to attract diverse candidates from across the nation and partner with local organizations to increase the community's awareness of opportunities
   - Provide Supports to Increase New Teacher Retention: Enhance and scale mentoring strategies to support and retain new teachers
   - Develop a Pipeline of Educators among WPS Students: Strengthen existing educator development initiatives in the district using best practices from effective teacher training models
   - Attract Recent College Graduates to WPS: Develop a teacher residency program that recruits talent to WPS and encourages students to pursue the teaching profession

Investment: $$$ Effort: ⭐⭐

2. Provide pathways for educators to demonstrate mastery and advance in their professional development
   - Recognize Skill Acquisition with Formal Credentials: Provide opportunities for educators to receive credentials for new skill sets or leverage expertise by becoming a building coach
   - Develop Career Advancement Opportunities for Top Educators: Develop opportunities for educators to become teacher leaders, based on a consistent demonstration of efficacy in the classroom. Teacher leaders will receive recognition, participate in school and district decision making, and support their colleagues

Investment: $$$ Effort: ⭐⭐

Strategies in Action: Diversity in Education

As Worcester becomes more diverse, it is critical to have an educator population that reflects the various life experiences of the community. Worcester will make a concerted effort to attract and retain educators and leaders from a variety of backgrounds by establishing partnerships with reputable programs in urban education. Worcester will rely on these settings to recruit candidates who are deeply knowledgeable about how to address and support the learning needs of students in urban settings. In addition, Worcester will initiate partnerships with multicultural institutions (e.g., historically Black Colleges/Universities and Hispanic Serving Institutions) to develop an educator workforce that reflects the student population. Furthermore, Worcester will employ evidence-based educator retention strategies to increase the longevity of new educators within the district. Efforts to increase diversity of the teacher workforce will launch for the 2019-2020 hiring period and continue beyond 2023.
3. Increase educator capacity to provide high-quality instruction and address student needs by offering diverse professional development opportunities and positive supports

- **Provide Training in High-Need Content Areas**: Provide district-level training opportunities in emerging content areas, including but not limited to social-emotional learning, trauma-sensitive practices, and cultural sensitivity
- **Ensure Peer Learning Opportunities District-wide**: Establish district expectations and opportunities for peer learning that can be implemented in schools
- **Encourage Existing Peer Sharing Initiatives in Schools**: Support and encourage the development of existing communities of practice for educators
- **Create Inclusive General Education Classrooms for English Language Learners**: Implement staff training in co-teaching models for general education classes with English language learners beginning with elementary educators
- **Provide Trainings for Special and General Educators**: Offer learning opportunities on updated assessments in special education as well as support for co-teaching implementation strategies
- **Review Positive Incentives for Educator Engagement**: Explore ways to support and re-energize educators to cultivate renewed enthusiasm and reduce non-health-related absences

**Investment: **$\$

**Effort: **★★★

4. Prioritize and provide supports to develop digital competence and confidence among all educators and leaders in the district to ensure the effective use of technology for teaching, learning, and communication

- **Use Technology to Enhance Communication Options for Educators**: Ensure that technology resources for both internal and external communication are available and that all staff are trained in their use
- **Provide Professional Development on Available Technology**: Build the collective efficacy of teachers and leaders to utilize technology by developing a professional development plan based on current educator needs
- **Employ Instructional Coaches for Technology Integration**: Train instructional coaches in digital literacy at each school. Identify at least six educators with advanced technology and instruction skills to serve as master coaches who provide learning sessions for peers through a “train the trainer” model
- **Employ District Liaison in Digital Learning and Computer Science**: Identify and bring on board a district liaison to work with educators to create and monitor K-12 DLCS curriculum
- **Increase Training District-wide on Technology-Enhanced Classrooms**: Provide trainings on technical skills as well as strategies to maximize the impact of technology-integrated instruction
- **Provide Variety in Continued Learning Opportunities**: Offer self-paced and diverse professional learning for teachers

**Investment: **$$\$

**Effort: **★★★
Technology & Operations

The vision of Worcester as a national leader in urban education can only be realized through wide-scale improvements in teaching and learning supported by a sustainable infrastructure. Worcester must address challenges that deeply impact the learning experience in the district—such as access to technology inside and outside the school building, transportation options for after-school programming, and funding gaps. This will require coordination among district administrators, School Committee members, municipal leaders, and community members. Together, the community can develop collaborative interim solutions and advocate for the foundational issue of underfunding in the school district. By working together to improve our schools and strategizing to increase state funding, we will be well-equipped to develop an infrastructure that can support excellence in education.

WHAT WE HEARD

- There is a need for increased coordination among the School Committee, City Council, and district leadership to prioritize, support, and implement improvements for the schools.
- The current budget of the district is insufficient to effectively operate and educate all students because of a $90 million gap between foundation formula calculations and actual spending.
- In 2017, unfunded budget needs totaled $12.9 million, including resources such as textbooks, furniture, and instructional technology.
- Critical improvements to physical spaces, transportation, and programming can be better and more consistently addressed with additional financial supports.
- Educators and students expressed the need for enhanced wireless infrastructure and access to devices for teaching and learning.

MAKING IT COUNT FOR ALL SCHOOLS

Our actions will drive improvement for all students and—most critically—change the course for our highest-need students. Currently:

- $14,492 on average, is allocated per pupil within Worcester
- $15,545 on average, is allocated per pupil for students in Massachusetts
- $20,247 on average, is allocated per pupil within a comparable urban district
CURRENT RESOURCES & INITIATIVES

- Building replacement plan resulting in new South High Community School and anticipated Doherty High School
- Partnership with Massachusetts State Building Authority to replace windows and boilers
- Transportation of 12,000 students and current feasibility study to insource transportation within the district

BENCHMARKS FOR SUCCESS IN 2023

<table>
<thead>
<tr>
<th>INCREASE PER-PUPIL EXPENDITURE BY 20%</th>
<th>CURRENT</th>
<th>2019</th>
<th>2021</th>
<th>2023</th>
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<tr>
<td></td>
<td>0%</td>
<td>4%</td>
<td>12%</td>
<td>20%</td>
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OBJECTIVES AND STRATEGIES

1. **Coordinate and align school administration, governance, and municipal processes to prioritize and support educational improvements for the success of all students**

   The community will:
   - **Review and Improve Governance Operations for Efficiency**: Review governance procedures and identify strategies to enhance the district’s efficiency and foster continuous improvement
   - **Increase Opportunities for the Community to Engage in Policy Discussions**: Expand School Committee planning and strategy processes to engage the public in policy discussions
   - **Develop Joint Committee for Improvement**: Establish standing joint committee (School Committee and City Council) to address district challenges and improvement needs

   **Investment:** $  
   **Effort:** ★★★

2. **Identify and establish support for fiscal strategies that enhance and scale improvements with demonstrated effectiveness**

   - **Review and Identify Strategies to Support District Priorities within Current Budget**: Engage in a targeted review of district operational and fiscal efficiency to identify strategies for addressing high-priority improvements within current budget
   - **Launch Campaign for Increased State Funding for School District**: Establish committee and campaign to advocate for an increase in the foundation budget

   **Investment:** $$$  
   **Effort:** ★★★

**Strategies in Action: Quarterly Policy Forums**

Worcester aims to increase the participation of a range of sectors and stakeholders in policy conversations that ultimately affect the functions and initiatives of schools. Building on existing opportunities for formal feedback through School Committee meetings, Worcester will use one meeting per quarter to engage in a rigorous briefing and dialogue around district policy and its ability to support the actions and improvements envisioned in this document for Worcester Public Schools. Through this discussion, Worcester aims to keep all stakeholders informed and coordinated on the strategic vision of the district and its successful implementation.
3. **Establish a strategic communication and outreach approach that promotes district opportunities and establishes Worcester as a leader in urban education**
   - **Develop and Maintain Resources that Attract New Families to WPS**: Strengthen public presence (including web presence and social media) to promote opportunities in the school district
   - **Enhance Community Awareness of WPS Offerings**: Create central information points for community members to learn about and support the district

   **Investment:** $\$\$\$\$ \quad \text{Effort:} \quad \star \star \star \star \star

4. **Establish the infrastructure necessary to support technology access and integration across the district**

   With support from the community we will:
   - **Establish District Culture and Operations Around Technology**: Develop policies and procedures for technology access, use, and improvement that will facilitate district-wide implementation and sustainability
   - **Engage an Advisory Body on Technology Rollout**: Establish a committee on technology, representative of all stakeholders, to oversee implementation and ensure alignment with community needs
   - **Employ an Updated Information System**: Invest in the acquisition and support of a student information system
   - **Improve Wireless Access in School Buildings**: Develop and maintain a robust wireless infrastructure to support a 1:1 device initiative throughout the district
   - **Develop a Strategy to Increase Access to Technology in Classrooms**: Craft a district-wide strategy to ensure all educators have access to basic technology that effectively supports instruction
   - **Increase Student Access to Devices in All Grades**: Provide access to devices to ensure that all students can use technology for personalized learning experiences
   - **Establish Funding for Device Maintenance**: Develop funding mechanisms for the maintenance and replacement of technology at appropriate intervals
   - **Address the Digital Divide Outside of School**: Work on solutions to improve after-school access to technology and the internet to support student learning

   **Investment:** $\$\$\$\$\$\$ \quad \text{Effort:} \quad \star \star
Conclusion

Defining our Path provides a broad and ambitious plan for assuring strong educational outcomes for all Worcester Public School students. Unlike most public school strategic plans, the genesis of this work was not with the School Department or the School Committee but rather with the community. While at times challenging, the work to bring together the multitude of sectors and interests making up our city highlighted a new way for all stakeholders to collaborate to address the pressing matters facing our schools and impacting our common life. Each participant learned a tremendous amount about the work of education in our district and the lived experience of administrators, teachers, students, and families. We believe that the cooperative approach that founded this plan remains key to its implementation; soliciting meaningful community engagement, calling on expert insight, and working with civic leaders and associations is integral to sustaining the forward momentum that will ensure the ongoing success of our schools and our children.
### Worcester Public Schools in 2023

**ALL STUDENTS WILL**

1. Have access to high-quality learning experiences that leverage effective approaches;
2. Have access to rigorous and personalized learning supported by technology;
3. Gain a holistic set of skills and be supported by a network—including their families and the community—to realize their personal, academic, and professional goals;
4. Be supported by effective educators who demonstrate leadership and commitment to enhancing student learning and development; and
5. Learn in an efficient and fiscally sound district.
Acknowledgments

Our deepest gratitude to the individuals and organizations who made this process possible and participated in the planning effort.

**SUPPORTING ORGANIZATIONS**

Barr Foundation  
George I. Alden Trust  
Greater Worcester Community Foundation

**ADVISORY COMMITTEE MEMBERS**

<table>
<thead>
<tr>
<th>Brian Allen</th>
<th>Edward Dumphy</th>
<th>Ike McBride</th>
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<td>Michael Angelini</td>
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<td>Geoffrey Dickinson</td>
<td>Kristen Mayotte</td>
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Endnotes


7. Massachusetts Department of Elementary and Secondary Education. (2017). 2017 Mobility Rate


### Worcester: Where We Are and Our Comparisons

<table>
<thead>
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<th></th>
<th>Worcester</th>
<th>Highest-Performing Comparison District</th>
<th>Median Performance of Comparison Districts</th>
<th>State</th>
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<td></td>
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<td>Graduation Rate- 5yr</td>
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<td>90.3%&lt;sup&gt;c&lt;/sup&gt;</td>
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<td>Student Growth</td>
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<td>50%</td>
</tr>
<tr>
<td>Percentile- ELA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Growth</td>
<td>49%</td>
<td>52%&lt;sup&gt;h&lt;/sup&gt;</td>
<td>41%</td>
<td>50%</td>
</tr>
<tr>
<td>Percentile- Math</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Academic Excellence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd Graders Meeting or Exceeding Expectations on MCAS - English Language Arts (%)</td>
<td>31%</td>
<td>49%&lt;sup&gt;i&lt;/sup&gt;</td>
<td>32%</td>
<td>47%</td>
</tr>
<tr>
<td>3rd Graders Meeting or Exceeding Expectations on MCAS - Math (%)</td>
<td>29%</td>
<td>53%&lt;sup&gt;l&lt;/sup&gt;</td>
<td>36%</td>
<td>49%</td>
</tr>
<tr>
<td>8th Graders Meeting or Exceeding Expectations on MCAS- ELA (%)</td>
<td>33%</td>
<td>46%&lt;sup&gt;j&lt;/sup&gt;</td>
<td>30.5%</td>
<td>49%</td>
</tr>
<tr>
<td>8th Graders Meeting or Exceeding Expectations on MCAS-Math (%)</td>
<td>25%</td>
<td>46%&lt;sup&gt;k&lt;/sup&gt;</td>
<td>31%</td>
<td>48%</td>
</tr>
<tr>
<td>Completion of College and Career Curriculum (MassCORE)</td>
<td>92.4%</td>
<td>100.0%&lt;sup&gt;l&lt;/sup&gt;</td>
<td>71.2%</td>
<td>80.9%</td>
</tr>
</tbody>
</table>

---

<sup>a</sup> All indicators and rates described within the appendix are sourced from the most current Massachusetts Department of Elementary and Secondary Education statewide reports and data sets available.

<sup>b</sup> Comparison District Cohort: Boston, Brockton, Fall River, Fitchburg, Holyoke, Lawrence, Leominster, Lowell, Lynn, New Bedford, Revere, and Springfield Public Schools

<sup>c</sup> 2016 Graduation Rate: Leominster Public Schools

<sup>d</sup> 2017 Next Generation MCAS Achievement Results: Revere Public Schools

<sup>e</sup> 2017 Next Generation MCAS Achievement Results: Lynn Public Schools

<sup>f</sup> 2017 Next Generation MCAS Achievement Results-3<sup>rd</sup> Grade ELA: Revere Public Schools

<sup>g</sup> 2017 Next Generation MCAS Achievement Results-3<sup>rd</sup> Grade Math: Revere Public Schools

<sup>h</sup> 2017 Next Generation MCAS Achievement Results-8<sup>th</sup> Grade ELA: Revere Public Schools

<sup>i</sup> 2017 Next Generation MCAS Achievement Results-8<sup>th</sup> Grade Math: Leominster Public Schools

<sup>j</sup> 2016-2017 MassCORE Completion Report All Students: Lawrence, Leominster, and Revere Public Schools
<table>
<thead>
<tr>
<th></th>
<th>Worcester</th>
<th>Highest-Performing Comparison District</th>
<th>Median Performance of Comparison Districts(^M)</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive Culture</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dropout Rate (Grades 9-12)</td>
<td>2.2%</td>
<td>1.2%(^N)</td>
<td>3.8%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Students Disciplined for Non-Drug, Non-Violent, or Non-Criminal-Related Offenses (% of All Students Disciplined)</td>
<td>71.3%</td>
<td>9.5%(^O)</td>
<td>69.5%</td>
<td>63.5%</td>
</tr>
<tr>
<td>Students Disciplined (% of Total Student Population)</td>
<td>8.4%</td>
<td>2.1 %(^P)</td>
<td>7.7%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Attendance Rate</td>
<td>94.1%</td>
<td>94.7%(^Q)</td>
<td>92.9%</td>
<td>94.6%</td>
</tr>
<tr>
<td>Chronically Absent</td>
<td>16.9%</td>
<td>12.9%(^Q)</td>
<td>23.3%</td>
<td>13.5%</td>
</tr>
<tr>
<td><strong>Educators</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educator Proficient or Higher on Evaluation</td>
<td>97.4%</td>
<td>98.0%(^R)</td>
<td>91.2%</td>
<td>95.7%</td>
</tr>
<tr>
<td><strong>Foundations for Improvement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per Pupil Spending Rate</td>
<td>$14,492</td>
<td>$20,247(^S)</td>
<td>$14,473</td>
<td>$15,545</td>
</tr>
</tbody>
</table>

\(^M\) Comparison District Cohort: Boston, Brockton, Fall River, Fitchburg, Holyoke, Lawrence, Leominster, Lowell, Lynn, New Bedford, Revere, and Springfield Public Schools

\(^N\) 2016-2017 Dropout Report (District) All Students: Lowell Public Schools

\(^O\) 2016-2017 Student Discipline Data Report - 18. Non-Drug, Non-Violent, or Non-Criminal-Related Offenses: Lawrence Public Schools

\(^P\) 2016-17 Student Discipline Data Report - All Offenses - All Students: Revere Public Schools

\(^Q\) 2016-2017 Student Attendance and Retention Report: Revere Public Schools

\(^R\) 2015-2016 Educator Evaluation Performance (District)- All Educators: Lowell Public Schools

\(^S\) 2016 Per Pupil Expenditures, All Funds: Boston Public Schools
## Teacher Race and Ethnicity Comparison

<table>
<thead>
<tr>
<th></th>
<th>African American</th>
<th>Asian</th>
<th>Hispanic</th>
<th>White</th>
<th>Native American</th>
<th>Native Hawaiian, Pacific Islander</th>
<th>Multi-Race, Non-Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worcester</td>
<td>4.05%</td>
<td>1.25%</td>
<td>9.17%</td>
<td>84.05%</td>
<td>0</td>
<td>0.22%</td>
<td>1.26%</td>
</tr>
<tr>
<td>Highest Comparison</td>
<td>27.39%</td>
<td>5.09%</td>
<td>13.16%</td>
<td>52.42%</td>
<td>0.23%</td>
<td>0.10%</td>
<td>1.61%</td>
</tr>
<tr>
<td>District</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State</td>
<td>3.76%</td>
<td>1.39%</td>
<td>3.90%</td>
<td>90.28%</td>
<td>0.08%</td>
<td>0.06%</td>
<td>0.52%</td>
</tr>
</tbody>
</table>
## Benchmarks for Success in 2023

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>Year 1</th>
<th>Year 3</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SCHOOL IMPROVEMENT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce number of schools performing at or below the 10th percentile statewide</td>
<td>10 schools</td>
<td>9 schools</td>
<td>7 schools</td>
<td>5 schools</td>
</tr>
<tr>
<td>Increase the number of schools demonstrating or maintaining an SGP in ELA higher than state median 50%</td>
<td>50%</td>
<td>50.33%</td>
<td>50.67%</td>
<td>51%</td>
</tr>
<tr>
<td>Increase the number of schools demonstrating or maintaining an SGP in Math to higher than state median 50%</td>
<td>49%</td>
<td>49.33%</td>
<td>49.67%</td>
<td>50%</td>
</tr>
<tr>
<td>100% of top-performing schools maintain their performance levels on state-designated metrics</td>
<td>9 schools</td>
<td>9 schools (Minimum)</td>
<td>9 schools</td>
<td>9 schools</td>
</tr>
<tr>
<td>100% of building leaders participate in Principal Academy</td>
<td>n/a</td>
<td>25%</td>
<td>45%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>ACADEMIC EXCELLENCE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce proficiency gap to 75% in English Language Arts and Math</td>
<td>50%</td>
<td>58%</td>
<td>67%</td>
<td>75%</td>
</tr>
<tr>
<td>47% of 3rd Grade students will meet or exceed benchmarks on English Language Arts MCAS</td>
<td>31%</td>
<td>36%</td>
<td>41%</td>
<td>47%</td>
</tr>
<tr>
<td>49% of 3rd Grade students will meet or exceed benchmarks on Math MCAS</td>
<td>29%</td>
<td>36%</td>
<td>42%</td>
<td>49%</td>
</tr>
<tr>
<td>49% of 8th Grade students will meet or exceed benchmarks on English Language Arts MCAS</td>
<td>33%</td>
<td>38%</td>
<td>44%</td>
<td>49%</td>
</tr>
<tr>
<td>46% of 8th Grade students will meet or exceed benchmarks on Math MCAS</td>
<td>25%</td>
<td>32%</td>
<td>39%</td>
<td>46%</td>
</tr>
<tr>
<td>100% of 12th graders enroll and pass a college or career success activity prior to graduation (e.g. AP, dual enrollment, internship)</td>
<td>n/a</td>
<td>80%</td>
<td>90%</td>
<td>100%</td>
</tr>
<tr>
<td>100% of students can engage in a digital learning experience (e.g., course or skill building activity in K-5)</td>
<td>30%</td>
<td>53%</td>
<td>76%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Welcoming Schools</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce chronic absenteeism to 13.5% for students</td>
<td>16.9%</td>
<td>15.8%</td>
<td>14.6%</td>
<td>13.5%</td>
</tr>
<tr>
<td>Reduce number of youth disciplined for non-drug, non-violent, and non-criminal offenses by 30%</td>
<td>71%</td>
<td>61%</td>
<td>51%</td>
<td>41%</td>
</tr>
</tbody>
</table>

* Benchmarks for strategies listed in the culture of innovation section are reflected here as school improvement. This allows a focus on a critical goal for Worcester, improvement of the schools and acknowledges the innovative practices infused throughout all sections.

* N/A signifies that current data is not available as the metric or initiative is yet to be calculated or implemented.
<table>
<thead>
<tr>
<th>Reduce number of students suspended for non-drug, non-violent, and non-criminal offenses by one-third districtwide</th>
<th>4.8%</th>
<th>4.48%</th>
<th>3.84%</th>
<th>3.2%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce number of students suspended for non-drug, non-violent, and non-criminal offenses by one-third in each subgroup</td>
<td>Shown Below</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Language Learners</td>
<td>4.7%</td>
<td>4.4%</td>
<td>3.8%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Economically disadvantaged</td>
<td>6.1%</td>
<td>5.7%</td>
<td>4.9%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Students w/ disabilities</td>
<td>10.4%</td>
<td>9.7%</td>
<td>8.3%</td>
<td>7.0%</td>
</tr>
<tr>
<td>High needs</td>
<td>5.5%</td>
<td>5.1%</td>
<td>4.4%</td>
<td>3.7%</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>11.4%</td>
<td>10.6%</td>
<td>9.1%</td>
<td>7.6%</td>
</tr>
<tr>
<td>Asian</td>
<td>0.7%</td>
<td>0.7%</td>
<td>0.6%</td>
<td>0.5%</td>
</tr>
<tr>
<td>African American/Black</td>
<td>4.8%</td>
<td>4.5%</td>
<td>3.8%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>6.7%</td>
<td>6.3%</td>
<td>5.4%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Multi-race, Non-Hispanic/Latino</td>
<td>6.6%</td>
<td>6.2%</td>
<td>5.3%</td>
<td>4.4%</td>
</tr>
<tr>
<td>White</td>
<td>3.1%</td>
<td>2.9%</td>
<td>2.5%</td>
<td>2.1%</td>
</tr>
<tr>
<td>100% of student engage in social and emotional support initiatives by graduation</td>
<td>n/a</td>
<td>33%</td>
<td>75%</td>
<td>100%</td>
</tr>
<tr>
<td>Reduce dropout rate to 1.8%</td>
<td>2.2%</td>
<td>2%</td>
<td>1.93%</td>
<td>1.8%</td>
</tr>
<tr>
<td>By 2023 all schools have a parent liaison trained in parent engagement best practices</td>
<td>20%</td>
<td>46%</td>
<td>72%</td>
<td>100%</td>
</tr>
<tr>
<td>Increase the number of schools with an active site council representative of the school community by 50%</td>
<td>0</td>
<td>10%</td>
<td>30%</td>
<td>50%</td>
</tr>
<tr>
<td>80% of families report using student information and communication vehicles</td>
<td>n/a</td>
<td>26%</td>
<td>52%</td>
<td>80%</td>
</tr>
</tbody>
</table>
**EDUCATORS**

<table>
<thead>
<tr>
<th>Metric</th>
<th>97.4%</th>
<th>97.6%</th>
<th>98.1%</th>
<th>98.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% of educators proficient or higher on evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase diversity of new hires by 25%</td>
<td>n/a</td>
<td>8%</td>
<td>17%</td>
<td>25%</td>
</tr>
<tr>
<td>80% of district- and school-level professional development opportunities align with strategic plan training areas</td>
<td>n/a</td>
<td>27%</td>
<td>53%</td>
<td>80%</td>
</tr>
<tr>
<td>50% of educators earn continuing education credits in priority areas of strategic plan</td>
<td>n/a</td>
<td>17%</td>
<td>33%</td>
<td>50%</td>
</tr>
<tr>
<td>80% of educators report application of practices aligned with training area</td>
<td>n/a</td>
<td>27%</td>
<td>53%</td>
<td>80%</td>
</tr>
<tr>
<td>80% of all leadership and educators will report that they have proficiency in the ISTE standards</td>
<td>n/a</td>
<td>26%</td>
<td>52%</td>
<td>80%</td>
</tr>
</tbody>
</table>

**OPERATIONS**

<table>
<thead>
<tr>
<th>Metric</th>
<th>n/a</th>
<th>33%</th>
<th>75%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% of School Committee meetings are guided by a consent agenda supported by mayor and superintendent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase participation of the community in existing governance meetings by 40%</td>
<td>n/a</td>
<td>13%</td>
<td>26%</td>
<td>40%</td>
</tr>
<tr>
<td>Increase per-pupil expenditure by 20%</td>
<td>n/a</td>
<td>4%</td>
<td>12%</td>
<td>20%</td>
</tr>
<tr>
<td>Increase the revenue from in-kind or financial contributions within the community by 20%</td>
<td>n/a</td>
<td>6%</td>
<td>13%</td>
<td>20%</td>
</tr>
<tr>
<td>INTERIM AND PROCESS BENCHMARKS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>100% of students have a personalized learning plan</td>
<td>n/a</td>
<td>20%</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>100% of high schools provide course offerings meeting all requirements of MassCORE</td>
<td>n/a</td>
<td>33%</td>
<td>75%</td>
<td>100%</td>
</tr>
<tr>
<td>Increase available spaces for advanced learning initiatives by 25%</td>
<td>n/a</td>
<td>8.3%</td>
<td>16.6%</td>
<td>25%</td>
</tr>
<tr>
<td>Increase available internships by 25%</td>
<td>n/a</td>
<td>8.3%</td>
<td>16.6%</td>
<td>25%</td>
</tr>
<tr>
<td>Develop district-wide policy and procedures manual that outlines EWIS, school data teams, and MTSS⁵</td>
<td>n/a</td>
<td>100% (complete)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100% of schools collect data using district school climate measures</td>
<td>n/a</td>
<td>25%</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>100% of schools collect data and report on social emotional learning</td>
<td>n/a</td>
<td>25%</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>75% of schools will use a multi-tiered system of support for both academic and behavior intervention</td>
<td>n/a</td>
<td>n/a (design year)</td>
<td>30%</td>
<td>75%</td>
</tr>
<tr>
<td>Implement system-wide review of and training program in classroom management practices for equitable behavioral outcomes launched</td>
<td>n/a</td>
<td>50%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>80% of grade-level teams routinely use EWIS data to proactively identify students at risk</td>
<td>n/a</td>
<td>20%</td>
<td>40%</td>
<td>80%</td>
</tr>
<tr>
<td>Implement positive supports for teacher wellness and attendance in all schools</td>
<td>n/a</td>
<td>30%</td>
<td>70%</td>
<td>100%</td>
</tr>
<tr>
<td>Implement enhanced communication process and system implemented (website, contact protocols, identification of student system vendor)</td>
<td>n/a</td>
<td>50%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>100% of students are educated in technology-enabled classrooms</td>
<td>20%</td>
<td>46%</td>
<td>72%</td>
<td>100%</td>
</tr>
<tr>
<td>Develop districtwide policy and procedures manual for technology use and operations</td>
<td>n/a</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quarterly policy discussions are held in the community and within School Committee</td>
<td>n/a</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establish a standing joint committee of city and school district leaders</td>
<td>n/a</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop a funding campaign that engages community and policy leaders</td>
<td>n/a</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

⁵ EWIS- early warning indicator system; MTSS- multi-tiered system of support
The City has advised that Doherty Memorial High School (DMHS) will be a non-designated emergency shelter, and will include emergency shelter features and functionality as outlined in the narrative below.

The following resources and publications were researched and utilized in preparing this narrative:
- Massachusetts Statewide Mass Care and Shelter Coordination Plan: Local Shelter Toolkit
- American Red Cross Shelter Facility Survey

Mass care and shelter options available in the Commonwealth of MA range from **Personal Care Sites** (with limited services and no overnight accommodation) to **State-Initiated Regional Shelters (SIRS)** (providing larger-scale services when local capacities are exceeded). The proposed shelter type for the Doherty Memorial High School will be a **Local-Initiated Overnight Shelter**, which falls somewhere in between the above in terms of services provided. A **Local-Initiated Overnight Shelter** is defined as a facility which “provides access and functional needs services and full dietary and dormitory services for a single community” as described in the following table:

<table>
<thead>
<tr>
<th>Local-Initiated Overnight Shelter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Required Capabilities</strong></td>
</tr>
<tr>
<td>▪ Americans with Disabilities Act (ADA) accessibility</td>
</tr>
<tr>
<td>▪ Functional needs support services (FNSS)</td>
</tr>
<tr>
<td>▪ Other goods and services as needed</td>
</tr>
<tr>
<td>▪ Backup power</td>
</tr>
<tr>
<td>▪ Parking</td>
</tr>
<tr>
<td>▪ Dormitory</td>
</tr>
<tr>
<td>▪ Kitchen</td>
</tr>
</tbody>
</table>

In Massachusetts, it is assumed that approximately 3–5% of a local population will come to a local shelter for disasters such as ice storms, tornadoes and flooding. The population of Worcester, MA in 2017 was approximately 185,700; 3–5% of that equals between 5,571 and 9,285 people who will potentially seek shelter in the City during a disaster situation.

Although there are no prescriptive requirements for emergency shelter facilities, the resources listed above have numerous recommendations and guidelines. These, along with LPA’s prior experience on public school facilities, are the basis for the bullet point list of considerations that follows:
Accessibility: All open-to-public spaces, including both the building (doors, stairs, elevators, toilet rooms, showers, medical treatment rooms, maneuvering/transaction clearances, controls, communications systems, signage, etc.) and site (entries, parking, sidewalks, etc.) elements, should be accessible based on the Americans with Disabilities Act (ADA) standards for emergency shelters. MA Building Code has jurisdiction over the proposed project and references 521 CMR Massachusetts Architectural Access Board (MA-AAB) rules and regulations, not ADA standards; however, the two are relatively similar.

Recommendations: Given that even a relatively minor renovation will mandate full compliance with 521 CMR requirements, the assumption can be made that both the site and building will be fully accessible. The elevator should also be on back-up power supply.

Reception and Shelter Staff Administrative Areas: A main registration/check-in area, with room for several tables and chairs, should be designated. It should be located at an accessible entry and, if possible, close to shelter staff/administrative offices. Staff resources may need to be supplemented by outside providers (home health care, medical centers, independent living providers, etc.) and should have access to communication systems. A separate shelter staff break/meeting room should be provided.

Recommendations: The Main Entry and Administration Offices/Meeting Rooms will effectively provide Reception and Shelter Staff Administrative Area shelter site services. Back-up power, lighting and HVAC functionality should be provided in these spaces.

First Aid Services: Health services should be provided in a discrete well-lit space, away from public view but near transportation services, with access to hot/cold water and toilet facilities. An Automated External Defibrillator (AED) should be located in this area. Medical supplies require secure storage and may need refrigeration (on back-up power supply). Separate provisions should be made for storage/disposal of medical, as opposed to ordinary, waste.

Recommendations: The school Nurse Office and Health Clinic will effectively provide First Aid shelter site services. Back-up power, lighting and HVAC functionality should be provided in these spaces.

Delivery, Storage and Waste Removal Areas: A separate receiving area, away from the general parking area and main entry, should be provided. Shelter resources should be moved easily from the receiving area to a secure storage space, large enough to store 2–3 days of total shelter supplies, without traversing stairs. A pallet jack or forklift may be advantageous for material handling in this area. Consideration should be given to waste removal, capacity and duration. Waste removal services are likely to be interrupted during a disaster, so provisions...
should be made to store garbage away from food storage and occupied shelter areas. Medical waste may be generated that must be handled, stored and disposed of properly.

**Recommendations:** The Food Service and Custodial Receiving areas will effectively provide Delivery, Storage and Waste Removal Area shelter site services. Back-up power, hot water, lighting and HVAC functionality should be provided in these spaces.

- **Dormitory:** General space guidelines are for 20–40 SF per person typical; and up to 100 SF per disabled person. Access to showers, changing areas and toilet rooms is needed; consideration should also be given to laundry facilities. Cots/bedding must be laid out to allow access for the disabled as well as unobstructed means of egress. Storage is needed for cots, blankets, pillows and other comfort items unless they can be obtained when needed. Overnight space for shelter staff should be separated from the general dormitory population. Electrical outlets for recharging devices should be available, clearly identifiable and on back-up power supply. Quiet hours are typical observed in dormitory areas; however, consideration should be given to providing a separate space for those who cannot sleep. The ability to provide services to infants or very young children, in a separate area, may also be desirable.

  **Recommendations:** The Gymnasium and Physical Education (PE) Locker/Shower Rooms will effectively provide Dormitory shelter site services. Back-up power, hot water, lighting and HVAC functionality should be provided in these spaces.

- **Pets and Service Animals:** Consider accommodations for pets and related supplies (food, medical supplies, crates, etc.); either with or separated from their owners. Dogs require 6–8 SF each for crates/storage. Cats and other animals require 4–6 SF each for crates/storage. Consideration should be given to a location with exterior access for pet relief and exercise. It should also have washing facilities and a separate ventilation system. A quarantine/isolation area and pet medical area (100 SF minimum) may be required for sick or aggressive animals. Service animals typically remain with their owner.

  **Recommendations:** The PE Team Room areas will effectively provide Pet and Service Animal shelter site services. Back-up power, hot water, lighting and HVAC functionality should be provided in these spaces.

- **Food Preparation and Dining Areas:** Food preparation can be done onsite or in coordination with local food vendors/providers. If onsite, adequate Kitchen space is needed to prepare meals/snacks for all persons in the shelter. Enough food storage space should be provided for 2–3 days of food/beverage services operation and should be easily accessible to the shelter receiving/delivery area. Access to hot/cold water, toilets and waste disposal is needed. Food and beverage services must adhere to Public Health guidelines which may mandate having some or all kitchen equipment (i.e. coolers/freezers, ventilation systems, kitchen hoods, etc.)
on back-up power supply. Consideration should be given to providing food/beverage services to those with special dietary needs. If a local food vendor/provider is used, an outside area may be needed to house temporary kitchens in trucks or tents.

Recommendations: The Kitchen/Cafeteria areas will effectively provide Food Preparation and Dining Area shelter site services. Back-up power, hot water, lighting and HVAC functionality should be provided in these spaces.

- **Recreation Areas:** Space should be provided for watching TV, playing card/board games and children’s games (separated if possible).

  Recommendations: The Gymnasium (sub-divided with divider curtain) and/or Media Center will effectively provide Recreation Area shelter site services. Back-up power, lighting and HVAC functionality should be provided in these spaces.

- **Fire Protection Systems:** An automatic fire sprinkler system, Fire Alarm (FA) on emergency power supply and fire extinguishers should be provided.

  Recommendations: Automatic fire sprinkler, FA systems and fire extinguishers will be required by code. Piping and equipment should be seismically restrained. The FA system should be on emergency power supply.

- **Plumbing Systems:** Guidelines for numbers of plumbing fixtures are 1 toilet for every 20 people (adults and children), 1 sink for every 2 toilets and 1 shower for every 20 people (adults and children). Sewage handling method, capacity and duration should be considered. Means of providing hot and cold running water during an emergency event (including fuel sources and back-up power supplies for hot water heaters, water treatment/filtration systems, pumps, etc.) should be considered. Consideration should be given to a back-up water supply source and associated storage requirements (i.e. bottled water).

  Recommendations: Main public-use Toilet Rooms, Administration Area Toilet Rooms, Health Clinic, PE Shower/Locker/Toilet Rooms, Food Service Areas and Receiving/Delivery should have functionality in terms of hot/cold running water and waste. Piping and equipment should be seismically restrained.

- **HVAC Systems:** Consideration should be given to heating and cooling zones, their fuel source(s), and whether they are on back-up power supply.

  Recommendations: Main Entry, Lobby and public-use Toilet Rooms, Administration Areas, Health Clinic, PE Gymnasium and Shower/Locker/Team/Toilet Rooms, Media Center, Kitchen/Cafeteria Areas and Receiving/Delivery should have functionality in terms of HVAC systems. Piping and equipment should be seismically restrained. HVAC boilers, control system, pumps and associated equipment should be on back-up power supply to
allow hot water to circulate and prevent freezing of non-shelter building spaces. Data/Communication rooms equipped with cooling should be on back-up power supply to maintain functionality.

- **Electrical Systems:** Consideration should be given to an emergency/back-up power generator (fuel source; duration; zone coverage for lighting, power, HVAC, data/communications systems, local sound and public address, food services, security, video surveillance, life safety, etc.).

**Recommendations:** In addition to life safety systems, a number of spaces should have functionality in terms of lighting and power systems. These include, but are not limited to, the following: Technical Services, Mechanical Rooms, Main Entry, Lobby and public-use Toilet Rooms, Administration Areas, Health Clinic, PE Gymnasium and Shower/Locker/Team/Toilet Rooms, Media Center, Kitchen/Cafeteria and Receiving/Delivery areas. Piping and equipment should be seismically restrained. Plumbing and HVAC boilers, building management control systems, pumps and associated equipment should be on back-up power supply to allow hot water to circulate and prevent freezing. Data/Communication equipment (servers, switches, wireless access system, etc.), local sound systems (at the Gymnasium, Cafeteria and Media Center), security/video surveillance and exterior lighting should be on back-up power supply to maintain functionality.
Safety and Security Risk and Vulnerability Assessment

Worcester, MA

Prepared By:
Good Harbor Techmark, LLC

Prepared For:
Worcester Public Schools

Date:
November 30, 2015
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November 30, 2015

Dr. Marco Rodrigues
Interim Superintendent
Worcester Public Schools
John Durkin Administration Building
20 Irving Street
Worcester, MA 01609

Dr. Rodrigues:

Good Harbor Techmark, LLC (GHT) is pleased to provide our school security findings and recommendations for the City of Worcester Public Schools (WPS, District). GHT has determined that while one incident within a school can be considered too many, overall positive and effective efforts exist throughout the District. WPS stakeholders have expressed confidence in recent changes and schools remain vigilant and relatively willing to adapt to new ideas as safety standards and benchmarks continue to evolve and improve. This is evident by a vast majority of interviewed parents that felt safe sending their child to school and students who expressed a feeling of safety while at school. Further, students expressed positive relationships with teachers and administrators and the courage to raise concerns, regardless of how slight, as evident by the trend in reporting.

As budgets remain constrained and threats continue to manifest, members of WPS cannot become complacent with the successful start of the 2015-16 school year. Opportunities for improvement remain and standards cannot be relaxed. Continuous collaborative work must be applied by the entire community to continue to enhance safety and security.

To begin, the District, City of Worcester (City) and public must seek to define what it truly means to be a “safe school”. While many tend to focus strictly on physical security features (i.e. ‘we need more cameras’), a broader definition and focus is necessary. There are lower cost preventative and foundational measures that can be created, instead of installing costly and reactive security devices. Families and students must be given opportunities to become involved and then take responsibility for fostering a culture and climate of community involvement and ownership. The expectation of schools solving all security problems with additional personnel or security devices is simply unsustainable.

Next, opportunities exist for improvements regarding the planning, preparedness, response and recovery from incidents at both the District level and through further integration between the City and State of Massachusetts (State). Individually, most schools and emergency response organizations understand their immediate response, and the District meets or exceeds State mandates for multi-hazard and medical planning, however uncertainty exists at all levels on how to maximize a coordinated and integrated response and recovery.

Finally, facility master planning integrated with cost effective physical security enhancements, such as classroom locks and improvements to main entrances at each school, is necessary to deter and mitigate risk. Enhancements are critical in older facilities where basic security principles are extremely difficult to implement. In these particular cases, the City must aggressively seek the Massachusetts School Building Authority’s (MSBA) immediate support to
relocate from antiquated facilities. These facilities should not be reviewed for “Accelerated Repair Programs”, but rather “Replacement Projects” only.

GHT is grateful for the opportunity to contribute to the protection of WPS and we hope this report will add to an increase in safety and security for the entire community. We also hope our process has enhanced, or in some cases, rebuilt communication and collaboration among City and school members. We strongly believe that only through unified efforts and community ownership of initiatives to improve safety and security, can a “safe school” be truly achievable.

Sincerely,

Frank Gallagher  
Principal
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1. Findings and Recommendations

1.1 Project Overview

Under the guidance of the City of Worcester Public Schools District (WPS District) Superintendent’s Office and the Chief Academic and Chief Finance and Operations Officers, Good Harbor Techmark (GHT) was tasked to conduct a broad and comprehensive safety and security risk and vulnerability assessment of fifteen (15) schools and make recommendation based findings. This included:

- A review of existing physical and technical safety and security features;
- Recommend standards to be used in all existing WPS facilities and new construction; and
- Development of a standardized safety and security risk and assessment tool to be used by the District to conduct school based reviews in the rest of the district.

To meet the District’s requirements, GHT incorporated a proven security risk methodology, based on ISO 31000 and international best practices, to identify and develop likely threat scenarios (design basis threats) in which to measure current security operational procedures and countermeasures against. To then accurately assess the entire District, GHT executed the following from September through November 2015:

- Day and nighttime site assessments of 15 schools and associated neighborhoods throughout the City of Worcester (City) that accurately represented all public schools within the City;
- Stakeholder interviews with District and school administrators, faculty, staff, students, parents and community members;
- A review and observation of busing operations, school drop-off and dismissals at each school;
- Stakeholder interviews with City emergency services including fire, police, EMS and emergency management; and
- Benchmarking assessments of school districts within Massachusetts and the United States with similar characteristics as WPS to understand best practices and how the District measures.

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With evolving threats and past occurrences of violence, WPS is challenged with a need to maintain a secure learning environment despite significantly constrained resources. GHT has determined that the District is performing well when it comes to seeking ways to make schools safe and secure. Recent efforts to unify and standardize physical security systems, while simultaneously creating programs and positions within schools to focus on safety and security, have created positive results and demonstrate the District’s renewed focus.

The District’s efforts are recognized by the overwhelming response from engaged stakeholders to feeling safe. Additionally, recent data demonstrates a decrease in suspensions. While improvements continue, they must be sustained through vigilant and proactive measures to treat the most significant risks. Based on the projected increase in student population, the District must continue to adopt and enforce a long-term unified approach to integrate all schools and the City with expanded operational policies and procedures, and the implementation of cost effective security measures.

### 1.2 Sustainment

WPS has made important gains to improve operational security and incorporate physical security systems into the new and existing facilities in a unified and deliberate approach. Additionally, WPS is undertaking initiatives related to community involvement and the expansion of behavioral and after school programs to support collaboratively building a culture focused on safety and active roles by students and parents. Recommended areas for sustainment include:

- **School Liaison Officers** – Daily involvement of officers within the District at secondary schools is effective despite gaps created at middle, elementary and alternative schools.

- **Lead Teacher for School Safety and Accountability at North High** – The dedicated staff administrative position focused on unifying and improving safety and security enables a review of current procedures and then the implementation of new and/or refined programs.

- **Video Assessment Unification and Standardization** – Standardizing the use of industry leading technologies, such as the Genetec video management platform and Axis IP cameras for all new and replaced systems is cost effective. A multi-function video management system that is operator friendly will enable all schools and the City to integrate viewing capabilities and the incorporation of other security devices.

- **Hazard Planning** – A positive foundation of response plans exists and individual schools frequently rehearse basic events making the process easy to adapt and build upon.

- **Medical** – Increased medical and behavioral health teams and training, including the pilot program of mobile teams, and medical programs like District-wide influenza vaccines, AED upgrades and medical training enable problems to be addressed early and often.
• **Staff Tenure** – Infrequent turnover of senior administrative staff within most schools, to include alumni of the WPS System, enables cohesion and refined planning and implementation.

• **School Behavioral Programs** - Positive Behavioral Interventions & Support (PBIS), Circle of Trust, Student Advisory Groups (SAG) and various school and after school programs are improving ways for students to take ownership of problems, recommend solutions and keep students socially and academically involved in positive environments.

• **Busing Cameras & GIS Capabilities** – The continued integration of onboard video assessment and GIS capabilities enables the District to actively respond to incidents and improve busing.

• **Resources within the City of Worcester** – The District has access to tremendous capabilities within close proximity for incident and crisis response, including trauma facilities and first responder capabilities. Additional volunteer assistance from local higher education institutes and public-private partnerships provides additional resources.

• **Nutrition**– All schools and after school programs are providing students with meals including breakfast and snacks creating a safe haven for students. Other schools, including Quinsigamond Elementary and South High Community School, have established food pantries and clothing distributions within the schools for students.

1.3 Opportunities

While the initiatives and approaches to safety and security highlighted in 1.2 above are positive, and in some cases exceeding best practices amongst similar districts, opportunities are still available to expand them and further increase the resiliency of the District. Based on our site surveys, assessments and stakeholder interviews, GHT developed several recommendations related to operational, policy and procedures and technological and infrastructure findings. The recommendations apply to over 30 different categories including organization (staffing, resource officers versus liaison, training, drills and exercises, etc.), policies and procedures (lock downs, shelter in-place, etc.) security systems (access control, video assessment, intercoms, public address, etc.), and infrastructure (doors and hardware, power, etc.). This includes the following priorities:

• **Unify Safe School Efforts** – A safe and secure school environment does not simply involve the latest technology devices. (i.e. cameras), Rather, a broader view focused on culture and climate and the impact of internal and external events throughout the City is necessary. Parents and students **must** play an active role and share in this responsibility as opposed to just faculty and administration. Making the school not only a destination for education, but transforming it into a community asset and an integral part of the fabric of the community, is necessary to building a foundation for safety and security.

“There’s no silver bullet when it comes to protecting schools. Keeping students safe is the responsibility of the entire community.”

- Justine Brown, emergencymgmt.com
• **Redefine and Align District Safety and Security Organizational Structure** – The current School Safety Liaison position at the District level should be overseen by a newly created position at the Officer/Manager level within the District. The new position should take on a much broader responsibility for oversight and implementation of planning, preparedness, response, and recovery programs for the District and act as the District’s liaison for City Emergency Operations. Included with this restructuring should be the refinement of budgets and financial responsibilities for security and physical security infrastructure under Information Systems (IS) and Facilities.

• **Refine and Integrate All Hazard Planning** – District All Hazard and Medical plans should be unified along with additional Continuity of Operations Plans between each school, the District and the City. While each entity understands their basic response requirements, uncertainty exists with roles, responsibilities and capabilities between organizations. Further, the District should begin evolving plans to incorporate Department of Homeland Security (DHS), State of Massachusetts (State) and other best-practice recommendations for Run, Hide, Fight / ALICE type response based actions. Finally, the District needs to clarify Incident Command Structure (ICS) and Emergency Operation Center (EOC) roles and responsibilities among District leadership and the District’s integration into the City’s EOC.

• **Improve the Quality of Training vs. Quantity of Events** – Schools conduct and even exceed required monthly and quarterly supported fire drills with WFD, lock-down drills, and medical planning. However, all events are basic and held at times convenient for everyone. Few appear to involve movement to primary and alternative evacuation sites or the full complement of first responders and collective interagency table-top and functional exercises, which have not occurred collectively “in a few years”. While still remaining compliant with State mandates, fewer, robust drills can occur that are more likely to benefit organizations and aid in City-wide planning efforts, than frequent routine drills.

• **Improve Main Entrances** – The majority of schools contain a secure vestibule style main entrance at the immediate front door, yet most contain antiquated technology and supporting procedures. Internal and external vestibule areas need to adopt layered security measures to eliminate full access within the main areas of school prior to complete identification and screening.

• **Reinforce Interior Doors and Door Hardware** – Facilities contain ineffective doors and antiquated door hardware that needs to be upgraded and, long-term, enhanced and integrated with access control, intrusion detection and cameras.

• **Secure Exterior Perimeter Doors and Improve Alarms** – Schools contain varying secure perimeters with limited functioning door contacts. Instances of propped doors and easilybreachable secondary entrances fail to lock or latch properly, and alarms and notifications fail when opened. Faculty with exterior doors cannot allow doors to be propped despite the need for ventilation or ease of access back into the school.

• **Shelter in Place** – In addition to improving lock-down and lock-out capabilities through effective doors and door hardware, rooms need the ability to conceal interior spaces through shades and other sheltering devices on doors and windows.
- **School Zones** – Virtually all schools face hazardous traffic congestion during peak hours of drop-off and pick up. Increased traffic mitigation measures are necessary through a combination of public awareness outreach, random police presence, signage, lighting, enforcement of no parking, and adjustments to crossing guards and one-way traffic designations.

- **Internal Communications** – Improvements are needed for mass-notification capabilities and the migration to smart-phone / mobile application technology. Further, handheld devices (radios and repeaters) and two-way room-to-room intercoms are necessary within each school and across the District, including the ability to talk from evacuation sites back to a school via radio.

- **External Communications** - Expedited external communication from the District is needed during incidents to counter the growing use of social media to mitigate false information and prevent escalations and disruptions to response. Further, the promotion of positive events within WPS is needed to reduce negative perceptions becoming reality.

- **Expand Transportation** – While school areas are safe, pedestrian movement to and from schools is a concern due to neighborhood activity. In other areas, particularly during the winter months, access to schools is difficult due to lack of sidewalks or cleared paths. Benefits from additional transportation would mitigate these concerns and increase attendance at afterschool programs including clubs, sports and community sponsored programs.

**1.4 Costs**

GHT's recommendations and associated costs for operational planning and physical security device implementation are summarized below. GHT believes that while some costs are considerable and will require capital investments over an extended period, many improvements can occur in the near term based on the investment of time and the sharing of information and support. Each cost varies in total based on the number of devices needed per school (e.g. one school may require more access controlled doors or cameras than another). Further related cost-per-unit information and actual vendor quotes for various systems is provided to enable the District to extrapolate estimates for all 54 schools and administrative buildings.

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<th>Summary of Recommendations</th>
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<th># of Recommendations</th>
<th>Estimated Cost</th>
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Costs are based on MSRP rate and include average labor costs for the Worcester area.
2. **WPS Organizational Findings and Recommendations**

Section 2.0 contains key organizational findings and recommendations that are consistent for all schools and should be implemented universally. Ultimately, Good Harbor Techmark (GHT) believes organizational recommendations are the most critical to address. Once the District and City is unified, policies, procedures and physical security systems can be implemented in a more efficient manner across all schools and departments. Additionally, organizational recommendations less expensive to implement and carry a greater long-term return on investment.

Recommendations are classified as *Low, Medium, High* and *Critical* based on priority of effort for organizational and security needs. Areas assessed as Critical and High should be the initial focus for Worcester Public Schools (WPS, District) and inform the City of Worcester’s (City) enterprise approach to risk and capital improvement plans both internally and under the direction of the Massachusetts School Building Authority (MSBA). Medium and Low recommendations should be considered for long-term implementation as further resource alignment becomes available.

It is important to note that most recommendations are not exclusively independent, but rather mutually supportive.

**1. Expand What It Means To Be A “Safe School” - Community Ownership for Safety and Security within Schools – Critical**

When discussing or defining “safe schools” many within the District and City focus only on physical devices such as cameras, radios and door locks. Many also believe it is simply the District’s “job” to provide students with a safe school environment. While all play a substantial role in school safety, devices and the District are only effective with the responsibility and support from school administrators, parents, students and the entire community.

In implementing enhancements to the District’s safety and security at each school, a broader definition of what it means “to be safe” needs to be developed. Then, ownership and support must come from everyone. Specifically:

- **Communities** should be encouraged to take ownership of their surroundings (adopt a school) and assist each neighborhood school with maintaining the property and helping to prevent crime;
- **WPS** should expand outreach and use of community leaders, social groups and other locally based community groups to increase student support, neighborhood programs and the support and use of schools. This includes:
  - Utilizing community groups for grant writing support, translation services and other curriculum development
  - Support to teachers to aide in understanding the ethnic culture, customs and traditions.
  - Providing community based groups with a clear expectation on curriculum so they can provide the right after school tutoring and academic assistance.
  - Expanding playgrounds and playing fields and access to school play areas.
- **Before and after school programs** and the requirements for developing and implementing these programs need to be streamlined. Doing so will enable the District to capitalize on community partners who want to become involved but quickly lose interest after exhaustive
bureaucratic implementation processes.

- The District needs to be consulted with City actions where second and third order effects have an impact within a school. (i.e. City Housing changes and enforcement disrupt student populations);
- Utilize parent volunteers for crossing points, reception duties and monitoring functions.
- Encourage parent/teacher information sharing including effective use of social media tools to share information for parents new to the District or a school.

Long-term implementation should occur to expand Vocational and Academy programs so students who struggle with traditional classroom environments, yet cannot gain access to Worcester Vo-Tech or programs can remain engaged in school.

2 Organizational Structure – Reorganize and Redefine District Level Security Liaison Responsibilities – Priority – Critical

Under the current District organizational structure, overall responsibility for school safety and security is disjointed. For example, the Chief Financial and Operations Officer maintains some responsibility for Incident Command, while the School Safety Liaison maintains an indirect report to the Superintendent based on the need for an independent hearing agent for school discipline appeals. Further, responsibilities for behavioral health and school nurses reside within two different departments. Finally, responsibilities and the analysis and distribution of incident reports are contained in different offices. The result is often disjointed roles and responsibility and even associated budget allocations. Additionally, limited or untimely coordination between the Quadrant Office, District leadership and City response organizations occurs.

To spearhead the District’s Safety and Security Master Planning and elevate responsibilities for incident planning, preparedness, response and recovery, GHT recommends the District create a new administrative position at the District Officer or Manager level by appointing an Emergency Preparedness officer position. This individual will be responsible for unifying and coordinating preparedness efforts with both the City and each school, acting as a liaison with City command level emergency functions, and providing oversight and implementation of security designs to include conducting trend analyses to measure effectiveness.
During a crisis, the individual will represent the District at the incident, while also assisting in the coordination of the Emergency Operation Center (EOC) that is established away from the crisis location. The individual will also coordinate School Resource Officers, School Safety Positions and the Lead Teacher for School Safety and Security modeled after the North High position. The District’s current Safety Liaison will aid this position by reporting directly to it. Further, the Safety Liaison should still maintain the status of a neutral party in discipline hearings, however a more active role in the due diligence surrounding each case, vetting state and federal legal requirements, and assisting the legal and compliance office should be performed with assistance from the newly created position and group.

3 Security Infrastructure Responsibility – Priority – Critical
As more security infrastructure becomes technologically advanced and Internet Protocol (IP) based, ownership of security systems is heavily dependent on information technology. In alignment with Recommendation 2 described above, GHT recommends WPS assign all physical security systems (video assessment, access control, etc.) to Information Systems (IS). IS should then work collaboratively with the newly defined position for the Emergency Preparedness Officer, along with other stakeholders, for implementation. IS should maintain the authority for maintenance, troubleshooting, and system training. Further, policies with regard to training, operation, retention, access and overall systems management needs to be established prior to a district-wide implementation of physical security systems. (ex. who is authorized to view recorded video or in real-time and on what device).

4 Align Security Budgeting – Priority – Critical
In the FY2016 budget, WPS allocated $75,000 for Security, an increase of $25,000 from FY15.² Within Miscellaneous Educational OM 3000 O. School Safety Equipment line-items, many areas of “security” are designated, yet the responsibilities and oversight of each differs greatly. As organizational and system recommendations discussed throughout this document are implemented, the District’s annual and capital budgets must properly align with these changes and reflect the needs of broader physical and operational security programs. This includes:

- Systems purchased through Grant programs without aligned maintenance and sustainment plans should not be purchased.
- Facilities and IS need funding alignments for systems, including general door hardware and upgraded classroom locks, before they are integrated into card access systems.
- Budgets need to be established for long-term maintenance and training of systems. For example, IS received only a 6% increase, yet when a security camera breaks and/or maintenance is required on a security system, funds are allocated from IS and not Miscellaneous Educational OM 3000.
- Funding for continuous training is needed. Networked based security systems and the use of them are “perishable skills”. This means that when an operator does not frequently use the system (summer vacation), they can no longer operate the system as effectively or, even

more importantly, troubleshoot it. This results in the need for costly service calls and retraining.

5 Expand School Liaison Program and re-allocate Private Security – Priority – High

Changes were recently made to the WPS school liaison program in which officers were moved to permanent positions at secondary schools and two additional officers were added as liaisons for all middle and elementary schools. This has proved positive at the secondary schools, however interaction and support from police varies at alternative, middle and elementary schools due to limited staffing and competing priorities from both liaison and route patrol officers.

Based on continued annual evaluations of the program and a much needed update to the current Memorandum of Understanding (MOU) between WPS and the Worcester Police Department (WPD), GHT recommends further expansion of the program including:

- The program should convert from “Liaison” Officers to “Resource” Officers and add additional positions at alternative, middle and elementary levels. As a true “resource” to the schools, officers can take a more active role in security planning, life and health awareness classes and even assist with community based learning.
- The program should be better aligned with WPD’s Community Impact Unit and include additional support from WFD.
- Officers should wear a modified uniform and seek to build a foundation for outreach and community policing, particularly at the elementary and middle school levels.
- The role of a Resource Officer can enable police to assist administrators with incidents without a mandatory and immediate elevation to criminal arrest requirements currently in place; something that currently causes administrators hesitation to calling for assistance.
- As part of the realignment, WPS should be provided input into decision making authority on who is assigned to the schools. Positions should not be short-term or officers who cannot fill patrol routes, but rather qualified volunteer officers.
- Officers assigned should receive additional focused school training and be involved in summer programs and planning and preparedness efforts with administrators as opposed to rotating back to patrols.
- Officers should be bilingual, much like they are now.

As the role is redefined and expanded, GHT believes the District can realize a cost savings by assigning officers to multiple schools based on time and distance between them. (i.e. one officer can support Burncoat High and Middle, South and Sullivan, etc.) Primary cost savings can also occur through the absorption of functions currently administered by private security officers where the District is spending approximately $116,258 annually. ³ The quality of this

³ WPS contract with Securitas America for private security.

“Our Officer is great – he walks around smiling all day and talks to us. We know we can go to him with concerns…and he volunteers as a football coach”

-Secondary School Student
program varies significantly across all schools with the limited ability to measure effectiveness. Improvements to main entrances and secure vestibules can further mitigate the need for security guards and thus these funds can be better served to hire officers or additional part-time administrators.

**6 Public Affairs/ Communication – Priority – High**

One of the primary functions within All-Hazard response planning and incident command is the role of communications or public affairs. In most incidents, individual schools will simply defer all communications related to the incident to the District. However, which individual within the District is responsible for delivering messages related to an incident and when to deliver those messages remains unclear. During recent incidents, the lack of timely communication and the inability to rapidly counter misinformation through the use of social media and alerts resulted in further escalation. The right messages must also be delivered to the public to ensure proper compliance with the litany of regulations (FERPA, HIPA, PII, etc.) is protected.

Equally important, communications related to safety and security and the overall well-being of schools should not just occur during or immediately following an event. Communications during planning and preparedness phases are often of greater importance. This includes the continuous promotion of positive events and the tremendous efforts and accomplishments of students, faculty and administration to people within the District and the public at large. If the only messages being distributed and heard from administrators and elected officials is negative, then efforts to build a positive climate and culture are already limited and perception starts to become reality.

**7 Special Education and Behavioral Health Integration – Priority – Medium**

As the District’s student population continues to grow, so too does the requirements and needs for behavioral health and special education requirements. While the student population and administrative requirements continuously outpace and strain the District’s annual budget, the highest frequency of safety incidents occurs directly against teachers or within classrooms from students who suffer from behavioral health challenges. Additionally, events that are low frequency, yet very high severity (i.e. active threat) can often be identified and even prevented from behavioral health identification.

The District currently has a dedicated Manager of English Language Learners (ELL) and Supplemental Support Services which maintains oversight for School Psychologists and Adjustment counselors, along with responsibility for the development and implementation of after school and evening programs. Separate from this department, oversight of Nurses within the District falls under the Division of Special Education. The functionality between the two departments appears to be working due primarily to the efforts of individuals to collaborate. Moving forward, this must be sustained, particularly in regards to budgeting. GHT believes the new Emergency Preparedness position can act as a conduit between the two in regards to planning and preparedness efforts as outlined above. Additional improvements include:

- Teachers need continuous support and training to coincide with evolving special education curriculums as the result of behavioral health advancements. Further training will enable the de-escalation of situations involving students and parents and further protect the entire classroom.
- Training is needed to understand legislative changes environment where regulations, such as Chapter 222, require changes to response plans for dealing with troubled individuals.
The Youth Mobile Health Crisis Team pilot program should be closely monitored for effectiveness. GHT is supportive of this program and believes it to be a best practice that should be expanded throughout the District. However, the reality is, can the team mobilize and respond in a timely manner as opposed to internal teams? Similar to a tactical team or an individual officer within the school, most incidents take 3-10min, thus requiring first line teachers and administrators to respond. The District must also closely monitor contractual language for outcome measures where upon contract award after the pilot, response times may decrease.

Community based groups should actively be sought to assist schools with troubled youths and aide in the Districts understanding of cultural sensitivities.

8 Information Sharing – Proactive vs. Reactive Posture – Priority – Medium

While some information and data sharing is already occurring throughout the District and a commitment to use data analysis to measure effectiveness is being applied, more collaboration both internally and externally should occur. Information sharing is an inexpensive but extremely effective way to learn what is working and not working and share ideas throughout the District. Further, it offers an ability to identify emerging threats, identify patterns, and develop consistent approaches to addressing security issues. Led by the refined Emergency Management role, this includes:

- Incorporate a safety component into the Senior Leadership Team – LEAP Team.
- Expand sharing of information related to WPD’s effective gang-task force collaboration with schools. Specifically, more sharing and education should occur with teachers and not just administrators. (teachers expressed concerns that they do not know what to look for as information is “need to know only”) Parents should also be included in various educational exchanges of information.
- Collectively review incident data for the effectiveness of safety and security programs beyond the Quadrant Office.
- Expand student and parent advisory groups.
- Incorporate student governments into planning and development of policies and procedures.
- Expand training opportunities and coordination as outlined below.
- Peer-to-Peer Networking – The District should initiate joint working groups with other similar teams in the County to share best practices and lessons learned including the local Colleges and Universities. Additional information should be exchanged on current threats, vulnerabilities and emerging trends. (ex: the recent participation in State All Hazard training by District members should be replicated)
- Formal and informal hosting of School Committee meetings within each school – There is a belief among many faculty, school based administrators and stakeholders interviewed that members have never visited their school. Hosting meetings within each school on a rotating basis will change this perception (or fact) and encourage members of the public and City to also visit the schools.

9 Expand Fire-Life Safety Classes – Priority – Medium

Elementary students currently receive life skills training related to fire safety procedures. As part of the national level curriculum, these courses seek to introduce students to basic life safety skills. WFD has excellent resources under Lt. Picket that should be expanded and utilized throughout the District. While most school districts tend to focus on school resource officer or police liaison officers, WFD offers an excellent opportunity to expand interaction and community outreach, particularly at the middle school ages. Aligned with District All Hazard preparedness, these programs can then further contribute to climate and culture and even “see something, say
something” and active threats.

10 Expand After-School Programs – Priority – Medium

The District currently runs limited after-school programs beyond normal athletic programs. Keeping students engaged in a safe environment beyond normal school hours and during the summer minimizes exposures in neighborhoods and further supports operational recommendations listed above.

- Programs are being reduced to one day per week vs. multiple days due to transportation and budgetary constraints.
- Course size is usually dictated around the capacity of a full bus as opposed to who is interested.
- The District does not have a formal checklist for developing programs, only a “mental checklist”. This is based on the ideas on what is needed for grant funds and logistics. Typically, a school or community partner will have a different idea or want to do something different. Then grant funding, outcome measurements, etc. are needed. Often this takes a tremendous amount of time and meetings. A formal streamlined checklist should be created to allow organizers to develop a program prior. This includes obtaining outcome measurements where the research and data office, safety liaisons and others can provide standardized KPIs and MOEs. Simply put, a child being a child actively engaged with a smile on their face in a safe environment is a simple outcome.
- Summer programs are being impacted by reduced funding resulting in shorter classes in terms of both the number of weeks and the length of day a program is offered.
- Programs are often driven by transportation. While older kids can use WRTA bus passes, they still need to get home from the nearest bus stop.
- Expand partnerships with community organizations for ideas and solutions to logistics and costs.
Appendix A - Methodology

In order to focus the findings and recommendations and follow a methodical assessment process, GHT used the components of Security Risk that is generally accepted to consist of three components: threat, vulnerability, and consequence. For the purposes of this report, GHT defines each as:

- **Threat**: The definition of threat focuses on the potential “bad actors” that could knowingly and intentionally target personnel or infrastructure. All other potential impact events or sources are termed “hazards” and are not specifically included.

- **Vulnerability**: Vulnerability is the ascertaining of where the protective or procedural weaknesses exist that may make it easier for potential adversaries, the threat, to exploit or damage the asset (entity, person, object or facility) that is being protected. Vulnerability can include things like fences, doors/walls, or access control systems as well as response procedures, security guard or monitor procedures, threat detection capabilities, as well as the ability to withstand and recover quickly from an incident or intrusion.

- **Consequence**: Consequence is the potential result of a successful incident or intrusion by an adversary due to the exploitation of one or more vulnerabilities. Consequences may include the disruption of operations, the loss of life or resources and assets, the loss of services, and damage to property.

GHT’s methodology is consistent with the risk assessment methodology developed by the International Organization for Standards (ISO 31000). The methodology also incorporates concepts in Design Basis Threat (DBT) development. This methodology first evaluates the seriousness of each threat, determines the critical assets likely to be targeted by the threat actor(s), and then analyzes the vulnerability of those assets to the evaluated threats. The combination of the rankings provided against each threat and vulnerability are combined to determine the likelihood that these threats will manifest. Likelihood is then combined with an assessment of the consequence to the organization, infrastructure and the surrounding area if these threats do manifest, to provide an overall ‘Risk Rating’.

4 http://www.iso.org/iso/home/standards/iso31000.htm
Appendix B – Benchmarking

In order to complete the security assessment and truly understand how the District measures in terms of best practices, Good Harbor Techmark (GHT) completed benchmark assessments of similar school districts within Massachusetts and across the United States. The table below offers an overall comparison of schools benchmarked. For the purposes of this published report and confidentiality agreements, benchmarked Districts are listed anonymously.

Similar to WPS, each district struggles to find a compromise of maintaining safe and secure facilities with constrained resources and evolving threats. Additionally, all districts are faced with varying degrees of community ownership and the responsibility students and parents take in contributing to a safe and secure environment. Finally, districts within New England that utilize facilities dating back to the early 1900s face similar challenges with poor entrances and classroom sheltering capabilities.

In conducting the benchmarks, GHT found WPS ranks higher than peers regarding:

- Path for standardized security platforms;
- Administrative positions focused on security within schools;
- Medical staffing and planning including nutrition and immunization; and
- Foundational all hazard response planning.

Where WPS lags peers is:

- Primary leadership role at District level;
- Integration of crisis response plans;
- School Resource Officers; and
- Community based programs.

Considerations for linkages to Federal, State and Local laws, regulations and best practices.
<table>
<thead>
<tr>
<th>City/Town</th>
<th>Worcester, MA</th>
<th>School District in Western MA</th>
<th>School District in Southern MA District</th>
<th>Northern NY State District</th>
<th>South Shore MA District School</th>
<th>Northern NY State District</th>
<th>Rhode Island District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total School Buildings in City/Town</td>
<td>45</td>
<td>52</td>
<td>41</td>
<td>26</td>
<td>27</td>
<td>45</td>
<td>22</td>
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<tr>
<td>% of Elementary Schools</td>
<td>31</td>
<td>31</td>
<td>78</td>
<td>19</td>
<td>11</td>
<td>44</td>
<td>13</td>
</tr>
<tr>
<td>% of Middle Schools</td>
<td>4</td>
<td>4</td>
<td>11</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>% of Alternative Schools</td>
<td>7</td>
<td>10</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
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</table>

### School Budget

<table>
<thead>
<tr>
<th>District</th>
<th>School Budget</th>
<th>% of Budget for Security</th>
<th>Vandalism Reimbursements</th>
<th>Spending on Building Security Systems</th>
<th>Spending for SROs</th>
<th>Spending on School Monitors</th>
<th>Spending on Security</th>
<th>Spending on Security Guards</th>
<th>Total Security Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worcester, MA</td>
<td>$169,984,800</td>
<td>0.03%</td>
<td>$60,000</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
</tr>
<tr>
<td>Western MA</td>
<td>$450,439,469</td>
<td>0.67%</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
</tr>
<tr>
<td>Southern MA District</td>
<td>$64,130,544</td>
<td>0.00%</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Northern NY State District</td>
<td>$120,411,973</td>
<td>0.82%</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
<td>$120,000</td>
</tr>
<tr>
<td>South Shore MA District</td>
<td>$101,397,542</td>
<td>0.62%</td>
<td>$30,000</td>
<td>$30,000</td>
<td>$30,000</td>
<td>$30,000</td>
<td>$30,000</td>
<td>$30,000</td>
<td>$30,000</td>
</tr>
<tr>
<td>Northern NY State District</td>
<td>$385,813,270</td>
<td>0.50%</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Rhode Island District</td>
<td>$172,655,028</td>
<td>0.04%</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

### Access Control System in High Schools

- **Limited**
- No Tech only
- None - Keys only
- None - Keys only
- Limited
- Yes
- An electronic access control system is implemented to regulate access to District school buildings and facilities.

### Access Control System in Middle Schools

- **Limited**
- Basic key system
- Master key system varies from school to school based on age of building and upgrades.
- Limited
- None
- None
- None
- Limited
- Limited
- An electronic access control system is implemented to regulate access to District school buildings and facilities.

### Access Control System in Elementary Schools

- **Limited**
- Basic key system
- Master key system varies from school to school based on age of building and upgrades.
- Limited
- Keys only, Poor master keys
- None - Keys only
- None - Keys only
- Limited
- Limited
- An electronic access control system is implemented to regulate access to District school buildings and facilities.

### Key Management System

- **Yes**
- A master key system is in place. The system is not electronic.
- Each school has their own master key system.
- Yes
- A master key system is in place. The system is not electronic.
- Yes
- A master key system is in place. The system is not electronic.
- Yes
- A master key system is in place. The system is not electronic.
- Yes
- A master key system is in place. The system is not electronic.
- Yes

### Annex A

**Page 25**
<table>
<thead>
<tr>
<th>City/Town</th>
<th>Worcester, MA</th>
<th>School District in Western MA</th>
<th>School District in Southern MA</th>
<th>North Shore MA District</th>
<th>South Shore MA District School</th>
<th>Norther NY State District</th>
<th>Norther NY State District</th>
<th>Rhode Island District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unified CCTV System</td>
<td>Yes - Axis</td>
<td>Yes</td>
<td>Yes - Cisco</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Department of Public Safety responsible for the direction of the security surveillance camera network and can collaborate with the Police Dept.</td>
</tr>
<tr>
<td>District Common Platform</td>
<td>Yes, Genetec</td>
<td>Yes</td>
<td>Cisco</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Department of Public Safety responsible for the direction of the security surveillance camera network and can collaborate with the Police Dept.</td>
</tr>
<tr>
<td>High School CCTV System</td>
<td>Limited</td>
<td>Yes</td>
<td>Yes, but not all work</td>
<td>Not disclosed</td>
<td>Not disclosed</td>
<td>Yes</td>
<td>Yes</td>
<td>Department of Public Safety responsible for the direction of the security surveillance camera network and can collaborate with the Police Dept.</td>
</tr>
<tr>
<td>Middle School CCTV System</td>
<td>Limited</td>
<td>Limited</td>
<td>None</td>
<td>Not disclosed</td>
<td>Not disclosed</td>
<td>Yes</td>
<td>Limited</td>
<td>Department of Public Safety responsible for the direction of the security surveillance camera network and can collaborate with the Police Dept.</td>
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<tr>
<td>Elementary School CCTV System</td>
<td>Limited - main entrance only</td>
<td>Limited</td>
<td>None</td>
<td>Not disclosed</td>
<td>Not disclosed</td>
<td>Yes</td>
<td>Limited</td>
<td>Department of Public Safety responsible for the direction of the security surveillance camera network and can collaborate with the Police Dept.</td>
</tr>
<tr>
<td>District Security Command Center</td>
<td>None</td>
<td>Limited - Integrated with PD</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Department of Public Safety responsible for the direction of the security surveillance camera network and can collaborate with the Police Dept.</td>
</tr>
<tr>
<td>Emergency Management Plan</td>
<td>There is a district template available for a school to utilize for a common design</td>
<td>Developed under Safety &amp; Security Department</td>
<td>Yes</td>
<td>Was not assessed</td>
<td>Was not assessed</td>
<td>Yes</td>
<td>Yes</td>
<td>Each school and the District maintains an emergency operations plan</td>
</tr>
<tr>
<td>Emergency Plan Method</td>
<td>Schools create plans based on school policy and procedures</td>
<td>All Hazard</td>
<td>Red, White, &amp; Blue</td>
<td>Was not assessed</td>
<td>Was not assessed</td>
<td>Yes</td>
<td>Yes</td>
<td>District has an emergency plan established that schools are able to utilize to create their emergency plans</td>
</tr>
<tr>
<td>EMP District Template Availability</td>
<td>Yes</td>
<td>Developed under Safety &amp; Security Department</td>
<td>No</td>
<td>Was not assessed</td>
<td>Was not assessed</td>
<td>Based on Comprehensive State Plan</td>
<td>Limited</td>
<td>District has an emergency plan established that schools are able to utilize to create their emergency plans</td>
</tr>
<tr>
<td>Lockdown Plan</td>
<td>Shelter In Place</td>
<td>Shelter In Place</td>
<td>Red, White, &amp; Blue</td>
<td>Shelter In Place</td>
<td>A.L.I.C.E.</td>
<td>Shelter In Place</td>
<td>Shelter In Place</td>
<td>Shelter In Place</td>
</tr>
<tr>
<td>Fire Drill Plan</td>
<td>Exceed State Mandate</td>
<td>Yes, compliant with state requirements</td>
<td>Yes, compliant with state requirements</td>
<td>Yes, compliant with state requirements</td>
<td>Yes, compliant with state requirements</td>
<td>Exceed State Mandate</td>
<td>Exceed State Mandate</td>
<td>Yes</td>
</tr>
<tr>
<td>Medical Plan</td>
<td>Schools create plans based on school policy and procedures</td>
<td>Yes, compliant with state requirements</td>
<td>Limited</td>
<td>Was not assessed</td>
<td>Was not assessed</td>
<td>Exceed State Mandate</td>
<td>Exceed State Mandate</td>
<td>Exceed State Mandate</td>
</tr>
<tr>
<td>City/Town</td>
<td>Worcester, MA</td>
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<td>Norther NY State District</td>
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<td>--------------------------</td>
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<td>----------------------</td>
<td>--------------------------</td>
<td>-----------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Intrusion System</td>
<td>Varies based on school</td>
<td>Yes</td>
<td>Yes, but not all function</td>
<td>Yes. The high school was recently upgraded in 2012</td>
<td>Yes</td>
<td>Yes, but not all function</td>
<td>Active Monitor by Stanley</td>
<td>Yes, but not all function.</td>
</tr>
<tr>
<td>Visitor Management</td>
<td>Sign in sheet in most schools; Visitors check-in on computers in others</td>
<td>Sign in sheet in most schools</td>
<td>Basic sign in sheet; based on the honor system</td>
<td>Sign in sheets are typical. New schools use an electronic system that verifies visitors' records on file with the state for sex offenders.</td>
<td>Sign in sheet</td>
<td>Limited</td>
<td>Sign in sheets</td>
<td>Utilize Raptor Ware for visitor management for easy registration. Visitors are given temporary visitor badge once cleared through the Raptor system. It is a temporary sticker that the visitor must wear during the time of visit and return when leaving.</td>
</tr>
<tr>
<td>School Resource Officer (SRO)</td>
<td>Liaison Officers - limited</td>
<td>Student Support Officers</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Exterior Lighting at High Schools</td>
<td>Varied upon school</td>
<td>Good</td>
<td>Varied upon school</td>
<td>Yes</td>
<td>Yes</td>
<td>Good</td>
<td>Good</td>
<td>Varied upon school</td>
</tr>
<tr>
<td>Exterior Lighting at Middle Schools</td>
<td>Lighting is Poor either around building and/or exterior of building</td>
<td>Good</td>
<td>Lighting is Poor either around building and/or exterior of building</td>
<td>Yes, but not consistent. New schools have better coverage.</td>
<td>Good</td>
<td>Good</td>
<td>Varied upon school</td>
<td>Varied upon school</td>
</tr>
<tr>
<td>Exterior Lighting at Elementary Schools</td>
<td>Lighting is Poor around building and/or exterior of building</td>
<td>Good</td>
<td>Lighting is Poor around building and/or exterior of building</td>
<td>Yes, but not consistent. New schools have better coverage.</td>
<td>Good</td>
<td>Good</td>
<td>Varied upon school</td>
<td>Varied upon school</td>
</tr>
<tr>
<td>Exterior Lighting at Other Buildings</td>
<td>Varied</td>
<td>Varied</td>
<td>Poor</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Varied</td>
<td>Varied</td>
</tr>
<tr>
<td>Secured Entry Vestibule with 2-Way Communication</td>
<td>Limited among all schools. New schools lack inner perimeter. Older buildings have main door only.</td>
<td>Limited among all schools. New schools lack inner perimeter. Older buildings have main door only.</td>
<td>Inadequate at all schools.</td>
<td>Yes, in new school designs</td>
<td>Inadequate at all schools.</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Note:*
Many schools have elementary and middle school grades in one building; the numbers reflect the count.
Appendix C – About Good Harbor

Good Harbor Techmark (GHT) is a registered small business headquartered in Norwell, MA. GHT is the product of the merger of two established and highly regarded companies, Good Harbor Consulting, LLC (Good Harbor) and Techmark Security Integration, Inc. (Techmark).

In 2002, Richard Clarke, Roger Cressey, and John Tritak, all of whom served in senior National Security advisory positions at the White House, founded Good Harbor as a boutique security and risk management consultancy. The firm leveraged its’ national security and broader security expertise to build a strategic consulting practice that gave clients a more informed understanding of risk management.

Techmark was founded as an independent security design and engineering services company. For over 20 years, the organization grew to become a premier leader in designing and implementing exclusive vendor-neutral security concepts to clients throughout the world.

In 2009, Good Harbor acquired Techmark to create a more holistic approach to organizational resiliency that emphasized the mitigation of both physical and logical threats to enterprise assets. Due to unparalleled growth and the need to increase efficiencies, Good Harbor recently created four independently owned and operated companies who operate collectively and consistently with the organization’s core competencies. One of these entities was Good Harbor Techmark.

www.ghtechmark.com
17 Accord Park Dr.
Suite 201
Norwell, MA 02061
781-871-6555
Petition to City of Worcester to Adopt a Policy of Not Arresting Kids at School.

We the undersigned petition the Worcester City Council and Worcester School Committee to adopt the following policy regarding the arrest of children by the City of Worcester and Worcester Police Department.

Whereas arresting children has been shown to have a negative impact on the emotional development of children;

Whereas arresting children at school by the police is potentially harmful and has nothing to do with the education of children;

Whereas the children, their parents, and addresses are known to the administration of a school;

We request the Worcester City Council to adopt the policy that the City of Worcester should not arrest children at school unless there is clear and immediate danger.

Decisions on whether a child should be placed in the criminal justice system should be made after suspension and/or a meeting with parents.

Should there be a need for the intervention of the criminal justice system it should be the policy of the City of Worcester that the child and parent are summoned to court.

Name

City or Town Residency

508 757 5873

WorC, MA
Mass. Human Rights
416 Lake Ave.
Worcester MA 01604
November 29, 2015

Helen Friel, Ed. D.
Clerk of the Worcester School Committee
20 Irving St.
Worcester MA 01609

Re: Petitions to Worcester School Committee

Dear Dr. Friel:

Our group, Mass. Human Rights, seek to petition the Worcester School Committee on the following issues:

1. A copy of the current Memorandum of Understanding between the School Department and the Police Department regarding police officers in the schools, a.k.a. School Resources Officers.

2. The procedures for parent, students, teachers, principals, and advocates to have input into the MOU now being revised by Mr. Pezella, Public Safety Liaison. A copy of the new MOU.

3. The School Committee adoption of a policy of no children arrested at school unless there is a clear and objective emergency.
I am enclosing one page of the petition for item 3 above that was presented to the Worcester City Council on the same subject, although we have many more signatures.

It is my understanding that we will be allowed to speak on the subjects at the December 17, 2015 meeting of the Worcester School Committee, 7 PM, City Hall. Please inform me should I need to contact a school committee member to suspend the rules.

Thank you for your attention to this matter.

Sincerely,

[Signature]

Gordon T. Davis
Organizer
508 757 5873
As presented to the School Committee during the First Quarter Budget Status Report, the final state budget actions will result in the reduction of our FY16 budget by $603,134, primarily due to a reduction of charter school reimbursement totaling $546,247. The comparison of FY16 budget revenues between the adopted budget and the final state budget are listed below:

<table>
<thead>
<tr>
<th>Revenue:</th>
<th>FY16 Adopted Budget</th>
<th>FY16 Final State Budget</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chapter 70 State Aid &amp; Reimbursement:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chapter 70 State Aid (Total)</td>
<td>$231,438,724</td>
<td>$231,540,738</td>
<td>$102,014</td>
</tr>
<tr>
<td>Charter School Reimbursement</td>
<td>$2,671,785</td>
<td>$2,125,538</td>
<td>($546,247)</td>
</tr>
<tr>
<td><strong>Total Chapter 70 State Aid &amp; Reimbursement</strong></td>
<td><strong>$234,110,509</strong></td>
<td><strong>$233,666,276</strong></td>
<td><strong>($444,233)</strong></td>
</tr>
<tr>
<td><strong>City Contribution</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount towards Required Spending</td>
<td>$99,745,201</td>
<td>$99,643,187</td>
<td>($102,014)</td>
</tr>
<tr>
<td>Amount for Non-Net School Spending Items</td>
<td>$12,546,372</td>
<td>$12,546,372</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total City Contribution</strong></td>
<td><strong>$112,291,573</strong></td>
<td><strong>$112,189,559</strong></td>
<td><strong>($102,014)</strong></td>
</tr>
<tr>
<td><strong>Total General Fund Revenues</strong></td>
<td><strong>$346,402,082</strong></td>
<td><strong>$345,855,835</strong></td>
<td><strong>($546,247)</strong></td>
</tr>
<tr>
<td><strong>Less Tuition Assessments:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charter School Tuition Assessment</td>
<td>$24,819,491</td>
<td>$24,866,852</td>
<td>$47,361</td>
</tr>
<tr>
<td>School Choice Tuition Assessment</td>
<td>$2,641,818</td>
<td>$2,651,386</td>
<td>$9,568</td>
</tr>
<tr>
<td>Special Education Revenue Offset</td>
<td>$147,660</td>
<td>$147,618</td>
<td>($42)</td>
</tr>
<tr>
<td><strong>Total Tuition Assessments</strong></td>
<td><strong>$27,608,969</strong></td>
<td><strong>$27,665,856</strong></td>
<td><strong>$56,887</strong></td>
</tr>
<tr>
<td><strong>Total General Fund Revenue:</strong></td>
<td><strong>$318,793,113</strong></td>
<td><strong>$318,189,979</strong></td>
<td><strong>($603,134)</strong></td>
</tr>
</tbody>
</table>

It will be necessary to reduce the budget to reflect the final state budget and the final City budget based upon the tax recap process approved on December 8, 2015.

Based on the City Manager’s recommendation and approved by the City Council, there is no reduction in the city’s contribution even though it was allowed by the state formula and those funds will remain in the WPS budget. A majority of these funds have been used to cover the cost of the school safety and security assessment that has been completed by Good Harbor Techmark, LLC. Therefore, the reduction to the budget will be **$501,120**.

In order to implement this reduction, the Administration recommends the following:

<table>
<thead>
<tr>
<th>Reduce Account</th>
<th>Account Name</th>
<th>Amount</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>500-91111</td>
<td>Teacher Salaries</td>
<td>-$501,120</td>
<td>$156,764,088</td>
<td>$156,262,968</td>
</tr>
</tbody>
</table>

As described in the First Quarter Budget Status Report, the balance in the Teacher Account resulted from restoring Pre-K teachers to the Title I grant from the general fund based on the final actual FY16 grant award. There is no reduction of teacher positions or any other budget impact at this time as a result of this recommended transfer.
In addition to this final budget adjustment, at some point during the year, the City will provide an additional approximately $145,000 for the first year planning costs for the Advanced Academy High School program. Staffing for these positions are underway and the estimated annual cost for this year has been provided to the City.

Based on City Council action to set the City’s tax rate, it is necessary for the School Committee to adopt a revised, final FY16 Budget in the amount of $318,291,993.
The Current Problems

- Too hot in summer and cold in winter (no central air).
- Mismatched desks.
- Many health problems.
- The cafeteria is too small.
- Not handicap accessible.
- Inadequate gym.
- Teachers share rooms.
- Library with no books and only three computers.

We want to make some major changes

ESTEDA HIGH SCHOOL

Founders: Emily Stein, Katerina Sodano, Dariel Espinal
<table>
<thead>
<tr>
<th>Country</th>
<th>Details</th>
</tr>
</thead>
</table>
| FINLAND | - Kids start school at the age of seven and this gives them time to develop during childhood before attending an education facility.  
- Nine years of schooling is required (up to ninth grade) after that, they are free to seek employment (they are usually 16 years old at this time).  
- Cooperation is enforced over competition to create a more peaceful and less stressful environment.  
- School in Finland starts anywhere from 9:00 to 9:45.  
- There are fewer teachers in schools so students receive instructions from the same teachers. |
| SOUTH KOREA | - School year: 2 semesters from March to July  
- September to February (optional half days)  
- Begins at 8am, classes are 50 minutes, with a morning break, 50 minute lunch, school ends at 4-4:30, back to school after dinner, stay until 10 or midnight (for studying or receiving extra help)  
- Have great respect for teachers (bow to teachers) |
| CARNEGIE VANGUARD | - Specialized school for the gifted and talented.  
- Really small sports program.  
- Almost all kids take 10 or more APs.  
- Only kids who are in the top 10% get a number rank. |
THE BUILDING

- A four story 450,000 square-foot building
- Has both air conditioning and heat
- Many windows
- Separate parking lots for teachers and students

HANDICAP ACCESSIBLE

- Three elevators
- Every entrance/exit has a ramp
- Handicap accessible bathrooms
- Wheelchair accessible lunch tables

ENVIRONMENTALLY FRIENDLY

- Very energy efficient
  - 75% of all our energy would come from renewable energy sources
  - We will have solar panels and wind turbines
- There is a mandatory clean up day every month
AMENITIES

- Library with books and computers
- Science Labs
- Greenhouse and garden
- Student Lounge

AMENITIES

- An Olympic swimming pool
- Large gym with track
- Weight room
- Large Theater
- State-of-the-art music room

TECHNOLOGY
STUDENTS AND TEACHERS

- student to teacher ratio 19:1
- total students enrolled: 1600 kids
- no limit on enrollment

TEACHERS

- works well with and enjoys being with teenagers
- very good at explaining their area of expertise
- has the ability to accommodate every kid in the class
- stays after at least one day every week for extra help
- more diverse faculty

COURSES

<table>
<thead>
<tr>
<th></th>
<th>HUMANITIES</th>
<th>STEM</th>
<th>PCTW</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP</td>
<td>AP Human Geography</td>
<td>AP Biotechnology</td>
<td>Aerospace Engineering</td>
</tr>
<tr>
<td></td>
<td>AP World History</td>
<td>AP Biophysics</td>
<td>Civil Engineering and Architecture</td>
</tr>
<tr>
<td></td>
<td>AP U.S. History</td>
<td>AP Statistics</td>
<td>Computer Integrated Manufacturing</td>
</tr>
<tr>
<td></td>
<td>AP English Language and Composition</td>
<td>AP Calculus</td>
<td>Digital Electronics</td>
</tr>
<tr>
<td></td>
<td>AP English Literature</td>
<td>AP Computations Life Sciences</td>
<td>Environmental Sustainability</td>
</tr>
<tr>
<td></td>
<td>AP Foreign Language</td>
<td>(biology, chemistry, and physics)</td>
<td>Principles of Engineering</td>
</tr>
<tr>
<td></td>
<td>AP Art</td>
<td>AP Computer Science</td>
<td>Biomedical Sciences</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HONORS</td>
<td>U.S. History 1 and 2</td>
<td>Algebra 1 and 2</td>
<td>Principles of Engineering</td>
</tr>
<tr>
<td></td>
<td>World History</td>
<td>PreCalculus and Calculus and Statistics</td>
<td>Introduction to Engineering Design</td>
</tr>
<tr>
<td></td>
<td>English 1, 2, 3, and 4</td>
<td>Biology</td>
<td>Digital Electronics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chemistry</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Physics</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Statistics</td>
<td></td>
</tr>
<tr>
<td>COLLEGE</td>
<td>U.S. History 1 and 2</td>
<td>Algebra 1 and 2</td>
<td>Principles of Engineering</td>
</tr>
<tr>
<td></td>
<td>World History</td>
<td>PreCalculus and Calculus and Statistics</td>
<td>Introduction to Engineering Design</td>
</tr>
<tr>
<td></td>
<td>English 1, 2, 3, and 4</td>
<td>Biology</td>
<td>Digital Electronics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chemistry</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Physics</td>
<td></td>
</tr>
</tbody>
</table>
“Adulting”
Music
Theater
Criminal Justice
Forensic Science
Photography
Journalism
World Culture
Pop Culture
Film Making
Art
Sign Language
Gaming

EXTRACURRICULARS

Sports:
- Intramurals
- Soccer
- Field Hockey
- Football
- Swimming
- Track
- Lacrosse
- Softball/Baseball
- Tennis
- Basketball
- Hockey
- Skiing
- Volleyball

Clubs
- community service clubs
- outdoors clubs
- activist clubs
- sports clubs
- computer clubs
- math clubs

Internship Opportunities
- local hospitals
- local businesses
- local law firms
- city hall
**A Typical Day**

- School starts at 8:00 AM and ends at 2:50 PM
- All after school activities begin at or after 3:00
- There is an open campus for upperclassmen (juniors and seniors) who are allowed to leave the building on breaks and lunch.
- Underclassmen are allowed to walk around and be outside but they must stay on school property.

**Schedule**

<table>
<thead>
<tr>
<th>Period 1</th>
<th>Period 2</th>
<th>Break</th>
<th>Period 3</th>
<th>Period 4</th>
<th>Period 5 (Lunch A)</th>
<th>Period 6 (Lunch B)</th>
<th>Period 7</th>
<th>Period 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00-8:45</td>
<td>8:50-9:35</td>
<td>9:35-10:00</td>
<td>9:45-10:40</td>
<td>10:45-11:30</td>
<td>11:35-12:20</td>
<td>12:25-1:10</td>
<td>1:15-2:00</td>
<td>2:05-2:50</td>
</tr>
</tbody>
</table>

**Graduation Requirements**

- 24 credits with 50 hours of community service
- 15 per year
- Seniors are required to have an internship or some real world experience before they graduate
- No gym is required to graduate
- 4 years of math and English and 2 years of history and science
- Each period counts as a credit
- Classes that are only one semester count for half a credit
ISEOM HIGH SCHOOL

Mya Vu
sara van voorhis
isis eisenmenger

olivia vandoros
emily vandoros

PHYSICAL FEATURES OF THE BUILDING

- 4 FLOORS
- ELEVATORS/ WHEELCHAIR ACCESSIBLE
- MOVING WALKWAYS - TWO SPEEDS FOR ALL PEOPLE
- DUNKINS LOCATED IN SCHOOL - PREVENT STUDENTS FROM LATE
- ROOFTOP DECK FOR STUDENTS TO EAT LUNCH
- 4 CAFETERIAS (COLLEGE STYLE CAFETERIAS)
- SCHOOL SUPPLIES STORE LOCATED IN BUILDING
- PARKING GARAGE WITH ROOFTOP ATHLETIC FIELDS (LIKE AT WPI) - STUDENTS WILL HAVE MORE PARKING AND FIELDS CLOSE TO THE SCHOOL

STUDENT AND TEACHER SIZES

- 100:1 TEACHER CLASS RATIO
- 20 STUDENTS PER CLASS
- 1600 STUDENTS TOTAL (ABOUT 400 PER GRADE)

Students are able to interact and help each other while learning how to be responsible for their own work. The teacher will be able to focus on students and students will get the chance to ask questions.
**Math**
4 years of Math required
- Algebra
- Geometry
- Algebra 2
- Choice

**English**
4 years of English required
- English 1
- English 2
- English 3
- English 4

**Science**
3 years of Science required
- Biology
- Chemistry
- Physics

**History**
3 years of History required
- World History 1
- World History 2
- U.S. History 1
- U.S. History 2

**Life Prep**
2 years of Life Prep required
This class includes many different topics to help kids prepare for after high school.

---

**Subject and Courses (Cont.)**

- Gym/Sports one season per year
- Language 2 years required
- AP classes and Honors classes are provided to all students
- 20:1 student teacher ratio
- Internships for students (grades 9-12)
- You have to secure own internship school will help

---

**Graduation Requirements**

- 24 Credits
- Pass all required classes
- 40 hours of community/service hours
- Participate in at least one club, sport or activity
**Teacher Requirements**

- Bachelor's degree
- Background check (clean record)
- Degree in the subject being taught

---

**Technology Use**

Our new school will have elevators, for those that are disabled or crippled, students who do not have a doctor's note cannot use the elevators when they please.

Just like airports, our school will have escalator walks for those who are in a hurry and need a boost to their next class/locker.

The desks are now smart-tables and what appears/is written on the whiteboard comes up on the desk to help students write their notes.

---

**Organized Day**

- 7:30am to 2:00pm
- 4 lunches all at the same time (4 cafeteria)
- 7 classes per day
- 5 minutes in between classes
- 40 minute classes
- One hour long class per day
- 4 options for long period
LONG PERIOD CLASS OPTIONS

A. JOB
   - Paid work around school for students who need money or a job. Ex: Cleaning

B. Free Period
   - Fun, stress free activities to help students mental health including gym, pool, and arcade

C. Nap Time
   - Room dedicated to sleep deprived students who need to catch up on sleep

D. Study
   - Chance for students to do work or study for school

EXTRACURRICULARS

SPORTS: 15 sport including baseball, volleyball, basketball and tennis.

CLUBS: Opportunities to start your own club, chess club, dance club, gaming club

ACTIVITIES: School dances, field trips, fundraisers

These clubs, sports and activities can help the students let off steam and to keep them active.

NAME? MASCOT?

ISEOM HIGH SCHOOL
MASCOT: Panda
INTERNATIONAL HIGH SCHOOLS

1. TANGLIN TRUST SCHOOL; SINGAPORE - PRIVATE Fee- Paying School, Open Admission Provides the UK with its curriculum

2. GARDEN INTERNATIONAL SCHOOL; KUALA LUMPUR - Largest Private Co-Ed International School in Malaysia Provides a British Style Education

3. DULWICH COLLEGE; BEIJING - Part of the DULWICH College Group Which Runs School Across the World From London to Beijing Based Off Traditional English Public Schools

4. ST. CHRISTOPHER'S; BAHRAIN- British School Style Based on English Public School System
3D prototype of the school

Physical Features of the Building: Overall

- We want to take a mid-century modern approach to the school itself; there will be lots of windows to filter in natural light, which is proven to increase student productivity and positively influence the ambience of the environment.
- The shape of the building will be very unique and geometric, so it stands out from other plain, square, brick-building schools. The landscaping will be pristine and kept-up with.
- The field house will be part of the rest of the school, connected by a transit. The field house will consist of two indoor turf fields and three connected basketball courts as well as the pool. Behind the field house will be the football turf field/stadium (also used for field hockey and lacrosse) the track and tennis courts.
- Solar panels will be installed on top of the school to power the majority of electricity we need, which will lower the ecological footprint of the school.
- The parking lot will be split between students and teachers and be large enough to accommodate those who drive. It should not be too crowded and easy to access.
- There will be a large organic vegetable garden that the cafeteria can access as well as students that are in need.
- Since we will be an eco-friendly school, we will encourage students biking to school and will include bike racks.
Physical Features of Building Continue

- The cafeteria will be very large and will have quality school lunch. The cost of each should not exceed three dollars. Students who cannot pay will be allowed to take it for free. Students are also allowed to eat outside at outdoor tables.
- The student center serves also as a lounge, where students can study during their study periods or just relax when they have the time to. Here, they can also meet with their teachers after school to work one on one.
- The science labs will be well equipped with the necessary safety equipment and materials so students and teachers can complete labs. The art rooms will have all of the necessary supplies.
- On each floor, there will be at least one drink machine, water bubbler or snack machine.
- Teachers will be encouraged to decorate their rooms and keep things organized.
- The building should be cleaned frequently to promote a safe and healthy environment.
- There will be appropriate air conditioning and heating for the school.
- We want the structure of the school to be as sustainable and ethically manufactured as possible.
- The library is a calm, quiet and open area in which students are allowed to read or study.

Classrooms

- Classrooms should have a projector, they should include multiple amenities that benefit the students (aiding in classroom activities- pencils, pens, rulers, tape- measures, and paper among other things).
- Classes will be "open" and large, with many large windows to allow light in.
- Classrooms should have at least one available computer with a printer, desks and chairs for each student.
- Classrooms should be clean, airy and inviting.
- Science labs should include tables or lab benches.
- Students should be allowed to use laptops and other electronic resources. (We want to bring back Engrade and also have student utilize different google apps.)
- Students should be allowed to utilize fidget toys and other self regulation tools during class.
- Classrooms should display exemplary student work such as posters and projects.
- They should contain up-to-date textbooks, supplementary learning tools and a comprehensive student library.
- We want the classrooms at our school to inspire students to want to learn and participate.

Students by the numbers

- The carrying capacity of our school would be 1,200.
- The average class size would be 15 students or rather between 10 and 18.
- With this, there will be a student to teacher ratio that is 15:1.
- By choosing this ratio, it gives teachers an easier way to know their students and their strengths and weaknesses, and be able to work one on one with them more often and be able to answer any questions that they may have.
- The many benefits that also accompany smaller class sizes: students feel less pressured to participate, discussion groups are more intimate, students are proven to perform better and learn faster and better communication between students and teachers.
- We want the students at our school to feel comfortable enough to participate in group work and discussions. Teachers can foster more interest in the subjects they teach this way.
- Our goal as a school is to produce the best academic results possible and a generation of educated students ready to live in the real world.
New Graduation Requirements

- There will be a minimum of 24 credits in order to graduate.
- Each student will need to have interned at a place that corresponds with the area of study that they are interested in. This counts for a credit and they will need to have participated as in intern for at least two semesters.
- They will have to take 4 years of math, 3 years of a science, at least 2 year of electives, 4 years of English and 3 years of history or social studies.
- Students will also need to complete at least 50 hours of community service whether it be inside of school or outside. We want to evoke compassion and desire to be part of a cause bigger than oneself in our students.
- Throughout their 4 years they will need to be involved in at least one club or team sport(s). We also want our students to be involved in school life and become well-rounded individuals.
- At the end of their senior year students will need to complete a senior project corresponding to the major they want to study and express it through any means.

Teacher Instruction Requirements

- Teachers are not allowed to give more than 1 hour of homework per night. We don’t want to hinder progress with any busy work that won’t help students learn.
- Teachers are supposed to respect students and staff, even if the views of others contrast with their own. We encourage parents and students to speak up if an issue with a teacher comes up. Racism, sexism, sexual misconduct and other things related will NEVER be tolerated.
- If a situation arises, it will be dealt with immediately.
- Teachers are not allowed to give more than 1 quiz/test per week and should designate their own quiz or test day.
- Teachers will be required to have a grading system for students and parents to see, whether it be Engrade or something else. This is integral to students progress.
- If a student has a 90 or above in any class they are not required to take the final exam.
- The final exam will either keep the students grade constant or raise it. it will not make it drop even lower than their yearly average.
- Though grades and academic success is important, teachers should focus just as much on fostering a trusting and lasting relationship with their pupils.
- Teachers should emphasize respect as a core value.

Organization of the day

- There are going to be 8 classes total (one of the classes will be mandatory for juniors and seniors that is a college readiness class which will include everything you will need for the college application process, like AVID).
- We will have 4 classes one day and 4 classes the next, switching off.
- Every class will be an hour and 20 mins long with a 10 min break period in between each class and also a 30 minute lunch break in which students will be able to eat either in the cafeteria or outside the school. Seniors and juniors are allowed to leave school and get lunch and they will be responsible to come back and be on time for class. This will teach students responsibility and allow them to remain focus, as they’re not trapped in the building all day.
- We want our high school to mirror college more than middle or elementary school.
- School will begin promptly at 8AM and end at 2:16 PM.
- These times give students time to sleep and get the right amount of sleep, while also allowing them to get out of school at a reasonable time and be on time for sports practices/games and clubs. After school they can meet teachers and attend study groups with other students.
Going Green

- The new Doherty will be as eco friendly as possible.
- There will be water bottle filling stations on every floor as well as the cafeteria.
- There will be no straws given/ provided and plastic use will be minimized.
- There will also be recycling bins and trash cans in every classroom as well as the cafeteria.
- There will be the air hand dryer in every bathroom in order to reduce paper towel usage.
- If it is light outside teachers should turn off the lights in the classroom in order to conserve energy.
- A big part of going green is also diet, so our school will have many food options in the cafeteria and they will be healthy instead of filled with many preservatives and other junk.
- There will be many food options such as gluten free, vegan, vegetarian, etc.
- Students who bring their lunch from home are encouraged to bring a reusable lunch bag rather than a paper bag. We want to minimize the amount of waste that will end up in landfills.
- Our school will consist of having solar panels on top on the roof as well so we can generate electricity from the sun
- We will conserve paper and mostly everything will be done from online and if not reusing scrap paper will be encouraged.

Technical Aspects of the School

- School will have central heating and central air conditioning, in order to maintain a homeostatic temperature.
- There will be 2-3 exits in every room in the school in case of emergency.
- An elevator will be provided for students who have become temporarily or are permanently handicapped. Accessibility in our school is key and we do not want to discriminate anyone based on their physical ability.
- There should be at least 4 Mac computer labs in the school in rooms that will be large enough to accommodate a full classroom.
- Students are allowed to bring their laptops or Ipads to class to use, as we are a very technology centered school. If students don’t have their own, they can sign one out and use it. If a student does not have internet access, they can utilize the computer labs during a study or after school.
- Engrade and Google Education are the main ways teachers can give students their grades and send assignments.
- Students will take notes electronically if needed, use different online resources and utilize their student emails.

Subjects and Courses

- The core classes students will be required to take each year will include: four years of English, four years of math, three years of history/social studies and three years of science.
- Students will also be able to take a variety of electives or vocational training. They will be required to take these electives/ vocational/ life skills classes for at least two years. These electives will include: Fine Arts (Art V, Drawing and Painting, Architectural Design, Art History/Appreciation, Band), Ceramics, Theater, Choir, Dance, Film, Music Appreciation/History, Photography, Sculpture/3D Design, Business (Accounting, Business Management, Business Math, Financial Management, Marketing), Communication (Public Speaking, Creative Writing, Journalism, Research Skills, Study Skills), Computers (Typing, Web Design, Comp Science, Programming), Health/ Physical Education, Life Skills (Home Management/Home Economics, Interior Design, Industrial Arts), Science Related (Botany, Oceanography, Meteorology), Rhetoric (Critical Thinking, Debate) and Social Studies (Sociology, Psychology, Anthropology).
Subjects and Courses Continued

- The AP classes that will be offered include AP Seminar, Art History, Biology, Calculus AB and BC, Chemistry, Language and Composition, Literature and Composition, Computer Science, Computer Science, European History, French Language, Spanish Language, Human Geography, Physics, Economics and Studio Art.
- Students should be offered Dual Enrollment classes and SAT prep as well, to raise the SAT scores for the school overall. (Disclaimer: We aren’t huge fans of standardized testing but it is what it is).
- Students have the option to also take IB courses, courses a little bit harder than APs, which include the classes stated above.
- We hope that the classes we offer are able to meet students that learn slower or differently and also students that need to be challenged more.
- We want our classes to teach students while also helping them gain worldly knowledge that they can use real society, we will also offer internship opportunities to Seniors, as interning gives them job experience.
- There are many places in which students can become interns in the city including WAM, the library, law offices and different corporations and companies to choose from.

Sports (Girls and Boys)

- The sports our school will offer include
  - Baseball/Softball
  - Basketball
  - Bowling
  - Cheerleading
  - Cross Country
  - Dance Team
  - Field Hockey/Ice Hockey
  - Football
  - Indoor/Outdoor Track and Field
  - Lacrosse
  - Soccer
  - Swimming/Diving
  - Tennis
  - Volleyball
  - Weightlifting
  - Wrestling

Clubs Offered

- French Club
- UNICEF Club
- Red Cross
- Drama Club
- Model UN
- Student Council
- Community Service Club
- Gay Straight Alliance
- Robotics
- Debate Club
- Academic Decathlon
- Math Team
- Book Club
- Yearbook
- Ethics Club
- Black Student Union
Clubs Offered- Continued

- Art Club
- Film Club
- Best Buddies
- Girls do Stem
- Photography Club
- Music Club
- Peer Tutoring
- American Sign Language Club
- Spanish Club
- Peer Leadership Club
- Kids Helping Kids
- Slam Poetry Club
- Envirothon
- Yoga Club
- Hospital Volunteer

Ideal Class

- Teachers should always have an open-minded attitude and not become frustrated with students who are struggling. They need to always designate time to answer any questions students have.
- The school should promote a non-competitive, tolerant and positive attitude.
- Classes should open with bellwork or an essential question to answer. Then teachers can jump into the lecture, lesson or discussion. They can utilize any and all resources the school has provided them, electronic and non-electronic.
- Teachers should be open to staying after school to tutor or provide extra help to students who need it. Communication is key between teachers and pupils.
- In the classroom, students will learn new study and independent skills. Learning should be based on student interests and abilities.
- Classrooms should run like a well-oiled machine, organized and with the least amount of chaos as possible. They should serve as safe spaces for students of all kinds.
- Each class should have a defined list of rules and expectations that everyone follows and adheres to.
- Teachers must keep dignity and respect when disciplining their classes.
- The ideal class incorporates all of the different learning styles: visual, hands-on and auditory.

Vanessa Cenkollari

Public School in the US- Academic Magnet High School, North Charleston, SC

- Aims to "challenge each student, teacher and parent with high academic expectations." Almost all courses offered at Academic Magnet High School are either honors or Advanced Placement courses, and every student completes an independent research project over their junior and senior years. Students' work has been published in multiple academic and professional journals. Students can stay connected with Wi-Fi access in the cafeteria and three computer labs.

International- Putney High School, London, UK

- With 63% A grades, and 92% A*-B at A-level last year, Exchange programs, there’s a new focus on STEM careers, too. Girls are inspired to think differently, to find their voice and to achieve their goals within school and beyond. They’re adding Arabic and Italian to their curriculum, and plans to build a new science, music, drama and debating block. There’s a multitude of sport: netball, tennis and gymnastics are strong, but they offer everything from golf to pilates. Rowers have their own boathouse.
Teagan Rose
Public School in the US: The Brooklyn Latin School
International Public School: International School of Helsinki

1) The Brooklyn Latin School, Brooklyn, New York

- Provides a classical liberal arts curriculum. Students obtain a strong background in science, math, history, English, Latin, a modern world language, and art history.
- The school is part of a group of schools with Specialized High School status from the NYC Department of Education. The schools serve the needs of gifted NYC Students.
- Brooklyn Latin High School provides the International Baccalaureate Diploma Program and the opportunity for students to earn college credits via dual enrollment courses.
- All the classes have an emphasis on structured writing and public speaking.
- Students participate in Socratic seminars and learn through communicating based on formal rules of discussion. Students also divide learning tasks then teach each other in small groups. Every student takes four years of Latin and laboratory sciences. Every student also creates an extended research essay.
- The school expects students to try to make a better world through volunteering in their communities and helping the less fortunate.
- Economically disadvantaged students make up 67 percent of the student body at Brooklyn Latin School. Students gain admission through the challenging Specialized High School Admissions Test.
- "The expectations for academic, extra-curricular, behavioral, and social-emotional achievement are quite high at TBLS. TBLS is only one of seven high schools in New York City to offer the prestigious International Baccalaureate (IB) Programme, and we are one of the few public schools across the United States that adheres to an IB-for-all philosophy. In order to provide our students with the opportunity to earn the IB diploma."

2) International School of Helsinki, Helsinki, Finland

- Founded in 1963 and located near the centre of Helsinki, ISH is a private coeducational IB World School divided into two sections: Lower School (Pre-K-5) and Upper School (6-12). ISH offers the International Baccalaureate PYP (Primary Years Programme), MYP (Middle Years Programme) and Diploma programmes.
- ISH is accredited by the New England Association of Schools and Colleges (NEASC) and the Council of International Schools (CIS).
- ISH is non-selective and entrance exams are not required. The learning programme is in English, student-centered, and includes a wide range of extracurricular activities and sports. Graduates are invaluable to universities around the world.
- The International School of Helsinki is a caring, inclusive and diverse community with an active Parent Teacher Organisation.
- ISH moved into its purpose-built structure in the Ruoholahden district of Helsinki in 1996. The school’s facilities include ICT labs, a gymnasium, sports field, library, and media centre as well as classrooms equipped with Smart Boards and other media devices. The school also has a combined cafeteria/auditorium.
- The International School of Helsinki offers a variety of activities. The After School Activities (ASA) Programme is divided into three seasons: Autumn, Winter and Spring. The intended goal of the ASA Programme is to offer students both competitive and non-competitive activities and athletics options. The school is a member of CEESA which allows older students to take part in events alongside students from other international schools in central and Eastern Europe. These include various sports events including soccer, basketball, and volleyball tournaments.
- Upper School students even travel and participate in sports and academic tournaments in the Central East European Schools Association (CEESA).
- The diversity of nationalities studying there is very rich - over 40 including students from diplomatic families, mobile expatriate families or locals who wish their children to be more open-minded and creative.
Myhrida Kamberi
Public School in the U.S: Maine School of Science and Mathematics

Maine School of Science and Mathematics: It is a residential magnet high school in Limestone, Maine. This is a high school for grades 9-12 and summer program from grades 5-9. They provide housing in the form of dormitories and can hold 156 students. Students who attend this high school end up going to the best colleges in the U.S. In the U.S. and world news report, MISM is ranked 2nd in the best high schools in America.

- This school aims to make the best learning environment, with small class sizes, extracurricular activities and work assignments. This school offers many AP’s and allows students to participate in internships to create a better understanding of what they want to study.
- There is an 8:1 student to teacher ratio, 100% of students meet high proficiency on state administered tests, there is a graduation rate of 94% and the school is situated in a beautiful area, with a pretty building.

International Public School: American International School of Vienna

- This is a non-profit school in Vienna, Austria and is recognized by many as one of the best international public schools.
- This school is divided into 3 divisions: Elementary (pre-kindergarten to 5th grade), middle school (6th grade to 8th grade) and high school (9th grade to 12th grade).
- There is 800 students attending this school, half American and half Austrian.
- 200 students are admitted each year.
- There is a 10 acre campus overlooking the city and is very close to the Austria woods and Nuestift vineyards. The campus is made up of 7 buildings and includes a library, cafeteria, science laboratories, sports facilities, art/music studios, theatre, outdoor theatre, amphitheatre and outdoor classes, it makes this an extended campus.
- The school consistently graduates kids and provides them with many tools like ipads.
Doherty Memorial High School
299 Highland Street, Worcester MA
Worcester Public Schools

COORDINATED PROGRAM REVIEW
REPORT OF FINDINGS

Dates of Onsite Visit: April 6-10, 2015
Date of Draft Report: July 23, 2015
Date of Final Report: November 2, 2015
Action Plan Due: December 7, 2015

Department of Elementary and Secondary Education Onsite Team Members:
   Joan Brinckerhoff, Program Quality Assurance (PQA), Chair
   Lynn Summerill, PQA
   Michael Aboulafia, PQA
   Sally Orme, PQA
   Sibel Hughes, Office of English Language Acquisition and Academic Achievement (OELAAA), Chair
   Paul Aguiar, OLEAAA
   Zhaneta Liti, OELAAA
   Melanie Manares, OELAAA
   Ramona Foster, Career/Vocational Technical Education (CVTE), Chair
   Marnie Jain, CVTE
   Lisa Weinstein, CVTE
   Dave Edmonds, CVTE

Mitchell D. Chester, Ed.D.
Commissioner of Elementary and Secondary Education
SCOPE OF COORDINATED PROGRAM REVIEWS

As one part of its accountability system, the Department of Elementary and Secondary Education oversees local compliance with education requirements through the Coordinated Program Review (CPR). All reviews cover selected requirements in the following areas:

Special Education (SE)
- selected requirements from the federal Individuals with Disabilities Education Act (IDEA-2004); the federal regulations promulgated under that Act at 34 CFR Part 300; M.G.L. c. 71B, and the Massachusetts Board of Education’s Special Education regulations (603 CMR 28.00), as amended effective March 1, 2007. The 2014 - 2015 Web-based Monitoring System (WBMS) districts conducted self-assessments across all criteria.

Civil Rights Methods of Administration and Other General Education Requirements (CR)
- selected federal civil rights requirements, including requirements under Title VI of the Civil Rights Act of 1964; the Equal Educational Opportunities Act of 1974; Title IX of the Education Amendments of 1972; Section 504 of the Rehabilitation Act of 1973, and Title II of the Americans with Disabilities Act of 1990, together with selected state requirements under M.G.L. c. 76, Section 5 as amended by Chapter 199 of the Acts of 2011 and M.G.L. c. 269 §§ 17 through 19.
- selected requirements from the Massachusetts Board of Education’s Physical Restraint regulations (603 CMR 46.00).
- selected requirements from the Massachusetts Board of Education’s Student Learning Time regulations (603 CMR 27.00).
- various requirements under other federal and state laws.
- The 2014 - 2015 Web-based Monitoring System (WBMS) districts conducted self-assessments across all criteria.

English Learner Education (ELE) in Public Schools
- selected requirements from M.G.L. c. 71A, the state law that governs the provision of education to limited English proficient students, and 603 CMR 14.00, as well as the No Child Left Behind Act of 2001 and Title VI of the Civil Rights Act of 1964. During the 2014 - 2015 school year, all districts that enroll limited English proficient students will be reviewed using a combination of updated standards and a self-assessment instrument overseen by the Department’s Office of Language Acquisition and Academic Achievement (OLAAA), including a request for information regarding ELE programs and staff qualifications.

Some reviews also cover selected requirements in:

Career/Vocational Technical Education (CVTE)
Districts providing Title I services participate in Title I program monitoring during the same year they are scheduled for a Coordinated Program Review. Details regarding the Title I program monitoring process are available at: [http://www.doe.mass.edu/titlei/monitoring](http://www.doe.mass.edu/titlei/monitoring).

**COORDINATED PROGRAM REVIEW ELEMENTS**

**Team:** Depending upon the size of a school district and the number of programs to be reviewed, a team of one to eight Department staff members conducts onsite activities over two to five days in a school district or charter school.

**Timing:** Each school district and charter school in the Commonwealth is scheduled to receive a Coordinated Program Review every six years and a mid-cycle special education follow-up visit three years after the Coordinated Program Review; about seventy school districts and charter schools are scheduled for Coordinated Program Reviews in 2014 - 2015, of which all districts participated in the Web-based Monitoring System (WBMS). The Department’s 2014 - 2015 schedule of Coordinated Program Reviews is posted on the Department’s web site at [http://www.doe.mass.edu/pqa/review/cpr/schedule.html](http://www.doe.mass.edu/pqa/review/cpr/schedule.html). The statewide six-year Program Review cycle, including the Department’s Mid-cycle follow-up monitoring schedule, is posted at [http://www.doe.mass.edu/pqa/review/cpr/6yrcycle.html](http://www.doe.mass.edu/pqa/review/cpr/6yrcycle.html).

**Criteria:** The Program Review criteria for each WBMS review, begins with the district/school conducting a self-assessment across all fifty-two current special education criteria and thirty-five civil rights criteria. Program Quality Assurance through its Desk Review procedures examines the district/school’s self-assessment submission and determines which criteria will be followed-up on through onsite verification activities. For more details, please see the section on *The Web-based Approach to Special Education and Civil Rights Monitoring* at the beginning of the School District Information Package for Special Education and Civil Rights.

The requirements selected for review in all of the regulated programs are those that are most closely aligned with the goals of the Massachusetts Education Reform Act of 1993 to promote student achievement and high standards for all students.

**WBMS Methods:** Methods used in reviewing special education and civil rights programs include:

**Self-Assessment Phase:**
- District/school review of special education and civil rights documentation for required elements including document uploads. Upon completion of this portion of the district/school’s self-assessment, it is submitted to the Department for review.
- District/school review of a sample of special education student records selected across grade levels, disability categories and level of need. Additional requirements for the appropriate selection of the student record sample can be found in *Appendix II: Student Record Review Procedures* of the School District Information Package for Special Education.
Upon completion of these two portions of the district/school’s self-assessment, it is submitted to the Department for review.

On-site Verification Phase: Includes activities selected from the following:

- Interviews of administrative, instructional, and support staff consistent with those criteria selected for onsite verification.
- Interviews of parent advisory council (PAC) representatives and other telephone interviews, as requested, by other parents or members of the general public.
- Review of student records for special education: The Department may select a sample of student records from those the district reviewed as part of its self-assessment, as well as records chosen by the Department from the special education student roster. The onsite team will conduct this review, using standard Department procedures, to determine whether procedural and programmatic requirements have been implemented.
- Surveys of parents of students with disabilities: Parents of students with disabilities whose files are selected for the record review, as well as the parents of an equal number of other students with disabilities, are sent a survey that solicits information regarding their experiences with the district’s implementation of special education programs, related services, and procedural requirements.
- Observation of classrooms and other facilities: The onsite team visits a sample of classrooms and other school facilities used in the delivery of programs and services to determine general levels of compliance with program requirements.
- Review of additional documents for special education or civil rights.

Methods for all other programs in the Coordinated Program Review:

- Review of documentation about the operation of the charter school or district's programs.
- Interviews of administrative, instructional, and support staff across all grade levels.
- Telephone interviews as requested by other parents or members of the general public.
- Review of student records for English learner education and career/vocational technical education: The Department selects a representative sample of student records for the onsite team to review, using standard Department procedures, to determine whether procedural and programmatic requirements have been implemented.
- Surveys of parents of English learners whose files are selected for the record review are sent a survey of their experiences with the district's implementation of the English learner education program and related procedural requirements.
- Observation of classrooms and other facilities: The onsite team visits a sample of classrooms and other school facilities used in the delivery of programs and services to determine general levels of compliance with program requirements.

Report: Preparation:
At the end of the onsite visit, the onsite team will hold an informal exit meeting to summarize its comments for the superintendent or charter school leader and anyone else he or she chooses. Within approximately 45 business days of the onsite visit, the onsite chairperson
will forward to the superintendent or charter school leader (and collaborative director where applicable) a Draft Report containing comments from the Program Review. The Draft Report comments for special education and civil rights are provided to the district/school on-line through the Web-based Monitoring System (WBMS). These comments will, once the district has had a chance to respond, form the basis for any findings by the Department. The district (and collaborative) will then have 10 business days to review the report for accuracy before the publication of a Final Report with ratings and findings (see below). The Final Report will be issued within approximately 60 business days of the conclusion of the onsite visit and posted on the Department’s website at <http://www.doe.mass.edu/pqa/review/cpr/reports/>.

Content of Final Report:

Ratings. In the Final Report, the onsite team gives a rating for each compliance criterion it has reviewed; those ratings are “Commendable,” “Implemented,” “Implementation in Progress,” “Partially Implemented,” “Not Implemented,” and “Not Applicable.” “Implementation in Progress,” used for criteria containing new or updated legal requirements, means that the district has implemented any old requirements contained in the criterion and is training staff or beginning to implement the new requirements in such a way that the onsite team anticipates that the new requirements will be implemented by the end of the school year.

Findings. The onsite team includes a finding in the Final Report for each criterion that it rates “Commendable,” “Partially Implemented,” “Not Implemented,” or “Implementation in Progress,” explaining the basis for the rating. It may also include findings for other related criteria.

Response: Where criteria are found “Partially Implemented” or “Not Implemented”, the district or charter school must propose corrective action to bring those areas into compliance with the relevant statutes and regulations. This corrective action plan (CAP) will be due to the Department within 20 business days after the issuance of the Final Report and is subject to the Department’s review and approval. Department staff will offer districts and charter schools technical assistance on the content and requirements for developing an approvable CAP.

Department staff will also provide ongoing technical assistance as the school or district is implementing the approved corrective action plan. **School districts and charter schools must demonstrate effective resolution of noncompliance identified by the Department as soon as possible but in no case later than one year from the issuance of the Department’s Final Program Review Report.**
INTRODUCTION TO THE FINAL REPORT

A 12-member Massachusetts Department of Elementary and Secondary Education team visited Worcester Public Schools during the week of April 6, 2015 to evaluate the implementation of selected criteria in the program areas of special education, civil rights and other related general education requirements, career/vocational technical education, and English learner education. The team appreciated the opportunity to interview staff and parents, to observe classroom facilities and to review the programs underway in the district.

The Department is submitting the following Coordinated Program Review Report containing findings made pursuant to this onsite visit. In preparing this report, the team reviewed extensive written documentation regarding the operation of the district's programs, together with information gathered by means of the following Department program review methods:

- Interviews of 13 administrative staff.
- Interviews of 116 teaching and support services staff across all levels.
- Interview of one parent advisory council (PAC) representative.
- Interview of one parent of an English language learner.
- Interviews as requested by persons from the general public.
- Interviews of six Parent Advisory Committee representatives for Career Vocational Technical Education.
- Interviews of five parent representatives for Career Vocational Technical Education.
- Interviews of 23 student representatives for Career Vocational Technical Education.
- Student record reviews: Samples of 64 special education student records, 25 English learner education student records and 23 Career Vocational Technical Education student records were first examined by local staff, whose comments were then verified by the onsite team using standard Department record review procedures.
- Surveys of parents of students with disabilities: Seventy-five parents of students with disabilities were sent surveys that solicited information about their experiences with the district’s implementation of special education programs, related services and procedural requirements. Nine of these parent surveys were returned to the Department of Elementary and Secondary Education for review.
- Surveys of parents of ELE students: Twenty-five parents of ELE students were sent surveys that solicited information about their experiences with the district’s implementation of English learner education programs, services, and procedural requirements. Four of these parent surveys were returned to the Department of Elementary and Secondary Education for review.
- Observation of classrooms and other facilities: A sample of 84 instructional classrooms and other school facilities used in the delivery of programs and services was visited to examine general levels of compliance with program requirements.
The report includes findings in the program areas reviewed organized under nine components. These components are:

- Component I: Assessment of Students
- Component II: Student Identification and Program Placement
- Component III: Parent and Community Involvement
- Component IV: Curriculum and Instruction
- Component V: Student Support Services
- Component VI: Faculty, Staff and Administration
- Component VII: Facilities
- Component VIII: Program Evaluation
- Component IX: Recordkeeping and Fund Use

The findings in each program area explain the “ratings,” determinations by the team about the implementation status of the criteria reviewed. The ratings indicate those criteria that were found by the team to be substantially “Implemented” or implemented in a “Commendable” manner. (Refer to the “Definition of Compliance Ratings” section of the report.) Where criteria were found to be either "Partially Implemented" or "Not Implemented," the district or charter school must propose to the Department corrective actions to bring those areas into compliance with the controlling statute or regulation. Districts are expected to incorporate the corrective action into their district and school improvement plans, including their professional development plans.
Worcester Public Schools

SUMMARY OF COMPLIANCE CRITERIA INCLUDED IN THIS REPORT REQUIRING CORRECTIVE ACTION

<table>
<thead>
<tr>
<th>PROGRAM AREA</th>
<th>PARTIALLY IMPLEMENTED</th>
<th>NOT IMPLEMENTED</th>
<th>OTHER CRITERIA REQUIRING RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career/Vocational Technical Education</td>
<td>CVTE 1, CVTE 3, CVTE 4, CVTE 5, CVTE 7, CVTE 8, CVTE 9A, CVTE 10, CVTE 11, CVTE 12, CVTE 13, CVTE 14, CVTE 18, CVTE 20, CVTE 21, CVTE 22, CVTE 24</td>
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</tr>
</tbody>
</table>

NOTE THAT ALL OTHER CRITERIA REVIEWED BY THE DEPARTMENT THAT ARE NOT MENTIONED ABOVE HAVE RECEIVED AN “IMPLEMENTED” OR “NOT APPLICABLE” RATING.
### DEFINITION OF COMPLIANCE RATINGS

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commendable</td>
<td>Any requirement or aspect of a requirement implemented in an exemplary manner significantly beyond the requirements of law or regulation.</td>
</tr>
<tr>
<td>Implemented</td>
<td>The requirement is substantially met in all important aspects.</td>
</tr>
<tr>
<td>Implementation in Progress</td>
<td>This rating is used for criteria containing new or updated legal requirements and means that the district has implemented any old requirements contained in the criterion and is training staff or beginning to implement the new requirements in such a way that the onsite team anticipates that the new requirements will be implemented by the end of the school year.</td>
</tr>
<tr>
<td>Partially Implemented</td>
<td>The requirement, in one or several important aspects, is not entirely met.</td>
</tr>
<tr>
<td>Not Implemented</td>
<td>The requirement is totally or substantially not met.</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>The requirement does not apply to the school district or charter school.</td>
</tr>
</tbody>
</table>
SPECIAL EDUCATION

LEGAL STANDARDS,
COMPLIANCE RATINGS AND
FINDINGS
<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>SPECIAL EDUCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I. ASSESSMENT OF STUDENTS</td>
</tr>
<tr>
<td></td>
<td><strong>Legal Standard</strong></td>
</tr>
<tr>
<td><strong>SE 1</strong></td>
<td>Assessments are appropriately selected and interpreted for students referred for evaluation</td>
</tr>
<tr>
<td></td>
<td>1. Tests and other evaluation materials are:</td>
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<tr>
<td></td>
<td>a. Validated</td>
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<td></td>
<td>b. administered and interpreted by trained individuals</td>
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<td></td>
<td>c. tailored to assess specific areas of educational need and related developmental needs</td>
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<tr>
<td></td>
<td>d. selected and administered to reflect aptitude and achievement levels and related developmental needs</td>
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<td></td>
<td>e. as free as possible from cultural and linguistic bias</td>
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<tr>
<td></td>
<td>f. provided and administered in the language and form most likely to yield accurate information on what the student knows and can do academically, developmentally, and functionally</td>
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<tr>
<td></td>
<td>g. not the sole criterion for determining an appropriate educational program</td>
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<tr>
<td></td>
<td>h. not only those designed to provide a single general intelligence quotient</td>
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<tr>
<td></td>
<td>i. are selected and administered to ensure that when a test is administered to a student with impaired sensory, manual, or speaking skills, the test results accurately reflect the student's aptitude or achievement level or the other factors the test purports to measure</td>
</tr>
<tr>
<td></td>
<td>j. technically sound instruments that may assess the relative contribution of cognitive and behavioral factors, in addition to physical or developmental factors</td>
</tr>
<tr>
<td></td>
<td>2. In interpreting evaluation data and making decisions, the district:</td>
</tr>
<tr>
<td></td>
<td>a. uses information from a variety of sources to gather relevant functional and developmental information, including information provided by the parent</td>
</tr>
<tr>
<td></td>
<td>b. ensures that information obtained from these sources is considered</td>
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<td></td>
<td>c. ensures that the placement decision conforms with placement in the least restrictive environment</td>
</tr>
<tr>
<td></td>
<td>d. includes information related to enabling the student to be involved in and progress in the general curriculum</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>603 CMR 28.04</td>
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</tr>
<tr>
<td>603 CMR 28.05</td>
<td></td>
</tr>
</tbody>
</table>

| Rating: | Implemented | District Response Required: | No |
**CRITERION NUMBER**

<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SE 2</strong></td>
<td>Required and optional assessments</td>
</tr>
<tr>
<td></td>
<td>1. <strong>Required assessments</strong>: The following assessments are completed by appropriately credentialed and trained specialists for each referred student:</td>
</tr>
<tr>
<td></td>
<td>a. Assessment(s) in all areas related to the suspected disability(y) (ies) including consideration of any needed assistive technology devices and services and/or instruction in Braille.</td>
</tr>
<tr>
<td></td>
<td>b. Educational assessment by a representative of the school district, including a history of the student’s educational progress in the general curriculum.</td>
</tr>
<tr>
<td></td>
<td>c. Assessment by a teacher(s) with current knowledge regarding the student’s specific abilities in relation to learning standards of the Massachusetts Curriculum Frameworks and the district’s general education curriculum, as well as an assessment of the student’s attention skills, participation behaviors, communication skills, memory, and social relations with groups, peers, and adults.</td>
</tr>
<tr>
<td></td>
<td>d. For a student being assessed to determine eligibility for services at age three (3), an observation of the student’s interactions in the student’s natural environment or early intervention program is strongly encouraged together with the use of current assessments from Early Intervention Teams to avoid duplicate testing.</td>
</tr>
<tr>
<td></td>
<td>2. <strong>Optional assessments</strong>: The Administrator of Special Education may recommend or the parent may request one or more of the following:</td>
</tr>
<tr>
<td></td>
<td>a. A comprehensive health assessment by a physician that identifies medical problems or constraints that may affect the student's education. The school nurse may add additional relevant health information from the student’s school health records.</td>
</tr>
<tr>
<td></td>
<td>b. A psychological assessment by a certified school psychologist, licensed psychologist, or licensed educational psychologist, including an individual psychological examination.</td>
</tr>
<tr>
<td></td>
<td>c. A home assessment that may be conducted by a nurse, psychologist, social worker, guidance or adjustment counselor, or teacher and includes information on pertinent family history and home situation and may include a home visit, with the agreement of the parent.</td>
</tr>
<tr>
<td></td>
<td>3. At the re-evaluation of a student, if no additional assessments are needed to determine whether the student continues to be eligible for special education, the school district recommends to the student’s parents the following:</td>
</tr>
<tr>
<td></td>
<td>a. that no further assessments are needed and the reasons for this; and</td>
</tr>
<tr>
<td></td>
<td>b. the right of such parents to request an assessment.</td>
</tr>
<tr>
<td><strong>State Requirements</strong></td>
<td><strong>Federal Requirements</strong></td>
</tr>
<tr>
<td>603 CMR 28.04 (1) and (2)</td>
<td>34 CFR 300.304; 300.305; 300.324(a)(2)(v)</td>
</tr>
<tr>
<td><strong>Rating:</strong> Partially Implemented</td>
<td><strong>District Response Required:</strong> Yes</td>
</tr>
</tbody>
</table>
Department of Elementary and Secondary Education Findings:
A review of student records demonstrated that the district does not consistently conduct all assessments consented to by the parent, specifically achievement, home, and psychological assessments. Record review also indicated that the district does not always provide all required assessments, including a history of the student’s educational progress in the general curriculum and observations of the student in his/her classroom environment.

<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 3</td>
<td>Special requirements for determination of specific learning disability</td>
</tr>
<tr>
<td></td>
<td>When a student suspected of having a specific learning disability is evaluated, the Team creates a written determination as to whether or not he or she has a specific learning disability, which is signed by all members of the Team, or if there is disagreement as to the determination, one or more Team members document their disagreement.</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>34 CFR 300.8(c)(10); 300.311</td>
</tr>
</tbody>
</table>

Rating: Implemented
District Response Required: No

<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 3A</td>
<td>Special requirements for students on the autism spectrum</td>
</tr>
<tr>
<td></td>
<td>Whenever an evaluation indicates that a child has a disability on the autism spectrum, which includes autistic disorder [autism], Asperger's disorder, pervasive developmental disorder not otherwise specified, childhood disintegrative disorder, and Rhett's Syndrome as defined in the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV, 2000), the IEP Team shall consider and shall specifically address the following:</td>
</tr>
<tr>
<td></td>
<td>1) the verbal and nonverbal communication needs of the child;</td>
</tr>
<tr>
<td></td>
<td>2) the need to develop social interaction skills and proficiencies;</td>
</tr>
<tr>
<td></td>
<td>3) the needs resulting from the child's unusual responses to sensory experiences;</td>
</tr>
<tr>
<td></td>
<td>4) the needs resulting from resistance to environmental change or change in daily routines;</td>
</tr>
<tr>
<td></td>
<td>5) the needs resulting from engagement in repetitive activities and stereotyped movements;</td>
</tr>
<tr>
<td></td>
<td>6) the need for any positive behavioral interventions, strategies, and supports to address any behavioral difficulties resulting from autism spectrum disorder;</td>
</tr>
<tr>
<td></td>
<td>7) and other needs resulting from the child's disability that impact progress in the</td>
</tr>
<tr>
<td>CRITERION NUMBER</td>
<td>Legal Standard</td>
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<tr>
<td>------------------</td>
<td>-------------------------------------------------------------------------------</td>
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<tr>
<td></td>
<td>general curriculum, including social and emotional development.</td>
</tr>
<tr>
<td></td>
<td>Please see additional guidance at:</td>
</tr>
<tr>
<td></td>
<td>Technical Assistance Advisory SPED 2007-1:</td>
</tr>
<tr>
<td></td>
<td>Autism Spectrum Disorder</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.doe.mass.edu/sped/advisories/07_1ta.html#">http://www.doe.mass.edu/sped/advisories/07_1ta.html#</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 57 of the Acts of 2006, amends M.G.L. c. 71B, section 3</td>
<td>34 CFR 300.8(c)(1)(i)</td>
</tr>
</tbody>
</table>

Rating: Partially Implemented  District Response Required: Yes

Department of Elementary and Secondary Education Findings:
A review of student records and interviews indicated that for students on the autism spectrum, IEP Teams do not consistently consider and specifically address the verbal and nonverbal communication needs of the student; the need to develop social interaction skills and proficiencies; the needs resulting from the student's unusual responses to sensory experiences; the needs resulting from resistance to environmental change or change in daily routines; the needs resulting from engagement in repetitive activities and stereotyped movements; the need for any positive behavioral interventions, strategies, and supports to address any behavioral difficulties resulting from autism spectrum disorder; and other needs resulting from the student's disability that impact progress in the general curriculum, including social and emotional development.

<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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</thead>
<tbody>
<tr>
<td>SE 4</td>
<td>Reports of assessment results</td>
</tr>
<tr>
<td></td>
<td>1. Each person conducting an assessment shall summarize in writing the</td>
</tr>
<tr>
<td></td>
<td>procedures employed, the results, and the diagnostic impression, and shall</td>
</tr>
<tr>
<td></td>
<td>define in detail and in educationally relevant and common terms, the student's</td>
</tr>
<tr>
<td></td>
<td>needs, offering explicit means of meeting them. Assessors may recommend</td>
</tr>
<tr>
<td></td>
<td>appropriate types of placements, but shall not recommend specific classrooms</td>
</tr>
<tr>
<td></td>
<td>or schools.</td>
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<tr>
<td></td>
<td>2. Summaries of assessments are completed prior to discussion by the Team and</td>
</tr>
<tr>
<td></td>
<td>upon request, are made available to the parent at least two days in advance</td>
</tr>
<tr>
<td></td>
<td>of the Team discussion.</td>
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<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>603 CMR 28.04(2)(c)</td>
<td></td>
</tr>
</tbody>
</table>

Rating: Partially Implemented  District Response Required: Yes
Department of Elementary and Secondary Education Findings:
A review of student records demonstrated that assessment summaries do not always include the procedures employed, the evaluator's diagnostic impressions of the student, a description of the student's needs in educationally relevant and common terms, or explicit means of meeting these needs. In addition, a review of student records indicated that the summaries of assessments are not consistently available to the parent two days in advance of the Team discussion.

<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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</thead>
<tbody>
<tr>
<td><strong>SE 5</strong></td>
<td>Participation in general State and district-wide assessment programs</td>
</tr>
<tr>
<td>1.</td>
<td>All students with disabilities, including those enrolled in out-of-district placements, are included in the Massachusetts Comprehensive Assessment System (MCAS) and other district-wide assessment programs.</td>
</tr>
<tr>
<td>2.</td>
<td>The district’s IEP Teams designate how each student will participate and, if necessary, provide an alternate assessment.</td>
</tr>
<tr>
<td>3.</td>
<td>The superintendent of a school district--or, for a public school program that is not part of a school district, the equivalent administrator:</td>
</tr>
<tr>
<td>a.</td>
<td>files an MCAS performance appeal for a student with a disability when the student’s parent or guardian or the student, if 18 or over, requests it, provided that the student meets the eligibility requirements for such an appeal;</td>
</tr>
<tr>
<td>b.</td>
<td>obtains the consent of the parent or guardian or the student, if 18 or over, for any MCAS performance appeal filed on behalf of a student with a disability;</td>
</tr>
<tr>
<td>c.</td>
<td>includes in the MCAS performance appeal, to the extent possible, the required evidence of the student’s knowledge and skills in the subject at issue.</td>
</tr>
<tr>
<td><strong>State Requirements</strong></td>
<td><strong>Federal Requirements</strong></td>
</tr>
<tr>
<td>St. 2003, c. 140, s. 119</td>
<td>20 U.S.C. 1412(a)(16)</td>
</tr>
<tr>
<td>603 CMR 30.05(2),(3),(5)</td>
<td></td>
</tr>
<tr>
<td><strong>Rating:</strong> Implemented</td>
<td><strong>District Response Required:</strong> No</td>
</tr>
</tbody>
</table>

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<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SE 6</strong></td>
<td>Determination of transition services</td>
</tr>
<tr>
<td>1.</td>
<td>The Team discusses the student’s transition needs annually, beginning no later than when the student is 14 years old, and documents its discussion on the Transition Planning Form.</td>
</tr>
<tr>
<td>2.</td>
<td>The Team reviews the Transition Planning Form annually and updates information on the form and the IEP, as appropriate.</td>
</tr>
</tbody>
</table>
### CRITERION NUMBER

#### Legal Standard

| 3. | Reserved |
| 4. | For any student approaching graduation or the age of twenty-two (22), the Team determines whether the student is likely to require continuing services from adult human service agencies. In such circumstances, the Administrator of Special Education makes a referral to the Bureau of Transitional Planning in the Executive Office of Health and Human Services in accordance with the requirements of M.G.L. c. 71B, §§12A-12C (known as Chapter 688). |
| 5. | In cases where the IEP included needed transition services and a participating agency other than the school district fails to provide these services, the Team reconvenes to identify alternative strategies to meet the transition objectives. |
| 6. | The district ensures that students are invited to and encouraged to attend part or all of Team meetings at which transition services are discussed or proposed. |

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.G.L. c.71B, Sections 12A-C 603 CMR 28.05(4)(c)</td>
<td>34 CFR 300.320(b); 300.321(b); 300.322(b)(2); 300.324(c)</td>
</tr>
</tbody>
</table>

**Rating:** Implemented  **District Response Required:** No

### CRITERION NUMBER

#### Legal Standard

**SE 7** Transfer of parental rights at age of majority and student participation and consent at the age of majority

1. At least one year prior to the student reaching age 18, the district informs the student and the parent/guardian of the rights that will transfer from the parent/guardian to the student upon the student’s 18th birthday. The notification provided to both the student and the parent/guardian must explicitly state that all rights accorded to parents under special education law will transfer to the 18 year old.

2. Upon reaching the age of 18, the school district implements procedures to obtain consent from the student to continue the student’s special education program.

3. The district continues to send the parent written notices and the parent will have the right to inspect the student’s records, but the parent will no longer have decision-making authority, except as provided below:
   a. If the parent has sought and received guardianship from a court of competent jurisdiction, then the parent retains full decision-making authority. The parent does not have authority to override any decision or lack of decision made by the student who has reached the age of majority unless the parent has sought or received guardianship or other legal authority from a court of competent jurisdiction.
### SE 8 IEP Team composition and attendance

The following persons are members of the IEP Team and may serve in multiple roles:

1. The child’s parents.
2. A representative of the school district who acts as Chairperson and who is (1) qualified to supervise or provide special education; (2) is knowledgeable about the general curriculum; and (3) is knowledgeable about the availability of resources of the district.
3. A representative of the school district who has the authority to commit the resources of the district (and who may act as the Chairperson).
4. 
   a. If the student may be involved in a regular education program, a regular education teacher. If the student is involved in a regular education program, a regular education teacher of the student.
   b. If the student is participating in a special education program, a special education teacher of the student or, if appropriate, a special education provider for the student.
5. The student, if one purpose of the meeting is to discuss transition services or if otherwise appropriate and if he/she chooses.

<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SE 8</strong></td>
<td></td>
</tr>
</tbody>
</table>
| **IEP Team composition and attendance** | The following persons are members of the IEP Team and may serve in multiple roles:  
1. The child’s parents.  
2. A representative of the school district who acts as Chairperson and who is (1) qualified to supervise or provide special education; (2) is knowledgeable about the general curriculum; and (3) is knowledgeable about the availability of resources of the district.  
3. A representative of the school district who has the authority to commit the resources of the district (and who may act as the Chairperson).  
4.  
   a. If the student may be involved in a regular education program, a regular education teacher. If the student is involved in a regular education program, a regular education teacher of the student.  
   b. If the student is participating in a special education program, a special education teacher of the student or, if appropriate, a special education provider for the student.  
5. The student, if one purpose of the meeting is to discuss transition services or if otherwise appropriate and if he/she chooses. |
<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>Other individuals at the request of the student's parents.</td>
</tr>
<tr>
<td>7.</td>
<td>Reserved</td>
</tr>
<tr>
<td>8.</td>
<td>An individual who is qualified to interpret the instructional implications of evaluation results, who may be any one of the persons identified in parts 2 - 4 above.</td>
</tr>
<tr>
<td>9.</td>
<td>Other individuals who may be necessary to write an IEP for the child, as determined by the Administrator of Special Education.</td>
</tr>
<tr>
<td>10.</td>
<td>When one purpose of the Team meeting is to discuss transition services, a representative of any public agency who may be responsible for providing or paying for transition services is invited to the Team meeting. If the representative(s) does not attend the meeting, the school district takes other steps to obtain the participation of these agencies.</td>
</tr>
<tr>
<td>11.</td>
<td>Reserved</td>
</tr>
<tr>
<td>12.</td>
<td>When one purpose of the Team meeting is to discuss placement, a person knowledgeable about placement options is present at the meeting.</td>
</tr>
<tr>
<td>13.</td>
<td>Members of the Team attend Team meetings unless:</td>
</tr>
<tr>
<td></td>
<td>a. the parent and district agree to use alternative means, such as a video conference or a conference call, for any Team meeting OR</td>
</tr>
<tr>
<td></td>
<td>b. the district and the parent agree, in writing, that the attendance of the Team member is not necessary because the member’s area of the curriculum or related services is not being modified or discussed OR</td>
</tr>
<tr>
<td></td>
<td>c. the district and the parent agree, in writing, to excuse a required Team member’s participation and the excused member provides written input into the development of the IEP to the parent and the IEP Team prior to the meeting.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>603 CMR 28.02(21). Part 1 of this criterion is related to State Performance Plan Indicator 8. Parts 5, 10, are related to Performance Plan Indicators 13 and 14. (See <a href="http://www.doe.mass.edu/sped/spp/">http://www.doe.mass.edu/sped/spp/</a>)</td>
<td>34 CFR 300.116(a), 300.321, 300.328. See also, in the IDEA 97 regulations, 34 CFR Part 300, Appendix A, to State Question #22</td>
</tr>
</tbody>
</table>

| Rating: Partially Implemented | District Response Required: Yes |

Department of Elementary and Secondary Education Findings:
A review of student records and staff interviews indicated that although the district obtains a parent's written permission to excuse a required Team member's participation, the excused Team member does not consistently provide written input in advance of the meeting to the parent and IEP Team for development of the IEP.
<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 9</td>
<td>Timeline for determination of eligibility and provision of documentation to parent</td>
</tr>
</tbody>
</table>

Within forty-five (45) school working days after receipt of the parent's written consent to an initial evaluation or a re-evaluation, the school district determines whether the student is eligible for special education and provides to the parent either a proposed IEP and (except in cases covered by 603 CMR 28.06(2)(e)) proposed placement or a written explanation of the finding of no eligibility.

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>603 CMR 28.05(1); 28.06(2)(e)</td>
<td></td>
</tr>
</tbody>
</table>

Rating: Partially Implemented  District Response Required: Yes

**Department of Elementary and Secondary Education Findings:**

A review of student records indicated that within 45 school working days after receipt of the parent's written consent to an initial evaluation or a re-evaluation, IEP Teams do not consistently convene to determine whether the student is eligible for special education and provide to the parent either a proposed IEP and proposed placement or a written explanation of the finding of no eligibility.

<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 9A</td>
<td>Elements of the eligibility determination; general education accommodations and services for ineligible students</td>
</tr>
</tbody>
</table>

1. To determine whether a student is eligible for special education, the school district:
   a. provides an evaluation or re-evaluation
   b. convenes a Team meeting
   c. determines whether the student has one or more disabilities
   d. determines if the student is making effective progress in school
   e. determines if any lack of progress is a result of the student’s disability
   f. determines if the student requires special education and/or related services in order to make effective progress or if the student requires related services in order to access the general curriculum
2. If a Team determines that a student is not eligible for special education but may be eligible for accommodation(s) for disabilit(y)(ies) under Section 504, the student is referred for consideration by the district for eligibility under that general education program.
3. When the student does not need any direct services, the Team makes a finding of no eligibility and appropriate services are provided through the district’s general education program.
4. When the student’s lack of progress is due to a lack of instruction in reading or mathematics, limited English proficiency, social maladjustment, or is due to an
### CRITERION NUMBER

<table>
<thead>
<tr>
<th>Legal Standard</th>
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<tbody>
<tr>
<td>inability to meet the school discipline code but is not due to a disability, the district makes a finding of no eligibility for special education and may refer the student to a more appropriate instructional program or support service.</td>
</tr>
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<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>603 CMR 28.05(1) and (2)</td>
<td>4 CFR 300.8; 300.306</td>
</tr>
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| Rating: Implemented | District Response Required: No |

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<table>
<thead>
<tr>
<th>Legal Standard</th>
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<tbody>
<tr>
<td>SE 10 End of school year evaluations</td>
</tr>
<tr>
<td>If consent is received between 30 and 45 school working days before the end of the school year, the school district ensures that a Team meeting is scheduled so as to allow for the provision of a proposed IEP or written notice of the finding that the student is not eligible no later than 14 days after the end of the school year.</td>
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<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td>603 CMR 28.05(1)</td>
<td>34 CFR 300.323</td>
</tr>
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| Rating: Implemented | District Response Required: No |

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<th>Legal Standard</th>
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<tbody>
<tr>
<td>SE 11 School district response to parental request for independent educational evaluation</td>
</tr>
<tr>
<td>If a parent disagrees with an initial evaluation or re-evaluation completed by the school district, and the parent requests an independent educational evaluation, the district implements the following requirements:</td>
</tr>
<tr>
<td>1. All independent educational evaluations funded by the district are conducted by qualified persons who are registered, certified, licensed or otherwise approved and who abide by the rates set by the state agency responsible for setting such rates. Unique circumstances of the student are to be justified when an individual assessment rate is higher than that normally allowed.</td>
</tr>
<tr>
<td>2. The school district has procedures to offer parents the option of participating in</td>
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</table>
### CRITERION NUMBER 6

**Legal Standard**

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td>603 CMR 28.04(5)</td>
<td>34 CFR 300.502</td>
</tr>
</tbody>
</table>

**Rating:** Implemented  
**District Response Required:** No

### CRITERION NUMBER SE 12

**Legal Standard**

<table>
<thead>
<tr>
<th>SE 12</th>
<th>Frequency of re-evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>When the student’s needs warrant it or a parent or teacher requests it, the school district, with parental consent, conducts a full re-evaluation consistent with the</td>
</tr>
</tbody>
</table>
### CRITERION NUMBER

#### Legal Standard

requirements of federal law, provided that:

1. a re-evaluation is conducted every three years unless the parent and district agree that it is unnecessary and
2. a re-evaluation is conducted no more frequently than once a year unless the parent and district agree otherwise.

2. The district implements re-evaluation procedures in all cases where it is suspected that a student is no longer eligible for special education, except that no re-evaluation is required before the termination of eligibility because a student has graduated with a general high school diploma or exceeded the age of eligibility.

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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</thead>
<tbody>
<tr>
<td>603 CMR 28.04(3)</td>
<td>34 CFR 300.303; 300.305(c)</td>
</tr>
</tbody>
</table>

**Rating:** Partially Implemented  **District Response Required:** Yes

### Department of Elementary and Secondary Education Findings:

*A review of student records indicated that the district does not consistently conduct re-evaluations every three years.*

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### CRITERION NUMBER

#### Legal Standard

**Progress Reports and content**

1. Parents receive reports on the student's progress toward reaching the goals set in the IEP at least as often as parents are informed of the progress of non-disabled students.
2. Progress report information sent to parents includes written information on the student’s progress toward the annual goals in the IEP.
3. Where a student’s eligibility terminates because the student has graduated from secondary school or exceeded the age of eligibility, the school district provides the student with a summary of his or her academic achievement and functional performance, including recommendations on how to assist the student in meeting his or her postsecondary goals.

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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</thead>
<tbody>
<tr>
<td>603 CMR 28.07(3)</td>
<td>34 CFR 300.305(c)(3); 300.320(a)(3)</td>
</tr>
</tbody>
</table>

**Rating:** Partially Implemented  **District Response Required:** Yes

### Department of Elementary and Secondary Education Findings:

*A review of student records indicated that not all progress reports include written information on the student’s progress toward the annual goals in the IEP.*
### CRITERION NUMBER

**SE 14**  
**Review and revision of IEPs**

1. At least annually, on or before the anniversary date of the IEP, a Team meeting is held to consider the student’s progress and to review, revise, or develop a new IEP or refer the student for a re-evaluation, as appropriate.
2. **Amendments to the IEP.** In between annual IEP meetings the district and parent may agree to make changes to a student’s IEP, documented in writing, without convening a meeting of the Team. Upon request, a parent is provided with a revised copy of the IEP with the amendments incorporated.

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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</thead>
<tbody>
<tr>
<td>603 CMR 28.04(3)</td>
<td>34 CFR 300.324(a)(4), (6) and (b)</td>
</tr>
</tbody>
</table>

**Rating:**  Implemented  
**District Response Required:**  No

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### CRITERION NUMBER

**SE 15**  
**Outreach by the School District (Student Find)**

The district has annual or more frequent outreach and continuous liaison with those groups below from which promotion or transfer of students in need of special education may be expected, or which would include students in need of special education:

1. professionals in community
2. private nursery schools
3. day care facilities
4. group homes
5. parent organizations
6. clinical /health care agencies
7. early intervention programs
8. private/parochial schools
9. other agencies/organizations
10. the school or schools that are part of the district, including Horace Mann charter schools
11. agencies serving migrant and/or homeless persons pursuant to the McKinney-Vento Education Act for Homeless Students

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<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td></td>
<td>34 CFR 300.111; 300.131; 300.209</td>
</tr>
</tbody>
</table>

**Rating:**  Implemented  
**District Response Required:**  No
### SE 16 Screening

1. The school district conducts screening for three and four year olds and for all children who are of age to enter kindergarten. Such screening is designed to review a student’s development and to assist in identification of those children who should be referred for an evaluation to determine eligibility for special education services.

2. Participation in the screening program for three and four year olds is optional on the part of the parents.

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<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td>603 CMR 28.03(1)(d)</td>
<td></td>
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</tbody>
</table>

**Rating:** Implemented  
**District Response Required:** No

### SE 17 Initiation of services at age three and Early Intervention transition procedures

1. Where at all possible the school district accepts referrals from the Department of Public Health, other agencies, and individuals for young children when or before the student turns two-and-one-half years old in order to ensure continuity of services and to ensure the development and implementation of an IEP for eligible children by the date of the student's third birthday in accordance with federal requirements.

2. The district implements procedures to ensure the effective transition of young children with disabilities from Early Intervention Programs through participation in transition planning conferences arranged by such programs.

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<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td>603 CMR 28.06(7)(b)</td>
<td>34 CFR 300.101(b); 300.124; 300.323(b)</td>
</tr>
</tbody>
</table>

**Rating:** Implemented  
**District Response Required:** No
**CRITERION NUMBER**

<table>
<thead>
<tr>
<th><strong>Legal Standard</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>SE 18A</strong></td>
</tr>
</tbody>
</table>
| IEP development and content  
1. Upon determining that the student is eligible for special education, the Team, including the parent(s), develops an IEP at the Team meeting.  
2. The IEP is completed addressing all elements of the most current IEP format provided by the Department of Elementary and Secondary Education.  
3. The school district ensures that the IEP will not be changed outside of the Team meeting.  
4. Whenever the IEP Team evaluation indicates that a student's disability affects social skills development, or when the student's disability makes him or her vulnerable to bullying, harassment, or teasing, the IEP must address the skills and proficiencies needed to avoid and respond to bullying, harassment, or teasing.  
5. For students identified with a disability on the autism spectrum, the IEP Team must consider and specifically address the skills and proficiencies needed to avoid and respond to bullying, harassment, or teasing. |
| **State Requirements** | Federal Requirements |
| 603 CMR 28.05(3); G.L.c. 71 B, section 3, as amended by Chapter 92 of the Acts of 2010 | IDEA-97: 34 CFR Part 300, Appendix A, Question #22 |
| Rating: Partially Implemented | District Response Required: Yes |

**Department of Elementary and Secondary Education Findings:**

A review of student records indicated that IEP Teams do not consistently or accurately address all elements of the IEP: this includes blank Present Level of Educational Performance B (PLEP B) for students with communication and behavior needs and inconsistencies between goals and service delivery grids. Student records, documents, and staff interviews also demonstrated that when students are identified with a disability on the autism spectrum or have a disability that affects social skills development or makes him or her vulnerable to bullying, harassment, or teasing, IEP Teams do not always specifically address the skills and proficiencies needed to avoid and respond to bullying, harassment, or teasing in the IEP.

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**CRITERION NUMBER**

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<thead>
<tr>
<th><strong>Legal Standard</strong></th>
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<tbody>
<tr>
<td><strong>SE 18B</strong></td>
</tr>
</tbody>
</table>
| Determination of placement; provision of IEP to parent  
1. At the Team meeting, after the IEP has been fully developed, the Team determines the appropriate placement to deliver the services on the student’s IEP.  
2. Unless the student’s IEP requires some other arrangement, the student is educated in the school that he or she would attend if the student did not require special education. |
### CRITERION NUMBER

<table>
<thead>
<tr>
<th>Legal Standard</th>
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<tbody>
<tr>
<td>3. The decision regarding placement is based on the IEP, including the types of related services that are to be provided to the student, the type of settings in which those services are to be provided, the types of service providers, and the location at which the services are to be provided.</td>
</tr>
<tr>
<td>4. Reserved</td>
</tr>
<tr>
<td>5. Immediately following the development of the IEP, the district provides the parent with two (2) copies of the proposed IEP and proposed placement along with the required notice, except that the proposal of placement may be delayed according to the provisions of 603 CMR 28.06(2)(e) in a limited number of cases.</td>
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<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td>603 CMR 28.05(6) and (7); 28.06(2)</td>
<td>34 CFR 300.116; 300.325</td>
</tr>
</tbody>
</table>

**Rating:** Implemented  **District Response Required:** No

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### CRITERION NUMBER

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<tr>
<th>Legal Standard</th>
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</thead>
<tbody>
<tr>
<td><strong>SE 19</strong> Extended evaluation</td>
</tr>
<tr>
<td>If the Team finds a student eligible for special education and finds the evaluation information insufficient to develop a full or partial IEP, the Team, with the parents’ consent, agrees to an extended evaluation period.</td>
</tr>
<tr>
<td>1. The extended evaluation period is not used to deny programs or services determined to be necessary by the Team. If, prior to the extended evaluation, the Team determines that sufficient information is available to determine, in part, necessary annual goals and services, the Team writes a partial IEP that, if accepted by the parent, is immediately implemented by the district while the extended evaluation is occurring.</td>
</tr>
<tr>
<td>2. The extended evaluation period is not used to allow additional time to complete the required assessments.</td>
</tr>
<tr>
<td>3. If the parent consents to an extended evaluation, the Team documents its findings and determines what evaluation time period is necessary and the types of information needed to develop an IEP. The Team may decide to meet at intervals during the extended evaluation, but in all cases reconvenes promptly to develop an IEP when the evaluation is complete.</td>
</tr>
<tr>
<td>4. The extended evaluation may extend longer than one week, but does not exceed eight school weeks.</td>
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<td>5. The extended evaluation is not considered a placement.</td>
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<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td>603 CMR 28.05(2)(b)</td>
<td></td>
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</tbody>
</table>
CRITERION NUMBER

Legal Standard

Rating: Implemented  District Response Required: No

CRITERION NUMBER

Least restrictive program selected
1. The program selected is the least restrictive environment for students, with consideration given to any potential harmful effect on the student or on the quality of services that he or she needs.
2. If the student is removed from the general education classroom at any time, the Team states why the removal is considered critical to the student’s program and the basis for its conclusion that education of the student in a less restrictive environment, with the use of supplementary aids and services, could not be achieved satisfactorily.
3. The district does not remove an eligible student from the general education classroom solely because of needed modification in the curriculum.
4. If a student’s IEP necessitates special education services in a day or residential facility or an out-of-district educational collaborative program, the IEP Team considers whether the student requires special education services and support to promote the student’s transition to placement in a less restrictive program.

State Requirements | Federal Requirements
M.G.L. c. 71B, § 3 | 34 CFR 300.114-120
603 CMR 28.06(2) |

Rating: Partially Implemented  District Response Required: Yes

Department of Elementary and Secondary Education Findings:
A review of student records indicated that the IEP Teams do not consistently state why the removal from the general education classroom is critical to the student's program and the basis for its conclusion that education of the student in a less restrictive environment, with the use of supplementary aids and services, could not be achieved satisfactorily.
CRITERION NUMBER

Legal Standard

SE 21

School day and school year requirements
1. The Team routinely considers the need for an educational program that is less than or more than the regular school day or school year, including extended day, or year, and/or residential services, and indicates on the IEP why the shorter or longer program is necessary.
2. The daily duration of the student’s program is equal to that of the regular school day unless the Team states that a different duration is necessary to provide a free appropriate public education to the student. In this case the Team specifies the daily duration of the program and states the reason for the different duration on the IEP.
3. Specialized transportation schedules do not impede a student’s access to a full school day and program of instruction.
4. An extended day or year program is identified if the student has demonstrated or is likely to demonstrate substantial regression in his or her learning skills and/or substantial difficulty in relearning such skills if an extended program is not provided.
5. If residential services are required, the IEP clearly specifies the reasons for such determination and how such services will be coordinated with the day education services provided to the student. Additionally, the annual goals and services on the student’s IEP reflect the comprehensive nature of the educational program required.
6. Camping or recreation programs provided solely for recreational purposes and with no corresponding IEP goals or specially designed instruction are not to be considered for extended year programs.

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<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td>M.G.L. c. 69, § 1G</td>
<td>34 CFR 300.106</td>
</tr>
<tr>
<td>603 CMR 28.05(4)(d) and (5)(c)</td>
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Rating: Implemented
District Response Required: No

CRITERION NUMBER

Legal Standard

SE 22

IEP implementation and availability
1. Where the IEP of the student in need of special education has been accepted in whole or in part by that student's parent, the school district provides the mutually agreed upon services without delay.
2. At the beginning of each school year, the district has an IEP in effect for each eligible student within its jurisdiction.
3. Each teacher and provider described in the IEP is informed of his or her specific
<table>
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<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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<tbody>
<tr>
<td>4.</td>
<td>The school district does not delay implementation of the IEP due to lack of classroom space or personnel, provides as many of the services on the accepted IEP as possible and immediately informs parents in writing of any delayed services, reasons for delay, actions that the school district is taking to address the lack of space or personnel and offers alternative methods to meet the goals on the accepted IEP. Upon agreement of the parents, the school district implements alternative methods immediately until the lack of space or personnel issues are resolved.</td>
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<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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</thead>
<tbody>
<tr>
<td>603 CMR 28.05(7)(b); 28.06(2)(d)(2)</td>
<td>34 CFR 300.323</td>
</tr>
</tbody>
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Rating: Implemented  District Response Required: No

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<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>SPECIAL EDUCATION III. PARENTAL INVOLVEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 24</td>
<td>Notice to parent regarding proposal or refusal to initiate or change the identification, evaluation, or educational placement of the student or the provision of FAPE</td>
</tr>
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<thead>
<tr>
<th>Legal Standard</th>
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<tbody>
<tr>
<td>1. A student may be referred for an evaluation by a parent or any person in a caregiving or professional position concerned with the student's development.</td>
</tr>
<tr>
<td>2. When a student is referred for an evaluation to determine eligibility for special education, the school district sends written notice to the student's parent(s) within 5 school days of receipt of the referral, along with the district’s notice of procedural safeguards. The written notice meets all of the content requirements set forth in M.G.L. c.71B, §3, and in federal law, seeks the consent of the parent for the evaluation to occur, and provides the parent with the opportunity to express any concerns or provide information on the student’s skills or abilities and to consult regarding the evaluators to be used.</td>
</tr>
<tr>
<td>3. For all other actions, the district gives notice complying with federal requirements within a reasonable time.</td>
</tr>
<tr>
<td>4. The school district provides the student's parent(s) with an opportunity to consult with the Special Education Administrator or his/her designee to discuss the reasons for the referral and the nature of the proposed evaluation.</td>
</tr>
<tr>
<td>5. The district provides parents with an opportunity to consult with the Administrator of Special Education or his/her designee regarding the evaluators to be used and the proposed content of all required and optional assessments</td>
</tr>
</tbody>
</table>
| 6. The school district does not limit a parent’s right to refer a student for timely
### III. PARENTAL INVOLVEMENT

#### Legal Standard

special education evaluation because the district has not fully explored and/or attempted some or all of the available instructional support programs or other interventions available in general education that may be described in the district’s curriculum accommodation plan, including any pre-referral program.

7. The school district refuses to conduct an initial evaluation only when the circumstances of a student make clear that there is no suspicion of a disability and that there is no concern about the student’s development.

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<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td>M.G.L. c. 71B, § 3; 603 CMR 28.04(1)</td>
<td>34 CFR 300.503; 300.504(a)(1)</td>
</tr>
</tbody>
</table>

**Rating:** Partially Implemented  
**District Response Required:** Yes

### Department of Elementary and Secondary Education Findings:

* A review of student records indicated that the Notices of Proposed School District Action (N1) do not consistently provide a description of each evaluation procedure, test, record, or report the district used as a basis for the proposed or refused action, or a description of any factors relevant to the district's proposal or refusal.

#### SE 25 Parental consent

In accordance with state and federal law, the school district obtains informed parental consent as follows:

1. The school district obtains written parental consent before conducting an initial evaluation and before making an initial placement of a student in a special education program. Written parental consent is obtained before conducting a reevaluation and before placing a student in a special education placement subsequent to the initial placement in special education.

2. The school district obtains consent before initiating extended evaluation services.

3. The school district obtains consent to the services proposed on a student’s IEP before providing such services.

4. A parent is informed that consent may be revoked at any time. Except for initial evaluation and initial placement, consent may not be required as condition of any benefit to the child.

5. When the participation or consent of the parent is required and the parent fails or refuses to participate, the attempts to secure the consent of the parent are implemented through multiple attempts using a variety of methods which are documented by the district. Such efforts may include letters, written notices sent by certified mail, electronic mail (e-mail), telephone calls, or, if appropriate, TTY communications to the home, and home visits at such time as the parent is likely to be home. Efforts may include seeking assistance from a community service agency to secure parental participation.

6. If, subsequent to initial evaluation and initial placement and after following the...
procedures required by the regulations, the school district is unable to obtain parental consent to a re-evaluation or to placement in a special education program subsequent to the initial placement, the school district considers with the parent whether such action will result in the denial of a free appropriate public education to the student. If, after consideration, the school district determines that the parent’s failure or refusal to consent will result in a denial of a free appropriate public education to the student, it seeks resolution of the dispute through the BSEA.

7. If the parent has given consent for special education services and then, at any time following, revokes his/her consent to the student’s special education services in writing, the district is obligated to discontinue all special education services and may not use mediation or request a due process hearing to obtain agreement or a ruling requiring the continuation of services, consistent with federal regulation. If a parent revokes consent in writing, the district must act promptly to provide written notice to the parent/guardian of the district’s proposal to discontinue services based on the revocation of consent, as well as information on how the parent can obtain a copy of his/her right to procedural safeguards. The district must provide the notice a reasonable time before the district intends to discontinue the services.

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<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td>603 CMR 28.07(1) This criterion is related to State Performance Plan Indicator 8. (See <a href="http://www.doe.mass.edu/sped/spp/">http://www.doe.mass.edu/sped/spp/</a>)</td>
<td>34 CFR 300.300</td>
</tr>
</tbody>
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Rating: Implemented
District Response Required: No

<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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<tbody>
<tr>
<td>SE 25A</td>
<td>Sending of copy of notice to Special Education Appeals</td>
</tr>
<tr>
<td></td>
<td>Within five (5) calendar days of receiving a notice that a parent is requesting a hearing or has rejected an IEP, proposed placement, or finding of no eligibility for special education, the school district sends a copy of the notice to the BSEA.</td>
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<tr>
<th>State Requirements</th>
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<tbody>
<tr>
<td>603 CMR 28.08(3)(b)</td>
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Rating: Implemented
District Response Required: No
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<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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<tbody>
<tr>
<td><strong>SE 25B</strong></td>
<td>Resolution of disputes</td>
</tr>
<tr>
<td></td>
<td>1. Within 15 days of receiving notice that a parent has made an official hearing request to Special Education Appeals, the district convenes a meeting with the parent(s) and the relevant member(s) of the IEP Team, including a representative of the district with decision-making authority, to try to resolve the dispute. The resolution session may be waived if the district and the parents agree in writing to do so or if they agree to use mediation instead.</td>
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<tr>
<td></td>
<td>2. If the dispute is resolved at the resolution session, the parent(s) and a representative of the district with the authority to do so sign a legally binding agreement, enforceable in state or federal court. Any party may void this agreement within three (3) business days of the signing.</td>
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<tbody>
<tr>
<td></td>
<td>34 CFR 300.510</td>
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| Rating: Implemented | District Response Required: No |

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<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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<tbody>
<tr>
<td><strong>SE 26</strong></td>
<td>Parent participation in meetings</td>
</tr>
<tr>
<td></td>
<td>1. The district ensures that one or both parents of a student are members of any group that makes decisions on the educational placement of their student.</td>
</tr>
<tr>
<td></td>
<td>2. The Administrator of Special Education notifies parent(s) in writing of any Team meeting early enough to ensure that they have an opportunity to attend.</td>
</tr>
<tr>
<td></td>
<td>3. The district schedules the meeting at a mutually agreed upon time and place; and documents such efforts.</td>
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<tr>
<td></td>
<td>4. If neither parent can attend, the district uses other methods to ensure parent participation, including individual or conference telephone calls, or video conferencing.</td>
</tr>
<tr>
<td></td>
<td>5. In cases where the district, after reasonable efforts, is unable to obtain the parents’ participation in Team meeting discussions and decisions, the district conducts the Team meeting and documents its attempts to facilitate the parents’ participation.</td>
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<tr>
<th>State Requirements</th>
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<tbody>
<tr>
<td>603 CMR 28.02(21)</td>
<td>34 CFR 300.322; 300.501</td>
</tr>
</tbody>
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| Rating: Partially Implemented | District Response Required: Yes |

**Department of Elementary and Secondary Education Findings:**
A review of student records indicated that the district does not document multiple attempts to obtain parents’ participation in IEP Team meetings.
<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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</table>
| SE 27            | Content of Team meeting notice to parents  
The parent notice of any Team meeting states the purpose, time, and location of the meeting as well as who will be in attendance. |

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<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td></td>
<td>34 CFR 300.322(b)(1)(i)</td>
</tr>
</tbody>
</table>

| Rating: | Implemented | District Response Required: | No |

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<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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</table>
| SE 29            | Communications are in English and primary language of home  
1. Communications with parents are in simple and commonly understood words and are in both English and the primary language of the home if such primary language is other than English. Any interpreter used in fulfilling these requirements is fluent in the primary language of the home and familiar with special education procedures, programs, and services. If the parents or the student are unable to read in any language or are blind or deaf, communications required by these regulations are made orally in English with the use of a foreign language interpreter, in Braille, in sign language, via TTY, or in writing, whichever is appropriate, and all such communications are documented.  
2. If the district provides notices orally or in some other mode of communication that is not written language, the district keeps written documentation (a) that it has provided such notice in an alternate manner, (b) of the content of the notice and (c) of the steps taken to ensure that the parent understands the content of the notice. |

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<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td>603 CMR 28.07(8)</td>
<td>34 CFR 300.322(e); 300.503(c)</td>
</tr>
</tbody>
</table>

| Rating: | Partially Implemented | District Response Required: | Yes |

**Department of Elementary and Secondary Education Findings:**  
A review of student records and staff interviews indicated that the district does not consistently translate documents for parents who speak low incidence languages. Interviews also indicated that interpretation at IEP Team meetings is not consistently provided by individuals familiar with special education procedures, programs and services; according to staff members, families and friends are sometimes relied on to act as interpreters.
### SE 32 Parent advisory council for special education

1. The school district has established a district-wide parent advisory council on special education.
2. Membership on the council is offered to all parents of students with disabilities and other interested parties.
3. The parent advisory council duties include but are not limited to: advising the district on matters that pertain to the education and safety of students with disabilities; meeting regularly with school officials to participate in the planning, development, and evaluation of the school district’s special education programs.
4. The parent advisory council has established by-laws regarding officers and operational procedures.
5. The parent advisory council receives assistance from the school committee without charge, upon reasonable notice, and subject to the availability of staff and resources.
6. The school district conducts, in cooperation with the parent advisory council, at least one workshop annually within the district on the rights of students and their parents and guardians under the state and federal special education laws.

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<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td>M.G.L. c. 71B, § 3; 603 CMR 28.03(1)(a)(4); 28.07(4)</td>
<td>Rating: Implemented District Response Required: No</td>
</tr>
</tbody>
</table>

### SE 33 Involvement in the general curriculum

1. Reserved
2. Reserved
3. At least one member of all IEP Teams is familiar with the general curriculum and is able to discuss an eligible student’s appropriate access to the general curriculum.
4. In the IEP the district documents the student’s participation in the general curriculum.

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>603 CMR 28.05(4)(a) and (b)</td>
<td>34 CFR 300.320(a)(1)(i) and a(2)(i)(A); 300.321(a)(4)(ii)</td>
</tr>
<tr>
<td>Rating: Implemented</td>
<td>District Response Required: No</td>
</tr>
</tbody>
</table>
CRITERION NUMBER

Legal Standard

SE 34
Continuum of alternative services and placements
The district provides or arranges for the provision of each of the elements of the IEPs of students in need of special education from the ages of three through twenty-one, ensuring that a continuum of services and alternative placements is available to meet the needs of all students with disabilities, and takes all steps necessary to ensure compliance with all elements of the IEPs, including vocational education.

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td>603 CMR 28.05(7)(b)</td>
<td>34 CFR 300.109; 300.110; 300.115</td>
</tr>
</tbody>
</table>

Rating: Partially Implemented  District Response Required: Yes

Department of Elementary and Secondary Education Findings:
A review of student records, documents, and staff interviews indicated that at all grade levels, only students placed in the Structured Therapeutic Education Program (STEP) receive school adjustment counseling. According to interviews with Team chairpersons and other special education staff members, IEP Teams may not develop IEPs with counseling as a direct service for students with social/emotional and behavioral needs who are not in the STEP program.

CRITERION NUMBER

Legal Standard

SE 35
Assistive technology: specialized materials and equipment
1. Specialized materials and equipment specified in IEPs are provided.  
2. The school district provides evidence that assistive technology is considered for each eligible student and—if the student needs it in order to receive a free, appropriate public education--described in the IEP and provided by the district.

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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</thead>
<tbody>
<tr>
<td>34 CFR 300.105; 300.324(a)(2)(v)</td>
<td></td>
</tr>
</tbody>
</table>

Rating: Implemented  District Response Required: No

CRITERION NUMBER

Legal Standard

SE 36
IEP implementation, accountability and financial responsibility
1. Reserved.  
2. The district oversees in an ongoing manner the full implementation of each in-
### SE 37 Procedures for approved and unapproved out-of-district placements

1. **Individual student program oversight:** The school district monitors the provision of services to and the programs of individual students placed in public and private out-of-district programs. Documentation of monitoring plans and all actual monitoring are placed in the files of every eligible student who has been placed out-of-district. To the extent that this monitoring requires site visits, such site visits are documented and placed in the students’ files for review. The duty to monitor out-of-district placements is not delegated to parents or their agents, to the Department of Elementary and Secondary Education, or to the out-of-district program.

2. **Student right to full procedural protections:** The school district retains full responsibility for ensuring that the student is receiving all special education and related services in the student's IEP, as well as all procedural protections of law and regulation. Any Team meetings conducted during the time that a student is enrolled in the out-of-district program are initiated by the school district in coordination with the out-of-district program.

3. **Preference to approved programs:** The school district, in all circumstances, first seeks to place a student in a program approved by the Department pursuant to the requirements of 603 CMR 28.09. Preference is also given to approved programs located within the Commonwealth of Massachusetts if the choice of such program is consistent with the needs of the student and the choice of such program complies with LRE requirements. When an approved program is available to provide the services on the IEP, the district makes such placement in the approved program in preference to any program not approved by the Department.
<table>
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<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td><strong>Written contracts:</strong> The school district enters into written contracts with all public and private out-of-district placements. At a minimum, such contracts meet the content requirements of 28.06(3)(f)(1-5).</td>
</tr>
<tr>
<td>5.</td>
<td><strong>Use of unapproved programs:</strong> A school district that places a student in a program that has not been approved by the Department according to the requirements under 603 CMR 28.09 ensures that such programs and services are provided in appropriate settings by appropriately credentialed staff able to deliver the services on the student’s IEP. Students placed by the school district in such programs are entitled to the full protections of state and federal special education law and regulation.</td>
</tr>
<tr>
<td>6.</td>
<td><strong>Placement documentation:</strong> The following documentation is maintained by the school district pursuant to its placement of students in unapproved out-of-district programs:</td>
</tr>
<tr>
<td></td>
<td>a. <strong>Search:</strong> The Administrator of Special Education documents the search for and unavailability of a program approved by the Department. The Administrator places such documentation in the student record.</td>
</tr>
<tr>
<td></td>
<td>b. <strong>Evaluation of facility:</strong> The Administrator of Special Education or his/her designee thoroughly evaluates the appropriateness of any unapproved facility prior to placement of the student in such program. Such evaluation determines whether the unapproved facility can appropriately implement the student’s IEP in a safe and educationally appropriate environment. Such evaluation determines whether the unapproved facility can and will provide the student with all the rights that are accorded to the student under state and federal special education law. Such evaluation is documented in detail and placed in the student record for review. To the extent that this evaluation requires a site visit, such site visits are documented and placed in the student record for review. The duty to evaluate the appropriateness of any unapproved facility is not delegated to the parents or their agents or the proposed unapproved facility.</td>
</tr>
<tr>
<td></td>
<td>c. <strong>School district approval to operate a private school in Massachusetts:</strong> If services in an unapproved program are provided in a school setting, the Administrator of Special Education ensures that such school has received approval from the school committee where the private school is located under M.G.L. c.76, §1 and a copy of such approval is retained in the student record.</td>
</tr>
<tr>
<td></td>
<td>d. <strong>Pricing:</strong> Pursuant to the requirements for Compliance, Reporting and Auditing for Human and Social Services at 808 CMR 1.00, the Administrator obtains pricing forms required to set program prices for programs receiving publicly funded students. Such pricing forms are completed by the proposed placement and document that the price proposed for the student’s tuition is the lowest price charged for similar services to any student in that program.</td>
</tr>
</tbody>
</table>
|                  | e. **Notification of the Department of Elementary and Secondary Education:** Prior to placement, if the Team determines that placement in such facility is appropriate, the Administrator notifies the Department of the intent to place...
CRITERION NUMBER

Legal Standard

the student and the name and location of the proposed placement before placing the student into the program by sending a completed mandated 28M3 form titled “Notice of Intent to Seek Approval for Individual Student Program” and all the required supporting documentation (i.e., completed pricing forms, signed written contract that will govern such placement, and monitoring plan pursuant to 603 CMR 28.06(3)(b)). The district maintains copies of this documentation, as well as any documentation of the Department’s objections to such placement and the steps the district has taken in regard to such objection. The district maintains documentation of the approved price for publicly-funded students as set by the state agency responsible for setting program prices. The district maintains documentation of actual monitoring of the unapproved placement, including any site visits made and other monitoring activities undertaken by the school district.

f. Out of state programs: If out-of-district programs are provided in a placement outside of Massachusetts, and such school has not received approval by the Department under 603 CMR 28.09, the Administrator of Special Education ensures that such school has received approval from the host state.

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.G.L. c. 76, s. 1</td>
<td>34 CFR 300.2(c)</td>
</tr>
<tr>
<td>603 CMR 18.00; 28.02(14);</td>
<td></td>
</tr>
<tr>
<td>28.06(2)(f) and (3); 28.09</td>
<td></td>
</tr>
<tr>
<td>808 CMR 1.00</td>
<td></td>
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<tr>
<td>Rating: Implemented</td>
<td>District Response Required: No</td>
</tr>
</tbody>
</table>

CRITERION NUMBER

Legal Standard

**SE 38 Special education services in institutional settings (SEIS)**

Department of Elementary and Secondary Education responsibility: In cases where the Department provides certain special education services to eligible students in certain facilities operated by or under contract with the Department of Mental Health, the Department of Youth Services, County Houses of Corrections, or the Department of Public Health, the Department retains the discretion to determine, based upon resources, the type and amount of special education and related services that it provides in such facilities.

School district responsibility:

1. The district implements its responsibilities to students in institutional settings by acting on requests for evaluation, issuing proposed IEPs in a timely manner,
### CRITERION NUMBER

**Legal Standard**

1. Providing special education and/or related services in accordance with state and federal law.

2. Where a student's IEP requires a type or amount of service that the facility does not provide, it remains the responsibility of the parent’s school district to implement the student's IEP by arranging and paying for the provision of such service(s).

3. The parent’s school district coordinates with the state agency to ensure that the student receives an evaluation, an annual review, and special education services as identified at a Team meeting convened by the parent’s school district.

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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</thead>
<tbody>
<tr>
<td>603 CMR 28.06(9)</td>
<td></td>
</tr>
</tbody>
</table>

**Rating:** Implemented

**District Response Required:** No

### CRITERION NUMBER

**Legal Standard**

**SE 39A**

*Procedures used to provide services to eligible students enrolled in private schools at private expense whose parents reside in the district*

1. The district conducts student find activities--comparable to those for public school students--for all students enrolled at private expense in private schools in the district.

2. The district consults with private schools in accordance with federal requirements.

3. The district provides or arranges for the provision of an evaluation for any private school student whose parent resides in the district who is referred for evaluation. The evaluation may take place in the public school, the private school, or an appropriate contracted facility; as part of its consultation with the private school, the district ensures that a representative of the student’s private school is invited to participate as a member of the Team pursuant to §28.05. The district provides an IEP for any such private school student who is found eligible for special education and/or related services.

4. The district provides special education and/or related services designed to meet the needs of eligible students, who are attending private schools at private expense and whose parents reside in the district, and does so according to a properly developed IEP. The district provides to such students genuine opportunities to participate in a public school special education program consistent with state constitutional limitations.

5. In providing or arranging for the provision of the special education and/or related services described by the student’s IEP, the district ensures that special
CRITERION NUMBER

Legal Standard

education services funded with state or local funds are provided in a public school facility or other public or neutral site. When services are provided using only federal funds, services are provided on public or private school grounds. When the student attends a private school located outside of the district, the district makes reasonable efforts to provide or arrange for the provision of services for the student in the community where the school is located.

6. The district does not withdraw or withhold services from a student whose parents reside in the district solely because the district has met the spending requirements of federal law.

7. Special education services and/or related services for a private school student whose parents reside in the district are comparable in quality, scope, and opportunity for participation to those provided to public school students with needs of equal importance.

8. An expedited special education evaluation, which is limited to a student’s physician statement unless there is a clear indication of the need or unless the parents request additional evaluation, is conducted and services provided to eligible students whose parents reside in the district within 15 calendar days of the district’s receipt of the student’s physician statement.

9. The district calculates the proportionate share of Federal Special Education Entitlement funds (Fund Code 240) required to be spent on eligible private school students (including all eligible students attending private school in the district whether their parents reside in the district, in another Massachusetts district, or out of state) and documents the spending of at least this amount of federal entitlement funds (Fund Code 240) on one or more of the eligible private school students attending private school in the district whose parents reside in the district or out of state.

State Requirements | Federal Requirements
--- | ---
M.G.L. c. 71B, section 2 603 CMR 28.03(1)(e) | 34 CFR 300.130-144; 300.300(d)(4)

Rating: Implemented  
District Response Required: No

CRITERION NUMBER

Legal Standard

Procedures used to provide services to eligible students who are enrolled at private expense in private schools in the district and whose parents reside out of state

1. The district conducts student find activities--comparable to those for public school students--for all students enrolled at private expense in private schools in
2. For students enrolled at private expense in private schools in the district and whose parents reside out of state, the district consults with the private schools in accordance with federal requirements. It conducts evaluations and determines eligibility in accordance with state and federal requirements.

3. The district calculates the proportionate share of Federal Special Education Entitlement funds (Fund Code 240) required to be spent on eligible private school students (including all eligible students attending private school in the district whether their parents reside in the district, in another Massachusetts district, or out of state) and documents the spending of at least this amount of federal entitlement funds (Fund Code 240) on one or more of the eligible private school students attending private school in the district whose parents reside in the district or out of state.

4. If the district provides services to any eligible private school student from out of state, it does so using an individual services plan.

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>603 CMR 28.02(7); 28.04; 28.05(2)</td>
<td>34 CFR 300.130-144; 300.301-311</td>
</tr>
</tbody>
</table>

Rating: Implemented  District Response Required: No

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**CRITERION NUMBER**

<table>
<thead>
<tr>
<th>Legal Standard</th>
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</thead>
<tbody>
<tr>
<td><strong>SE 40</strong> Instructional grouping requirements for students aged five and older</td>
</tr>
<tr>
<td>1. The size and composition of instructional groupings for eligible students receiving services outside the general education classroom are compatible with the methods and goals stated in each student's IEP.</td>
</tr>
<tr>
<td>2. Instructional grouping size requirements are maximum sizes and the school district exercises judgment in determining appropriate group size and supports for smaller instructional groups serving students with complex special needs.</td>
</tr>
<tr>
<td>3. When eligible students are assigned to instructional groupings outside of the general education classroom for 60% or less of the students’ school schedule, group size does not exceed</td>
</tr>
<tr>
<td>a. 8 students with a certified special educator,</td>
</tr>
<tr>
<td>b. 12 students if the certified special educator is assisted by 1 aide, and</td>
</tr>
<tr>
<td>c. 16 students if the certified special educator is assisted by 2 aides</td>
</tr>
<tr>
<td>4. For eligible students served in settings that are substantially separate, serving solely students with disabilities for more than 60% of the students’ school schedule, the district provides instructional groupings that do not exceed</td>
</tr>
<tr>
<td>a. 8 students to 1 certified special educator or</td>
</tr>
<tr>
<td>b. 12 students to 1 certified special educator and 1 aide.</td>
</tr>
<tr>
<td>5. After the school year has begun, if instructional groups have reached maximum size as delineated in paragraphs 3 and 4 of this criterion, the Administrator of Special Education and the certified special educator(s) providing services in an instructional group may decide to increase the size of an instructional grouping</td>
</tr>
</tbody>
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CRITERION NUMBER

Legal Standard

by no more than two additional students if the additional students have compatible instructional needs and then can receive services in their neighborhood school.

6. In such cases, the Administrator provides written notification to the Department and the parents of all group members of the decision to increase the instructional group size and the reasons for such decision. Such increased instructional group sizes are in effect only for the year in which they are initiated.

7. The district takes all steps necessary to reduce the instructional groups to the sizes outlined in paragraph 3 or 4 of this criterion for subsequent years. Such steps are documented by the district.

State Requirements | Federal Requirements
---|---
603 CMR 28.06(6) | |

Rating: Partially Implemented District Response Required: Yes

Department of Elementary and Secondary Education Findings:
A review of documents indicated that two sections of Study Skills at Burncoat High School exceed the maximum number of students to special education staff. Document review and interviews demonstrated that the district has not provided written notification to the Department or the parents of all group members of the decision to increase the instructional group size and the reasons for such decision.

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**SE 41 Age span requirements**
The ages of the youngest and oldest student in any instructional grouping do not differ by more than 48 months. A written request for approval of a wider age range is submitted to the Commissioner of Elementary and Secondary Education in cases where the district believes it is justified. Such requests are implemented only after approval of the Department of Elementary and Secondary Education.

State Requirements | Federal Requirements
---|---
603 CMR 28.06(6)(f) | |

Rating: Partially Implemented District Response Required: Yes

Department of Elementary and Secondary Education Findings:
A review of documents demonstrated that the ages of the youngest and oldest students in the following special education instructional groups differ by more than 48 months:

<table>
<thead>
<tr>
<th>School</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burncoat High School</td>
<td>Life Skills</td>
</tr>
<tr>
<td>Burncoat High School</td>
<td>Study Skills</td>
</tr>
<tr>
<td>North High School</td>
<td>Algebra I</td>
</tr>
</tbody>
</table>
Document review and interviews verified that the district has not submitted a written request for approval of a wider age range to the Department in cases where the district believes a request is justified.

<table>
<thead>
<tr>
<th>North High School</th>
<th>Health</th>
</tr>
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<tbody>
<tr>
<td>North High School</td>
<td>Study Skills</td>
</tr>
<tr>
<td>South High School</td>
<td>Human Anatomy</td>
</tr>
<tr>
<td>South High School</td>
<td>Six periods of Study Skills</td>
</tr>
<tr>
<td>South High School</td>
<td>Career Ed Plan</td>
</tr>
<tr>
<td>South High School</td>
<td>English IV</td>
</tr>
<tr>
<td>Technical High School</td>
<td>Two periods of Life Skills</td>
</tr>
<tr>
<td>Claremont Academy High School</td>
<td>World History II</td>
</tr>
</tbody>
</table>

**CRITERION NUMBER**

<table>
<thead>
<tr>
<th><strong>Legal Standard</strong></th>
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<tbody>
<tr>
<td><strong>SE 42</strong> Programs for young children three and four years of age</td>
</tr>
</tbody>
</table>

**General requirements:**

1. The school district ensures programs are available for eligible students three and four years of age. Such programs shall be developmentally appropriate and specially designed for students ages three and four years.
2. Reserved.
3. Where appropriate, the school district elects, consistent with federal requirements, to use the format and services of the Individualized Family Service Plan (IFSP), if appropriate, for an additional year as a means of transitioning eligible students to public school services.
4. Where appropriate the Team allows a student to remain in a program designed for three and four year old students for the duration of the school year in which the student turns five years old (including the summer following the date of the student's fifth birthday).

**Types of Settings:**

5. Inclusionary programs for young students are located in a setting that includes students with and without disabilities and meet the following standards:
   a. Services in such programs are provided in the home, the public school, Head Start, or a licensed childcare setting.
   b. For public school programs that integrate students with and without disabilities, the class size does not exceed 20 with 1 teacher and 1 aide and no more than 5 students with disabilities. If the number of students with disabilities is 6 or 7 then the class size does not exceed 15 students with 1 teacher and 1 aide.

6. Substantially separate programs for young students are located in a public school classroom or facility that serves primarily or solely students with disabilities. Substantially separate programs adhere to the following standards:
   a. Substantially separate programs are programs in which more than 50% of the students have disabilities.
   b. Substantially separate programs operated by the district limit class sizes to 9 students with 1 teacher and 1 aide.
### CRITERION NUMBER

<table>
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<th>Legal Standard</th>
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<tbody>
<tr>
<td><strong>State Requirements</strong></td>
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<tr>
<td>603 CMR 28.06(7)</td>
</tr>
<tr>
<td><strong>Rating:</strong> Implemented</td>
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### CRITERION NUMBER

| SPECIAL EDUCATION  
V. STUDENT SUPPORT SERVICES |
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<tr>
<td><strong>Legal Standard</strong></td>
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</tbody>
</table>
| **SE 43** Behavioral interventions  
For a student whose behavior impedes their learning or the learning of others, the Team considers the student’s behavior including positive behavioral interventions and the possible need for a functional behavioral assessment. |
| **State Requirements** | **Federal Requirements** |
| | 34 CFR 300.324(a)(2)(i) |
| **Rating:** Implemented | **District Response Required:** No |

### CRITERION NUMBER

<table>
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<tr>
<th>Legal Standard</th>
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</table>
| **SE 44** Procedure for recording suspensions  
The district has a procedure to record the number and duration of suspensions from any part of the student’s program, including suspensions from special transportation prescribed by the IEP. |
| **State Requirements** | **Federal Requirements** |
| | 34 CFR 300.530  
| **Rating:** Implemented | **District Response Required:** No |
### SE 45 Procedures for suspension up to 10 days and after 10 days: General requirements

1. Any eligible student may be suspended up to 10 days in any school year without implementation of procedures described in criterion SE 46 below.
2. After a student with special needs has been suspended for 10 days in any school year, during any subsequent removal the public school provides sufficient services for the student to continue to receive a free and appropriate public education.
3. The school provides additional procedural safeguards for students with disabilities prior to any suspension beyond 10 consecutive days or more than 10 cumulative days (if there is a pattern of suspension) in any school year.

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tr>
<td>M.G.L. c. 76, §§ 16-17</td>
<td>34 CFR 300.530-300.537</td>
</tr>
</tbody>
</table>

**Rating:** Partially Implemented  
**District Response Required:** Yes

#### Department of Elementary and Secondary Education Findings:

A review of student records and staff interviews indicated that the written notice of procedural safeguards is not consistently provided to parents of high school students who are suspended 10 or more days.

### SE 46 Procedures for suspension of students with disabilities when suspensions exceed 10 consecutive school days or a pattern has developed for suspensions exceeding 10 cumulative days; responsibilities of the Team; responsibilities of the district

1. A suspension of longer than 10 consecutive days or a series of suspensions that are shorter than 10 consecutive days but constitute a pattern are considered to represent a change in placement.
2. When a suspension constitutes a change in placement of a student with disabilities, district personnel, the parent, and other relevant members of the Team, as determined by the parent and the district, convene within 10 days of the decision to suspend to review all relevant information in the student’s file, including the IEP, any teacher observations, and any relevant information from the parents, to determine whether the behavior was caused by or had a direct and substantial relationship to the disability or was the direct result of the district’s failure to implement the IEP—“a manifestation determination.”
3. If district personnel, the parent, and other relevant members of the Team determine that the behavior is NOT a manifestation of the disability, then the suspension or expulsion may go forward consistent with policies applied to any...
CRITERION
NUMBER

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student without disabilities, except that the district must still offer:

a. services to enable the student, although in another setting, to continue to participate in the general education curriculum and to progress toward IEP goals; and

b. as appropriate, a functional behavioral assessment and behavioral intervention services and modifications, to address the behavior so that it does not recur.

4. Interim alternative educational setting. Regardless of the manifestation determination, the district may place the student in an interim alternative educational setting (as determined by the Team) for up to 45 school days

a. on its own authority if the behavior involves weapons or illegal drugs or another controlled substance or the infliction of serious bodily injury on another person while at school or a school function or, considered case by case, unique circumstances; or

b. on the authority of a hearing officer if the officer orders the alternative placement after the district provides evidence that the student is “substantially likely” to injure him/herself or others.

Characteristics. In either case, the interim alternative education setting enables the student to continue in the general curriculum and to continue receiving services identified on the IEP, and provides services to address the problem behavior.

5. If district personnel, the parent, and other relevant members of the Team determine that the behavior IS a manifestation of the disability, then the Team completes a functional behavioral assessment and behavioral intervention plan if it has not already done so. If a behavioral intervention plan is already in place, the Team reviews it and modifies it, as necessary, to address the behavior. Except when he or she has been placed in an interim alternative educational setting in accordance with part 4, the student returns to the original placement unless the parents and district agree otherwise or the hearing officer orders a new placement.

6. Not later than the date of the decision to take disciplinary action, the school district notifies the parents of that decision and provides them with the written notice of procedural safeguards. If the parent chooses to appeal or the school district requests a hearing because it believes that maintaining the student’s current placement is substantially likely to result in injury to the student or others, the student remains in the disciplinary placement, if any, until the decision of the hearing officer or the end of the time period for the disciplinary action, whichever comes first, unless the parent and the school district agree otherwise.

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td></td>
<td>34 CFR 300.530-537</td>
</tr>
</tbody>
</table>

Rating: Implemented
District Response Required: No
CRITERION NUMBER

Legal Standard

SE 47  Procedural requirements applied to students not yet determined to be eligible for special education
1. If, prior to the disciplinary action, a district had knowledge that the student may be a student with a disability, then the district makes all protections available to the student until and unless the student is subsequently determined not to be eligible. The district may be considered to have prior knowledge if:
   a. The parent had expressed concern in writing; or
   b. The parent had requested an evaluation; or
   c. District staff had expressed directly to the special education director or other supervisory personnel specific concerns about a pattern of behavior demonstrated by the student.
   The district may not be considered to have had prior knowledge if the parent has not consented to evaluation of the student or has refused special education services, or if an evaluation of the student has resulted in a determination of ineligibility.
2. If the district had no reason to consider the student disabled, and the parent requests an evaluation subsequent to the disciplinary action, the district must have procedures consistent with federal requirements to conduct an expedited evaluation to determine eligibility.
3. If the student is found eligible, then he/she receives all procedural protections subsequent to the finding of eligibility.

State Requirements | Federal Requirements
--- | ---
| 34 CFR 300.534 |
Rating: Implemented | District Response Required: No

CRITERION NUMBER

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SE 48  Equal opportunity to participate in educational, nonacademic, extracurricular and ancillary programs, as well as participation in regular education
All students receiving special education, regardless of placement, shall have an equal opportunity to participate in and, if appropriate, receive credit for the vocational, supportive, or remedial services that may be available as part of the general education program as well as the non-academic and extracurricular programs of the school.
Programs, services and activities include, but are not limited to:
1. art and music
<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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<tbody>
<tr>
<td></td>
<td>2. vocational education, industrial arts, and consumer and homemaking education</td>
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<tr>
<td></td>
<td>3. work study and employment opportunities</td>
</tr>
<tr>
<td></td>
<td>4. counseling services available at all levels in the district</td>
</tr>
<tr>
<td></td>
<td>5. health services</td>
</tr>
<tr>
<td></td>
<td>6. transportation</td>
</tr>
<tr>
<td></td>
<td>7. recess and physical education, including adapted physical education</td>
</tr>
<tr>
<td></td>
<td>8. athletics and recreational activities</td>
</tr>
<tr>
<td></td>
<td>9. school-sponsored groups or clubs</td>
</tr>
<tr>
<td></td>
<td>10. meals</td>
</tr>
<tr>
<td>State Requirements</td>
<td>Federal Requirements</td>
</tr>
<tr>
<td>603 CMR 28.06(5)</td>
<td>34 CFR 300.101 - 300.113</td>
</tr>
<tr>
<td>Rating: Implemented</td>
<td>District Response Required: No</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 49</td>
<td>Related services</td>
</tr>
<tr>
<td></td>
<td>For each student with special education needs found to require related services, the school district provides or arranges for the provision of transportation and such developmental, corrective, and other supportive services as are required to assist a student to benefit from special education or to access the general curriculum, and includes:</td>
</tr>
<tr>
<td></td>
<td>1. speech-language pathology and audiology services</td>
</tr>
<tr>
<td></td>
<td>2. psychological services</td>
</tr>
<tr>
<td></td>
<td>3. physical therapy</td>
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<tr>
<td></td>
<td>4. occupational therapy</td>
</tr>
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<td></td>
<td>5. recreation, including therapeutic recreation</td>
</tr>
<tr>
<td></td>
<td>6. early identification and assessment of disabilities in children</td>
</tr>
<tr>
<td></td>
<td>7. counseling services, including rehabilitation counseling</td>
</tr>
<tr>
<td></td>
<td>8. orientation and mobility services (peripatology)</td>
</tr>
<tr>
<td></td>
<td>9. medical services for diagnostic or evaluation purposes</td>
</tr>
<tr>
<td></td>
<td>10. school health services, including school nurse services</td>
</tr>
<tr>
<td></td>
<td>11. social work services in schools</td>
</tr>
<tr>
<td></td>
<td>12. parent counseling and training, and</td>
</tr>
<tr>
<td></td>
<td>13. interpreting services.</td>
</tr>
<tr>
<td>State Requirements</td>
<td>Federal Requirements</td>
</tr>
<tr>
<td>603 CMR 28.02(18)</td>
<td>CFR 300.34; 300.323(c)</td>
</tr>
<tr>
<td>Rating: Implemented</td>
<td>District Response Required: No</td>
</tr>
<tr>
<td>CRITERION NUMBER</td>
<td>SPECIAL EDUCATION VI. FACULTY, STAFF AND ADMINISTRATION</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Legal Standard</td>
</tr>
<tr>
<td>SE 50</td>
<td><strong>Administrator of Special Education</strong></td>
</tr>
<tr>
<td></td>
<td>The school district has an appointed person to be its Administrator of Special Education. The Administrator supervises all special education for the school district and ensures compliance with all federal and state special education laws. The Administrator of Special Education is appropriately licensed or holds a current waiver for an appropriate license or otherwise demonstrates that he or she has the qualifications to perform all of the duties of the Administrator. As appropriate, and in accordance with the requirements of M.G.L. c.71B, §3A, the Administrator may designate other school district personnel to carry out some of the duties of the Administrator.</td>
</tr>
<tr>
<td></td>
<td>State Requirements</td>
</tr>
<tr>
<td></td>
<td>Federal Requirements</td>
</tr>
<tr>
<td></td>
<td>M.G.L. c. 71B, § 3A; 603 CMR 28.03(2)</td>
</tr>
<tr>
<td></td>
<td>Rating: Implemented</td>
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<td></td>
<td>District Response Required: No</td>
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<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>SPECIAL EDUCATION VI. FACULTY, STAFF AND ADMINISTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Legal Standard</td>
</tr>
<tr>
<td>SE 51</td>
<td><strong>Appropriate special education teacher licensure</strong></td>
</tr>
<tr>
<td></td>
<td>Except at Commonwealth charter schools, individuals who design and/or provide direct special education services described in IEPs are appropriately licensed.</td>
</tr>
<tr>
<td></td>
<td><strong>Commonwealth Charter Schools – Special Education Teacher Qualifications</strong></td>
</tr>
<tr>
<td></td>
<td>To come into compliance with IDEA, Commonwealth charter schools must use “qualified” teachers to provide specialized instruction or have a “qualified” teacher consult with or provide direct supervision for someone who is not qualified but is delivering specialized instruction. This is an IDEA requirement.</td>
</tr>
<tr>
<td></td>
<td>“Qualified” teachers must hold a valid license in special education or have successfully completed an undergraduate or graduate degree in an approved special education program.</td>
</tr>
<tr>
<td></td>
<td>Please see additional guidance at:</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.doe.mass.edu/charter/tech_advisory/07_1.html#">http://www.doe.mass.edu/charter/tech_advisory/07_1.html#</a> (update 2/2011)</td>
</tr>
<tr>
<td></td>
<td>State Requirements</td>
</tr>
<tr>
<td></td>
<td>Federal Requirements</td>
</tr>
<tr>
<td>CRITERION NUMBER</td>
<td>Legal Standard</td>
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<tr>
<td></td>
<td>M.G.L. c. 71, s. 38G; s. 89(qq); 603 CMR 1.07; 7.00; 28.02(3) 34 CFR 300.18; 300.156</td>
</tr>
<tr>
<td>Rating:</td>
<td>Implemented</td>
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<tr>
<td>District Response Required:</td>
<td>No</td>
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<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 52</td>
<td>Appropriate certifications/licenses or other credentials -- related service providers</td>
</tr>
<tr>
<td></td>
<td>Any person, including non-educational personnel, who provides related services described under federal special education law, who supervises paraprofessionals in the provision of related services, or who provides support services directly to the general or special classroom teacher is appropriately certified, licensed, board-registered or otherwise approved to provide such services by the relevant professional standards board or agency for the profession.</td>
</tr>
<tr>
<td>State Requirements</td>
<td>Federal Requirements</td>
</tr>
<tr>
<td>603 CMR 28.02(3),(18)</td>
<td>34 CFR 300.34; 300.156(b)</td>
</tr>
<tr>
<td>Rating:</td>
<td>Implemented</td>
</tr>
<tr>
<td>District Response Required:</td>
<td>No</td>
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<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 52A</td>
<td>Registration of educational interpreters</td>
</tr>
<tr>
<td></td>
<td>Providers of interpreting services for students who are deaf or hard of hearing must be registered with the Massachusetts Commission for the Deaf and Hard of Hearing.</td>
</tr>
<tr>
<td>State Requirements</td>
<td>Federal Requirements</td>
</tr>
<tr>
<td>603 CMR 28.02(3),(18)</td>
<td>34 CFR 300.34; 300.156(b)</td>
</tr>
<tr>
<td>Rating:</td>
<td>Implemented</td>
</tr>
<tr>
<td>District Response Required:</td>
<td>No</td>
</tr>
<tr>
<td>CRITERION NUMBER</td>
<td>Legal Standard</td>
</tr>
<tr>
<td>------------------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>SE 53</strong></td>
<td>Use of paraprofessionals</td>
</tr>
<tr>
<td></td>
<td>1. Reserved</td>
</tr>
<tr>
<td></td>
<td>2. Persons employed as paraprofessionals and assistants do not design instruction for students with disabilities but are expected to implement instruction under the supervision of an appropriately certified or licensed professional who is proximate and readily available to provide such supervision.</td>
</tr>
<tr>
<td><strong>State Requirements</strong></td>
<td><strong>Federal Requirements</strong></td>
</tr>
<tr>
<td>Rating: Implemented</td>
<td>District Response Required: No</td>
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</tbody>
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<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SE 54</strong></td>
<td>Professional development</td>
</tr>
<tr>
<td></td>
<td>1. The district considers the needs of all staff in developing training opportunities for professional and paraprofessional staff and provides a variety of offerings.</td>
</tr>
<tr>
<td></td>
<td>2. The district ensures that all staff, including both special education and general education staff, are trained on:</td>
</tr>
<tr>
<td></td>
<td>a. state and federal special education requirements and related local special education policies and procedures;</td>
</tr>
<tr>
<td></td>
<td>b. analyzing and accommodating diverse learning styles of all students in order to achieve an objective of inclusion in the general education classroom of students with diverse learning styles;</td>
</tr>
<tr>
<td></td>
<td>c. methods of collaboration among teachers, paraprofessionals and teacher assistants to accommodate diverse learning styles of all students in the general education classroom;</td>
</tr>
<tr>
<td></td>
<td>3. The district provides in-service training for all locally hired and contracted transportation providers, before they begin transporting any special education student receiving special transportation, on his or her needs and appropriate methods of meeting those needs; for any such student it also provides written information on the nature of any needs or problems that may cause difficulties, along with information on appropriate emergency measures. Transportation providers include drivers of general and special education vehicles and any attendants or aides identified by a Team for either type of vehicle.</td>
</tr>
<tr>
<td><strong>State Requirements</strong></td>
<td><strong>Federal Requirements</strong></td>
</tr>
<tr>
<td>M.G.L. c. 71, §§ 38G, 38Q and 38Q ½ 603 CMR 28.03(1)(a); 28.06(8)(b) and (c)</td>
<td>34 CFR 300.156</td>
</tr>
<tr>
<td>Rating: Partially Implemented</td>
<td>District Response Required: Yes</td>
</tr>
</tbody>
</table>
Department of Elementary and Secondary Education Findings:
A review of documents and staff interviews indicated that general education and special education teachers do not receive training annually on the following: (1) state and federal special education regulations and related special education procedures, (2) analyzing and accommodating diverse learning styles of all students in order to achieve an objective of inclusion in the general education classroom, and (3) methods of collaboration among teachers, paraprofessionals and instructional assistants to accommodate diverse learning styles of all students in the general education curriculum.

<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>SPECIAL EDUCATION VII. SCHOOL FACILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Legal Standard</td>
</tr>
<tr>
<td>SE 55</td>
<td>Special education facilities and classrooms</td>
</tr>
<tr>
<td></td>
<td>The school district provides facilities and classrooms for eligible students that</td>
</tr>
<tr>
<td></td>
<td>1. maximize the inclusion of such students into the life of the school;</td>
</tr>
<tr>
<td></td>
<td>2. provide accessibility in order to implement fully each student’s IEP;</td>
</tr>
<tr>
<td></td>
<td>3. are at least equal in all physical respects to the average standards of general education facilities and classrooms;</td>
</tr>
<tr>
<td></td>
<td>4. are given the same priority as general education programs in the allocation of instructional and other space in public schools in order to minimize the separation or stigmatization of eligible students; and</td>
</tr>
<tr>
<td></td>
<td>5. are not identified by signs or other means that stigmatize such students.</td>
</tr>
<tr>
<td></td>
<td>State Requirements</td>
</tr>
<tr>
<td></td>
<td>603 CMR 28.03(1)(b)</td>
</tr>
</tbody>
</table>

Rating: Partially Implemented  District Response Required: Yes

Department of Elementary and Secondary Education Findings:
Observations indicated the following issues with special education facilities: 1) At the Chandler Magnet School, special education classes are clustered in the school’s C wing (rooms 120, 119, 118, 121A, 121B, 122A and 122B), which does not maximize the inclusion of these students into the life of the school; 2) at Doherty High School, special education students and English language learners receive instruction simultaneously in room 209, creating auditory distractions and confidentiality concerns; 3) also at Doherty High School, students must access their special education classroom (room 324) through the suspension room, which creates a confidentiality issue; and 4) occupational therapy and speech therapy services at Doherty High School are delivered in a room where computers are fixed (room 203), which poses a safety hazard for the students.
### CRITERION NUMBER

**VIII. PROGRAM PLAN AND EVALUATION**

<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 56</td>
<td>Special education programs and services are evaluated. Special education programs and services are regularly evaluated.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.G.L. c. 71B, section 2</td>
<td>34 CFR 300.323(g)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rating:</th>
<th>Implemented</th>
<th>District Response Required: No</th>
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### CRITERION NUMBER

<table>
<thead>
<tr>
<th>Legal Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE 59</td>
</tr>
</tbody>
</table>

**Transfer of student records**

When a student with an IEP transfers from school district to school district, whether both of those districts are within the Commonwealth of Massachusetts or not,  
1. any Massachusetts school to which the student is transferring takes reasonable steps to promptly obtain the student’s records, including the IEP, from the former school, and  
2. any Massachusetts school from which the student is transferring takes reasonable steps to promptly respond to the new school’s request for records.

<table>
<thead>
<tr>
<th>State Requirements</th>
<th>Federal Requirements</th>
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<tbody>
<tr>
<td></td>
<td>34 CFR 300.323(g)</td>
</tr>
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</table>

| Rating: | Implemented | District Response Required: No |
CIVIL RIGHTS
METHODS OF ADMINISTRATION (CR)
AND
OTHER RELATED GENERAL EDUCATION REQUIREMENTS

LEGAL STANDARDS,
COMPLIANCE RATINGS AND
FINDINGS
<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>CIVIL RIGHTS METHODS OF ADMINISTRATION (CR) AND OTHER RELATED GENERAL EDUCATION REQUIREMENTS</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>II. STUDENT IDENTIFICATION AND PLACEMENT</td>
</tr>
<tr>
<td></td>
<td>Legal Standard</td>
</tr>
</tbody>
</table>
| CR 3             | **Access to a full range of education programs**  
All students, regardless of race, color, sex, gender identity, religion, national origin, 
sexual orientation, disability, or homelessness, have equal access to the general 
education program and the full range of any occupational/vocational education 
programs offered by the district. |
|                  | Title VI: 42 U.S.C. 2000d; 34 CFR 100.3(a),(b); EEOA: 20 U.S.C. 1703(f); Title IX:  
20 U.S.C. 1681; 34 CFR 106.31, 106.34, 106.35; Section 504: 29 U.S.C. 794; 34  
CFR 104.4; Title II: 42 U.S.C. 12132; 28 CFR 35.130; IDEA 2004: 20 U.S.C. 1400; 
34 CFR 300.110; NCLB: Title III, Part A, Sec. 3121(c)(1)(C); Title X, Part C, Secs. 
721, 722(g)(4); Mass. Const. amend. art. 114; M.G.L. c. 71A, s. 7; c. 76, s. 5; 603  
CMR 26.03 as amended by Chapter 199 of the Acts of 2011 |
| Rating:          | Implemented |
|                  | District Response Required: No |

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<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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</table>
| CR 6             | **Availability of in-school programs for pregnant students**  
1. Pregnant students are permitted to remain in regular classes and participate in 
extracurricular activities with non-pregnant students throughout their pregnancy, 
and after giving birth are permitted to return to the same academic and 
extracurricular program as before the leave.  
2. The district does not require a pregnant student to obtain the certification of a 
physician that the student is physically and emotionally able to continue in 
school unless it requires such certification for all students for other physical or 
emotional conditions requiring the attention of a physician. |
|                  | Title IX: 20 U.S.C. 1681; 34 CFR 106.40(b) |
| Rating:          | Implemented |
|                  | District Response Required: No |
CRITERION NUMBER | CIVIL RIGHTS METHODS OF ADMINISTRATION (CR) AND OTHER RELATED GENERAL EDUCATION REQUIREMENTS
III. PARENTAL INVOLVEMENT

<table>
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<tr>
<th>Legal Standard</th>
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</thead>
</table>

**CR 7** Information to be translated into languages other than English

1. Important information and documents, e.g. handbooks and codes of conduct, being distributed to parents are translated into the major languages spoken by parents or guardians with limited English skills; the district has established a system of oral interpretation to assist parents/guardians with limited English skills, including those who speak low-incidence languages.

2. School or program recruitment and promotional materials being disseminated to residents in the area served by the school or program are translated into the major languages spoken by residents with limited English skills.

Title VI; EEOA: 20 U.S.C. 1703(f); M.G.L. c. 76, s. 5; 603 CMR 26.02(2)

**Rating:** Partially Implemented  District Response Required: Yes

**Department of Elementary and Secondary Education Findings:**

A review of student records and staff interviews indicated that although the district has a report card template translated into the seven major languages identified by the district, teacher comments on the report cards are not translated. Interviews also indicated that the system of oral interpretation for low incidence languages is not implemented consistently across all school levels.

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CRITERION NUMBER | CIVIL RIGHTS METHODS OF ADMINISTRATION (CR) AND OTHER RELATED GENERAL EDUCATION REQUIREMENTS
IV. CURRICULUM AND INSTRUCTION

<table>
<thead>
<tr>
<th>Legal Standard</th>
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</table>

**CR 7A** School year schedules

1. Before the beginning of each school year, the school district sets a school year schedule for each school. The school year includes at least 185 school days for students in grades 1-12 at each elementary, middle, and secondary school in the district, and these schools are in operation for at least 180 days a year for these students.

2. The school district ensures that unless his or her IEP or Section 504 Accommodation Plan provides otherwise, each elementary school student is scheduled for at least 900 hours of structured learning time a year and each secondary school student is scheduled for at least 990 hours of structured learning time a year, within the required school year schedule. Where the school district operates separate middle schools, it designates each one as either elementary or secondary.

3. Where the school district sets a separate school year and school day schedule for kindergarten programs, it provides at least 425 hours of structured learning time a year. If the district schedules two sessions of kindergarten a day, it ensures equal instructional time for all kindergarten students.

M.G.L. c. 69, § 1G; 603 CMR 27.03, 27.04
<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
<th>CIVIL RIGHTS METHODS OF ADMINISTRATION (CR) AND OTHER RELATED GENERAL EDUCATION REQUIREMENTS</th>
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<tbody>
<tr>
<td></td>
<td>IV. CURRICULUM AND INSTRUCTION</td>
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<td></td>
<td>Legal Standard</td>
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<tr>
<td>Rating:</td>
<td>Implemented</td>
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<tr>
<td>District Response Required:</td>
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<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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<tbody>
<tr>
<td>CR 7B</td>
<td>Structured learning time</td>
</tr>
<tr>
<td></td>
<td>1. The school district ensures that its structured learning time is time during which students are engaged in regularly scheduled instruction, learning, or assessments within the curriculum of core subjects and other subjects as defined in 603 CMR 27.02 (including physical education, required by M.G.L. c. 71, s. 3). The district’s structured learning time may include directed study (activities directly related to a program of studies, with a teacher available to assist students), independent study (a rigorous, individually designed program under the direction of a teacher, assigned a grade and credit), technology-assisted learning, presentations by persons other than teachers, school-to-work programs, and statewide student performance assessments.</td>
</tr>
<tr>
<td></td>
<td>2. The district ensures that its structured learning time does not include time at breakfast or lunch, passing between classes, in homeroom, at recess, in non-directed study periods (study halls), participating in optional school programs, or receiving school services such as health screening, speech, or physical and occupational therapy, except where those services are prescribed by a student’s IEP or Section 504 Accommodation Plan.</td>
</tr>
<tr>
<td></td>
<td>3. The hours spent in any type of structured learning time are verified by the school district. Where the school district counts independent study or a school-to-work program as structured learning time, it has guidelines that explain clearly how hours spent by students are verified.</td>
</tr>
<tr>
<td></td>
<td>M.G.L. c. 69, § 1G; 603 CMR 27.02, 27.04</td>
</tr>
<tr>
<td>Rating:</td>
<td>Implemented</td>
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<tr>
<td>District Response Required:</td>
<td>No</td>
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### CRITERION NUMBER

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<thead>
<tr>
<th>CR 7C</th>
<th>Early release of high school seniors</th>
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<td></td>
<td>When the school district schedules the early release at the end of the year of the senior class of a high school, it does so in a way that conforms with Board of Education requirements under 603 CMR 27.05, ensuring that neither the conclusion of the seniors’ school year nor graduation is more than 12 school days before the regular scheduled closing date of that school.</td>
</tr>
<tr>
<td></td>
<td>M.G.L. c. 69, § 1G; 603 CMR 27.05</td>
</tr>
<tr>
<td>Rating:</td>
<td>Partially Implemented</td>
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<tr>
<td>District Response Required:</td>
<td>Yes</td>
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</tbody>
</table>

**Department of Elementary and Secondary Education Findings:**

A review of documents indicated that the last day of senior attendance for Burncoat High School, Doherty High School, North High School, the Alternative School at St. Casimir’s, University Park Campus, and Worcester Technical High School is more than 12 school days before the regular scheduled closing date of each school.

### CRITERION NUMBER

<table>
<thead>
<tr>
<th>CR 8</th>
<th>Accessibility of extracurricular activities</th>
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<tbody>
<tr>
<td></td>
<td>Extracurricular activities sponsored by the district are nondiscriminatory in that:</td>
</tr>
<tr>
<td></td>
<td>1. the school provides equal opportunity for all students to participate in intramural and interscholastic sports;</td>
</tr>
<tr>
<td></td>
<td>2. extracurricular activities or clubs sponsored by the school do not exclude students on the basis of race, sex, gender identity, color, religion, national origin, sexual orientation, disability, or homelessness.</td>
</tr>
<tr>
<td></td>
<td>Title VI: 42 U.S.C. 2000d; 34 CFR 100.3(a), (b); Title IX: 20 U.S.C. 1681; 34 CFR 106.31, 106.41; Section 504: 29 U.S.C. 794; 34 CFR 104.4,104.37(a), (c); Title II: 42 U.S.C. 12132; 28 CFR 35.130; NCLB: Title X, Part C, Sec. 721; Mass. Const. amend. art 114; M.G.L. c. 76, § 5; 603 CMR 26.06 (1) as amended by Chapter 199 of the Acts of 2011</td>
</tr>
<tr>
<td>Rating:</td>
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<tr>
<td>District Response Required:</td>
<td>No</td>
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<td>CRITERION NUMBER</td>
<td>Legal Standard</td>
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</tr>
<tr>
<td><strong>CR 9</strong></td>
<td><strong>Hiring and employment practices of prospective employers of students</strong></td>
</tr>
<tr>
<td></td>
<td>1. The district requires employers recruiting at the school to sign a statement that the employer complies with applicable federal and state laws prohibiting discrimination in hiring or employment practices and the statement specifically includes the following protected categories: race, color, national origin, sex, gender identity, handicap, religion and sexual orientation.</td>
</tr>
<tr>
<td></td>
<td>2. Prospective employers to whom this criterion applies include those participating in career days and work-study and apprenticeship training programs, as well as those offering cooperative work experiences.</td>
</tr>
<tr>
<td>Rating:</td>
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<td>District Response Required:</td>
<td>No</td>
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<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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<tbody>
<tr>
<td><strong>CR 10</strong></td>
<td><strong>Anti-Hazing Reports</strong></td>
</tr>
<tr>
<td></td>
<td>1. The principal of each secondary school in the district issues a copy of M.G.L. c. 269 §§ 17 through 19, to every student enrolled full-time, and every student group, student team, or student organization, including every unaffiliated student group, student team, or student organization, and a copy of the school's anti-hazing disciplinary policy approved by the school committee.</td>
</tr>
<tr>
<td></td>
<td>2. Each secondary school files, at least annually, a report with the Department certifying</td>
</tr>
<tr>
<td></td>
<td>a. Its compliance with its responsibility to inform student groups, teams, or organizations, and every full-time enrolled student, of the provisions of M.G.L. c. 269 §§ 17 through 19;</td>
</tr>
<tr>
<td></td>
<td>b. Its adoption of a disciplinary policy with regard to the organizers and participants of hazing; and</td>
</tr>
<tr>
<td></td>
<td>c. That the hazing policy has been included in the student handbook or other means of communicating school policies to students.</td>
</tr>
<tr>
<td>Authority:</td>
<td>M.G.L. c. 269, ss. 17-19</td>
</tr>
<tr>
<td>Rating:</td>
<td>Implemented</td>
</tr>
<tr>
<td>District Response Required:</td>
<td>No</td>
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<tr>
<td>CRITERION NUMBER</td>
<td>CIVIL RIGHTS METHODS OF ADMINISTRATION (CR) AND OTHER RELATED GENERAL EDUCATION REQUIREMENTS</td>
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<tr>
<td></td>
<td>Legal Standard</td>
</tr>
<tr>
<td>CR 10A</td>
<td>Student handbooks and codes of conduct</td>
</tr>
<tr>
<td></td>
<td>1. The district has a code of conduct for students and one for teachers.</td>
</tr>
<tr>
<td></td>
<td>a. The principal of every school containing grades 9-12 prepares, in consultation with the school council, a student handbook containing the student code of conduct and distributes it to each student annually, as well as to parents and school personnel; the school council reviews and revises the student code of conduct every year.</td>
</tr>
<tr>
<td></td>
<td>b. The principal of every school containing other grades distributes the district’s student code of conduct to students, parents, and personnel annually.</td>
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<tr>
<td></td>
<td>c. At the request of a parent or student whose primary language is not English, a student handbook or student code of conduct is translated into that language.</td>
</tr>
<tr>
<td></td>
<td>2. Student codes of conduct contain:</td>
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<td>a. procedures assuring due process in disciplinary proceedings and</td>
</tr>
<tr>
<td></td>
<td>b. appropriate procedures for the discipline of students with special needs and students with Section 504 Accommodation Plans.</td>
</tr>
<tr>
<td></td>
<td>3. Student handbooks and codes of conduct reference M.G.L. c. 76, s. 5 and contain:</td>
</tr>
<tr>
<td></td>
<td>a. a nondiscrimination policy that is consistent with M.G.L. c. 76, s. 5, and affirms the school’s non-tolerance for harassment based on race, color, national origin, sex, gender identity, religion, or sexual orientation, or discrimination on those same bases;</td>
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<tr>
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<td>b. the school’s procedure for accepting, investigating and resolving complaints alleging discrimination or harassment; and</td>
</tr>
<tr>
<td></td>
<td>c. the disciplinary measures that the school may impose if it determines that harassment or discrimination has occurred.</td>
</tr>
<tr>
<td></td>
<td>Section 504; M.G.L. c. 71, § 37H; 603 CMR 26.08 as amended by Chapter 199 of the Acts of 2011</td>
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<td>Rating: Partially Implemented</td>
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</table>

**Department of Elementary and Secondary Education Findings:**

_A review of documents indicated that the code of conduct does not include a nondiscrimination policy consistent with M.G.L. c. 76, s. 5, affirming every student's right to attend the public schools of the town where he or she actually resides, regardless of race, color, sex, gender identity, religion, national origin or sexual orientation._
<table>
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<tr>
<th>CRITERION NUMBER</th>
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<tbody>
<tr>
<td>CR 10B</td>
<td><strong>Bullying Intervention and Prevention</strong></td>
</tr>
<tr>
<td></td>
<td>1. Public schools (including charter schools and collaboratives) must update school handbooks to conform to their updated amended Bullying Prevention and Intervention Plan (Plan). The school handbook (and local updated Plan) must be consistent with the amendments to the Massachusetts anti-bullying law, which became effective July 1, 2013. The amendments extend protections to students who are bullied by a member of the school staff. As defined in G.L. c. 71, 37O, as amended, a member of the school staff includes, but is not limited to, an “educator, administrator, school nurse, cafeteria worker, custodian, bus driver, athletic coach, advisor to an extracurricular activity or paraprofessional.” The school handbook must make clear that a member of the school staff may be named the “aggressor” or “perpetrator” in a bullying report.</td>
</tr>
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<td></td>
<td>2. School and district employee handbooks must also contain relevant sections of the amended Plan relating to the duties of faculty and staff and relevant provisions addressing the bullying of students by a school staff member.</td>
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<td></td>
<td>3. Each year all school districts and schools must give parents and guardians annual written notice of the student-related sections of the local Plan.</td>
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<td>4. Each year all school districts and schools must provide all staff with annual written notice of the Plan.</td>
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<td>5. All schools and school districts must implement, for all school staff, professional development that includes developmentally appropriate strategies to prevent bullying incidents; developmentally appropriate strategies for immediate, effective interventions to stop bullying incidents; information regarding the complex interaction and power differential that can take place between and among a perpetrator, victim and witnesses to the bullying; research findings on bullying, including information about specific categories of students who have been shown to be particularly at risk for bullying in the school environment; information on the incidence and nature of cyber-bullying; and internet safety issues as they relate to cyber-bullying.</td>
</tr>
<tr>
<td></td>
<td>M.G.L. c. 71, s. 37H, as amended by Chapter 92 of the Acts of 2010. M.G.L. c. 71, s. 37O(e)(1) &amp; (2). M.G.L. c. 71, s. 37O(d), as amended.</td>
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<td><strong>Rating:</strong> Implemented</td>
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<th>CRITERION NUMBER</th>
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<tbody>
<tr>
<td>CR 11A</td>
<td><strong>Designation of coordinator(s); grievance procedures</strong></td>
</tr>
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<td></td>
<td>1. The district has designated one or more staff persons to serve as coordinator(s) for compliance with its responsibilities under Title IX, Section 504, and (if it</td>
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<td>CRITERION NUMBER</td>
<td>Legal Standard</td>
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<tr>
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<td>employs 50 or more persons) Title II.</td>
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<td>2. The district has adopted and disseminated grievance procedures for students and for employees providing for prompt and equitable resolution of complaints alleging discrimination based on sex or disability.</td>
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<td>Title IX: 20 U.S.C. 1681; 34 CFR 106.8; Section 504: 29 U.S.C. 794; 34 CFR 104.7; Title II: 42 U.S.C. 12132; 28 CFR 35.107</td>
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<td>Rating:</td>
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<td>District Response Required:</td>
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<tbody>
<tr>
<td>CR 12A</td>
<td><strong>Annual and continuous notification concerning nondiscrimination and coordinators</strong></td>
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<tr>
<td></td>
<td>1. If the district offers vocational education programs, it advises students, parents, employees and the general public before the beginning of each school year that all vocational opportunities will be offered regardless of race, color, national origin, sex or disability. The notice includes a brief summary of program offerings and admission criteria and the name(s), office address(es), and phone number(s) of the person(s) designated under CR 11A to coordinate compliance under Title IX and Section 504.</td>
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<tr>
<td></td>
<td>2. In all cases, the district takes continuing steps to notify applicants, students, parents, and employees (including those with impaired vision or hearing), as well as unions or professional organizations holding collective bargaining or professional agreements with the district, that it does not discriminate on the basis of race, color, national origin, sex, or disability. This notice, also, includes the name(s), office address(es), and phone number(s) of the person(s) designated under CR 11A to coordinate compliance under Title IX and Section 504.</td>
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<td></td>
<td>3. Written materials and other media used to publicize a school include a notice that the school does not discriminate on the basis of race, color, national origin, sex, gender identity, disability, religion, or sexual orientation.</td>
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<td></td>
<td>Title VI: 42 U.S.C. 2000d; 34 CFR 100.6(d); Title IX: 20 U.S.C. 1681; 34 CFR 106.8(a), 106.9; Section 504: 29 U.S.C. 794; 34 CFR 104.8; M.G.L. c. 76, § 5; 603 CMR 26.02(2) as amended by Chapter 199 of the Acts of 2011.</td>
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<td>Rating:</td>
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<td>District Response Required:</td>
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<td>CRITERION NUMBER</td>
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</table>
| CR 13 | **Availability of information and academic counseling on general curricular and occupational/vocational opportunities**  
Students from linguistic, racial, and ethnic minorities; males; females; homeless students; and students with disabilities all receive, in grades 7-12, the same information and academic counseling as other students on the full range of general curricular and any occupational/vocational opportunities available to them.  
Title VI: 42 U.S.C. 2000d; 34 CFR 100.3(a), (b); Title IX: 20 U.S.C. 1681; 34 CFR 106.31, 106.36; Section 504: 29 U.S.C. 794; 34 CFR 104.4, 104.37(b); Title II: 42 U.S.C. 12132; 28 CFR 35.130; NCLB: Title III, Part A, Sec. 3121(c)(1)(C); Title X, Part C, Sec. 721; Mass. Const. amend. art. 114; M.G.L. c. 71A, § 7; c. 76, § 5; 603 CMR 26.03  
Rating: Implemented  
District Response Required: No |
| CR 14 | **Counseling and counseling materials free from bias and stereotypes**  
To ensure that counseling and counseling materials are free from bias and stereotypes on the basis of race, color, sex, gender identity, religion, national origin, sexual orientation, disability, and homelessness, all counselors:  
1. encourage students to consider programs of study, courses, extracurricular activities, and occupational opportunities on the basis of individual interests, abilities, and skills;  
2. examine testing materials for bias and counteract any found bias when administering tests and interpreting test results;  
3. communicate effectively with limited-English-proficient and disabled students and facilitate their access to all programs and services offered by the district;  
4. provide limited-English-proficient students with the opportunity to receive guidance and counseling in a language they understand;  
5. support students in educational and occupational pursuits that are nontraditional for their gender.  
Title VI: 42 U.S.C. 2000d; 34 CFR 100.3(a), (b); EEOA: 20 U.S.C. 1703(f); Title IX: 20 U.S.C. 1681; 34 CFR 106.31, 106.36; Section 504: 29 U.S.C. 794; 34 CFR 104.4, 104.37; Title II: 42 U.S.C. 12132; 28 CFR 35.130, 35.160; NCLB: Title III, Part A, Sec. 3121(c)(1)(C); Title X, Part C, Sec. 721; Mass. Const. amend. art. 114; M.G.L. c. 71A, § 7; c. 76, § 5; 603 CMR 26.04, 26.07(8) as amended by Chapter 199 of the Acts of 2011  
Rating: Partially Implemented  
District Response Required: Yes |
Department of Elementary and Secondary Education Findings:
A review of documents indicated that although the district has procedures to ensure counseling and counseling materials are free from bias and stereotyping on the basis of race, color, sex, religion, national origin, sexual orientation, disability and homelessness, these procedures do not address the protected category of gender identity.

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</table>
| **CR 15** | **Non-discriminatory administration of scholarships, prizes and awards**
Scholarships, prizes and awards sponsored or administered by the district are free of restrictions based upon race, color, sex, gender identity, religion, national origin, sexual orientation or disability. Schools may post or print information regarding private restricted scholarships as long as no preferential treatment is given to any particular scholarship offered and as long as the school does not endorse or recommend any such scholarship nor advise or suggest to a particular student that he or she apply for such a scholarship. |
| **CR 16** | **Notice to students 16 or over leaving school without a high school diploma, certificate of attainment, or certificate of completion**
1. Within ten days from a student’s fifteenth consecutive unexcused absence, the school provides written notice to students age 16 or over and their parents or guardians. The notice is in English and the family’s native language and states that the student and the parent or guardian may meet with a representative of the district within ten days from the date the notice was sent. At the request of the parent or guardian, the district may consent to an extension of the time for the meeting of not longer than fourteen days.
2. At the meeting the participants discuss the reasons that the student is leaving school and alternative educational or other placements. The student and parent or guardian are told that attendance is voluntary after the student turns 16 but are...
3. Any district serving students in high school grades sends annual written notice to former students who have not yet earned their competency determination and who have not transferred to another school
   a. to inform them of the availability of publicly funded post-high school academic support programs and
   b. to encourage them to participate in those programs.
   At a minimum, the district sends annual written notice by first class mail to the last known address of each such student who attended a high school in the district within the past two years.

M.G.L. c. 76, §§ 5, 18; St. 1965, c. 741

Department of Elementary and Secondary Education Findings:
A review of documents demonstrated that the district’s written notice to students 16 or over leaving school without a high school diploma, certificate of attainment, or certificate of completion contains conflicting information regarding when the student and the parent or guardian may meet with a representative of the district to discuss the reasons that the student is leaving school. In addition, document review demonstrated that the district’s annual outreach notice to former students who have not yet earned their competency determination and who have not transferred to another school includes a required meeting with district personnel within 10 days of receipt of the letter; while the district may encourage former students to meet with high school staff, there is no requirement for this activity or the timeline.

CRITERION NUMBER

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<tbody>
<tr>
<td>CR 17A</td>
<td>Use of physical restraint on any student enrolled in a publicly-funded education program</td>
</tr>
<tr>
<td></td>
<td>1. The district has developed and implemented staff training at least annually on the use of restraint consistent with regulatory requirements. Such training occurs within the first month of each school year and, for employees hired after the school year begins, within a month of their employment.</td>
</tr>
<tr>
<td></td>
<td>2. The district administers physical restraint on students only when needed to protect a student and/or a member of the school community from imminent, serious, physical harm. The district implements restraint procedures consistent with Department of Elementary and Secondary Education regulations in order to prevent or minimize any harm to the student as a result of the use of physical restraint.</td>
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<td>3. The district has developed written procedures regarding appropriate responses to student behavior that may require immediate intervention. Such procedures are</td>
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<td>Legal Standard</td>
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<td>annually reviewed and provided to school staff and made available to parents of enrolled students.</td>
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<td>The district has developed and implemented reporting requirements and procedures for administrators, parents and the Department of Elementary and Secondary Education consistent with the regulations.</td>
</tr>
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<td>The district has developed and implemented any applicable individual waiver procedures consistent with the regulations.</td>
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<td>M.G.L. c. 71, § 37G; 603 CMR 46.00</td>
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<tr>
<td>Rating:</td>
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<td>District Response Required:</td>
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<tr>
<th>CRITERION NUMBER</th>
<th>CIVIL RIGHTS METHODS OF ADMINISTRATION (CR) AND OTHER RELATED GENERAL EDUCATION REQUIREMENTS VI. FACULTY, STAFF AND ADMINISTRATION</th>
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<tbody>
<tr>
<td>CR 18</td>
<td>Responsibilities of the school principal</td>
</tr>
<tr>
<td></td>
<td>1. Instructional support. The principal in each of the district’s schools promotes instructional practices responsive to student needs and ensures that adequate instructional support is available for students and teachers. Instructional support includes remedial instruction for students, consultative services for teachers, availability of reading instruction at the elementary level, appropriate services for linguistic minority students, and other services consistent with effective educational practices and the requirements of M.G.L. c. 71B, §2. The principal consults with the Administrator of Special Education regarding accommodations and interventions for students. Such efforts and their results are documented and placed in the student record. Additionally, when an individual student is referred for an evaluation to determine eligibility for special education, the principal ensures that documentation on the use of instructional support services for the student is provided as part of the evaluation information reviewed by the Team when determining eligibility.</td>
</tr>
<tr>
<td></td>
<td>2. Curriculum Accommodation Plan. The principal implements a curriculum accommodation plan developed by the district’s general education program to ensure that all efforts have been made to meet the needs of diverse learners in the general education program. The plan assists the regular classroom teacher in analyzing and accommodating diverse learning styles of all children in the regular classroom and in providing appropriate services and support within the general education program including, but not limited to, direct and systematic instruction in reading and provision of services to address the needs of children whose behavior may interfere with learning. The plan includes provisions encouraging teacher mentoring and collaboration and parental involvement. (The plan may be part of a multi-year strategic plan.)</td>
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### CRITERION NUMBER

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<tr>
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<tr>
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<td><strong>Legal Standard</strong></td>
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<tr>
<td></td>
<td>3. Coordination with special education. The principal with the assistance of the Administrator of Special Education coordinates the delivery and supervision of special education services within each school building.</td>
</tr>
<tr>
<td></td>
<td>4. Educational services in home or hospital. Upon receipt of a physician’s written order verifying that any student enrolled in a public school or placed by the public school in a private setting must remain at home or in a hospital on a day or overnight basis, or any combination of both, for medical reasons and for a period of not less than fourteen school days in any school year, the principal arranges for provision of educational services in the home or hospital. Such services are provided with sufficient frequency to allow the student to continue his or her educational program, as long as such services do not interfere with the medical needs of the student. The principal coordinates such services with the Administrator for Special Education for eligible students. Such educational services are not considered special education unless the student has been determined eligible for such services, and the services include services on the student’s IEP.</td>
</tr>
<tr>
<td></td>
<td>M.G.L. c. 71, § 38Q ½; 603 CMR 28.03(3)</td>
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<td><strong>Rating:</strong> Partially Implemented  <strong>District Response Required:</strong> Yes</td>
</tr>
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</table>

**Department of Elementary and Secondary Education Findings:**

* A review of documents and staff interviews indicated that the district has not developed a Curriculum Accommodation Plan to ensure that all efforts have been made to meet the needs of diverse learners in the general education program, such as provision of services to address the needs of children whose behavior may interfere with learning and instructional support in mathematics.

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### CRITERION NUMBER

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<tr>
<td></td>
<td><strong>Legal Standard</strong></td>
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<tr>
<td>CR 18A</td>
<td><strong>School district employment practices</strong></td>
</tr>
<tr>
<td></td>
<td>District employment practices in general are free from discrimination on the basis of race, color, national origin, sex, or disability. The district’s employee recruitment is aimed at reaching all groups, including members of linguistic, ethnic, and racial minorities, females and males, and persons with disabilities.</td>
</tr>
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<td></td>
<td>Title VI: 42 U.S.C. 2000d; 34 CFR 100.3(c); EEOA: 20 U.S.C. 1703(d); Title IX: 20 U.S.C. 1681; 34 CFR 106.51-106.61; Section 504: 29 U.S.C. 794; 34 CFR 104.11-104.14; Title II: 42 U.S.C. 12132; 28 CFR 35.140; Mass. Const. amend. art 114</td>
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<td><strong>Rating:</strong> Implemented  <strong>District Response Required:</strong> No</td>
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<tr>
<td>CR 20</td>
<td><strong>Staff training on confidentiality of student records</strong>  &lt;br&gt;The district trains school personnel on the provisions of the Family Educational Rights and Privacy Act, M.G.L. c. 71, s. 34H, and 603 CMR 23.00 and on the importance of information privacy and confidentiality.  &lt;br&gt;FERPA: 20 U.S.C. § 1232g; 34 CFR Part 99; M.G.L. c. 71, § 34H; 603 CMR 23.00, esp. 23.05(3)</td>
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<td><strong>Rating:</strong> Partially Implemented  &lt;br&gt;<strong>District Response Required:</strong> Yes</td>
</tr>
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</table>

**Department of Elementary and Secondary Education Findings:**  
A review of documents and staff interviews indicated that provisions of the Family Educational Rights and Privacy Act (FERPA) are not included in the annual training on confidentiality of student records for all school personnel.

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<th>CRITERION NUMBER</th>
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<tbody>
<tr>
<td>CR 21</td>
<td><strong>Staff training regarding civil rights responsibilities</strong>  &lt;br&gt;The district provides in-service training for all school personnel at least annually regarding civil rights responsibilities, including the prevention of discrimination and harassment on the basis of students’ race, color, sex, gender identity, religion, national origin and sexual orientation and the appropriate methods for responding to it in the school setting.  &lt;br&gt;Title VI: 42 U.S.C. 2000d; 34 CFR 100.3; EEOA: 20 U.S.C. 1703(f); Title IX: 20 U.S.C. 1681; 34 CFR 106.31-106.42; M.G.L. c. 76, § 5; 603 CMR 26.00, esp. 26.07(2), (3) as amended by Chapter 199 of the Acts of 2011</td>
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<td></td>
<td><strong>Rating:</strong> Partially Implemented  &lt;br&gt;<strong>District Response Required:</strong> Yes</td>
</tr>
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</table>

**Department of Elementary and Secondary Education Findings:**  
A review of documents and staff interviews indicated that the district's training for all school personnel on their civil rights responsibilities in order to prevent discrimination and harassment does not address gender identity as a protected category.

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<tr>
<th>CRITERION NUMBER</th>
<th>CIVIL RIGHTS METHODS OF ADMINISTRATION (CR)  &lt;br&gt;AND OTHER RELATED GENERAL EDUCATION REQUIREMENTS  &lt;br&gt;VII. SCHOOL FACILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR 22</td>
<td><strong>Accessibility of district programs and services for students with disabilities</strong>  &lt;br&gt;In at least one facility within the district, the district makes available and entirely accessible to students with disabilities all educational and vocational programs and services offered at each level (preschool, elementary and secondary).</td>
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</tbody>
</table>
### VII. SCHOOL FACILITIES

**Legal Standard**

Section 504: 29 U.S.C. 794; 34 CFR 104.21,104.22; Title II: 42 U.S.C. 12132; 28 CFR 35.149, 35.150; Mass. Const. amend. art. 114; 603 CMR 28.03(1)(b)(1)

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<tr>
<th>CRITERION NUMBER</th>
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<td>VII. SCHOOL FACILITIES</td>
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<td><strong>Legal Standard</strong></td>
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<td>Section 504: 29 U.S.C. 794; 34 CFR 104.21,104.22; Title II: 42 U.S.C. 12132; 28 CFR 35.149, 35.150; Mass. Const. amend. art. 114; 603 CMR 28.03(1)(b)(1)</td>
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<td>Rating: Implemented  District Response Required: No</td>
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</tbody>
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### VIII. PROGRAM PLAN AND EVALUATION

**Legal Standard**

CR 24 Curriculum review
The district ensures that individual teachers in the district review all educational materials for simplistic and demeaning generalizations, lacking intellectual merit, on the basis of race, color, sex, gender identity, religion, national origin and sexual orientation. Appropriate activities, discussions and/or supplementary materials are used to provide balance and context for any such stereotypes depicted in such materials.

M.G.L. c. 76, § 5; 603 CMR 26.05(2) as amended by Chapter 199 of the Acts of 2011

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<td>VIII. PROGRAM PLAN AND EVALUATION</td>
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<td><strong>Legal Standard</strong></td>
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<td>CR 24 Curriculum review</td>
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<tr>
<td></td>
<td>The district ensures that individual teachers in the district review all educational materials for simplistic and demeaning generalizations, lacking intellectual merit, on the basis of race, color, sex, gender identity, religion, national origin and sexual orientation. Appropriate activities, discussions and/or supplementary materials are used to provide balance and context for any such stereotypes depicted in such materials.</td>
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<tr>
<td></td>
<td>M.G.L. c. 76, § 5; 603 CMR 26.05(2) as amended by Chapter 199 of the Acts of 2011</td>
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<td></td>
<td>Rating: Partially Implemented  District Response Required: Yes</td>
</tr>
</tbody>
</table>
**Department of Elementary and Secondary Education Findings:**

A review of documents indicated that although individual teachers in the district review all educational materials for simplistic and demeaning generalizations, lacking intellectual merit, on the basis of race, color, sex, religion, national origin, and sexual orientation, this process does not address gender identity as a protected category.

<table>
<thead>
<tr>
<th>CRITERION NUMBER</th>
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<tbody>
<tr>
<td><strong>CR 25</strong></td>
<td>Institutional self-evaluation</td>
</tr>
<tr>
<td></td>
<td>The district evaluates all aspects of its K-12 program annually to ensure that all students, regardless of race, color, sex, gender identity, religion, national origin, limited English proficiency, sexual orientation, disability, or housing status, have equal access to all programs, including athletics and other extracurricular activities. It makes such changes as are indicated by the evaluation.</td>
</tr>
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<td></td>
<td>Title VI: 42 U.S.C. 2000d; 34 CFR 100.3(b)(2); EEOA: 20 U.S.C. 1703(f); Section 504: 29 U.S.C. 794; 34 CFR 104.4(b)(4); Title II: 42 U.S.C. 12132; 28 CFR 35.130(b)(3); NCLB: Title III, Part A, Sec. 3121(c)(1)(C); Title X, Part C, Sec. 722(g)(1)(J)(i), 722(g)(7); Mass. Const. amend. art. 114; M.G.L. c. 71A, § 7; c. 76, § 5; 603 CMR 26.07(1),(4) as amended by Chapter 199 of the Acts of 2011</td>
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<td>Rating:</td>
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<tr>
<th>CRITERION NUMBER</th>
<th>CIVIL RIGHTS METHODS OF ADMINISTRATION (CR) AND OTHER RELATED GENERAL EDUCATION REQUIREMENTS IX. RECORD KEEPING</th>
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<tbody>
<tr>
<td><strong>CR 26A</strong></td>
<td>Confidentiality and student records</td>
</tr>
<tr>
<td></td>
<td>1. In accordance with federal and state requirements, the district protects the confidentiality of any personally identifiable information that it collects, uses or maintains.</td>
</tr>
<tr>
<td></td>
<td>2. The district maintains and provides access to student records in accordance with federal and state requirements.</td>
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<tr>
<td></td>
<td>FERPA: 20 U.S.C. § 1232g; 34 CFR Part 99; M.G.L. c. 71, § 34H; 603 CMR 23.05, 23.07</td>
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<tr>
<td>Rating:</td>
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<td>District Response Required:</td>
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CAREER/VOCATIONAL TECHNICAL EDUCATION

LEGAL STANDARDS, COMPLIANCE RATINGS AND FINDINGS
### CRITERION NUMBER

| **CAREER/VOCTORIAL TECHNICAL EDUCATION**
| **I. ASSESSMENT OF STUDENTS**

#### Legal Standard

**CVTE 1**
Career guidance and placement services, including career assessments and assistance with the development of a four-year career plan, are provided in order to assist each student enrolled in a career/vocational technical education program in making the transition to the workforce, postsecondary education, and/or apprenticeship programs. *Vocational Technical Education Regulations 603 CMR 4.03(4)(d), Perkins Section 134*

Definition: A career assessment is a formal assessment instrument that helps the student evaluate his/her career interests.

**References:**
- Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at [http://www.doe.mass.edu/cte/laws.html](http://www.doe.mass.edu/cte/laws.html)

**Rating:** Partially Implemented  
**District Response Required:** Yes

#### Department of Elementary and Secondary Education Findings:
A review of documents, student records, and interviews indicated that while some students at Worcester Technical High School are provided with career assessments and career plans, students in career/vocational technical education programs at Burncoat, Doherty, North, and South High Schools do not receive career assessments and assistance with the development of a four-year career plan.

### CRITERION NUMBER

| **Legal Standard**

**CVTE 2**
MCAS and/or other academic assessment results are used to design instructional and support services. *Perkins Section 3, 134, Vocational Technical Education Regulations 603 CMR 4.03(4)*

**References:**
- Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at [http://www.doe.mass.edu/cte/laws.html](http://www.doe.mass.edu/cte/laws.html)
- Chapter 74 Manual for Vocational Technical Education Programs at [http://www.doe.mass.edu/cte/programs/](http://www.doe.mass.edu/cte/programs/)

**Rating:** Implemented  
**District Response Required:** No
CRITERION NUMBER

Legal Standard

CVTE 3
The district assesses students for the acquisition of safety & health, technical that includes embedded academic, employability, management & entrepreneurship, and technological knowledge and skills. Vocational Technical Education Regulations 603 CMR 4.03 (4); Perkins Section 3, 134, M.G.L. c.74 Section 2

References:
Carl D. Perkins Career & Technical Education Improvement Act of 2006 at http://www.doe.mass.edu/cte/perkins/
Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at http://www.doe.mass.edu/cte/laws.html
Chapter 74 Manual for Vocational Technical Education Programs at http://www.doe.mass.edu/cte/programs/

Rating: Partially Implemented
District Response Required: Yes

Department of Elementary and Secondary Education Findings:
A review of documents, student records, and interviews verified that students are consistently assessed for safety and health (Strand 1) and technical skills (Strand 2) in all programs at Worcester Technical High School and for technical skills (Strand 2) at some of the vocational programs at Burncoat, Doherty, North, and South High Schools. However, a review of documents, student records and interviews indicated that the district does not assess the acquisition of embedded academic, employability, management & entrepreneurship, and technological knowledge and skills (Strands 4, 5 & 6) for all students enrolled in the district’s career/vocational technical education programs. (Legal Citation: Perkins Section 134)

CRITERION NUMBER

CAREER/VOCTORIAL TECHNICAL EDUCATION II. STUDENT IDENTIFICATION AND PROGRAM PLACEMENT

Legal Standard

CVTE 4
Information concerning career/vocational technical education programs is provided to students and to their parents/guardians. Such information shall include admission requirements for career/vocational technical programs; specific programs/courses that are available; employment and/or further education and registered apprenticeship opportunities. Perkins Section 134, Vocational Technical Education Regulations 603 CMR 4.03 (4) (6).

References:
Carl D. Perkins Career & Technical Education Improvement Act of 2006 at http://www.doe.mass.edu/cte/perkins/
Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at http://www.doe.mass.edu/cte/laws.html
Chapter 74 Manual for Vocational Technical Education Programs at http://www.doe.mass.edu/cte/programs/
Chapter 74 Manual for Vocational Technical Education Admission Policies at

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Department of Elementary and Secondary Education Findings:
A review of documents and interviews indicated that although the district provides course selection sheets and 8th grade tours for all high schools, an on-line program of study for Worcester Technical, and an annual open house where all five high schools present their career/vocational technical education programming, the district has not developed a district-wide program of study with specific information on admission requirements for all career/vocational technical programs; specific programs/courses that are available across the district, including employment and/or further education; and registered apprenticeship opportunities. In addition, document review indicated that there are no procedures to ensure information on career/vocational technical education programs at each high school is available in languages other than English. (Legal Citation: Perkins Section 134, Vocational Technical Education Regulations 603 CMR 4.03 (4) (6))

<table>
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<tr>
<td>CVTE 5</td>
<td>All individuals including those who are members of special populations are provided with equal access to career/vocational technical education programs, services and activities and are not discriminated against on the basis of their status as members of special populations or race, color, gender, gender-identity, religion, national origin, English language proficiency, disability, or sexual orientation. Perkins Sections 122 &amp; 134, Vocational Technical Education Regulations 603 CMR 4.03(4) (6) (7), M.G.L.c.76, Section 5.</td>
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References:
Carl D. Perkins Career & Technical Education Improvement Act of 2006 at http://www.doe.mass.edu/cte/perkins/
Massachusetts Perkins IV Manual at http://www.doe.mass.edu/cte/perkins/
Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at http://www.doe.mass.edu/cte/laws.html
Chapter 74 Manual for Vocational Technical Education Admission Policies at http://www.doe.mass.edu/cte/admissions/
Guidelines for Eliminating Discrimination and Denial of Services on the Basis of Race, Color, National Origin, Sex and Handicap in Vocational Education Programs (34 CFR, Part 100, Appendix B) at http://www.doe.mass.edu/cte/admissions/
Massachusetts Special Education Regulations 603 CMR 28.10 (6) (c) at http://www.doe.mass.edu/lawsregs/603cmr28.html?section=all#start
Massachusetts General Law Chapter 76, Section 5 at http://www.mass.gov/legis/laws/mgl/gl-pt1-toc.htm
Massachusetts Access to Equal Educational Opportunity Regulations 603 CMR 26.00 at http://www.doe.mass.edu/lawsregs/603cmr26.html
### CRITERION NUMBER

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<th>Legal Standard</th>
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| Rating: | Partially Implemented | District Response Required: | Yes |

### Department of Elementary and Secondary Education Findings:

A review of documents and interviews indicated that technical teachers at Worcester Technical High School are not provided Individualized Education Program (IEP) information on needed accommodations/modifications for grade nine students in exploratory. Consequently, these students do not receive accommodations/modifications during exploratory.

A review of documents, student records and interviews also indicated that the five visited high schools do provide technical teachers with information on accommodations/modifications for students with IEPs for students in grades 10-12, but, with the exception of South High School, accommodations/modifications are not always provided in a student’s career/vocational technical program.

Interviews and document review also demonstrated there is no system in place for students with limited English proficiency to receive language support, as necessary, in their career/vocational technical education programming at any of the high schools. For example, oral or written translation of vocational curriculum materials, including safety curriculum and tests, are not routinely provided, when necessary. Any translations that occur in a student’s career/vocational technical education program are typically done by other students within the program. Interviews also confirmed that there is no process to ensure that guidance counselors at Worcester Technical communicate with students in a language they understand. Consequently, career guidance and placement services for this population differ from services provided to their peers.

Also see CVTE 4.

(Legal Citation: Perkins Sections 122 & 134, Vocational Technical Education Regulations 603 CMR 4.03(4) (6 (7), M.G.L.c.76, Section 5)

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<th>CVTE 6</th>
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(Noe: This criterion applies only to Chapter 74-approved vocational technical education.)

The district uses its Department-approved admission policy and an appropriate application for admission. Vocational Technical Education Regulations 603 CMR 4.03(6). M.G.L. c. 76 Section 5.

**References:**

- Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at [http://www.doe.mass.edu/cte/laws.html](http://www.doe.mass.edu/cte/laws.html)
- Chapter 74 Manual for Vocational Technical Education Admission Policies at
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<td>Guidelines for Eliminating Discrimination and Denial of Services on the Basis of Race, Color, National Origin, Sex and Handicap in Vocational Education Programs (34 CFR, Part 100, Appendix B at <a href="http://www.doe.mass.edu/cte/admissions/">http://www.doe.mass.edu/cte/admissions/</a></td>
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<td>Massachusetts Special Education Regulations 603 CMR 28.10 6) (c) at <a href="http://www.doe.mass.edu/lawsregs/603cmr28.html?section=all#start">http://www.doe.mass.edu/lawsregs/603cmr28.html?section=all#start</a></td>
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<td>Massachusetts General Law Chapter 76, Section 5 at <a href="http://www.mass.gov/legis/laws/mgl/gl-pt1-toc.htm">http://www.mass.gov/legis/laws/mgl/gl-pt1-toc.htm</a></td>
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<td>Massachusetts Access to Equal Educational Opportunity Regulations 603 CMR 26.00 at <a href="http://www.doe.mass.edu/lawsregs/603cmr26.html">http://www.doe.mass.edu/lawsregs/603cmr26.html</a></td>
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<th>Legal Standard</th>
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<tr>
<td>CVTE 7</td>
<td>(Note: This criterion applies only to Chapter 74-approved vocational technical education.)</td>
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<td>Ninth graders admitted to Chapter 74-approved vocational technical education participate in the district’s Chapter 74-approved vocational technical education exploratory program for a minimum of one-half of the school year. The program provides for students to explore at least one program that would prepare them for a career nontraditional for their gender if the district has program(s) that prepare students for careers that would be nontraditional for their gender. Students receive appropriate safety training while exploring programs. The time exploring each program should be sufficient to allow the student to be adequately assessed. The time should be sufficient to allow the student to become aware of the program requirements and the opportunities for employment and further education/training extended by the program. Technical Education Regulations 603 CMR 4.03(4). M.G.L. c. 76 Section 5.</td>
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<tr>
<td>References:</td>
<td>Chapter 74 Selected Sections &amp; 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at <a href="http://www.doe.mass.edu/cte/laws.html">http://www.doe.mass.edu/cte/laws.html</a></td>
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<td>Chapter 74 Manual for Vocational Technical Education Admission Policies at <a href="http://www.doe.mass.edu/cte/admissions/">http://www.doe.mass.edu/cte/admissions/</a></td>
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<td>Chapter 74 Manual for Vocational Technical Education Programs at <a href="http://www.doe.mass.edu/cte/programs/manual.doc">http://www.doe.mass.edu/cte/programs/manual.doc</a></td>
</tr>
<tr>
<td>Rating:</td>
<td>Partially Implemented</td>
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</tbody>
</table>
Department of Elementary and Secondary Education Findings:
Interviews, document review, and student record review indicated that all students can elect to apply to Worcester Technical or to the other two Chapter-74 programs in the district (Health Assisting at North and Engineering at Doherty). However, the current process used for the exploratory program at Worcester Technical differs from the process described in the district’s Department-approved admission policy; specifically, the programs explored by students are based on choices made on the school application prior to having been accepted, which is not in the approved admission policy that states students will select six (6) programs after the mini-exploratory of all programs. Further, how students are placed into the programs after exploratory, with the exception of Worcester Technical, is not indicated in student records. Finally, there is no documentation to confirm that the number of hours for the exploratory program meets the minimum requirement of one-half the school year (approximately 198-247.50 hours). (Legal Citation: Vocational Technical Education Regulations 603 CMR 4.03(4). M.G.L. c. 76, Section 5)

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<tr>
<th>CRITERION NUMBER</th>
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<tbody>
<tr>
<td>CVTE 8</td>
<td>The programs in which students are enrolled meet the Perkins IV definition of career and technical education as contained in Appendix A (Massachusetts Perkins IV Career and Technical Education Program Checklist) of the Massachusetts Perkins IV Manual, Perkins Sections 3 &amp; 134</td>
</tr>
<tr>
<td>Rating:</td>
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<tr>
<td>District Response Required:</td>
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Department of Elementary and Secondary Education Findings:
A review of documents and interviews indicated that not all programs in which students are enrolled meet the Perkins IV definition of career and technical education, with the exception of Worcester Technical. Specifically, other high school programs do not have established advisory committees, offer sequences of courses, provide students with opportunities for technical skill proficiency, or offer an industry recognized credential/certificate. See also CVTE 9A. (Legal Citation: Perkins Act IV of 2006, Sections 3 & 134; Massachusetts Perkins IV Manual)

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<tr>
<th>CRITERION NUMBER</th>
<th>CAREER/ VOCATIONAL TECHNICAL EDUCATION III. PARENT AND COMMUNITY INVOLVEMENT</th>
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<tbody>
<tr>
<td>CVTE 9A</td>
<td>The district accurately reports student data in the Department of Elementary and Secondary Education’s Student Information Management System (SIMS). Perkins Section 113, Vocational Technical Education Regulations 603 CMR 4.05</td>
</tr>
</tbody>
</table>
### CRITERION NUMBER

**CAREER/VOCTORIAL TECHNICAL EDUCATION**  
**III. PARENT AND COMMUNITY INVOLVEMENT**

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#### References:
Massachusetts Perkins IV Manual at [http://www.doe.mass.edu/cte/perkins/](http://www.doe.mass.edu/cte/perkins/)
Instructions for School Districts in Reporting Students Enrolled in Career/Vocational Technical Education Programs at [http://www.doe.mass.edu/cte/data/](http://www.doe.mass.edu/cte/data/)

| Rating: Partially Implemented | District Response Required: Yes |

#### Department of Elementary and Secondary Education Findings:

A review of documents and interviews indicated that, except for Worcester Technical, the district’s four high schools inaccurately report students as enrolled in career and technical education programs as defined by Perkins IV when the programs do not meet the Perkins definition. See also CVTE 8. (Legal Citation: Perkins Section 11, Vocational Technical Education Regulations 603 CMR 4.05)

| CRITERION NUMBER | CAREER/VOCTORIAL TECHNICAL EDUCATION  
|------------------|III. PARENT AND COMMUNITY INVOLVEMENT |
| CVTE 9B          | The district accurately reports student data in Career/Vocational Technical Education Graduate Follow-up Report. *Perkins Section 113, Vocational Technical Education Regulations 603 CMR 4.05*

#### References:
Massachusetts Perkins IV Manual at [http://www.doe.mass.edu/cte/perkins/](http://www.doe.mass.edu/cte/perkins/)
Instructions for School Districts in Reporting Students Enrolled in Career/Vocational Technical Education Programs at [http://www.doe.mass.edu/cte/data/](http://www.doe.mass.edu/cte/data/)

| Rating: Implemented | District Response Required: No |

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Massachusetts Department of Elementary and Secondary Education – Program Quality Assurance Services


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### CRITERION NUMBER

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<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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<tr>
<td>CVTE 10</td>
<td>Representatives of business/industry; organized labor (union); colleges(s); parent(s)/guardian(s); student(s); representative(s) from registered apprenticeship program(s) (only required if the occupational field of the program has a registered apprenticeship program) are involved in the development, implementation, and review of career/vocational technical programs. Representation is race, linguistic, disability, and nontraditional by gender inclusive, and if not, there is a plan (formal recruitment process) to make it inclusive. Perkins Section 134, M.G.L. c.74 Section 6, Vocational Technical Education Regulations 603 CMR 4.03 (1)</td>
</tr>
</tbody>
</table>

**References:**
- Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at [http://www.doe.mass.edu/cte/laws.html](http://www.doe.mass.edu/cte/laws.html)
- Career/Vocational Technical Education Advisory Committee Guide at [http://www.doe.mass.edu/cte/resources/](http://www.doe.mass.edu/cte/resources/)
- Massachusetts Perkins IV Manual at [http://www.doe.mass.edu/cte/perkins/](http://www.doe.mass.edu/cte/perkins/)

**Rating:** Partially Implemented  
**District Response Required:** Yes

### Department of Elementary and Secondary Education Findings:

A review of documents and interviews indicated that each program at Worcester Technical has a Program Advisory Committee that meets at least twice annually as well as a General Advisory Committee. However, while some programs at the other high schools have industry connections and informal relationships with individual businesses, there is no formal process to verify the labor market for these programs, which is typically done by an advisory committee. Therefore, with the exception of Worcester Technical, representatives from business/industry and postsecondary education are not consistently involved in the development, implementation, and review of the district’s Perkins-funded career/vocational technical programs.

In addition, the Program Advisory Committee chairs for the Chapter-74 programs at North and Doherty are not members of the district’s General Advisory Committee, as required. (Legal Citation: M.G.L. c.74 Section 6; Vocational Technical Education Regulations 603 CMR 4.03 (1))

### CRITERION NUMBER

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<tr>
<th>CRITERION NUMBER</th>
<th>CAREER/VOCATIONAL TECHNICAL EDUCATION IV. CURRICULUM AND INSTRUCTION</th>
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<tr>
<td>CVTE 11</td>
<td>Programs are structured so that students acquire safety &amp; health, technical that includes embedded academic, employability, management &amp; entrepreneurship, and technological knowledge and skills. Perkins Section 3, 134, M.G.L. c. 74 Section 2, Vocational Technical Education Regulations 603 CMR 4.03 (4) 4.06</td>
</tr>
</tbody>
</table>

**References:**
### CRITERION NUMBER | CAREER/VOCATIONAL TECHNICAL EDUCATION IV. CURRICULUM AND INSTRUCTION
---|---
| | Legal Standard

| | Massachusetts Perkins IV Manual at [http://www.doe.mass.edu/cte/perkins/](http://www.doe.mass.edu/cte/perkins/)
| | Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at [http://www.doe.mass.edu/cte/laws.html](http://www.doe.mass.edu/cte/laws.html)
| | Massachusetts Vocational Technical Education Frameworks at [http://www.doe.mass.edu/cte/frameworks/](http://www.doe.mass.edu/cte/frameworks/)
| | Chapter 74 Manual for Vocational Technical Cooperative Education at [http://www.doe.mass.edu/cte/programs/](http://www.doe.mass.edu/cte/programs/)

| Rating: | Partially Implemented | District Response Required: | Yes |

**Department of Elementary and Secondary Education Findings:**
A review of documents, student records, and interviews indicated that except for staff at Worcester Technical, most staff members are not aware of the administrative responsibilities under Perkins IV, which resulted in the following issues:

- All programs at Worcester Technical High School have developed comprehensive program scope and sequence and are appropriately structured so that students acquire the technical skills in Strands 1 and 2 in the Vocational Technical Education Frameworks (VTEF); other Worcester Technical programs are appropriately structured so that students acquire the technical skills in Strands 4, 5, & 6. However, only a few programs at the other high schools (Burncoat, Doherty, North and South) include the technical skills that encompass all aspects of the industry for the particular program (Strands 1-6).

- With the exception of Worcester Technical, there is no process to ensure that the integration of academic standards with relevant career/vocational technical programs occurs.

*(Legal Citation: Perkins Section 134, M.G.L. c. 74 Section 2; Vocational Technical Education Regulations 603 CMR 4.03 (4) 4.06)*

### CRITERION NUMBER | Legal Standard
---|---
| CVTE 12 | Linkages between secondary and postsecondary education including registered apprenticeship programs exist through, at a minimum, articulation agreements that are annually reviewed and approved. *Perkins Section 134, Vocational Technical Education Regulations 603 CMR 4.03 (4)*

**References:**
Department of Elementary and Secondary Education Findings: Findings:
A review of documents and interviews indicated that although the district has articulation agreements, including registered apprenticeship programs, there is no district-wide process to ensure articulation agreements are annually reviewed and approved. (Legal Citation: Perkins Section 134; Vocational Technical Education Regulations 603 CMR 4.03 (4))

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<th>CRITERION NUMBER</th>
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<tbody>
<tr>
<td>CVTE 13</td>
<td>(Note: This criterion applies only to Chapter 74-approved vocational technical education.) Cooperative Education is implemented in accordance with applicable laws, regulations, and policies. Child Labor Bulletin 101 – Child Labor Requirements in Nonagricultural Occupations under the Fair Labor Standards Act WH – Revised March 2001, Code of Federal Regulations Title 29 (CFR 29) Parts 570.50 (c) (1) &amp; 570.51-570.68, M.G.L. c. 74 Sections 1&amp; 2A, M.G.L. c.149, Sections 1, 62 &amp; 62A, M.G.L. c. 152, Vocational Technical Education Regulations 603 CMR 4.03(7) 4.10(3), (Chapter 385 of the Acts of 2002)</td>
</tr>
</tbody>
</table>

References:
Massachusetts Perkins IV Manual at [http://www.doe.mass.edu/cte/perkins/](http://www.doe.mass.edu/cte/perkins/)
Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at [http://www.doe.mass.edu/cte/laws.html](http://www.doe.mass.edu/cte/laws.html)
Chapter 74 Manual for Vocational Technical Cooperative Education at [http://www.doe.mass.edu/cte/programs/](http://www.doe.mass.edu/cte/programs/)
Massachusetts General Law Chapter 149 at [http://www.state.ma.us/legis/laws/mgl/gl-149-toc.htm](http://www.state.ma.us/legis/laws/mgl/gl-149-toc.htm)
Advisory of CORI Law: Mandatory Criminal Record (CORI) Checks - Education Laws and Regulations at [http://www.doe.mass.edu/lawsregs/advisory/cori.html](http://www.doe.mass.edu/lawsregs/advisory/cori.html)

Rating: Partially Implemented  
District Response Required: Yes
### CRITERION NUMBER

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<th>Legal Standard</th>
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#### CVTE 14

Non-cooperative education (unpaid) work-based learning such as internships and job-shadowing is implemented in accordance with applicable laws, regulations and policies. *Perkins Section 134, M.G.L. c. 74 Section 2A, M.G.L. c. 152, Vocational Technical Education Regulations 603 CMR 4.03(4), Chapter 385 of the Acts of 2002*

**References:**
- Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at [http://www.doe.mass.edu/cte/laws.html](http://www.doe.mass.edu/cte/laws.html)
- Advisory of CORI Law: Mandatory Criminal Record (CORI) Checks - Education Laws and Regulations at [http://www.doe.mass.edu/lawsregs/advisory/cori.html](http://www.doe.mass.edu/lawsregs/advisory/cori.html)

**Rating:** Partially Implemented  
**District Response Required:** Yes

**Department of Elementary and Secondary Education Findings:**
A review of documents and student records revealed that forms, agreements, flyers, and applications for Worcester Technical’s non-cooperative education (unpaid) work-based learning program do not address gender identity as a protected category. (Legal Citation: Massachusetts Statute 2011, c. 199)

#### CRITERION NUMBER

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<th>Legal Standard</th>
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#### CVTE 15

**(Note: This criterion applies only to Chapter 74-approved vocational technical education.)**

Unpaid off-campus construction and maintenance projects are appropriately implemented per the Massachusetts Vocational Technical Education Regulations. *Vocational Technical Education Regulations 603 CMR 4.06; M.G.L.c.142, Section 3A.*

**References:**
- Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at [http://www.doe.mass.edu/cte/laws.html](http://www.doe.mass.edu/cte/laws.html)

**Rating:** Not Applicable  
**District Response Required:** No

**Department of Elementary and Secondary Education Findings:**
The district does not have any unpaid off-campus construction and maintenance.
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<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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</table>
| CVTE 16          | The needs of students in alternative education are addressed (if the district has alternative education). *Perkins Section 122*  
*Note:* Alternative Education is an instructional approach under the control of a school committee that is offered to "at-risk" students in a nontraditional setting. "At-risk" students may include those who are pregnant/parenting teens, truant students, and suspended or expelled students, returned dropouts, delinquent youth, or other students who are not meeting local promotional requirements. Alternative Education may operate as a program or as a separate self-contained school. Alternative Education does not include private schools, home schooling, school choice, General Educational Development (GED), or gifted and talented programs. Alternative Education also does not include programs exclusively serving students receiving special education services or career/vocational technical education. |
|                  | **References:**  
| Rating:          | Implemented |
| District Response Required: | No |

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<tr>
<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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<tbody>
<tr>
<td>CVTE 18</td>
<td>Staff in career/vocational technical education programs are appropriately licensed or are working under a current Department-issued waiver. <em>Perkins Section 134, M.G.L. c. 74 Section 18, Vocational Technical Education Regulations 603 CMR 4.03 (5) 4.07 and M.G.L. c. 71 Section 38G, Regulations for Educator Licensure and Preparation Program Approval 603 CMR 7.00</em></td>
</tr>
</tbody>
</table>
|                  | **References:**  
Massachusetts General Law Chapter 74, Section 18 at [http://www.mass.gov/legis/laws/mgl/gl-74-toc.htm](http://www.mass.gov/legis/laws/mgl/gl-74-toc.htm)  
Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at [http://www.doe.mass.edu/cte/laws.html](http://www.doe.mass.edu/cte/laws.html)  
Chapter 74 Guide for Preliminary Vocational Technical Teacher Licensure at |
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<th>CRITERION NUMBER</th>
<th>Legal Standard</th>
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<tr>
<td></td>
<td><a href="http://www.doe.mass.edu/cte/licensure/prelimguide.doc">http://www.doe.mass.edu/cte/licensure/prelimguide.doc</a></td>
</tr>
<tr>
<td></td>
<td>Chapter 74 Guide for Professional Vocational Technical Teacher Licensure at</td>
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<td><a href="http://www.doe.mass.edu/cte/licensure/profguide.doc">http://www.doe.mass.edu/cte/licensure/profguide.doc</a></td>
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<tr>
<td></td>
<td>Chapter 74 Guide for Vocational Technical Administrator and Cooperative Education</td>
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<td></td>
<td>Coordinator Licensure at <a href="http://www.doe.mass.edu/cte/licensure/admin_cecguide.doc">http://www.doe.mass.edu/cte/licensure/admin_cecguide.doc</a></td>
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<tr>
<td></td>
<td>Chapter 74 Guide for Vocational Technical Educator License Renewal at</td>
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<td><a href="http://www.doe.mass.edu/cte/licensure/renewalguide.doc">http://www.doe.mass.edu/cte/licensure/renewalguide.doc</a></td>
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<tr>
<td></td>
<td>Regulations for Educator Licensure and Preparation Program Approval 603 CMR 7.00 at</td>
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<td></td>
<td><a href="http://www.doe.mass.edu/lawsregs/603cmr7.html">http://www.doe.mass.edu/lawsregs/603cmr7.html</a></td>
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<tr>
<td>Rating:</td>
<td>Partially Implemented</td>
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<tr>
<td>District Response Required:</td>
<td>Yes</td>
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</table>

**Department of Elementary and Secondary Education Findings:**
A review of teacher licensure revealed that two staff members working in Chapter-74 approved career/vocational technical education programs are not appropriately licensed or working under a current Department-issued waiver. (Legal Citation: Vocational Technical Education Regulations 603 CMR 4.03 (5))

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<thead>
<tr>
<th>CRITERION NUMBER</th>
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<tbody>
<tr>
<td></td>
<td>Staff in career/vocational technical education programs acquire professional development. Perkins Section 134, Vocational Technical Education Regulations 603 CMR 4.03 (5) 4.07 and M.G.L. c. 71 Section 38G, Regulations for Educator Licensure and Preparation Program Approval 603 CMR 7.00</td>
</tr>
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<td>Massachusetts General Law Chapter 74, Section 18 at <a href="http://www.mass.gov/legis/laws/mgl/gl-74-toc.htm">http://www.mass.gov/legis/laws/mgl/gl-74-toc.htm</a></td>
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<td>Massachusetts General Law Chapter 71, Section 38G at <a href="http://www.mass.gov/legis/laws/mgl/gl-71-toc.htm">http://www.mass.gov/legis/laws/mgl/gl-71-toc.htm</a></td>
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<td>Chapter 74 Selected Sections &amp; 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at <a href="http://www.doe.mass.edu/cte/laws.html">http://www.doe.mass.edu/cte/laws.html</a></td>
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<tr>
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<td>Chapter 74 Guide for Vocational Technical Educator License Renewal at <a href="http://www.doe.mass.edu/educators/e_license.html?section=voc">http://www.doe.mass.edu/educators/e_license.html?section=voc</a></td>
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<td>District Response Required:</td>
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#### Legal Standard

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<tr>
<td>CVTE 20</td>
<td>Career/vocational technical education instructional facilities meet current occupational standards. Perkins Section 134; Vocational Technical Education Regulations 603 CMR 4.03 (3) (4) (7)(8). Each vocational technical education program shall be conducted in facilities that meet current occupational standards. 603 CMR 4.03 (3)(a)</td>
</tr>
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</table>

### References:

- Carl D. Perkins Career & Technical Education Improvement Act of 2006 at http://www.doe.mass.edu/cte/perkins/
- Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at http://www.doe.mass.edu/cte/laws.html
- NIOSH Safety Checklist Program for Schools at http://www.doe.mass.edu/cte/safety_health.html
- Chapter 74 Manual for Vocational Technical Cooperative Education at http://www.doe.mass.edu/cte/programs/

#### Rating: Partially Implemented   District Response Required: Yes

### Department of Elementary and Secondary Education Findings:

A review of documents and instructional facilities by the DESE CVTE safety specialist indicated that not all career/vocational technical education instructional facilities meet current occupational standards. The Office for Career/Vocational Technical Education will send the official Safety Survey Report, which includes details specific to each program, to Interim Superintendent Rodrigues under separate cover. (Legal Citations: 603 CMR 4.03 (3) (4) (7)(8))

### CRITERION NUMBER

#### Legal Standard

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<tr>
<td>CVTE 21</td>
<td>Career/vocational technical education instructional equipment meets current occupational standards. Perkins Section 134; Vocational Technical Education Regulations 603 CMR 4.03 (3) (4) (7) (8)</td>
</tr>
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</table>

### References:

- Carl D. Perkins Career & Technical Education Improvement Act of 2006 at http://www.doe.mass.edu/cte/perkins/
- Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at http://www.doe.mass.edu/cte/laws.html
- NIOSH Safety Checklist Program for Schools at http://www.doe.mass.edu/cte/safety_health.html
### Department of Elementary and Secondary Education Findings:

A review of documents and instructional facilities by the DESE CVTE safety specialist indicated that not all career/vocational technical education instructional equipment meet current occupational standards. The Office for Career/Vocational Technical Education will send the official Safety Survey Report, which includes details specific to each program, to Interim Superintendent Rodrigues under separate cover. (Legal Citation: 603 CMR 4.03 (3) (4) (7)(8))

### Department of Elementary and Secondary Education Findings:

A review of documents and interviews revealed that each high school has an Instructional Leadership team that meets monthly and utilizes multiple data sources to develop accountability plans; however, the data reviewed does not include all of the Perkins Core Indicators. Document review and interviews also demonstrated that while technical teachers at Worcester Technical are provided with and use Perkins Act Core Indicator data to improve student outcomes, this data is not shared with the technical teachers at the other high schools. (Legal Citation: Perkins Section 113, Perkins 134 (b) (5), (7), (8))

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<tr>
<td><a href="http://www.doe.mass.edu/cte/safety_health.html">http://www.doe.mass.edu/cte/safety_health.html</a></td>
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<tr>
<td>Chapter 74 Manual for Vocational Technical Cooperative Education at</td>
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<tr>
<td><a href="http://www.doe.mass.edu/cte/programs/">http://www.doe.mass.edu/cte/programs/</a></td>
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Rating: Partially Implemented  | District Response Required: Yes  

### CRITERION NUMBER

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<tr>
<th>CAREER/VOCATIONAL TECHNICAL EDUCATION</th>
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<tr>
<td>V. STUDENT SUPPORT SERVICES</td>
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Legal Standard

CVTE 22

The district uses the Perkins Act Core Indicator of Performance outcomes to improve programs and the outcomes for students. Perkins Section 113, Perkins 134 (b) (5), (7), (8)

References:

Carl D. Perkins Career & Technical Education Improvement Act of 2006 at  
http://www.doe.mass.edu/cte/perkins/  
Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education  
Regulations and Guidelines at  http://www.doe.mass.edu/cte/laws.html  
Massachusetts Perkins Accountability Workbook – Secondary at  
http://www.doe.mass.edu/cte/perkins/acctworkbook_sec.pdf  

Rating: Partially Implemented  | District Response Required: Yes  

### References:

- Carl D. Perkins Career & Technical Education Improvement Act of 2006 at http://www.doe.mass.edu/cte/perkins/
- Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at http://www.doe.mass.edu/cte/laws.html
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### CVTE 23

Perkins Local Plans and Standard Contract Forms and Application for Program Grants are appropriately designed, amended, and locally monitored. *Perkins Sections 113, 201, and 135*

**References:**
- Massachusetts Perkins IV Manual at [http://www.doe.mass.edu/cte/perkins/](http://www.doe.mass.edu/cte/perkins/)
- OMB Circular A – 87 at [HTTP://WWW.WHITEHOUSE.GOV/OMB/CIRCULARS/A087/A087-ALL.HTML](HTTP://WWW.WHITEHOUSE.GOV/OMB/CIRCULARS/A087/A087-ALL.HTML)

**Rating:** Implemented  
**District Response Required:** No

### CRITERION NUMBER

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<th>Legal Standard</th>
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### CVTE 24

The district uses Perkins funds in accordance with statutory fund-use rules, including supplement not supplant provisions. *Perkins Sections 135*

**References:**
- Massachusetts Perkins IV Manual at [http://www.doe.mass.edu/cte/perkins/](http://www.doe.mass.edu/cte/perkins/)
- OMB Circular A – 87 at [HTTP://WWW.WHITEHOUSE.GOV/OMB/CIRCULARS/A087/A087-ALL.HTML](HTTP://WWW.WHITEHOUSE.GOV/OMB/CIRCULARS/A087/A087-ALL.HTML)

**Rating:** Partially Implemented  
**District Response Required:** Yes

### Department of Elementary and Secondary Education Findings:

A review of financial Perkins records submitted by the district and interviews indicated the following:

- The district paid for two staff members to attend 2015 conferences that are not approved expenditures in the FY15 grant.
- A district-wide process does not yet exist to ensure property/inventory-control records are kept. The documentation must include a description of the property, a serial number or other
identification number, source of property, who holds title, acquisition date, cost of the property, percentage of Federal participation in the cost of the property, location, use and condition of the property, and any ultimate disposition data including the date of disposal and sale price of the property.

- The district changed the proportion of the wages paid out of Perkins funds for the Special Populations Coordinator (from 40% Perkins and 60% non-federal funding to 60% Perkins and 40% non-federal funding) without notifying the district’s liaison, a standard procedure for financial changes to grants. Budgetary shifts within a line item must be communicated to liaisons to ensure such changes are allowable under the Perkins Act.
- A review of documents and interviews indicated that the district uses the school-based Director of Career/Vocational Technical Education, who exclusively serves Worcester Technical, also performing the duties of the Special Populations Coordinator, which is the position described in the approved Perkins grant. The district is using Perkins funds for activities that do not agree with the position authorized under the grant (the Special Populations Coordinator).

(Legal Citation: Education Department General Administrative Regulations (80.32[d][1]); Carl D. Perkins Career & Technical Education Improvement Act of 2006; Massachusetts Perkins IV Manual, 2006)

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<tr>
<td>CVTE 25</td>
<td>(Note: This criterion applies only to Chapter 74-approved vocational technical education.) The district has adequate financial resources to enable the programs to meet current industry and Occupational Safety and Health Administration (OSHA) standards with respect to facilities, safety, equipment, and supplies. Vocational Technical Education Regulations 603 CMR 4.03 (8)</td>
</tr>
</tbody>
</table>

References:
Chapter 74 Selected Sections & 603 CMR 4.00 Vocational Technical Education Regulations and Guidelines at [http://www.doe.mass.edu/cte/laws.html](http://www.doe.mass.edu/cte/laws.html)

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<th>Rating:</th>
<th>Implemented</th>
<th>District Response Required:</th>
<th>No</th>
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### SE Criterion # 2 - Required and optional assessments

**Rating:**
Implemented

**Basis for Findings:**
A review of student records indicated that the district conducts all assessments consented to by the parent, specifically achievement, home, and psychological assessments. Record review also indicated that the district conducts all required assessments, including a history of the student's educational progress in the general curriculum and observations of the student in his/her classroom environment.

### SE Criterion # 3A - Special requirements for students on the autism spectrum

**Rating:**
Implemented

**Basis for Findings:**
A review of student records and staff interviews indicated that for students on the autism spectrum, IEP Teams consider and specifically address the verbal and nonverbal communication needs of the student; the need to develop social interaction skills and proficiencies; the needs resulting from the student's unusual responses to sensory experiences; the needs resulting from resistance to environmental change or change in daily routines; the needs resulting from engagement in repetitive activities and stereotyped movements; the need for any positive behavioral interventions, strategies, and supports to address any behavioral difficulties resulting from autism spectrum disorder; and other needs resulting from the student's disability that impact progress in the general curriculum, including social and emotional development.

IEP Teams use a checklist to guide the development of these required areas for students on the autism spectrum. Student record review demonstrated that Teams document their consideration of each area in the IEP, along with goals and accommodations for identified areas of student need.
**SE Criterion # 4 - Reports of assessment results**

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**Basis for Findings:**
A review of student records indicated that assessment summaries consistently include the procedures employed, the evaluator's diagnostic impressions of the student, a description of the student's needs in educationally relevant and common terms, and explicit means of meeting these needs. In addition, a review of student records indicated that the summaries of assessments are consistently available to the parent two days in advance of the Team discussion.

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**SE Criterion # 8 - IEP Team composition and attendance**

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<th>Rating:</th>
<th>Partially Implemented</th>
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**Basis for Findings:**
Student record review indicated that general education teachers are not consistently in attendance at Team meetings when their attendance is required, and do not consistently provide written input in advance of the Team meeting to the parent and IEP Team for development of the IEP.

Also, the district is not documenting in writing a parent's agreement to excuse Team members that are invited to a Team meeting, but do not attend.

**Department Order of Corrective Action:**
Review those records in which a Team meeting was held since the start of the 2017-2018 school year and in which all required Team members were not in attendance and the excusal process was not documented. Analyze the information to determine the root cause(s) of the non-compliance. Based on the results of the analysis, describe the steps the district will take to correct the non-compliance and provide a timeline for the implementation of those corrections.

Subsequent to all corrective actions, conduct a review of a sample of 25 student records from across all grade levels and schools ensuring that required Team members, including general education teachers, are in attendance and excusal procedures are followed if a Team member is unable to attend.

*Please note when conducting internal monitoring the district must maintain the following documentation and make it available to the Department upon request: a) list of student names and grade levels for the records reviewed; b) date of the review; and c) name of person(s) who conducted the review with their role(s) and signature(s).*
**SE Criterion # 8 - IEP Team composition and attendance**

**Required Elements of Progress Reports:**

By October 26, 2018, submit the results of the root cause analysis that includes a description of the district's proposed corrective actions, the timeline for implementation, and the person(s) responsible.

By January 14, 2019, submit the results of the internal review of student records and include the following:

1. the number of records reviewed at each level (preschool, elementary, middle and high school);
2. the number found to be compliant;
3. for any records not in compliance, determine the root cause; and
4. the specific corrective actions taken to remedy the non-compliance.

**Progress Report Due Date(s):**

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<th>Date</th>
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<tr>
<td>10/26/2018</td>
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<td>01/14/2019</td>
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**SE Criterion # 9 - Timeline for determination of eligibility and provision of documentation to parent**

**Rating:**

Implemented

**Basis for Findings:**

A review of student records indicated that within 45 school working days after receipt of the parent's written consent to an initial evaluation or a re-evaluation, IEP Teams consistently convene to determine whether the student is eligible for special education and provide to the parent either a proposed IEP and proposed placement or a written explanation of the finding of no eligibility.

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**SE Criterion # 12 - Frequency of re-evaluation**

**Rating:**

Implemented

**Basis for Findings:**

A review of student records indicated that the district consistently conducts re-evaluations every three years.
**SE Criterion # 13 - Progress Reports and content**

**Rating:**
Implemented

**Basis for Findings:**
A review of student records and staff interviews indicated that progress reports are provided at least as often as parents are informed of the progress of non-disabled students and consistently address student progress towards annual IEP goals.

A review of student records also indicated that when a student's eligibility terminates because the student has graduated from secondary school or exceeded the age of eligibility, the school district provides the student with a summary of his or her academic achievement and functional performance, including recommendations on how to assist the student in meeting his or her postsecondary goals.

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**SE Criterion # 14 - Review and revision of IEPs**

**Rating:**
Implemented

**Basis for Findings:**
A review of student records and staff interviews indicated that at least annually, on or before the anniversary date of the IEP, a Team meeting is held to consider the student's progress and to review, revise, or develop a new IEP or refer the student for a re-evaluation, as appropriate. The IEP Team consistently reviews and revises the student's IEP to address any lack of expected progress towards the annual goals and in the general curriculum.

A review of student records and staff interviews also indicated that if the district and parent agree to make changes to a student's IEP between annual meetings, the Team is reconvened to amend the IEP. Parents are advised that they may request a revised copy of the IEP with amendments incorporated.
**SE Criterion # 18A - IEP development and content**

**Rating:**  
Partially Implemented

**Basis for Findings:**  
A review of student records and staff interviews indicated that upon determining that the student is eligible for special education, IEP Teams do not consistently address all elements of the current IEP format provided by the Department of Elementary and Secondary Education. Specifically, the service delivery grid does not identify the end date of the service unless the student receives extended year services. Also, in some instances, the Present Levels of Educational Performance A (PLEP A), for students with a disability that impacts their participation in the general curriculum, was left blank, and several IEPs included other student names.

A review of student records also indicated that IEP Teams specifically address the skills and proficiencies needed to avoid and respond to bullying, harassment, or teasing for students identified with a disability on the autism spectrum. However, IEP Teams do not consistently address those skills and proficiencies for students whose disability affects social skills development or when the student's disability makes him or her vulnerable to bullying, harassment or teasing.

**Department Order of Corrective Action:**  
Review the district's procedures regarding the requirement to address all elements of the IEP. Train all appropriate personnel on: 1) identifying end dates on the service delivery grid; 2) completing PLEP A; 3) including correct personal student information; and 4) addressing the skills and proficiencies needed to avoid and respond to bullying, harassment or teasing for students whose disability affects social skills development and when the student's disability makes him or her vulnerable to bullying, harassment or teasing.

For those student records identified by the Department, reconvene the Team and update the IEP to ensure that all required and appropriate information is included.

Develop an internal oversight and tracking system for ensuring that: 1) all elements of the IEP, including service delivery grids and PLEP A, are completed and contain the correct personal student information; and 2) Teams specifically address the skills and proficiencies needed to avoid and respond to bullying, harassment, or teasing.

Subsequent to all corrective actions, conduct a review of a sample of 25 student records from across all grade levels and schools to ensure that all elements of the current IEP format are addressed, including service delivery grids, PLEP A, and bullying, and that IEPs contain correct personal student information.
**SE Criterion # 18A - IEP development and content**

*Please note when conducting internal monitoring the district must maintain the following documentation and make it available to the Department upon request: a) list of student names and grade levels for the records reviewed; b) date of the review; and c) name of person(s) who conducted the review with their role(s) and signature(s).*

<table>
<thead>
<tr>
<th>Required Elements of Progress Reports:</th>
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<tbody>
<tr>
<td><strong>By October 26, 2018,</strong> submit evidence of trainings (agenda, signed/dated attendance list with staff role and materials used).</td>
</tr>
<tr>
<td><strong>By October 26, 2018,</strong> for those students whose records were identified by the Department, submit: 1) the meeting invitation (N3); 2) Team attendance sheet (N3A); and 3) revised or amended IEP.</td>
</tr>
<tr>
<td><strong>By October 26, 2018,</strong> submit a description of the district's internal oversight and tracking system.</td>
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<tr>
<td><strong>By January 14, 2019,</strong> submit the results of the internal reviews of student records and include the following:</td>
</tr>
<tr>
<td>1. the number of records reviewed at each level (preschool, elementary, middle and high school);</td>
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<td>2. the number found to be compliant;</td>
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<tr>
<td>3. for any records not in compliance, determine the root cause; and</td>
</tr>
<tr>
<td>4. the specific corrective actions taken to remedy the non-compliance.</td>
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<tr>
<th>Progress Report Due Date(s):</th>
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<tr>
<td>10/26/2018</td>
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</table>
**SE Criterion # 18B - Determination of placement; provision of IEP to parent**

<table>
<thead>
<tr>
<th>Rating:</th>
<th>Partially Implemented</th>
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<tbody>
<tr>
<td><strong>Basis for Findings:</strong></td>
<td>A review of student records indicated that the district does not consistently provide to the parent the proposed IEP and proposed placement along with the required notice within two calendar weeks when the parent receives a summary at the conclusion of the Team meeting.</td>
</tr>
<tr>
<td><strong>Department Order of Corrective Action:</strong></td>
<td>Develop procedures to ensure that the district provides to the parent the proposed IEP and proposed placement along with the required notice within two calendar weeks when the parent receives a summary at the conclusion of the Team meeting. Conduct training for Evaluation Team Coordinators on these procedures.</td>
</tr>
<tr>
<td>Develop an internal oversight and tracking system for ensuring the proposed IEP and proposed placement, along with the required notice, are provided to the parent within two calendar weeks when the parent receives a summary at the conclusion of the Team meeting. The tracking system should include periodic reviews by an administrator to ensure ongoing compliance.</td>
<td></td>
</tr>
<tr>
<td>Subsequent to implementation of all corrective actions, conduct a review of 25 student records across grade levels and schools for evidence that the district provided the parent the proposed IEP and proposed placement, along with the required notice, within two calendar weeks, when the parent receives a summary at the conclusion of the Team meeting.</td>
<td></td>
</tr>
<tr>
<td><em>Please note when conducting internal monitoring the district must maintain the following documentation and make it available to the Department upon request: a) list of student names and grade levels for the records reviewed; b) date of the review; and c) name of person(s) who conducted the review with their role(s) and signature(s).</em></td>
<td></td>
</tr>
<tr>
<td><strong>Required Elements of Progress Reports:</strong></td>
<td><strong>By October 26, 2018</strong>, submit the procedures and evidence of training (agenda, signed/dated attendance list with staff role and materials used).</td>
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<tr>
<td><strong>By October 26, 2018</strong>, submit a description of the district's internal oversight and tracking system.</td>
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<tr>
<td><strong>By January 14, 2019</strong>, submit the results of the internal review of student records and include the following:</td>
<td></td>
</tr>
<tr>
<td>1. the number of records reviewed at each level (preschool, elementary, middle and high school);</td>
<td></td>
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<tr>
<td>2. the number found to be compliant;</td>
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<tr>
<td>3. for any records not in compliance, determine the root cause; and</td>
<td></td>
</tr>
<tr>
<td>4. the specific corrective actions taken to remedy the non-compliance.</td>
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| **Progress Report Due Date(s):** | 10/26/2018 | 01/14/2019 |
### SE Criterion # 20 - Least restrictive program selected

**Rating:**
Implemented

**Basis for Findings:**
A review of student records and staff interviews indicated that when a student is removed from the general education classroom, IEP Teams consistently state why the removal is considered critical to the student’s program and provide the basis for its conclusion that education of the student in a less restrictive environment, with the use of supplementary aids and services, could not be achieved satisfactorily.

### SE Criterion # 24 - Notice to parent regarding proposal or refusal to initiate or change the identification, evaluation, or educational placement of the student or the provision of FAPE

**Rating:**
Implemented

**Basis for Findings:**
A review of student records and staff interviews indicated that the district’s Notice of Proposed School District Action (N1) consistently provides a description of each evaluation procedure, test, record, or report the district used as a basis for the proposed or refused action and a description of any factors relevant to the district’s proposal or refusal.

### SE Criterion # 26 - Parent participation in meetings

**Rating:**
Partially Implemented

**Basis for Findings:**
A review of student records indicated that when parents do not attend IEP Team meetings, the district does not document multiple attempts to obtain parents' participation.

**Department Order of Corrective Action:**
Review the district’s procedures for documenting multiple attempts to obtain parents' participation when they do not attend IEP Team meetings. Alternative methods may include, but are not limited to, video conferencing or telephone calls. Train appropriate personnel on these procedures.

For those student records identified by the Department in which the parent/guardian was not able to attend the Team meeting and the district did not document multiple attempts to obtain the parent’s participation, reschedule the Team meetings to ensure that the parent/guardian either attends or is offered alternative means to participate.

Develop an internal oversight and tracking system for ensuring that multiple attempts for parent participation are documented. The tracking system should include periodic reviews by an administrator to ensure ongoing compliance.

Subsequent to all corrective actions, conduct a review of a sample of 25 student records from across all grade levels and schools for evidence that parents are in attendance at Team meetings. If the parent is unable to attend, the district documents multiple attempts to obtain the parent's participation in IEP Team meetings.
**SE Criterion # 26 - Parent participation in meetings**

*Please note when conducting internal monitoring the district must maintain the following documentation and make it available to the Department upon request: a) list of student names and grade levels for the records reviewed; b) date of the review; and c) name of person(s) who conducted the review with their role(s) and signature(s).*

**Required Elements of Progress Reports:**
By October 26, 2018, submit evidence of training (agenda, signed/dated attendance list with staff role and materials used).

By October 26, 2018, for those students whose records were identified by the Department, submit a copy of the Team Meeting Attendance Sheet (N3A) indicating that the parent attended the IEP meeting or evidence that alternative means for participation was offered and documented.

By October 26, 2018, submit a description of the district's internal oversight and tracking system.

By January 14, 2019, submit the results of the internal review of student records and include the following:
1. the number of records reviewed at each level (preschool, elementary, middle and high school);
2. the number found to be compliant;
3. for any records not in compliance, determine the root cause; and
4. the specific corrective actions taken to remedy the non-compliance.

**Progress Report Due Date(s):**

| 10/26/2018 | 01/14/2019 |

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**SE Criterion # 29 - Communications are in English and primary language of home**

**Rating:**
Implemented

**Basis for Findings:**
A review of student records and staff interviews indicated that the district consistently translates documents for parents who speak low incidence languages. Record review and interviews also indicated that individuals familiar with special education procedures, programs and services consistently provide interpretation at IEP Team meetings. New procedures are in place to ensure that families and friends are not relied upon to act as interpreters.

**SE Criterion # 34 - Continuum of alternative services and placements**

**Rating:**
Implemented

**Basis for Findings:**
A review of student records and staff interviews indicated that, at all grade levels, Teams may develop IEPs with counseling as a direct service for any student with social/emotional and behavioral needs, including students that are not placed in the Structured Therapeutic Education Program (STEP) program.
<table>
<thead>
<tr>
<th>SE Criterion # 40 - Instructional grouping requirements for students aged five and older</th>
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<td><strong>Rating:</strong></td>
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<td><strong>Basis for Findings:</strong></td>
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<th>SE Criterion # 41 - Age span requirements</th>
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<td><strong>Basis for Findings:</strong></td>
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<tr>
<th>SE Criterion # 45 - Procedures for suspension up to 10 days and after 10 days: General requirements</th>
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<td><strong>Rating:</strong></td>
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<td><strong>Basis for Findings:</strong></td>
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<tr>
<th>SE Criterion # 54 - Professional development</th>
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<td><strong>Rating:</strong></td>
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<td><strong>Basis for Findings:</strong></td>
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### SE Criterion # 55 - Special education facilities and classrooms

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<th>Rating:</th>
<th>Implemented</th>
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**Basis for Findings:**
Classroom observations indicated that the special education facilities and classroom issues identified during the 2014-2015 CPR have been resolved at the following schools:

Chandler Magnet Elementary School: The previously identified Academic Transition Program (ACT) classrooms, which were special education rooms clustered in the school’s C wing (rooms 120, 119, 118, 121A, 121B, 122A and 122B), are now used for district professional development. The ACT program was moved off site where it now operates as an Approved Day School.

Doherty High School: A wall was constructed in room 209 which created two classroom spaces identified as A and B to eliminate auditory distractions and any confidentiality concerns. Currently, special education students receive services in both classroom spaces. Another wall was constructed in room 321 to create two classroom spaces identified as B and C. (Please note that at the time of the CPR, room 324 was incorrectly identified as the classroom in the finding. The classroom that was out of compliance was 321). Students now enter the suspension room through its own entrance. Also, computers are no longer repaired in the classroom where occupational therapy and speech therapy services are delivered (room 203) and, therefore, a safety hazard no longer exists for the students.
REVIEW AND RECOMMENDATIONS OF BEST PRACTICES
FOR K–12 STEM LEARNING SPACES

Undertaken for the Massachusetts School Building Authority, under contract awarded for
RFR to Analyze Space, Configuration and Use Standards for Science and Technology/Engineering
Educational Space in Massachusetts K–12 Public Schools

STEM Learning Design, LLC
Jake Foster
Laura Smith

December 2018
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EXECUTIVE SUMMARY

This report provides an overview of best practices for science, technology, engineering, and mathematics (STEM) education as it applies to the use and design of STEM learning spaces. A well-designed space can enable hands-on science and engineering, relevant and applied mathematics, and effective integration and use of technologies. Quality STEM education begins early to foster the interest, engagement, and development of students who will be ready to contribute to a literate society, viable economy, and sustainable world.

STEM learning spaces support investigating and making experiences for all students, flexible and varied curriculum, and student safety. Typical STEM curricular strategies include collaboration, critical thinking and problem solving, project-based learning, and technology use. STEM instructional design blends a variety of strategies for any particular learning goal. STEM spaces must be flexible to meet such diverse modes of learning and variety of strategies.

The report provides recommendations for several types of STEM learning spaces:

- Well-designed generalist elementary classrooms include at least two sinks, display space for student work, and significant floor area for messy work.
- Elementary schools that provide a dedicated teacher for science and technology/engineering instruction may also provide a dedicated room that provides enough space, flexibility, and design features for safely engaging in inquiry and design activities.
- The needs for a middle school science lab are similar to those for a high school lab. Key features of the 2011 MSBA high school science lab guidelines should apply, including space, perimeter utilities, and flexibility, but not include gas and fume hoods.
- Technology/engineering labs (including makerspaces) are also well served by the 2011 MSBA high school science lab guidelines, with particular considerations such as dedicated tool exhaust or tool and material storage.

The expansion and inclusion of engineering is one continuing trend that STEM space design must account for. This includes the need to support learning and experiences with key engineering design components, such as ideation and design, prototyping and fabrication, assembly and testing, and display and communication of solutions. This can be supported by making small adjustments or additions to traditional science spaces, incorporating dedicated spaces such as makerspaces, and/or provision of project spaces.

Every STEM program must carefully attend to student safety in the process of learning. The policy and cultural context of a school are a large influence on how safety is attended to and approached. Implementation of a culture of safety is only possible when the school and district works together rather than leaving safety to individual teachers or departments. Safety also requires attention to the design, maintenance, and use of key systems, such as ventilation, chemical storage, and emergency response systems. The design of school and classroom systems require a strong understanding of the intended uses of the space, and what procedures, chemicals, equipment, and materials are anticipated in the curriculum.
**REVIEW CONTEXT**

This report provides findings and recommendations resulting from a review and analysis of current national, Massachusetts, and Massachusetts School Building Authority (MSBA) standards and best practices for science, technology, engineering, and mathematics (STEM) learning spaces.

**Goal of the review**

The goal of this review, as established in the MSBA RFR of October 2017, is to:

- Complete a review and analysis of K–12 core academic STEM learning spaces, with a focus on K–8, and provide recommendations for “best practices” for the quantifying and sizing, configuration, outfitting, management, maintenance, and use of STEM learning spaces.
- Recommended “best practices” will include a list of suggested teaching and safety equipment, materials, and practices that are optimal and age-appropriate for providing core academic STEM programming for K–12.

**Review process**

**Key topics investigated**

The findings and recommendations presented in this report are the result of investigating a number of key topics, including:

- Best practices for K–8 STEM education
- Implications of state STEM learning standards for STEM program design
- School use of the 2011 MSBA high school science lab guidelines
- Analysis of schools that include or are planning a makerspace
- Potential of conducting K–8 STEM education without hazardous chemicals
- Specific safety system recommendations (e.g., inclusion of shower drains, acid neutralization)

**Summary of the review process**

Key activities in this work have included:

- A review of documents and position statements relevant to STEM learning spaces and best practices for STEM education
- Site visits to a variety of Massachusetts schools
- Stakeholder interviews on space design and use, makerspaces in particular, and safety practices
- Regular discussion with MSBA staff

Input on best practices identified during this review, and on initial findings, were provided through sessions at a number of events in the state, including:

- MSBA Designer Roundtable

---

1 Found at [www.massschoolbuildings.org/programs/science_lab/guidelines](http://www.massschoolbuildings.org/programs/science_lab/guidelines)
• MA Science Education Leadership Association (MSELA)
• MA Association of Science Teachers (MAST)
• MA STEM Summit

A full overview of the review protocol, site visit guide, sites visited, and organizations consulted can be found in the Appendix.

Limitations of this review
This review is focused on learning spaces that engender learning of science, technology, engineering, and mathematics learning standards. A primary focus is on K–8 learning spaces that provide for STEM teaching and learning, including both generalist classrooms and STEM-specific rooms. Second, the review considers implications of emerging trends in technology/engineering spaces, such as makerspaces. Finally, the review recommends potential updates to the 2011 MSBA high school science lab guidelines.

This review does not look at nor provide recommendations for the design of:
• Secondary level specialized STEM spaces (e.g., audio/visual production, CAD rooms, biotech labs)
• Career preparation spaces (e.g., Chapter 74 or Perkins CTE programs or vocational shops, Fab Labs)
• Outdoor learning spaces
• Art spaces (or art in the context of STEM, often referred to as STEAM programming)

This report summarizes some best practices with regard to STEM learning spaces, and some applicable codes and regulations, but the District is responsible for the operation of school buildings, practices and routines, and safety requirements. It is the District’s responsibility to ensure the proper use of any educational space, that schools are in compliance with all applicable codes and regulations, including but not limited to OSHA/ANSI requirements, and to provide adequate staff training and oversight.

STEM in Massachusetts K–12 schools
All STEM education programs start with a vision of how STEM knowledge and skills will contribute to a student’s future. This vision can vary widely from program to program. Whatever the visionary perspective, the design of a corresponding program—and including educational strategies, curricular options provided, and built environment—should reflect that perspective. Schools must clearly articulate their vision, program, and learning goals for STEM in order to inform their educational approach and design decisions. This often takes significant time to articulate and implement. The challenge in the design of building space is to allow for a reflection of a current vision while maintaining flexibility for adjustments and unanticipated changes in the future. In order to accommodate the wide variability in perspectives and future uses, this review emphasizes a select number of goals, strategies, and choices about learning spaces that are both common to, and shown to be effective in, a wide variety of STEM programs and contexts.
Goals for STEM education

STEM education, which can incorporate subjects of science, technology, engineering, mathematics, and computer science in a variety of designs, is increasingly a focus of public education in Massachusetts. While there are different conceptions of what constitutes “STEM” across the state, it is important that each of the subjects be attended to in a K–12 educational program to prepare every student for success in an increasingly technical society and workplace (AAAS, 1993; ITEEA, 2017; NRC, 2012, 2006). Our educational system is beginning to move beyond the typical focus on mathematics and traditional sciences as separate and distinct subjects, toward more connections among the disciplines, in order to reflect the need for a literate society, an economically viable workforce, and the ability to address global challenges.

Key goals for a literate society

- Every individual will be able to understand and analyze the natural and built world to achieve personal well-being and functional communities (e.g., programming home systems, appreciating greenspace, assessing food options).
- Every individual will be able to participate in civic government, contribute to decisions about technical and scientific infrastructure, initiatives, and policies (e.g., town sewer systems, genetic testing, climate change mitigation).

Key goals for economic viability:

- Preparation of each individual for workforce viability and success in an increasingly technical and innovation-driven economy
- Development of key skills and habits of mind to successfully contribute to Massachusetts’ economy:
  - Adaptability and flexibility
  - Critical analysis to evaluate claims, products, and trends
  - Ability to learn and act when change is required
  - Ability to use and apply technology and data

Key goals for global sustainability:

- Ability to contribute to grand challenges of our time which are global in nature and require engineered solutions
- Development of individuals across society and workforce that can:
  - Collaborate across communities and sectors
  - Empathize with different cultures
  - Engage in critical analysis, problem solving, and constant adaptation
  - Effectively use pervasive technology for communication, collaboration, solution generation, knowledge access, and equity

The traditional focus on distinct science and mathematics knowledge is not enough to meet these imperatives. These key goals drive the dual need for conceptual understanding and disciplinary skills now reflected in all state STEM learning standards developed since 2010.
These imperatives are also the driver of increased focus on innovation, engineering design, digital literacy, and computer science across the state.

Implications of STEM curriculum frameworks
Massachusetts curriculum frameworks for STEM, including standards and guidance for Science and Technology/Engineering, Mathematics, as well as Digital Literacy and Computer Science, primarily articulate the expected learning goals for all students. These outcomes are written such that they can be achieved through a variety of learning contexts or program designs. Additional program guidance provided in state frameworks articulate qualities of STEM programs for schools to consider as they implement their program; this guidance encourages but does not require attention to best practices for STEM programs. State curriculum frameworks do not specifically require any particular program design, curriculum, or sizing or outfitting of learning spaces.

Guidance provided in state STEM curriculum frameworks does encourage STEM learning through active learning, such as carrying out science investigations, prototyping engineering solutions, designing and testing coded programs, or applying mathematical concepts to real-world applications. These activities, when provided as active experiences for students, necessitate using a variety of materials and tools in different environments. To accomplish this, schools need to provide appropriate materials and space to be active, and to be safe while being active. The standards do not, however, specifically define what these activities are, or what materials should be used; the standards do sometimes provide examples and suggestions. For example, consider this 7th grade physical science standard:

7.MS-PS3-3. Apply scientific principles of energy and heat transfer to design, construct, and test a device to minimize or maximize thermal energy transfer.* Clarification Statement: Examples of devices could include an insulated box, a solar cooker, and a vacuum flask. State Assessment Boundary: Accounting for specific heat or calculations of the total amount of thermal energy transferred is not expected in state assessment. (ESE, 2016b, p. 57)

In this case, each example device has implications for the types of materials needed, the nature of the activity to be undertaken, and even for storage of the project, assuming that the school takes a physical, hands-on approach to teaching this standard. Other example devices may be considered, or limited, based on tools available to students in a particular context, or based on staff training and experience. These examples are not, however, the only devices a school may choose from, do not indicate the number of devices to be built per class, do not preclude some or all learning activities relative to this standard from being virtual or digital, nor inform any other number of curricular design decisions that need to be worked through to make for a viable instructional experience. Standards are not intended to define the STEM program for schools, or the particular activities and materials to be used, but rather to build on an overall assumption of active student learning with relevant materials.

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See Appendix for links to each curriculum framework, or visit [www.doe.mass.edu/frameworks/current.html](http://www.doe.mass.edu/frameworks/current.html).
Defining high school “laboratory science” courses
The Massachusetts Science and Technology/Engineering [STE] Framework provides guidance to districts to establish a local definition for “laboratory science” courses; there is not a state-wide definition. This designation is commonly applied to high school courses for purposes of conveying the nature of the course to higher education institutions for admissions purposes. The Framework states:

**Defining “Laboratory Science” Courses in High School**
The inclusion of science and engineering practices in the standards suggests that the key factor in defining a “laboratory science” course is the nature and prevalence of the active learning experience. A definition of such courses should include two critical elements:

1. A balance between open and procedural investigations in which students learn and apply science and engineering practices.
2. The percent of course time engaged in inquiry- or design-based experiences.

Any course aligned to the STE standards, including technology/engineering courses, can be designated as a laboratory course. STE curricula should give students regular opportunities to develop distinct science and engineering practices and occasional opportunities to apply those together as a collective set of practices. A defined number of minutes, or an extra course period, can be used for—but is not the critical feature of—a lab definition. “Laboratory science” does not have to be in a laboratory; effective STE learning also occurs through field work, in a sufficiently supplied traditional classroom, through project-based experiences, in well-designed virtual courses, and in other learning environments (e.g., out of school time, see Appendix X). *America’s Lab Report* (NRC, 2006), which reviewed research and best practices across the country, supports these perspectives. (ESE, 2016b, p. 152)

What is considered appropriate STEM program design is dependent on the particular program approach, curriculum priorities, course offerings, and training or experience of staff; there is no one-size-fits-all answer or approach. Each district, school, and teacher must evaluate the particulars of their work and student needs to ensure the appropriate choice of materials, equipment, learning environment, safety considerations, and best practices for each learning goal for their program.

**STEM program qualities**
Quality STEM education programs are generally designed to enable:
- hands-on, minds-on science and engineering (e.g., Clough, 2002; ESE, 2016b; NRC, 2012, 2006)
- relevant and applied mathematics (e.g., ESE, 2017)
- effective integration and use of technologies (e.g., ESE, 2016a; ITEEA, 2017)
- dynamic application of STEM knowledge and skills to relevant contexts and problems (e.g., ESE, 2017, 2016a, 2017b; NRC, 2005; NAE & NRC, 2014)
Quality STEM education begins early, starting in PreK, both to ensure foundational knowledge and skills as well as to foster the interest, engagement, and development of students ready for the imperatives of a literate society, viable economy, and sustainable world.

**Key educational strategies in STEM**
A number of curricular and instructional strategies are found in quality STEM education programs, including (e.g., Banilower et al, 2010; NRC, 2012, 2009, 2005):

- Collaboration
- Critical thinking and problem solving
- Project-based learning
- Application to relevant community, economic, and global contexts
- Technology to enhance and engender teaching and learning of above
- Explicit attention to equity and inclusion

This list is illustrative of key strategies used in successful STEM programs across Massachusetts; a wide variety of additional strategies may be used in individual programs. These strategies tend to be consistent with theories of learning and instruction that enable quality STEM education, particularly:

- Social constructivism: knowledge development is an active process mediated through social interactions (Lave & Wegner, 1991; Palincsar, 1998; Vygotsky, 1978)
- Constructionism: knowledge development is facilitated when building things that are tangible and shareable (e.g., Papert & Harel, 1991)

The art of STEM instructional design is choosing among a variety of potentially effective strategies for any particular learning goal. Very often it is a combination of strategies that are woven together to best engage students in a set of experiences and tasks to achieve a learning goal. Current state STEM learning standards include an integration of conceptual outcomes and skills or practices. A lesson in high school science may, for example, include observation and measuring of a discrepant event (a counter-intuitive phenomenon) to get students thinking about a concept, a hands-on activity to explore the phenomenon further, some small group and whole-class discussion of what the students have found, and a writing or assessment task to document learning. To meet such diverse modes of learning and variety of strategies, the learning space must be flexible to accommodate regular changes in the arrangement of student groups, activity centers, learning tasks, and student performances or demonstrations.

**Spectrum of elementary STEM learning spaces**
This review recognizes that there is a spectrum of STEM learning spaces in Massachusetts’ elementary schools (typically grades Pre-K–5). In Pre-K through grade 2, STEM learning takes place in general elementary classrooms in which the teacher is responsible for the breadth of the curriculum. This is also the case for most grade 3–5 classrooms, although at these grades some Massachusetts schools provide for teacher specialization (by, for example, teaming pairs of generalist teachers where one focuses on STEM and the other on humanities), and others
provide a specialized teacher in a dedicated science specialist room (Levy et al, 2016, 2008). The decision to provide specialized STEM teachers or spaces is a program decision, not a requirement, which is a reflection of the district’s philosophy and curriculum. This review provides recommendations for general elementary classrooms as well as dedicated elementary spaces that are typically staffed by a STEM-specific teacher.

Spectrum of secondary STEM learning spaces
There are a wide variety of STEM learning spaces in middle schools (typically grades 6–8) and high schools (typically grades 9–12). STEM learning opportunities are found in a variety of learning spaces such as mathematics classrooms and science labs, as well as in a wide variety of specials (middle school) and electives (high school), all of which typically have specialized teachers. In particular, technology/engineering spaces merit considerable attention in this review as this area changes regularly, often in conjunction with changes in state or local economies. Technology/engineering spaces may go by a variety of names such as technology education room ("tech ed" or "tech room"), makerspace, STEM lab, Fab Lab, and others. Science labs, technology/engineering spaces, and mathematics classrooms represent the learning spaces where the MA core academic STEM learning standards\(^3\) are typically addressed.

\(^3\) MA Curriculum Frameworks for Science and Technology/Engineering and Mathematics.
High schools often have a variety of specialized STEM spaces designed for particular courses or programs of studies that are not addressed in this report. These spaces can address subjects as diverse as forensics, aquaculture, broadcasting, video production, and others. Career preparation spaces are also found in many high schools, whether in comprehensive or vocational schools (such as Career and Technical Education [CTE] programs\(^4\)). This review does not address the particular needs or designs of these spaces as they typically address curriculum beyond core academic STEM learning standards.

**Evolution of making in Massachusetts schools**

Makerspaces are an emerging trend in STEM education in Massachusetts schools and are a particular focus of this review. Contextualizing the trend of “maker education” (e.g., Clapp et al., 2017; Halverson & Sheridan, 2014) helps understand how it relates to current offerings in schools, particularly technology education offerings. This section lays out how making in Massachusetts schools has evolved over time in response to the state’s changing economy. In this context, makerspaces are not a new category or type of space but are an iteration of spaces with a long tradition in Massachusetts schools that reflect the availability of new tools, techniques, and priorities.

**Foundations for making**

The importance of making in MA schools is often driven by personal, educational, and economic perspectives:

- At the individual level, making enables our personal ability to use basic tools and address everyday needs (e.g., enable self-sufficiency)
- At the curriculum level, learning through doing is an important contributor to effective learning (e.g., social constructivist and constructionism learning theories)
- At the program level, making is typically driven by the economy (e.g., industrial arts to support an industrial economy)

**Changing perspectives of making**

The rise of engineering design, computer science, and digital tools in education over the past decade reflects an increasing recognition that individuals need to understand the designed world they live in, and that they need to be prepared to interact with and manipulate designed systems for success in a constantly changing economy. Relatively rapid changes in the local and state economy push schools and districts (particularly in grades 6–12) to respond by regularly adding new program elements or transforming existing elements. While there has long been a core value for making in schools, how that is framed for students and what the program looks like are continually in flux. There has been an evolution of making in Massachusetts over the past approximately 50 years which can be characterized by a transition through three models.

**Industrial arts model**

In 2001, Massachusetts adopted a new set of Science and Technology/Engineering standards, reflecting the first time that engineering was included in the core academic disciplines and

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\(^4\) CTE programs designated and funded through Massachusetts Chapter 74 and federal Perkins programs.
acknowledging the importance of students need to understand the technological systems our society relies on. Before the adoption of those standards, the predominant spaces for making in secondary level schools were Industrial Arts shops, characterized by now well-recognized woodshops and metal shops. In this model, the main emphasis was on production, including the use of tools to produce quality products, and skills that could be transferred to an industrial production-focused economy. These courses were generally considered specials or electives for students. Relatively large mechanical shops with major machines (tools) and systems representative of target industries were at the center of these programs, and the curriculum typically put an emphasis on quality of associated products. Additionally, programs such as family and consumer science provided opportunities for making in additional domestic and workforce contexts. Some schools still maintain courses aligned with this model.

**Technology education model**
With the adoption of the 2001 standards, a technology education model has been predominant in Massachusetts schools. In this model the emphasis is on major technological systems (e.g., building, transportation, communication systems) that comprise the designed world, with engineering design as a powerful process to design technological products (ITEEA, 2017). Since 2001 schools have been transitioning industrial arts shop programs to accommodate learning of the academic standards for all students through a variety of technology education offerings (often referred to as “tech ed” courses). These courses have typically been maintained as specials or electives. Learning spaces in this model have continued to include machines (tools), but the curriculum relies less on full-scale machines and products, instead allowing for smaller learning spaces with hand and power tools and a focus on engineering design process as applied across technological systems. This model de-emphasizes the quality of particular products to focus on student understanding of technological systems in the designed world.

**Innovation economy model**
Since about 2015 education in the state has begun to see another transition toward innovation as a central focus. This transition has not been correlated with a particular change in state learning standards, but is more reflective of policy and economic changes in the state such as the move toward advanced manufacturing and biotechnology. The emergence of an “innovation economy” requires students who can address and respond to societal and economic needs through quick innovation and prototyping. Schools have begun looking for opportunities across the curriculum to integrate more of a process focus, including engineering design and prototyping, to prepare students. Learning spaces to support this model focus on collaboration and sharing tools, inclusion of a wide variety of materials and small-scale mechanical and digital tools to quickly prototype and test solutions, and flexibility for regularly changing projects or contexts. Attention to technological systems and engineering design, the focus of the technology education model, remain, but are no longer the main focus. While the specific purpose and design for learning spaces in the innovation model vary based on context, they tend to aim for broader integration across the curriculum with a focus on innovation and application. Included machines reflect a mix of some traditional tools (typically benchtop

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5 For example, see [www.masstech.org/index](http://www.masstech.org/index).
machines and hand tools) and a wide variety of digital tools and technologies (e.g., robotics, 3D design and printing, laser cutting).

The general evolution of the field through these three models represents movement toward increasing democratization and access to technology and engineering for all students (Halverson & Sheridan, 2014; Papert & Harel, 1991), with increasingly stronger ties to core academic learning standards. Given this trend, this review particularly attends to how schools can support an innovation focus, including considerations for best practices and learning space design. This review also assumes that the inclusion of technology and engineering education into core academic programming is likely to increase over time, particularly as schools continue to address the most recent Massachusetts state Science and Technology/Engineering standards (2016), and the Digital Literacy and Computer Science standards (2016), which together reflect the increasing focus on the economic and global imperatives for STEM education.

**Approaches to making in MA school programming**

Making as part of the core academic program in MA schools is often achieved in a school’s technology/engineering programming. Elementary schools typically have the generalist classroom teacher address all the academic subjects, including technology/engineering. In secondary schools making is often reflected in the school’s “technology education” course offerings. In most secondary schools there is a dedicated technology/engineering teacher, but some schools integrate technology/engineering units and lessons into science or other subjects.

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6 Experiences with making are also provided through specialized STEM courses, CVTE programming, and art courses which are not a focus of this review.
Some secondary schools are moving toward more integrated science and technology/engineering departments, bringing together two traditionally separate science and tech ed departments. The approach to making in any particular school should reflect the goals of their educational program, staff capacity and training, and availability of appropriate space and equipment.

Those schools that do not have dedicated technology/engineering staff or space can consider solutions such as:

- Rolling maker carts\(^7\) to provide selected tools and materials conducive to integrating engineering design and prototyping into other subjects
- Outfit classrooms, science labs, or art rooms to support engineering education with:
  - collaboration and display space
  - ceiling anchors to suspend projects
  - small tools for prototyping and solution testing\(^8\)
- Open project space created through strategic adjacencies or a dedicated “project room” for long-term or larger-scale projects

Each of these can support engineering design and innovation in non-dedicated spaces.

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\(^7\) E.g., [www.communityengineering.org/portablestudio/](http://www.communityengineering.org/portablestudio/)

\(^8\) See further details relevant to this strategy in the learning spaces recommendations section below.
A specific technology/engineering space can be the right solution for those schools that have defined technology and engineering curriculum as part of the core academic program and dedicated staffing to support it. These spaces should provide programming aligned to the academic learning standards and appropriate to the grade span using it, including appropriate mechanical and digital tools, materials, and safety solutions, as well as a staff person responsible for the safe use and maintenance of the space. Use cases for this model include:

- An elementary makerspace available to all classes where work in the space enhances school-based projects and other academics. In this model, the space can be treated as a library or media program, or as a special with students scheduled into it several times a week for some portion of the school year.
- A library- or media-based makerspace in a middle or high school where classes schedule time to work on aspects of projects and supplement core academic coursework with making activities. In this model, the space is treated as a library or media program with students using it when relevant to particular projects and activities.
- A dedicated middle or high school technology education or engineering room in which a defined technology/engineering curriculum is taught. In this model, the middle school room is often treated as a special (students typically scheduled into it one quarter per year); the high school room would typically be treated as an elective for students.
- A high school science lab that is outfitted for engineering, such as robotics. In this model, the course would typically be treated as an elective course.

All schools, even those without a technology/engineering element to their current program, should plan for a time in which this will be included in their program. This does not, however, mean that all schools need to build a dedicated space. The decision to include a dedicated space or not should reflect how prominent engineering education is in the school’s STEM program, how effectively engineering education is integrated into other subjects of the academic curriculum, and whether there is dedicated staff for it. Significant technology, engineering, making, and computer science education can be accommodated through minimal
design elements and equipment purchases for elementary classrooms, science labs, mathematics classrooms, and/or art spaces to effectively support technology/engineering education. There are many options available, and planning should provide for program flexibility into the future.
BUILDING DESIGN AND BEST PRACTICE RECOMMENDATIONS FOR STEM LEARNING SPACES

Key assumptions for STEM learning spaces

Descriptions of and recommendations for each STEM learning space presented below all have several key assumptions in common:

- Investigating and making in school is important for students of all ages
- Flexible use and configuration of space is critical
  - Program elements will change (focus or design, courses, curriculum, instructors, projects, equipment, and daily learning experiences)
  - Technology for learning and collaboration will change
  - College and career goals and needs will change
- Student safety is a critical responsibility
  - Doing and making incur risks, and each risk must be assessed and minimized as much as possible in the context of its contribution to achieving learning goals
  - Sufficient space is needed to safely learn and engage in learning experiences
  - K–5 STEM education programming can be conducted without the need for hazardous chemicals; this should be reflected in school policy
  - All schools should use as few hazardous chemicals as possible, choosing the safest, healthiest, and most sustainable options available
  - When hazardous chemicals are used in middle and high schools, use as low volumes and as diluted solutions as possible
  - Hazards posed by tools, machines, materials, and processes must be evaluated and communicated
  - Proper safety equipment and procedures must be in place for any given learning experience
  - Proper training of staff and continued professional development is necessary to successfully and safely conduct STEM learning experiences

Safety is discussed in greater detail later in this report, including the implementation of the Occupational Safety and Health Administration (OSHA) standards to Massachusetts public employees⁹ and the definition of hazardous chemicals. These assumptions apply to other aspects of the school program beyond STEM, although that is not explored in this report.

Design Guidelines by Room Type

This section considers each type of STEM room found in schools now, and likely to be typical STEM spaces into the near future. The list presented in this section offers key foundations for planning STEM spaces to meet program needs, but is not exhaustive. Descriptions of each room type provide a brief overview of their use and key features, including current assumptions of typical use. These are descriptive of how the rooms are likely to be used currently and into the

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⁹ malegislature.gov/Laws/SessionLaws/Acts/2018/Chapter44
near future while providing for flexibility for changes in use over longer time periods. Each section also provides recommendations for building design and best practices.

- **Building design recommendations** are those elements that must be considered in the design and construction of the building as they are building features or systems that are difficult or costly for the school to change after construction is complete.
- **Best practice recommendations** are those elements that are relatively easy to swap out or change; they are more about particular program choices or procedures a staff can implement.

All recommendations are meant to convey best practice and inform action; this report does not define MSBA policy or guidance.

**Elementary generalist classroom (typically grades Pre-K–5)**

Generalist elementary classrooms are built on an operating assumption that all core academic content is taught in the classroom by the generalist elementary teacher. Ideally, the curriculum integrates the subjects to make learning a coherent experience for students. Many methods can be used to teach elementary STEM in an experiential way, providing opportunities to use and manipulate a variety of materials and tools, applying learning to relevant situations and designs.

Physical features supporting STEM education in elementary generalist classrooms is primarily a function of furniture, fixtures, and equipment. In Pre-K classrooms, it is typical for a portion of the room to be dedicated to exploration and play, with blocks, water table, bubbles, or other hands-on explorations, with floors that are easily cleanable to accommodate occasional mess. Science is typically taught within K–2 generalist classrooms, and often taught in grades 3–5 generalist classrooms. In these classrooms flat tables that can be moved or grouped provide space to investigate and design, counters and windows provide opportunities for plants or small aquarium tanks, and sinks provide health and hygiene during projects and throughout the curriculum. Additional considerations here should include additional storage space for kits and materials, and a portion of the space with appropriate flooring materials in “wet areas”. Often adjacent spaces such as hallways and break-out rooms can allow for additional flexibility during project work or collaborative work.

This review assumes that STEM programming at grades Pre-K–5 can be conducted without hazardous chemicals,\(^\text{10}\) so significant chemical safety systems or hazardous material storage are not needed. No use of open flames is also assumed, so no fire blanket is needed.\(^\text{11}\) That said, all classrooms should contain basic safety equipment relevant to the school’s curriculum program and typical activities (such as splash goggles for eye protection). Operational training for staff should be required for all provided equipment.

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\(^{10}\) With the possible minor and infrequently used exceptions such as vinegar; see discussion of this in the safety policy section below.

\(^{11}\) Consult local fire safety officials as many variables determine the fire safety systems needed in a space.
Building design recommendations:

- Include at least two (2) sinks, one (1) compliant with the Americans with Disabilities Act (ADA); one (1) deep and wide, with hot and cold running water and soap
  - Supports comprehensive approach to health & hygiene as well as active STEM learning activities, including project-based learning
- Provide display space for projects
  - E.g., whiteboards, tack boards, shelves, ceiling anchors
- Provide a significant area with appropriate flooring materials for messy work
- If there is not a dedicated science and technology/engineering room or project room in the school, consider these additional design elements to support generalist classrooms:
  - Provide a counter in each classroom with outlet for a terrarium, aquarium, plant station, etc, and/or a window plant rack
  - Provide storage for projects in progress as well as science, engineering, and math materials/kits (a shared closet or small storage room accessible to all teachers)
- Access to outdoor learning spaces, such as natural area, garden, weather station, or outdoor classroom

Best practice recommendations:

- Moveable, flexible desks and furniture with flat surfaces
- Access to appropriate tools for investigation and design (e.g., magnifying devices)
- For young grades (Pre-K–K), include tactile exploration stations that can be swapped out during the year
  - E.g., sand table, water table, block station for building structures
- Basic safety equipment
  - Splash goggles for eye protection (can include a sanitizer cabinet)
  - Fire extinguisher if required
- Technology connectivity, LCD or other interactive display(s)

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12 Consider application of this recommendation to any space in the school where health and hygiene is an important consideration or project-based learning drives curriculum design.
13 Some districts – typically larger districts – maintain a district-based distribution center so that large kits are sent to individual schools as needed. Where this exists, there is typically not a need for additional storage space for kits in the school.
14 Goggles should meet ANSI standard (Z87.1) for impact resistance.
Elementary science and technology/engineering room (typically grades 3–5)
Some schools choose to provide a dedicated space and staff for science and technology/engineering instruction when that fits their curriculum (Levy et al, 2016, 2008). Such rooms, often referred to as science specialist rooms, are typically in upper elementary grades (grades 3–5). Sometimes grade 6 is included in elementary schools as well, in which case a grade 6 science lab in the elementary school may reflect the design outlined in this section. Grades Pre-K–2 curriculum is generally integrated and the types of investigations are more easily accommodated in generalist classrooms. Schools that include a science and technology/engineering room should support that approach with a dedicated, relevantly-licensed teacher.

This review assumes that elementary school STEM programming can be conducted without hazardous chemicals, so significant chemical safety systems or hazardous material storage are not needed. No use of open flames is also assumed, so no fire blanket is needed.\(^\text{15}\) That said, all science and technology/engineering classrooms should contain basic safety equipment relevant to the curriculum and typical activities (such as splash goggles for eye protection). Operational training for staff should be required for all provided equipment.

Building design recommendations:
- 45 ft\(^2\) per student\(^\text{16}\) (1080 ft\(^2\) for 24 students)
- Prep/storage room: 100–150 ft\(^2\) (for a total area of approximately 1200 ft\(^2\))
- Usage assumes students are scheduled in room twice per week, with a typical teacher schedule of (6) 45-min sessions per day
- Counters (lab surfaces) with sinks and power outlets on periphery of room, appropriately sized for the grade level

\(^{15}\) Consult local fire safety officials as many variables determine the fire safety systems needed in a space.

• Eyewash station(s) (minimum of 1)
• Electrical drops from ceiling to accommodate tables in center of room
• Provide a counter with outlet for a terrarium, aquarium, plant station, etc, and/or a window plant rack
• A variety of cabinets and shelves for storage and display
  o At least some should be lockable
  o Consider some open shelving or cubie style storage for student projects or student-accessible materials
• Provide varied display space for projects (e.g., whiteboards, tack boards, shelves, ceiling anchors)
• Appropriate flooring materials in wet areas
• Access to outdoor learning spaces, such as natural area, garden, weather station, or outdoor classroom

Best practice recommendation:
• Moveable flat-topped tables, appropriately sized for the grade level
  o Standard desk-height tables and/or counter height tables that align with perimeter counter heights appropriate for the given grades
• Relevant tools for investigation and design activities, such as microscopes
• Splash goggles\(^{17}\) for eye protection (can include a sanitizer cabinet)
• Fire extinguisher if required
• Technology connectivity, LCD or other interactive display(s)

\(^{17}\) Goggles should meet ANSI standard (Z87.1) for impact resistance.
Middle school science lab (typically grades 6–8)

Middle school science addresses a wide variety of phenomena and concepts, and students work toward increasingly complex science practice skills. The phenomena studied span from the atomic level to solar system dynamics, including chemical phenomena such as endo- and exo- thermic reactions (grade 6) and the study of properties of chemicals resulting from reactions (grade 8), biological processes in the body and ecosystem, and application of science concepts to design challenges. In many ways, the needs for a middle school science lab are similar to those for a high school lab. Key to a functional lab is a flexible design for a variety of activities and investigations, integration of technology/engineering, and utilities to support hands-on work. Those who have worked in grades 7 and 8, in particular, recognize the wide range in stature of middle school students, often comparable to high school students. Key references on space requirements for safe science labs, including NSTA (Motz et al., 2007), treat middle and high school as equivalent.

An appropriate middle school science lab should be modeled on the 2011 MSBA high school science lab guidelines (www.massschoolbuildings.org/programs/science_lab/guidelines), including 60 ft² per student, utilities on the perimeter, 2 exit doors, moveable furniture, and so on, but with a few key differences:

- No need for gas (or any open flames) at middle school (can meet curriculum needs with hotplates).
- May want higher proportion of lab tables and/or counters at 28”–34” (rather than 36”) to accommodate wider variation in student size; movable tables and perimeter counters should align in height (be mindful of ADA and MA Architectural Access Board [MAAB] requirements that require a maximum 28”-34” height and a minimum clear space below the counter of 27” for accessible surfaces).
- Only 1 fume hood in the chemical storage area for preparation and handling purposes. Classroom activities at the middle school should not involve students in handling chemicals that require the use of a fume hood. Other classroom chemical safety systems, including eyewash station, deluge shower, and negative room pressure, should be maintained for emergency response.
- A chemical storage room at middle school can be smaller than provided for in high school given the fewer number and amounts of chemicals, while still providing for key safety features of a chemical storage room.

18 Consistent with National Science Teachers Association [NSTA] recommendation for middle school (Motz et al., 2007, p. 30).
High school science lab (typically grades 9–12): potential updates to 2011 MSBA guidelines
A number of potential updates to the 2011 MSBA high school science lab guidelines have been identified following visits to several sites that now use this model.

Suggested updates to guidelines:
- Ensure the prep room is wide enough to allow for both counter (with cabinets) and deep storage shelves. ADA/MAAB requires a minimum 36” clear width for wheelchair passage throughout the space, and a minimum 60” diameter circle for wheelchair turnaround somewhere within the space. Assuming the full 60” clear between base cabinets throughout, the result would be a minimum of 7’ clear between walls if there are base cabinets on one side, and 9’ clear between walls if there are base cabinets and/or deep shelves on both sides. Note that the MSBA HS Science lab guidelines (with base cabinets on both sides) show 13 feet 4 inches between walls.
  - The intent is to avoid thin prep rooms where the aisle in front of base cabinets is the only storage option; particularly an issue where a single lab has a dedicated, smaller prep room that is not shared

19 Found at: www.massschoolbuildings.org/programs/science_lab/guidelines
• Ensure sinks are as wide and deep as possible
  o Very narrow sinks in lab counters are not conducive to project-based work
  o Must provide at least one (1) ADA compliant sink

• Recommend that schools do not include an acid neutralization system or holding tank, and instead utilize best practices in chemical choices, neutralization in lab procedures, and disposal practices
  o Best practice alleviates the need for these systems (see safety section), and when best practices are not followed, these systems can result in additional hazards
  o Note that without a holding tank, no hazardous chemicals can be poured down any drain
  o Deluge showers should not include a drain (see safety section)

Two science prep rooms with too many items being stored. The thin design contributes to the clutter as there is not sufficient width for counters and storage shelves or carts.
• Labs must include proper procedures for storage and disposal of all hazardous waste (see safety section); none can be poured down the drain
• Consider emergency call button that rings multiple phones in central office
• Encourage inclusion of electrical drops and ceiling bars in all science labs
  o Ensures reduction of electrical hazards any time electrical equipment (e.g., microscopes, probe ware) is used at lab tables in the interior of the room
  o Adds flexibility for future use, supports engineering education

Best practice recommendations:
• Ensure lab tables are same height as counters on periphery
  o Mismatched heights damage cabinets if not even, pose potential safety hazard during labs
• Label all doors leading to long-term chemical storage with hazards graphic placard (see safety section)
• Provide sturdy stools
  o Labs do not need adjustable stools (those tend to break)
  o Stools should not have backs (for safety when doing labs with hazards, and to reduce risk of tipping); if stools have backs they should not be used when engaging in lab activities that involve hazards (students should stand) so they do not become a barrier to responding to a situation
• Technology connectivity, LCD or other interactive display(s)
  o Do not include monitors with articulating arms over lab bench areas as these pose a hazard
Technology/engineering lab (including makerspaces) (grades 6–12)

Technology/engineering learning spaces go by many names and take a variety of forms that are reflective of the particular program choices and relationship to other subjects.

- **Technology education** is a general label for a wide variety of courses, including tech shops and tech classrooms that may focus on broadcast production, culinary arts, robotics, technology/engineering, CAD design, computer science, woodshop, and many others. Can be used as a generic term that also encompasses makerspaces or STEM labs.

- **Makerspaces** can take many shapes and forms but have in common an intention to equitably provide maker activity to all students and promote creativity, innovation, and a culture of persistence.

- **STEM Lab** is, in essence, another name for makerspaces, but with a title that highlights disciplinary connections rather than a maker philosophy.

- **Fab Lab** predominantly refers to an MIT model of community-based invention center and business incubator.\(^{20}\) While this term is intended to designate a model of career preparation beyond the scope of this review, we have seen a few schools apply this label to their makerspace or shop. We do not encourage the use of this term given the original intended use.

- Additional labels used in community or organizational spaces refer to niche designs, such as hackerspace and breakerspace, which are not generally found in K–12 schools.

- Schools may also apply a more particular label to a technology/engineering lab space to achieve unique branding (e.g., Innovation Lab; DaVinci Lab) that do not indicate the particular underlying model.

Whatever the label is used, these spaces are designed to support key engineering design components:

- ideation and design
- prototyping and fabrication
- assembly and testing
- display and communication of solutions

In this review, “technology/engineering lab” can encompass a broad range of courses or topics that includes makerspaces. Much of this analysis focuses on makerspaces in particular as these are the newest form of technology/engineering spaces, as discussed above. The variety of currently existing technology education (tech ed) courses continue to be relevant and meaningful options to advance important STEM education goals; makerspaces are just one more option in the list.

This review assumes typical programming in a technology/engineering lab, including makerspaces, can be conducted without hazardous chemicals, so significant chemical safety systems or hazardous material storage are not needed. To the extent that glues, solvents, finishes, or other chemicals may be used in these labs,\(^{21}\) each should be evaluated for the

\(^{20}\) For more information, visit: [www.fabfoundation.org/](http://www.fabfoundation.org/).

\(^{21}\) If such chemicals are present, ensure that Safety Data Sheets (SDSs) are provided for each.
hazard it poses and a determination made about appropriate use in this lab. All technology/engineering lab spaces should contain basic safety equipment relevant to the curriculum and activities anticipated (such as splash goggles for eye protection or direct exhaust for certain procedures). Operational training for staff should be required for all provided equipment.

**Makerspaces**

Makerspaces are varied in their design and purpose, but several considerations are useful for any school thinking about adding a makerspace to their program:

- A makerspace can be appropriate at any grade level but most likely to be found in secondary grades
  - Projects that young students (particularly K–2) are likely to engage in are easier to accommodate in a sufficiently outfitted general classroom, a grades 3-5 specialist room, or media center that includes a makerspace component; it is rare that a K-5 school will require both a specialist room and a makerspace
  - Equipment, tools, and materials should be differentiated by grade span
- The overall design of any particular space is dependent on the educational goals and type of activities anticipated (e.g., programming robotics and physical computing vs 3D printing and prototyping)
  - Start the design of a makerspace by attending to the learning goals and curriculum, not the space or tools
  - Aim for simplicity: a few well-chosen tools and materials can go a long way
  - Build over time as need arises and curriculum projects are defined
  - Anticipate safety measures and ventilation needs that impact the design of the space
- Technology in these spaces will change regularly so flexibility is critical

If a dedicated makerspace space is ultimately decided upon, it is critical that the school:

- Show clear commitment to the space as part of the core academic program (commitment to project-based approach or similar, and clear articulation of how the space helps achieve state STEM learning standards)
- Consider it an academic space in which a dedicated, relevantly-certified teacher will be responsible
  - A staff member has to be responsible for the integrity of the curricular program, the learning space, and safety of students
  - The makerspace should not be staffed by volunteers nor should responsibility of the space be distributed or shared among a group of staff

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22 It may be most appropriate to use such chemicals in a different space such as a science lab outfitted with appropriate chemical safety systems. Alternatively, there may be operational means to safely use selected chemicals in limited situations; see the discussion in the safety policy section on use of hazardous chemicals in elementary schools for more on this.

23 It is also rare that an elementary school would require both a specialist room and project room (see later section).
Without a dedicated staff person responsible for the space, these rooms tend to be underused, become unorganized and cluttered, and unsafe.

- Show clear commitment to long term professional development to maximize staff's ability to successfully and safely integrate into the curriculum.

Makerspace use cases

**Dedicated makerspaces in middle school**
These spaces tend to be treated as specials, with students scheduled into it 1 quarter, trimester, or semester per year (approximately 45, 60, or 90 days, respectively).

**Dedicated makerspaces in high school**
Dedicated high school makerspaces tend to be treated as elective courses, with students selecting a year-long or semester-long course as part of their school-year schedule.

For middle and high schools, the number of makerspaces per school can vary but should be assessed in the context of the full set of tech ed spaces and courses.

**Makerspaces in libraries, media centers, or learning commons**
Common-area makerspaces are typically treated as a shared resource that is functionally part of another space; they are not stand-alone dedicated spaces (Burke, 2014). These are typically scheduled for use on an as-needed basis, often as it applies to project-based work in other classrooms. Curriculum integration with all academic classrooms may engender a wider variety of projects and needs. That said, these spaces may host regularly scheduled classes (as specials or electives) but those would be far fewer in number or frequency as compared to a dedicated makerspace. Even as a shared space, a staff person should be responsible for the space and activities within it.

Given the shared and co-located nature of makerspaces in common areas, the dual use of the area for making activities and other more traditional library or media functions are sometimes in tension with each other. Some considerations these designs should attend to include:

- Machine noise (background hum of machines can add up; operation of some machines can be a distraction)
- Collaborative project work and testing can get noisy or messy
- Tool- or machine-specific requirements, such as dedicated exhaust, are not typically available in library or media areas
- General open access requires thinking about control and monitoring of tools and materials, through the use of lockable cabinets, storage, electrical lock-out or digital login for use of machines, and storage of digital files
- Scheduling and management strategies for providing typical library or media activities in the space and makerspace activities

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24 Professional development may include out-of-school training and development opportunities as well as in-school time for planning, collaboration, and coordination.
Makerspace design recommendations
There are many similarities in the underlying assumptions for technology/engineering labs (and hence makerspaces) as are applied to the 2011 MSBA high school science lab guidelines (e.g., flexibility, perimeter utilities, 60 ft² space allocation per secondary student for safe activities). Technology/engineering labs, including makerspaces, should be modeled on these same guidelines.

Building design recommendations
Space:
- 60 ft² per student at middle and high school; 45 ft² per student at elementary grades
  - NSTA science lab recommends 60 ft² (Motz et al, 20017, p. 30), Roy & Love (2017, p. 122) recommend 50 ft² for fabrication areas plus significant additional space for related functions, resulting in total recommendation close to 60 ft²
- Tool and material storage area: 150–200 ft² for middle and high school
  - Roy & Love (2017, p. 123) recommend 150–250 ft²
  - Large enough for 2 shelves with center aisle, map drawer cabinet or other storage options appropriate for anticipated materials and tools; lockable
- Spray booth (if included; may also be located with art classroom and shared): 100 ft²
  - Roy & Love (2017, p. 123) recommend 100 ft²
  - For painting or other fumes (e.g., glues or finishes)
  - Ensure the spray booth is large enough for most anticipated projects
  - Requires direct exhaust

Utilities:
- Minimum of two (2) sinks, one (1) ADA compliant, one (1) large – wide and deep, with hot and cold running water and soap
- Provide ceiling bars for suspending projects from the ceiling
- Provide sufficient electrical outlets, including ceiling drops
- Provide varied counter/bench heights (refer to ADA/MAAB requirements: 36” height is standard for standing/stool height counters, 28”- 34” is a universal height for standing and handicapped accessibility, 30” is a standard desk height)
  - Include some shorter countertops for benchtop tools (“28”–30”), as appropriate for the grade span
    - Low surfaces for benchtop tools ensure that students are looking down slightly at the work surface of the tool
- Safety equipment relevant to planned or anticipated tools, machines, and/or procedures in the technology/engineering lab
  - Basic safety equipment
    - Splash goggles (with option of sanitizing cabinet)
    - Eyewash station
    - Fire safety equipment as required (e.g., extinguisher, blanket)

This is functionally the equivalent of a science prep room.
Goggles should meet ANSI standard (Z87.1) for impact resistance.
Consult local fire safety officials as many variables determine the fire safety systems needed in a space.
Equipment-specific safety systems\textsuperscript{28} for
\begin{itemize}
\item Direct exhaust (see list below) or activities (e.g., soldering)
\item Power lock-out so a hazardous tool cannot run unless the system is turned on with a key
\item Emergency stops in room to cut power to devices
\item Safety zones (typically 3 feet) around any machines
\end{itemize}

\textit{Storage:}
\begin{itemize}
\item Provide a variety of storage options including closet, cabinet, and shelving options\textsuperscript{29}
  \begin{itemize}
  \item Lockable cabinet or closet dedicated to tools and portable machines; can be in the lockable storage closet or a lockable tall standing cabinet in the lab
  \item Varied open shelving and cabinets for student-accessible materials, tools, and projects
  \end{itemize}
\item Stock material storage solutions (tall/long materials, sheet materials, bins for variety of small items), each of which can be secured for safety (e.g., such that long materials do not fall over); can be in the lockable storage/materials closet
  \begin{itemize}
  \item Potential categories of different stock:
    \begin{itemize}
    \item Electronic parts and tools
    \item Computers, cameras, software
    \item Craft and art supplies
    \item Building materials (including long and sheet stock)
    \item Traditional tools
    \item Book and article library
    \end{itemize}
  \end{itemize}
\item Provide varied display space to pin/hang 2D products (e.g., boards, shallow cases) and to place 3D products (e.g., shelves, deeper cases)
  \begin{itemize}
  \item Consider displays in the lab and in hallways or school entry spaces
  \end{itemize}
\end{itemize}

\textbf{Makerspace best practice recommendations}

\textit{Furniture and equipment:}
\begin{itemize}
\item Put as much as possible on wheels – both for rearranging space, temporary storage, and so students can move materials carts and workspaces as needed to do project work
  \begin{itemize}
  \item Moveable materials carts, tables and chairs, tools/carts, even whiteboards
  \end{itemize}
\item Prioritize table-top tools (e.g., scroll saw, drill press) for flexibility and efficient use of space
\item Identify areas for ‘centers’ (e.g., electronics, sewing, vinyl design production) that can be changed on a periodic basis and as technology or the STEM program changes
\item Provide small group tables rather than individual desks
\end{itemize}

\textit{Storage:}
\begin{itemize}
\item Consider accessibility and storage of both artifacts and information. Trend toward keeping materials and work easily accessible unless they absolutely must be protected
\end{itemize}

\textsuperscript{28} Hazards posed by tools, machines, materials, and processes must be evaluated and communicated; follow OSHA standards relevant to mechanical tools and systems as appropriate.

\textsuperscript{29} A good practice for makerspaces is to plan for up to 30\% of available space to be dedicated to storage (Doorley & Witthoft, 2012). For purposes of this review, this is a reminder of the importance of storage, not a target.
Security should be coordinated and integrated with the visibility necessary in a collaborative and creative context. Some storage should be visible and some out of sight.

Consider accessibility and storage for both physical and digital resources.

Machines and tools that many makerspaces include

The following list has been generated from analysis of a variety of grades 6–12 makerspaces observed throughout this review. This could be considered a representative equipment list for a basic makerspace; actual equipment should be tailored to the particular school goals, projects, and curriculum. Items are listed alphabetically to reflect the notion that any particular tool is not important by itself, but its value is in how it contributes to educational goals. The number in parentheses reflect the average number observed in a space. Typical tools include:

- 3D printers (2–3); sometimes all the same, sometimes different sizes or brands
- Assortment of typical hand tools appropriate to the grade level (e.g., hammer, screwdrivers, cutting tools, hand saw) (3–5 of each)
- Benchtop band saw or scroll saw (1)
- Benchtop drill press (1)
- Clamps of various sizes (from binder clips up to clamps several feet long; numbers vary)
- Electronics testers / multimeters (1–2)
- Hot glue guns (10)
- Laptops or tablets (5–10)
- Laser cutter (1)
- Laser printer (1)
- Sewing machines (1–3)
- Shop vac (1)
- Soldering irons (3–6)
- Vinyl cutter (1–2); small or mid-size cutter is typical; rarely a large format cutter

30 The majority of makerspaces observed in this review used low temperature plastics, avoiding nanoparticles high temperature plastics can produce (www.researchgate.net/publication/308023202_3D_printing_What’s_the_harm).

31 All benchtop power tools must be properly anchored to the counter, and cords secured out of the way.
**Equipment that typically require direct exhaust**
The following equipment requires direct exhaust to the outside:  

- 3D printer using ABS or other high temperature material
- Biocontainment area (not common, but sometimes seen for high school biotechnology activities)
- Cooktop
- Laser cutter
- Soldering station \(^{33}\)
  - In all cases avoid the use of lead-based solder
- Spray booth

Note that any tool producing significant dust (e.g., sander/grinder, table saw/chop saw) requires a dust collection system.

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\(^{32}\) Check manufacturer guidelines for specific equipment.

\(^{33}\) Many makerspaces use table-top charcoal fans but that is not effective in removing fumes from the work area.
**Project room (grades K–12)**

Project rooms are different than technology/engineering labs and are not dedicated to STEM education per se, but can support STEM, project-based learning activities, prototype testing, and presentations. If a distinct project room is not feasible or required, project areas can be created through strategic adjacencies and/or openings (movable walls, large door openings, etc.) that provide a similar open space and flexible use for project-based work. Adjacent spaces such as hallways and break-out rooms can allow for additional flexibility during project work or collaborative work. Use of common “neighborhood” spaces can accommodate larger projects and projects involving students from more than one class working together.

Such project spaces are very flexible, with little equipment or materials beyond collaboration technology and flexible furniture. They are designed for collaborative activities such as small group work, project brainstorming, prototype and product testing, presentation and project display, and communication. Emerging uses may include virtual reality (VR) and augmented reality (AR) projects, which typically require free floor space.

At the elementary school level, a project room can be an alternative option to a science and technology/engineering specialist room, in cases where the school may not include a dedicated science teacher or specialized STE program. Many rooms within the typical middle and high school building offer opportunities for projects (e.g. art rooms, science rooms, media rooms, multipurpose rooms). In all cases, the space should be multi-purpose with a variety of uses that serve multiples aspects of the school’s educational program.

![Project rooms with moveable furniture and (on the left) lots of moveable shelves for storage and display and (on the right) lots of white boards and pin boards for collaboration and sharing.](image)

Safety practices should be applied in project rooms just as in any other space where STEM activities are conducted. While investigations, design tasks, and project will be undertaken in these spaces, there should be no hazardous chemicals used in these spaces as there are not
substantive chemical safety systems or hazardous materials storage provided, nor should there be any open flames as appropriate fire safety equipment is unlikely to be included.\textsuperscript{34}

**Building design recommendations:**
- 40 ft\(^2\) per student elementary (equivalent to standard classroom) (Motz et al, 2007, p. 30); 50 ft\(^2\) per student secondary (equivalent to art room)
- Comparable project areas can be achieved via creative adjacencies using, for example, hallway space, moveable walls or large doors, or other solutions that provide for significant floor space and collaboration opportunities
- Significant whiteboard and tack/pin board surfaces
- Sinks with hot and cold running water and soap, at least one being ADA compliant
- Provide appropriate flooring materials

**Best practice recommendations:**
- Flexible tables for small group work and project work
- Technology connectivity, LCD or other interactive display(s), print center
- Provide some flexible storage for projects under development (combination of open and lockable storage)

**Mathematics classroom (grades 6-12)**
Mathematics is held in regular classrooms and typically there are no unique space design considerations. One emerging trend that may have some storage implications is the increasing use of manipulatives in mathematics, particularly in elementary and middle schools. These manipulatives are materials bundled in kits aligned to mathematics curriculum units. While not particularly large, classroom sets of these kits across a number of units can require storage space, either in class or shared across classrooms.

As is the trend in many subjects, more emphasis on varied group work and collaboration strategies requires that student furniture should be as flexible as other STEM learning spaces. Additionally, mathematics is also seeing an increase in technology use, including math apps and collaboration technology that require access and bandwidth in the classroom.

\textsuperscript{34} Consult local fire safety officials as many variables determine the fire safety systems needed in a space.
Additional considerations across STEM learning spaces

The inclusion of sinks, storage, and digital technology each merit a brief additional discussion here given their prevalence across STEM learning spaces. These may have implications for other school spaces as well, but this discussion does not assume that sinks and storage are necessary for every space, such as for project-based learning spaces located in adjacent hallways.

Sinks

The inclusion of sinks in STEM learning spaces supports the wide variety of STEM activities typically conducted during a school year, including many activities that involve messy materials and processes or that directly rely on having a water source. STEM activities can include, for example, filling or cleaning buckets or tubs used for providing water to small stream tables, filling pitchers used to maintain a small aquarium, cleaning a small habitat container, or studying the water cycle. Readily available sinks are also a key element of doing STEM education safely, such as when students need to wash up after examining terrariums, worms, owl pellets, or other organics. Finally, readily available sinks contribute to overall health and hygiene of students, allowing for regular hand washing and clean-up of equipment.

Variety of options for sinks large enough for STEM needs and project-based activities.
The recommendation forwarded in this report is to include a minimum of two sinks in each general elementary classroom and STEM-specific learning space, where one is ADA compliant and one is sufficiently large and deep enough to handle a wide variety of STEM activities. While this report focuses on STEM spaces, the rationale presented here highlights the importance of including a large enough sink in any room where project-based learning will take place, where relatively large equipment needs to be cleaned and maintained, and wherever students need ready access to soap and water to wash their hands or equipment where such equipment will be shared.

Storage
Having adequate storage for regularly-used materials, on-going projects, and equipment that needs to be secured is critical for an effective and safe STEM program. Identifying an appropriate amount of storage for a particular learning space requires consideration of multiple elements that are often in tension with each other.

- Materials for a particular unit or project can be bulky, and only used once or twice in a school year; it is often not prudent to keep some of those materials in openly accessible areas when they are not in use (both safety and maintenance concerns).
- Ensuring that there are enough materials for a particular school year needs to be balanced with the need to store materials not in use.
- Fiscal efficiency by ordering in bulk puts a strain on the storage facilities, and can lead to expiration of some consumables (such as chemicals) that also incur a cost for disposal.
- Ongoing student projects need to be stored in between classes, other completed projects are intended to be displayed for educational purposes; each requires accessible storage to students.
- Availability (or lack) of storage drive curricular decisions. For example, if no storage options are provided, curriculum will bias toward short 1- or 2-day projects vs. extended multi-day, week- or month-long projects.
- Safety – materials and objects will be “stored” in unlikely and undesirable places if there are not reasonable and appropriate storage options (Doorley & Whitthoft, 2012). Inappropriately storing things on the floor, covering student work tables, in hallways, or around safety equipment can pose significant hazards, and become an impediment to instructional activities or response to a classroom emergency.
- Some materials, equipment and tools need to be readily accessible to students, while others required controlled or even secure access.
- Storage should account for both physical resources and digital resources.
- Effective use and maintenance of storage requires ongoing review, clean-up, and organization to prevent cluttering and development of hazards that may negatively impact teaching and learning.

This report recommends that sufficient storage be provided, which is a relative judgement guided by an assessment of what materials are used and projects that are undertaken in the educational program. Unfortunately, there is no clear guidance on calculating the amount. In
In some instances, such as for math classrooms where manipulatives are common, wall or under-counter cabinets can be enough; in other instances, such as for technology/engineering rooms or makerspaces, a variety of storage options may be needed and account for upwards of 30% of overall space (Doorley & Whitthof, 2012). Looking to other learning spaces and programs, such as art rooms, music rooms, theater/stage areas, or gymnasiums can provide guidance and strategies for project and material storage.

School should implement a ‘just-in-time’ purchasing approach for school materials, particularly for chemicals. This may be facilitated through budgetary line items dedicated for materials purchase (and/or disposal). Several districts observed in this review set up an annual materials budget line that has helped alleviate teacher concerns about materials availability and reduced the overall storage load over time. When a teacher can order needed materials each year in time for particular projects or units, this alleviates the need to keep large quantities of materials. This does not remove the need for all storage but should be considered a best practice strategy for reducing over-ordering and long-term storage of materials that may not actually be used, and reducing costly disposal of expired, hazardous materials.

Lack of storage results in room clutter, reduced teaching space, and unsafe conditions.
Digital Technology
The prevalence of digital technologies to support STEM learning is growing and will only continue to increase over time. STEM-specific technologies vary widely, but currently include items such as probe ware, digital microscopes, robotics systems, and programmable computer boards, all of which are increasingly being connected to the internet. Non-STEM-specific technologies found across the curriculum also continue to increase in STEM learning spaces.

Instructional set up
Every STEM space should be provided with a minimum technology set-up that includes:

- LCD projector with interactive whiteboard, or large interactive LCD display
- Classroom set of tablets and/or laptops
  - For PreK–2, tablets seem to be the predominant choice
  - For 3–5, laptops seem to be more common
- Document camera
- Ability to screen cast from tablets/laptops to display
- Wireless network to allow for internet and network access anywhere in the room or school
- Charging station or cart
- Sufficient internet bandwidth (see listing of bandwidth-intensive usage next)
- Voice amplification systems for instructors
  - Both to serve those who have hearing impairments and for safety and management of all students when the classroom is noisy

Bandwidth needs
These are examples of technology uses that require, or will increasingly require, significant bandwidth:

- Cloud application and file storage\textsuperscript{35} and backup
- Video-based learning (video streaming) and immersive video environments (e.g., 360 videos, VR, AR)
- Video production and sharing
- Project collaboration and teacher professional development through video-conferencing or immersive learning environments with science experts, teachers, global classrooms
- Web-based apps (e.g., virtual dissection, virtual labs, CAD design, remote telescope control, interactive apps and educational games)
- Interactive digital lessons and assessments
- School-wide or district-wide learning management systems
- Internet research
- Downloading design files (e.g., for 3D printing, 3D graphics)

\textsuperscript{35} Core to cloud-based computing systems often used in schools, such as Chromebooks.
SAFETY IN STEM LEARNING SPACES

Considerations of safety are important elements for an effective STEM program. The goal of every STEM program should include student safety in the process of learning. Every task, activity, investigation, design, or field trip in which students engage carries some risk, but schools justify those risks based on their value and necessity to student learning. This section provides a summary of safety considerations particularly salient to this review. This is not an inclusive or comprehensive treatment of safety for STEM education. There are numerous STEM learning spaces articles, books, and websites that address safety in science and technology/engineering labs. Some resources are provided in the Appendix that schools and districts can use to develop a comprehensive approach to safety in STEM programming.

A safe STEM program identifies activities that best meet a learning goal while minimizing risk. A school or teacher can never get to zero risk – every activity engaged in, material or tool used, or field trip taken has risk. The key is to evaluate the risk, minimize it, plan for responses to unexpected situations, and justify the risk present in terms of the benefit to student learning (learning goals). Safety systems installed in classrooms or buildings are a key element of carrying out safe STEM education, but facilities cannot make up for a lack of planning, training, or best practice. Once an activity is chosen for a particular learning goal, it is incumbent on the staff and students to safely carry out the activity.

The specific design of a safety program for any school or program is dependent on the learning goals, activities to be undertaken, and materials or equipment used. For that reason, the safety program for any particular school will be somewhat unique and will change over time. There are many elements of STEM programming, however, that are common across schools and for which best practices have been identified. This section summarizes some of those that are most relevant to the design of STEM learning spaces.

**Policy**

The policy and cultural context that teachers and students work in have a large influence on how safety is attended to and approached. Safety must be a constant consideration (Kwan et al., 2003; NRC, 2011; Roy et al., 2017; Texley et al., 2004). Schools can promote this by:

- Establishing a culture of safety
- Actively managing hazards (all hazards, not just chemical hazards)
- Maintaining plans and protocols
- Conducting a risk assessment for each instructional activity
- Conducting worst-case planning and training
- Provide safety orientation and practices
- Regularly inspecting tools, materials, and processes
- Regularly maintaining and updating tools and equipment
- Provide experienced personnel dedicated to the ongoing review of safety and spaces
• Provide continuing professional development to increase safety awareness and expertise for all staff

Federal, state, and local policy also plays a role in the design of safe STEM programs. In Massachusetts, for example, regulatory references include requirement of OSHA protections for all employees, fire prevention regulations, Right-To-Know law, hazardous waste regulations, and building codes, to name a few.

**Duty or standard of care for safe STEM education**
Core to the educational endeavor in Massachusetts is the principle that each district and school is responsible for providing a safe learning environment for students. Educators and administrators have a “Duty of Care” – an obligation, recognized by law, requiring conformance to a certain standard of conduct to protect others against unreasonable risk. For STEM educators and administrators, this includes providing safety information and training to educators and students and communicating potential hazards to all stakeholders, including parents and the community. One way to address this is to apply all district and school safety policies, plans, procedures, and best practices to all students as well as employees. Additional considerations, such as safety training or safety contracts for students may be needed. Make each element of this approach explicit in district and school policy.

**Implementation of OSHA protections for MA public employees**
In March 2018, An Act Relative to Standards of Employee Safety was signed into Massachusetts law. This makes explicit that public employers shall provide public employees at least the level of protection provided under the federal Occupational Safety and Health Act (OSHA) of 1970. While not a new expectation for Massachusetts, making this explicit will raise awareness for schools and districts across the state, and require implementation for STEM educators and programs. For example, having and maintaining a current safety policy, a comprehensive safety plan, a chemical hygiene officer, and following best safety practices in alignment with OSHA expectations will be new for many academic STEM staff.

Of particular focus for STEM programs is the OSHA Laboratory Standard (29 Code of Federal Regulations [CFR] 1910.1450) and the Hazard Communication Standard (29 CFR 1910.1200), both of which address hazardous chemical use in schools. While there are many other hazards that need to be attended to and that are addressed by OSHA protections, hazardous chemicals (as defined in 29 CFR 1910.1200, see subsequent section below) have particularly large implications for worker safety and safety systems. Other OSHA standards set expectations for the evaluation and mediation of a wide variety of other hazards (e.g., noise, dust, sound, electrical, physical). Each should be part of a school safety assessment and plan.

This standard is designed to ensure that chemical hazards are identified and communicated to those who may be affected by them. All school activities involving chemicals must meet the

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Hazard Communication Standard, whether that is in the science lab or as part of school cleaning and maintenance. Key elements of the hazard communication standard include:

- Development and maintenance of a written hazard communication program for the workplace, including lists of hazardous chemicals present
- Ensuring that containers of chemicals in the workplace are properly labeled
- Ensuring that safety data sheets (SDSs) for chemicals that workers may be exposed to are made available to workers
- Development and implementation of worker training programs regarding hazards of chemicals they may be exposed to and the appropriate protective measures that must be used when handling these chemicals (Hazards Communications [HazCom] training).

Laboratory Standard (29 CFR 1910.1450)
A particularly important consideration for STEM programs is whether STEM learning activities that involve hazardous chemicals fit the OSHA Laboratory Standard, which has 4 considerations:

- Use of multiple chemicals or multiple procedures
- Work is done on a lab scale; what an individual will do (not production scale)
- The workplace is not a production facility
- There is standard safety equipment present

Most STEM education activity that uses hazardous chemicals would meet these 4 criteria and therefore be expected to fulfill the Laboratory Standard. Meeting this standard has significant implications for training and procedures in the STEM learning space in order to protect people working in those spaces. Fulfilling the expectations of the Laboratory Standard consists of five major elements:

- Hazard identification
- Chemical Hygiene Plan (and Officer)
- Information and training
- Exposure monitoring
- Medical consultation and examinations when necessary

This report does not provide additional details about these elements; a variety of references and resources are available to assist schools in determining appropriate actions (selected references are listed in the Appendix).

Avoiding or reducing hazardous chemicals in schools
OSHA definition of hazardous chemicals
The definition of hazardous chemicals provided by OSHA (29 CFR 1910.1200) is:

*Hazardous chemical* means any chemical which is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified.

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37 A hard copy of the SDS is not required if an electronic version is accessible.
38 Note that other spaces in schools may meet this definition as well, particularly art rooms and CVTE shops.
For purposes of school STEM programs, this includes the vast majority of chemicals typically used in schools, with the exception of very basic materials such as table salt, sugar, and baking soda. As noted previously, the OSHA Laboratory Standard is typically met when hazardous chemicals are used in science and technology/engineering spaces.

The 2016 Massachusetts Science and Technology/Engineering Curriculum Framework does not dictate the particular materials or activities that a STEM program must include, but does provide examples that inform such decisions. Two middle school standards for physical science standards suggest the use of particular chemicals (grade 6 and grade 8, respectively):

- 6.MS-PS1-6. ... Examples of chemical reactions could include dissolving ammonium chloride or calcium chloride.
- 8.MS-PS1-2. ... Examples of reactions could include burning sugar or steel wool, fat reacting with sodium hydroxide and mixing zinc with HCl (hydrogen chloride).

Each of these four chemicals is considered hazardous under the OSHA definition. Other chemical phenomena are commonly illustrated using vinegar (acetic acid – CH₃COOH) and baking soda (sodium bicarbonate – NaHCO₃). Acetic acid, at approximately 5% typical in vinegar, is considered hazardous under the OSHA definition.

During interviews with middle school science educators, some chemicals that are typically used in their districts include: ammonia, bleach, borax, vinegar (acetic acid), baking soda, rubbing alcohol, hydrogen peroxide, iodine, bromthymol blue, calcium chloride, citric acid, magnesium sulfate, and zinc. Given the classification of many of these chemicals as hazardous by the OSHA definition, even in diluted solutions and small amounts, and their typical use in science labs would mean the OSHA Laboratory Standard would apply.

Assumption of hazardous chemical use in elementary school curriculum
A goal of all schools should be to reduce the use of hazardous chemicals as much as possible. Conducting a program without hazardous chemicals means the OSHA Hazard Communication and Laboratory standards do not apply, and there is no need for significant chemical safety systems. When a program can be conducted without hazardous chemicals, the school benefits through significantly lower costs of construction, operations, and maintenance, as well as reduction of in-class hazards and liability.

Elementary schools are the best candidate for conducting STEM programs without hazardous chemicals, and a goal of no hazardous chemicals is achievable in these grades. Result of a review of the grades Pre-K–5 STEM learning standards, educator focus groups, and input at state STEM conferences suggests that this is possible. Schools should formally adopt a position of reducing hazardous chemicals and make it explicit in school and/or district policy.

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A key exception at elementary school is the very common use of vinegar (~5% acetic acid) which is classified as a hazardous chemical. Building significant chemical safety systems in elementary classrooms, however, is not realistic based on limited use of vinegar. If a school chooses to use a chemical like vinegar in limited instances, it is possible to do so from an operational perspective. The school will want to document the nature of the risk that is being taken, what the educational value is, what they have done to mitigate the risk (e.g., use of splash goggles, reduce the amount of vinegar available, contain the vinegar, have the teacher use the vinegar, etc), and procedures to follow in case anything happens. This approach can mitigate the risk while conducting the learning activity and ensure that if anything does happen appropriate actions can be taken.

Recommendation for limiting hazardous chemicals in middle and high school

The Global Harmonized System (GHS) categorizes chemicals through the use of two signal words, pictograms of hazard types, and a 1–4 scale for severity of the hazard. In the GHS 1–4 severity system, Category 1 chemicals are most dangerous.\(^{40}\) The signal words are:

- **Danger**
  - Used for more severe hazards
  - E.g., hydrofluoric acid (HF), chlorine (Cl), 12 molar hydrochloric acid (HCl), lead nitrate (Pb(NO\(_3\))\(_2\)), potassium iodine (KI)
- **Warning**
  - Used for less severe hazards
  - E.g., 6 molar hydrochloric acid (HCl), 0.1 molar hydrochloric acid (HCl), 5% acetic acid (vinegar)
  - Any other chemicals are considered “Not classified”
    - E.g., sodium chloride (NaCl), potassium chloride (KCl) solution, chlorine water (though this is still Category 2 acute aquatic toxicity)

Based on input from professionals that have worked with the GHS system and with schools regarding chemical education, it is recommended that schools consider the following guidelines when choosing chemicals for their STEM program:

- Grades K–5: Prohibit use of chemicals with signal words Danger and Warning
- Grades 6–12: Prohibit use of chemicals with signal word Danger, and highly recommend avoiding chemicals with signal word Warning that are Category 1

Strategies to reduce impact of hazardous chemicals when they are necessary

An important strategy to reduce or avoid the use of hazardous chemicals is to identify alternative chemicals that are safer, healthier, and more sustainable, or to identify alternative activities that achieve the same learning goal with less hazardous chemicals. These are the goals of green chemistry, discussed next. Any chemical or mixture that has a “Danger” signal word should be carefully evaluated and when possible substituted. When hazardous chemicals need to be used, schools should aim to use as little as is necessary, including using dilute solutions when that can reduce the risk to students. In certain situations, it can be viable to use

\(^{40}\) This is opposite of the NFPA system, discussed later.
microscale chemistry techniques as well. In visits and interviews conducted for this report, it is clear that Massachusetts schools are increasingly implementing these strategies.

*Green chemistry approach*
Green chemistry is about identifying safer, healthier, and more sustainable choices in materials use and learning activities. While the chemicals ultimately identified may still be hazardous by the OSHA definition, the goal is to make less hazardous choices.

Science administrators are also implementing microchemistry to assist with safety and budget considerations, consistent with green chemistry principles. Microchemistry is the practice of using very small volumes or masses to complete chemical reactions. This can be very beneficial when safety is a particular concern. Microchemistry does have some limitations in certain educational contexts (such as difficulty observing gas generation in a reaction) and may require equipment designed specifically for this approach. Those should be considered in light of the safety benefits.

Selected green chemistry resources are provided in the appendix.

*Actively manage chemical hazards and maintain chemical safety systems*
Schools should be proactive in managing hazardous chemicals and chemical safety systems, including:

- Provide proper storage, handling practices, and disposal options
  - A school owns all hazardous chemicals from cradle to grave, from ordering through the disposal
- Maintain SDS forms\(^\text{41}\) for every chemical used in the lab, keep them visible and accessible
- Provide relevant and proactive training for teachers and supervisors (administrators, curriculum coordinators, or others)
- Establish a system such as a safety contract for students
- Test systems regularly
- Fix anything that is broken
- Ensure staff have keys to reset emergency gas shut offs
- Policies and practices for reducing hazardous chemicals in the STEM program
  - Aim for no hazardous chemicals first, then identify only what is needed
  - Purchase and use as little as possible and as dilute a solution as possible
  - Make neutralization part of regular lab procedure; if acids and bases are treated as part of regular lab practice and before it is considered waste, then the by-products are no longer hazardous (as long as the pH is between 2 and 12.5) and disposal is easier and more cost effective

\(^\text{41}\) No longer use Material Safety Data Sheets (MSDS). The implementation of the Global Harmonized System (GHS) requires the use of the signal words, categories, and pictograms to communicate hazards. SDSs use the GHS system. Vendors provide an SDS with the delivery of every chemical.
• Ensure compliance with hazardous waste storage and disposal (including staff training) per Massachusetts and federal Hazardous Waste regulations

Planning for safe STEM instruction
Interviews with Massachusetts science educators during this review, and observations over time and locations around the state by the authors, indicate that few districts are providing regular and thorough safety information and training to educators and students necessary to ensure a safe STEM program. Additionally, a comprehensive view of science safety is not typically taught in Massachusetts teacher preparation programs. Safety problems in schools are often a result of a lack of safety policies, protocols, and best practice. Chemicals and other supplies are frequently improperly stored. Poor housekeeping methods are often observed, evaluation of supplies and equipment is often lacking, and slow responses to fix broken equipment are typical. Too frequently there is a lack of, or improper use of, personal protective equipment. Administrators, STEM teachers, and students must receive regular safety training relevant to their roles and duties, and schools should develop a culture of safety that includes regular implementation of best practices to engender a safe learning environment.

Staff training is critical
School or district safety plans, staff training on those plans and on specific safety systems, and training on how to design safe curriculum and conduct STEM activities safely are all critical elements to achieving a safe STEM program. Some plans and trainings are required by federal or state regulations (e.g., a Chemical Hygiene Plan based on OSHA’s Laboratory Standard). A majority of the resources that address safety in the science lab contain procedures for training educators and students about safety. The American Chemical Society (ACS) and the National Science Teachers Association (NSTA) provide examples of Personal Protective Equipment Lists, Chemical Hygiene Plan, and Safety Training. These and other resources are provided in the Appendix. Support for developing school-based safety plans and training programs are scattered and localized (e.g. some county extension offices may help a school plan for hazardous wastes, but not all), so it can be difficult for a school district to develop comprehensive plans. But schools must work toward this goal.

Further, the district and school should approach safety as a system responsibility. Consider the roles, responsibilities, and training of educators, the district or school Chemical Hygiene Officer, Nurse, administrators, Emergency Response Coordinator, Purchasing Office, and others that together contribute to a culture of safety and ensure implementation of best practices across the system.

Instructional planning with safety in mind
Safety must be a constant consideration in planning STEM learning activities as all STEM activities elicit some sort of risk. To mediate this, educators should consistently assess risks of each learning activity, actively reduce the risks as possible while still maintaining key learning

goals, and document steps taken and plans made. Some key questions to consider and document can include:

- What are the risks and why are they necessary to achieve the learning goal?
- What has been done to reduce risk (hazard & exposure)?
- What harm could be incurred, and what do we do if something happens?

Appropriate and proper safety equipment and procedures must be in place for any given learning experience.

Looking beyond the individual curriculum activities, it is helpful to view the STEM program through the lens of the National Institute for Occupational Safety and Health’s (NIOSH) Hierarchy of Controls.

STEM educators tend to think most frequently about personal protective equipment (PPE), as that is what students are most directly using during a learning activity. Administrative controls (such as how to move chemicals from a chemical storage room to a science lab) are also often considered, but given the wide variety of potential administrative controls that may be applied to particular processes, this can always be considered more comprehensively. STEM programs would be well served to give more attention to elimination and substitution options. These decisions have the greatest potential to enhance safety by removing certain risks entirely or substituting the nature of the risk with something less hazardous. For any given hazard there

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43 Industry practice is to conduct a written risk assessment for all activities utilizing hazardous chemicals.
44 Found at: [www.cdc.gov/niosh/topics/hierarchy/default.html](http://www.cdc.gov/niosh/topics/hierarchy/default.html)
are a variety of options available to reduce the risk to staff and students. The two tables provided as a supplement to this report provide examples of common laboratory hazards and potential options by each level of control relevant to STEM learning spaces.

The discussion in this section highlights a few best practices to enhance safety in STEM programs. This section is not comprehensive. While this review is focused on STEM learning spaces, these also apply to other learning spaces such as art rooms.

**Systems**

This section touches on selected safety topics of relevance to building design that arose during interviews and discussions conducted throughout this review. The topics presented in this report are not comprehensive; see the two tables provided as a supplement to this report and resources provided in the Appendix for additional information.

**System design and maintenance is essential**

Safety systems are only good if they work as designed and for the purposes for which they were intended. Schools must understand what each system was designed for, and maintain the systems so they are available when needed. Schools must:

- Include proper placement of signage to identify safety equipment
- Keep safety systems clear of obstructions for quick accessibility
- Conduct regular maintenance or updates to ventilation systems, gas, and electric utilities
- Fix or replace anything that is broken, worn, or expired
- Develop safety plans in which the available systems are an integral, but not the only, component of conducting safe STEM education
- Provide all potential users of the systems with training

**Systems for all STEM learning spaces**

**Personal Protective Equipment**

OSHA (1910.133) and state law (MA General Law [M.G.L.] c.71 §55C) requires eye and face protection from items found in any classroom such as flying particles, liquid chemicals, and chemical vapors. Everyone, including students, teachers, and visitors, should wear properly fitted splash-proof safety goggles when working or observing chemicals, hot liquids, or potential flying objects. While the American Chemical Society recommends that chemical splash goggles be stored in a UV-sanitizing goggle cabinet (ACS, 2012, p. 17), it can be more effective to

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45 See NSTA’s Safety and School Science Instruction position statement (2014) for additional suggestions and resources: [www.nsta.org/about/positions/safety.aspx](http://www.nsta.org/about/positions/safety.aspx).

46 Failure to provide students with PPE as written on an SDS is a violation of OSHA law.

47 OSHA: [www.osha.gov/laws-regis/regulations/standardnumber/1910/1910.133](http://www.osha.gov/laws-regis/regulations/standardnumber/1910/1910.133); Massachusetts: [malegislature.gov/Laws/GeneralLaws/PartI/TitleXII/Chapter71/Section55C](http://malegislature.gov/Laws/GeneralLaws/PartI/TitleXII/Chapter71/Section55C).

48 Goggles should meet ANSI standard (Z87.1) for impact resistance.

49 Also see ACS elementary recommendations, p. 20 for cleaning shared goggles recommendations: [www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/safetypractices/safety-in-the-elementary-school-science-classroom.pdf](http://www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/safetypractices/safety-in-the-elementary-school-science-classroom.pdf).
for schools to provide personal goggles for every student to eliminate the need for sanitization. If included, a sanitizing cabinet should be large enough to hold goggles for two classes (as there is typically not enough time to run the sanitizer between class sections). Additionally, shared goggles should be thoroughly washed, including the straps, to prevent transmission of environmental microbial contamination. UV bulbs need to be replaced regularly to ensure their effectiveness.

**Fire extinguishers**
The use of Bunsen burners in high school are just one obvious source of fire in STEM learning spaces. Other sources can be found in these spaces at all grade levels, and will continue to diversify as schools increase offerings in robotics, electronics, and digital tools. Potential heat or fire sources may include solder irons, battery packs, hot plates, heat presses, electronic circuitry, or a variety of other electrical appliances or tools.

Appropriate fire extinguishers should be found in every educational space (per National Fire Protection Association [NFPA] Table 13.6.2) near the escape route; the type should match the expected use per NFPA 10, sec 13.6.1.1. Placement of the fire extinguisher near the exit should allow for somebody in the hallway to basically reach in through the door to grab it. This means that placement must be on the latch side of the door, opposite the hinge side, 2–4 feet from the door. Mis-placement is very common. An extinguisher should be placed in each chemical storage area, and ideally prep room where chemicals are stored or used as well, so no staff member has to leave the room to get an extinguisher. Employees must be trained on the use of the extinguishers.

**Fire Blankets**
A fire blanket is not required in general classrooms or in labs where there is also a deluge shower (MA 527 Code of Massachusetts Regulations [CMR] 1.00, sections 10.23 through 10.23.4.3.1). NPFA 45 (A.6.5.3.2 and the appendix) advocates a stop, drop, and roll approach over fire blankets in labs; the use of the deluge shower is an option when immediately at hand. Some STEM labs, particularly technology/engineering labs (including makerspaces) may require a fire blanket given the likelihood of heat sources (such as soldering irons) and the lack of a deluge shower. When present, staff must be trained on the proper use of fire blankets.

**Eyewash Stations**
Eyewash stations are a definite recommendation for STEM rooms because of the sensitivity of the eyes. Vapors, liquids, dust, or other irritant can be prevalent in labs, making eyewash stations a critical tool to address any incidents involving the eyes. Eyewash stations are required by OSHA and Massachusetts fire code. In accordance with the American National Standard Institute (ANSI) Z358.1-2014, eyewashes are required to deliver tepid flushing fluid

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50 Consult local fire safety officials as many variables determine the fire safety systems needed in a space.
51 Consult local fire safety officials as many variables determine the fire safety systems needed in a space.
52 Consult local fire safety officials as many variables determine the fire safety systems needed in a space.
53 As well as 2015 International Building Code (IBC) and International Plumbing Code (IPC) Section 411.1 and 411.2.
(60-100 degrees Fahrenheit). This implies a plumbed-in eyewash station to maintain this temperature, although faucet-mounted eyewashes are viable where a plumbed-in option is not possible. A faucet mounted eyewash station requires turning the hot water lever and the cold water lever and then pulling a center lever. That said, it is more important from a practical perspective to have an eyewash available, even if it is mounted on a faucet, than to not have an eyewash available due to lack of direct plumbing. Portable eyewash stations have the risk of possible bacterial contamination and they do not supply a sufficient amount of water to flush the eyes for the recommended 15 minutes; these should not be allowed.

One eyewash per classroom is sufficient, although the Designer should consider maximum distance requirements from ANSI Z358.1-2014. There is no harm in having an additional eyewash station placed on opposite sides of a room for rapid access from anywhere in the room, but this is not a requirement. Keep areas around the eyewash station clear to provide easy access in case of an emergency. In addition to science labs, eyewashes should be provided in elementary science and technology/engineering rooms and technology/engineering labs.

In regards to maintenance, ANSI Z358.1-2014 requires flushing equipment weekly to clearing the plumbing of any deposits and prevent bacterial growth. Annual inspections should be completed to determine whether the eyewash stations continue to meet requirements.

**Natural gas**
The availability of natural gas (gas jets) is not necessary in elementary or middle school to meet state learning standards for those grade spans. Hot plates are an acceptable heat source for activities employed to demonstrate the core ideas in the standards. No gas is needed in a technology/engineering lab (e.g., tech ed room, makerspace) at any grade level.

At high school, natural gas is typically used in chemistry-related classes. When Bunsen burners are used, it is best practice to provide an identified area on the lab bench for where it is safe to place the burners (e.g., back from the edge, not under cabinets). Use yellow caution tape on the lab bench to designate these areas.

Gas jets in science labs are frequently observed to be broken or jammed, resulting in systems that have been shut off entirely due to concerns about safety. When included in a high school lab, gas jets should be regularly maintained and evaluated, with an operable safety shut off near the exit door, that requires a key to reset.

**Broken glass**
Include a separate, clearly marked container to place any broken glass (e.g., beakers, glass cabinet doors). Broken glass should not be disposed of in the regular trash as custodial other staff may inadvertently cut themselves when handling the bags.

**Electrical circuits**
All electrical outlets subject to moisture need to be protected by ground-fault circuit interrupters (GFCI), subject to compliance with MA 527 CMR and NFPA-70.
These are only a representative list of systems that are particularly salient based on this review. Additional aspects of these systems or other safety systems may also need to be considered for a particular STEM space.

Anytime large or benchtop electromechanical machines are used, the room should include emergency stops that will shut off power to all electrical circuits except the room lights. These emergency stops must allow for the power to be shut off from anywhere in the room within 10 seconds, which may require multiple stops in a particular room.

**Systems for safe use of hazardous chemicals**

**Chemical Storage**

Many safety problems in schools are a result of a lack of safety protocols, including how chemical supplies are stored. Schools should review all chemicals used, not just those used in typical chemistry classes, such as glues, solvents, or finishes (e.g., spray paints). A dedicated chemical storage room should be provided anytime hazardous chemicals will be stored for longer than is needed for short-term use. The following are some best practice recommendations for chemical storage rooms; this list is not comprehensive but highlights key points that commonly arise. See additional resources provided in the appendix, particularly *Prudent Practices in the Laboratory* (NRC, 2011). In particular the following emerged during this review:

- Provide dedicated ventilation for the chemical storage room
  - Chemical storage cabinets do not require ventilation
- Include flammables cabinet when flammables are used or anticipated
- Chemical storage cabinets should be a maximum size of 4 ft x 4 ft, with self-closing double doors
  - Schools should not have more chemicals that need to be stored than these cabinets will hold
  - Good inventory control is required to maintain these levels
  - Keep in mind that nitric acid (which should be avoided) needs a separate storage even from other acids
  - One shelf of each cabinet may be designated for holding waste materials
- Include a plumbed-in eyewash station
- An appropriate fire extinguisher is required
- Doors leading into prep rooms and chemical storage areas in which chemicals are stored must have a storeroom lock (outside lever fixed, entrance with a key only; inside lever always unlocked for immediate exit) and have a self-closing device

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54 Consult local fire safety authorities or building code. There are limited instances where ventilation of a cabinet is required based on the nature of a particular chemical being stored; those types of chemicals, however, are not typical and should not be present in schools.

55 See discussion above in the policy section about the value of a just-in-time purchasing approach.

56 Consult local fire safety officials as many variables determine the fire safety systems needed in a space.
• All doors leading to chemical storage (doors between hallway and chemical storage, including lab doors if that is the path to the storage) have to be marked with minimum 6” by 6” diamond placard (see fire graphics section below); these can be blank placards that are grease-pencil labeled or color photocopied with mylar covering.

• Consider the addition of an “in-use” light signal outside of the chemical storage room that turns on with the interior light to indicate that someone is inside.

**Fire graphics system**

The National Fire Protection Association (NFPA) provides a graphics system used by emergency personnel to identify risks posed by the presence of hazardous materials in a certain area (NFPA 704). Appropriate signage using the NFPA placard, below, should be included on all doors leading to areas where chemicals are stored, including any doors between the hallway and the chemical storage room (even when that requires passes through a prep room) and any classroom where chemicals are actively being used.

While state fire code relies on the NFPA system for emergency signage, SDSs and school chemical management systems use the Global Harmonized System (GHS). Each system has a unique purpose so schools need to work with both; NFPA and OSHA provide information on the relationship between these systems and how to work across the two.\(^5\)

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5 A quick card with this information can be found at: [www.nfpa.org/Assets/files/AboutTheCodes/704/NFPA704_HC2012_QCard.pdf](http://www.nfpa.org/Assets/files/AboutTheCodes/704/NFPA704_HC2012_QCard.pdf)
Hazardous waste storage and disposal
The use of hazardous chemicals in schools means that hazardous waste will be generated, particularly in high schools. All hazardous waste must be stored and disposed of properly (see MA Department of Environmental Protection [DEP] 310 CMR 30.000, and Resource Conservation and Recovery Act [RCRA] CFR 40 parts 239–282); none can be put down the drain (MA Plumbing Code 248 CMR 10.00 / Section 10.13)\(^{58}\). As discussed in the policy section above, schools should aim to order, use, and store as little chemicals as possible, and choose safer, healthier, and more sustainable options. Given that some hazardous chemicals will be in the lab, appropriate waste management and disposal has to be planned for and implemented. Schools typically produce low quantities of hazardous waste so can be considered a Very Small Generator of Hazardous Waste, a MA DEP designation that encourages schools to “minimize the amount of hazardous waste you produce (and take advantage of the flexible requirements for “Very Small Quantity Generators”!) by substituting non-hazardous products for hazardous ones, by reusing or recycling hazardous wastes wherever possible, and by not mixing non-hazardous with hazardous wastes” (MA School Chemical Management Program\(^{59}\), p. 111).

School must ensure that basic requirement for a hazardous waste storage area are met, including proper signage, limited access, secured and closed containers, separation by compatibility, proper placement (e.g., not on top of wall cabinets), spillage containment, and lighting. All relevant staff should be trained and maintain dated inspection records.

Acid Neutralization
An acid neutralization system is only necessary for, and only effective on, mineral acids\(^{60}\), and only required if the pH of those acids are 2 or less. While mineral acids are commonly used in schools, they are just one category of chemicals used, and few schools use much acid of this strength. Schools typically do not generate large enough amounts of mineral acid waste to justify the expense of a large neutralization system, and if neutralization is made a regular practice in lab procedures, all caustic waste (with pH of 2 or less or 12.5 or more)\(^{61}\) can be eliminated.

Additionally, while many schools have acid neutralization systems, or even acid/base neutralization systems (which can effectively address bases with pH more than 12.5), these are very frequently misused. Much too often these systems are viewed as, and used as, the overall waste disposal system. These systems do not do anything to treat or remediate other hazardous chemicals poured into the system, so functionally any other hazardous chemicals just get held in the tank for a period of time with a great chance of additional hazardous by-

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\(^{58}\) The MA Plumbing Code 248 CMR 10.00 Section 10.13 is clear that hazardous wastes have to be treated before being discharged into a sanitary system: [www.mass.gov/files/documents/2017/09/28/248cmr10_0.pdf](www.mass.gov/files/documents/2017/09/28/248cmr10_0.pdf)


\(^{60}\) Not including Nitric Acid which converts to nitrate salts, an oxidizer, that cannot be disposed down any drain.

\(^{61}\) Aqueous wastes with a pH greater than or equal to 12.5, or less than or equal to 2 are corrosive under Environmental Protection Agency (EPA) Hazardous Waste Identification Regulations. A waste may also be corrosive if it has the ability to corrode steel in a specific EPA-approved test protocol.
products created (creating new hazards), and ultimately those all get passed through to the municipal system anyway (in violation of code). So it is best to neutralize mineral acids as part of the regular lab procedure and deal with them before any consideration of disposal, and treat all other hazardous waste appropriate to the particular chemical being disposed of (not down the drain in any case – see previous section).

The inclusion of acid neutralization is problematic because:

- The amount of acid typically used and disposed of is small (and can be zero if following best practice of neutralization as part of lab procedure) and disproportionate to cost of a large neutralization system
- The systems give people the false sense that they can pour anything down the drain, which they cannot but often do
- It represents an unreasonable risk to people when the system fails or it is misused (e.g., nitric acid is poured into the system generating toxic gas which can make its way out of the system)
- It requires a monitoring system, which requires frequent maintenance and often fails
- Other activities, including regular handwashing with soap, can interfere with the effectiveness of the system

If a school deems it necessary to include an acid neutralization system, they must commit to use it appropriately, train everyone on its use (staff and students), and maintain it over its full life. Additionally, the system must be designed in compliance with MA Plumbing Code 248 CMR 10.00 Section 10.13, regarding piping and treatment of special hazardous wastes. Such a system is only required if schools will be pouring corrosive, very acidic mineral acids down the sink. All sinks that drain to the acid neutralization system should be labeled as such so that they are not used for other activity that may interfere or hinder the effectiveness of the system. District staff and the design team must work together to determine what corrosive chemicals are anticipated, and provide appropriate plumbing treatment systems and operational procedures accordingly.

**Deluge Showers**

Deluge showers are an important element of any response to accidents involving hazardous chemicals. The 2015 International Building Code (IBC) and International Plumbing Code (IPC) Section 411.1 and 411.2, and compliance with ANSI Z358.1-2014, states that there should be one shower per lab, located within 50 feet of where chemicals are stored or used, with a sign “Emergency Shower.” Showers are only needed, however, in situations where hazardous chemicals are in use and the OSHA Lab Standard (1910.1450) applies. This likely applies to all science laboratories and may apply to technology/engineering labs where chemicals are used (see policy discussion above).

The effective best practice recommendation is to not include a drain. A drain should not be included unless the school has a sufficiently sized holding tank (which most do not, and should

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62 IPC 411.2 notes that a drain is not required.
not), and a trap primer at each station would be required. Additionally, a holding tank would require a distinct drainage system from an acid neutralization system (which most do not need either, see previous section). During an emergency, the water resulting from using the shower must be treated as hazardous waste given that the use of the shower would be triggered by the need to remove hazardous chemicals on a person (unless the particular chemical is rendered non-hazardous through significant dilution). This contaminated water cannot be put down a regular drain and clean-up should reflect the chemical(s) involved. Unless the chemical happened to be a mineral acid, sending that contaminated water through an acid neutralization system does not treat the hazard. So if a drain were to be included, it would need to drain to a large holding tank, and all water collected in that tank (even if just from regular testing of the showers) would need to be disposed of as hazardous waste.

Without a drain, recognize that the volume of water produced when using the shower in an emergency situation is significant, and the implications of that much water on the floor need to be accounted for. During design, surrounding areas should be assessed, including any cabinetry, and an assessment made of where the water is likely to go (including any potential of the water finding its way through the floor to any spaces below). When a deluge shower is included, it should be visually inspected weekly and tested/flushed every six months (per MA 527 CMR 10.24.3.1). During testing, the release of water can be anticipated and an appropriate tub or alternative can be employed to capture and drain the clean water to a sink during testing.

The area under the shower and approaches to the shower must be maintained for clear passage and use, and be accessible to the handicapped (refer to ANSI Z358.1-2014 for minimum dimensional requirements). Mark off an area around the shower with yellow caution tape on the floor to designate that no other objects or materials should be kept in this zone.

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63 Note that both images show drains which are not recommended.
Fume Hoods
Fume hoods are required in science laboratories where flammable and other hazardous chemicals are used (NFPA 45, NFPA 30). The NSTA recommends that all labs should provide fume hoods and ventilation systems. There are many chemicals that may be used in a science lab that can produce hazardous fumes. The NSTA Minimum Safety Practices and Regulations: January 2017 states that a fume hood is particularly necessary if using nitrogen dioxide, sulfur dioxide, or hydrogen sulfide.

The middle school science curriculum does not require the use of particularly hazardous chemicals, and most if any chemicals used at this grade span will not require a fume hood. The Focus Group of middle school science educators that were interviewed for this review, as well as additional interviews with teachers at site visits, stated that if they did have a fume hood in the lab or the prep room, they were not used for their intended purpose of ventilating harmful chemicals. In referencing the chemical list generated from interviews of the materials used and needed to perform experiments, the low concentrations and small quantities of chemicals used do not require the use of fume hoods. For middle school, there likely is a need to provide at least one fume hood associated with the chemical storage room to allow for appropriate handling and preparation of solutions in that location, but not in individual science labs.

Any double-sided fume hoods placed between a science lab and prep area need to provide for locking at least one side (preferably the prep room side) of the hood. This is to maintain security of the prep room; without the lock somebody can climb through the hood to access the prep room.

Negative room pressure
In the rare instances where significant fumes are released into a science lab, a system that maintains negative room pressure relative to the rest of the school acts to contain the fumes in the science lab. Other by-products of STEM or project-based activities (e.g., dissection in Biology classes) can also produce a smell that the school does not want to have spread beyond the science lab.

During this review several labs were observed that additionally had a whole-room exhaust or air purge system. While anecdotally this was useful in very specific situations where the air in the room could become uncomfortable (such as with the smell of a class dissection in a biology course), these situations were extremely rare, should be mediated in the first place, and if such conditions develop should trigger evacuation of students from the room (rather than purging the smell and carrying on). There are very few situations where the volume or concentration of chemicals used should trigger the need for a system beyond the negative room pressure and regular ventilation, as well as direct exhaust provided by a fume hood if available.
STEM design in context

STEM education is a critical element of every school program, and increasingly is a focus of public education in Massachusetts. Given district flexibility in the design and implementation of academic programming in Massachusetts, there is no standard design for curriculum, safety systems, or school design that will work for all. This means that school staff and building designers must closely collaborate to identify the range of STEM activities, equipment, chemicals, materials, and systems that are likely to be used in a particular space. A quality STEM program will employ a variety of strategies and experiences, and hence a variety of activities, that requires flexible use of STEM spaces across school year and over time. A successful K–12 STEM education program prepares every student for success in an increasingly technical society and workplace, where they can contribute to a literate society, an economically viable workforce, and our global ability to address grand challenges.

Every STEM program must carefully attend to student safety to support engaging and active learning. Beyond the policy and cultural context of a school, safety procedures and systems are critical to quality STEM programs. STEM staff must be supported by the school and district to ensure that safety is considered and implemented as a coherent system. Staff and student training are critical to ensuring that safety is attended to and implemented as intended. Schools and districts must commit to the ongoing professional development of staff, and maintenance of equipment and systems, to be able to implement and maintain a quality STEM program. The appropriate design and use of STEM spaces is only possible when contextualized as an integral element of the school and district’s programming and procedures. A well-designed educational program provides each and every student the opportunity to achieve STEM learning standards and succeed after high school.
APPENDICES

Selected references and resources

Books and articles


**Web resources**

Massachusetts Technology Collaborative, Index of the Massachusetts Innovation Economy: [www.masstech.org/index](http://www.masstech.org/index)

National Association for the Education of Young Children: [www.naeyc.org/resources/position-statements](http://www.naeyc.org/resources/position-statements)

National Association of Early Childhood Specialists in State Departments of Education: [www.naecs-sde.org/](http://www.naecs-sde.org/)

**Makerspaces and making education**

**Books and articles**


**Web resources**


Boston Maker Educators: [www.bostonmakereducators.org/k12-boston-makerspaces.html](http://www.bostonmakereducators.org/k12-boston-makerspaces.html)

Community Engineering Portable Studio: [www.communityengineering.org/portablestudio/](http://www.communityengineering.org/portablestudio/)


Fab Foundation: [www.fabfoundation.org/](http://www.fabfoundation.org/)

Invent to Learn (book) resource links: [https://inventtolearn.com/resources/](https://inventtolearn.com/resources/)
Learning in the Making: A Comparative Case Study of Three Makerspaces:
www.hepgjournals.org/doi/abs/10.17763/haer.84.4.brr34733723j648u?code=hepg-site

Link Engineering: www.linkengineering.org/


MakeShop Learning Practices (Pittsburg Children’s Museum): link on Makerspace for Education:
www.makerspaceforeducation.com/

Making + Learning: makingandlearning.squarespace.com/

MIT Edgerton Center: Makerspace Resources for K–12 Educators: http://k12maker.mit.edu/

MIT Fab Lab FabCentral: http://fab.cba.mit.edu/

Massachusetts K–12 Engineering: www.engineeringk12mass.org/

SCOPES Digital Fabrication, Community of Practice: www.scopesdf.org/

STEAM Studio Curriculum: http://steamcurriculum.weebly.com/media.html

Green chemistry

Web resources

Beyond Benign (green chemistry curriculum): www.beyondbenign.org/curriculum/

EPA Green Chemistry: www.epa.gov/greenchemistry

EPA Healthy Schools, Healthy Kids: www.epa.gov/schools

MIT Green Chemistry Alternative Wizard: ehs.mit.edu/site/environmental-stewardship/green-chemistry

Massachusetts Toxic Use Reduction Institute at UMass Lowell: www.turi.org/

My Green Lab: www.mygreenlab.org/

Rehab the Lab (green chemistry alternatives):
www.hazwastehelp.org/educators/rehabthelab.aspx;
www.hazwastehelp.org/educators/index.aspx

Safety

Books and articles


Web resources
3D Printing: What’s the Harm?:
www.researchgate.net/publication/308023202_3D_printing_What%27s_the_harm

American Chemical Society
- www.acs.org/content/acs/en/education/policies/safety/chemical-health-and-safety.html
- www.acs.org/content/dam/acsorg/about/governance/committees/chemicalsafety/safetypractices/safety-in-the-elementary-school-science-classroom.pdf
- www.acs.org/content/acs/en/greenchemistry.html?cid=home_trending


Board of State Examiners of Plumbers and Gas Fitters:

Boston University Research Support: www.bu.edu/researchsupport/compliance/laboratory-safety/


Environmental Protection Agency:
- Safer Choice: www.epa.gov/saferchoice

ITEEA
- Safer Tool Use in Elementary Schools: www.iteea.org/File.aspx?id=107093&v=3b7fe097
- www.iteea.org/STEMCenter.aspx

Laboratory Safety Institute: www.labsafety.org/resource

Massachusetts Department of Public Health. Chemical Storage in Schools:


Mass.Gov
- malegislature.gov/Laws/SessionLaws/Acts/2018/Chapter44
• www.mass.gov/service-details/workplace-safety-and-health-program-statutes
• www.mass.gov/workplace-safety-and-health-program-wshp
• www.mass.gov/service-details/workplace-safety-and-health-program-info
• www.mass.gov/topics/workers-rights-safety
• www.mass.gov/service-details/safety-programs-for-public-sector
• www.mass.gov/service-details/occupational-safety-and-health-program-information
• www.mass.gov/service-details/improper-chemical-storage-or-usage

• massfacilities.com/wp-content/uploads/2016/05/schlchem-programs-MA-2006.pdf
• www.mass.gov/files/documents/2016/08/nt/schlchem.pdf

National Fire Protection Agency: www.nfpa.org/

National Science Teachers Association
• www.nsta.org/safety/
• static.nsta.org/extras/riseandshine/Appendix5.1.pdf
• static.nsta.org/pdfs/PositionStatement_Safety.pdf
• static.nsta.org/pdfs/OvercrowdingInTheInstructionalSpace.pdf
• static.nsta.org/pdfs/ScienceActivitySafetyChecklist.pdf
• static.nsta.org/pdfs/ManagingYourChemicalInventoryPart3.pdf
• static.nsta.org/pdfs/MinimumSafetyPracticesAndRegulations.pdf
• nstacommunities.org/blog/2018/03/23/safer-breakerspaces/
• nstacommunities.org/blog/2018/03/02/science-activity-safety-checklist/
• nstacommunities.org/blog/2013/03/22/arranging-a-science-classroom/
• nstacommunities.org/blog/2018/08/23/chemical-safety-training-for-science-teachers/

Occupational Safety and Health Administration
• www.osha.gov/law-reggs.html
• www.osha.gov/laws-reggs/standardinterpretations/2009-06-01
• www.osha.gov/dte/grant_materials/fy09/sh-18796-09/hazardcommunication.pdf
• www.osha.gov/Publications/laboratory/OSHA3404laboratory-safety-guidance.pdf
Methodology

Process and key activities

Outcome

- Agreed upon methodology for initial phase of the Review and Analysis of current Massachusetts, National and MSBA Standards and/or Recommended Practices for providing Science and Technology/Engineering Education in K–12 Schools

Proposed methodology

The following tasks and activities are proposed to complete this first phase of the review:

i. Research and document best practices for science and engineering spaces (see draft list in the appendix for potential individuals, organizations, and references):
   a. Research and compile source documents and references
   b. Consult position statements and recommendations from relevant organizations, including NSTA, NEASC, NAEYC, ITEEA, and others
   c. Review current MSBA guidelines, relevant state safety and building codes, and OSHA regulations and policies (e.g., space per student; exits; water in classroom; safe movement of students; disposal of chemicals likely used in science instruction)
   d. Visit selected schools and classrooms to observe designs of general classroom, science, and engineering (e.g., makerspaces; design labs; fab labs) spaces used for STEM and project-based instruction
   e. Interview selected elementary and middle school faculty, curriculum specialists, safety specialists, MSBA staff, and others as relevant
      i. See attached draft interview framework

ii. Synthesize documentation to draft initial findings
   a. Draft summary considerations for different elementary program models:
      i. Since many elementary teachers teach all subjects, consider classroom needs to support a project-based approach to curriculum across subjects
      ii. Some elementary schools, however, have a science specialist, so consider physical space design of a separate science classroom
   b. For middle school, how might the MSBA guidelines for high schools be different when applied to middle school?
   c. More schools are including engineering spaces, either as a separate room (e.g., maker space) or in a library or other public space. Articulate a spectrum of possible program models and corresponding design considerations
   d. Draft initial findings related to additional specific design issues raised at the kick-off meeting, such as:
      i. Emergency shut off valve location (height, placement)
      ii. What equipment needs direct ventilation?
      iii. If have a shower, do you put a floor drain in?
         1. Cost of installation
         2. Cost of maintenance
         3. Frequency and procedure for testing
         4. Where does the waste go if using in emergency situation?
iv. Microchemistry (and implications)
v. Acid neutralization
   1. HS large tank vs. MS localized storage (e.g., under sink)
   vi. Fire blankets – appropriate to keep in specs? (about training)
e. Confer with MSBA staff as needed to agree on appropriate level of specificity for particular issues, prioritization of topics, and framing of initial findings and recommendations.

iii. Finalize initial recommendations for best practice related to the components listed in the previous section.
a. Suggestions to include quantities and sizing, configuration, outfitting, management, and maintenance related to:
   i. design of physical space
   ii. equipment
   iii. supporting technology
b. Obtain informal feedback from select organizations to get input validity and scope of draft initial recommendations
c. Deliverable: draft results and recommendations of the initial phase of the Review and Analysis of current Massachusetts, National and MSBA Standards and/or Recommended Practices for providing Science and Technology/Engineering Education in K–12 Schools. The draft will include:
   i. a narrative of the procedures used to date to conduct the Review and Analysis
   ii. initial findings based upon that Review and Analysis
   iii. initial recommendations for and draft list of “Best Practices” for the quantifying and sizing, configuration, outfitting, management, maintenance and use of educational space
   iv. references and resources
iv. Attend and lead a Charrette with the MSBA and the Facilities Assessment Subcommittee of the MSBA Board of Directors to discuss and establish the Form and Content of a Draft Report of the Review and Analysis

Notes
Additional site visits, interviews, and research to be conducted following the delivery of the initial draft, as identified and requested based on discussions and explorations with MSBA staff, as well as FAS and Board members.

Scope limitations:
• Not including traditional ‘shop’ spaces (e.g., wood shop, metal shop)
• Not including CVTE spaces
• Not including outdoor STEM learning spaces at this time
Interview and site visit framework

Note context and purpose of this review (established in initial outreach via email or call). Input will be synthesized with other interviews and resources and to develop recommendations for the MSBA to inform school design in the state. We will be synthesizing information from multiple interview and sources. We may, however, ask to reference your program if it serves as an illustration of best practices or space design that others should look to.

[NOTE: this framework includes too much for any one interview or site visit of an hour or two in length; the interviewer will choose particular program models and/or considerations based on the expertise and context of the person being interviewed and adjust as the conversation progresses. Interviewers will ensure that each point is addressed by several sources across the full set of interviews and site visits.]

Range of possible elements to consider in interviews and visits

There are several models for STEM programs – with corresponding space types – that we are considering. We will be considering both design, operational, and program considerations in each model. We are also likely to identify best practices and specifications that vary by grade level or span.

[Interview protocol: for each model below, review relevant questions from the second list; return to the next model here, cycle through second list again; and so on...adjust as needed for redundancy and overlap.]

Potential/common STEM program models:

1. Elementary classrooms where teachers teach all subjects, consider classroom needs to support a project-based approach to curriculum across subjects
2. Elementary science specialist with their own science room
3. Middle school science rooms/labs
4. STEM rooms/maker spaces/fab labs/project rooms (may look different by grade level/spans)
5. School “learning commons” (e.g., library-based project space) (any/all/different grade spans)
6. (Art spaces [if time])
7. (Outdoor spaces [if time])

Considerations for each program model above:

- Any best practices or special considerations for program, curriculum, or instruction when providing STE education in this model?
  - Including relationship to other school or program components
- Suggestions for sizing, configuration, outfitting, management, and maintenance of space and equipment in this model?
  - Specifications for overall space
Middle school and elementary space guidelines (overall or sq ft per student)? For HS science labs we assume 1440 sq ft space (60 sq ft for 24 students)

# of science labs, maker spaces, etc in a school? (by grade span, per # of students)

Appropriateness of the model for grade levels/spans?

Teacher ownership (need an assigned teacher-ok to share among a team, who manages and takes responsibility for the space)?

Storage recommendations? (amount, type, projects visible vs. hidden)

Recommended equipment lists? (assume equipment can be changed over time)

Space needs or physical considerations for particular equipment? (e.g., direct ventilation, gas or compressed air)

Any templates or good examples of effective layouts/designs?

Particular safety considerations?

Any best practices and/or references for the management and maintenance of space in the context of this model?

Technology needs for model, e.g.:
- LCD projector location(s)
- Probes, or connecting computers to equipment
- Bandwidth for internet, teleconference, future VR use

Any local, state, or OSHA safety and building codes, regulations, or policies that need to be accounted for (including codes for handicap access)?
- e.g., space per student; exits; water in classroom; safe movement of students; disposal of chemicals

Specific issues

There are a number of specific issues that you may be able to help us think through.

- Do middle schools need gas (based on standards/curriculum)?
- Emergency shut off valve location (height, placement) – water and gas both?
- If have a shower, do you put a floor drain in?
  - Cost of installation
  - Cost of maintenance
  - Frequency and procedure for testing
  - Where does the waste go if using for real?
- What kinds of chemicals do middle schools use? Any that need special storage for hazardous chemicals?
- Microchemistry (and implications for space, storage, and safety)
- Acid neutralization
  - HS large tank vs. MS localized storage (e.g., under sink)?
- Fire blankets – appropriate to keep in specs? (about training)
- Height specifications for tables and counters (36” standard; 28”-34” standard for handicap; but may need adjustments for younger/smaller students)
• Greenhouses vs. shelves in windows

Additional references and resources
Thank you for your input.
• Ok to cite you or your organization as a source for particular resources or information you have provided?
• Ok to return with follow up questions if needed?
Any additional resources we should consider?
• Other people we should talk to?
• Schools we should visit to observe designs of general classroom, science, and engineering spaces used for STEM and project-based instruction?
• Useful articles, books, or documents we should check out?
• Organizations we should contact, talk to, or check out?

Schools and programs visited
A variety of schools and STEM programs have been visited throughout this review:
• Acera School, Winchester (private) (www.aceraschool.org/)
  ◦ K–8 STEAM program with a focus on science, creativity, and leadership
• Bourne High School Innovation Studio (www.bourneps.org/Content/90)
  ◦ Makerspace in converted woodshop for district-wide use
  ◦ Serves all grades and subjects across the district
• Burlington Science Center (bsciencecenter.wordpress.com/)
  ◦ Serves the district’s elementary schools, also live animal program
• Burlington Marshall Simonds Middle School (www.burlington.org/departments/schools/marshall_simonds_middle_school/)
  ◦ Middle school science labs designed by past district science director
• Cambridge College (elementary teacher education science lab)
  ◦ Recent labs for elementary science teacher preparation (in old Hood facility)
• Cambridge Friends School (private) (www.cfsmass.org/CFSMakerSpace)
  ◦ One of the first elementary maker spaces to be incorporated into a school’s curriculum
• Franklin High School (www.franklinps.net/fhs)
  ◦ Built about 5 years ago, used 2011 MSBA lab guidelines
• Gloucester High School (ghs.glouesterschools.com/home)
  ◦ Project-based work (e.g., designing instruments) and some integration across program (e.g., with physics)
• Haverhill Hunking K–8 School (hunking.haverhill-ps.org/)
  ◦ Recently completed project that includes STEM project rooms adjacent to science labs for each grade level
• MIT Edgerton Center (k12maker.mit.edu/)
  ◦ Focused on makerspace development and support
• Newton Zervas Elementary School (www.newton.k12.ma.us/Page/2318)
  ◦ Recently constructed elementary school
• NuVu, Cambridge (private program, 9–12) ([cambridge.nuvustudio.com/](cambridge.nuvustudio.com/))
  - Pedagogy based on the architectural studio model and geared around multi-disciplinary, collaborative STEM projects
• Plymouth North and Plymouth South High Schools ([www.plymouth.k12.ma.us](www.plymouth.k12.ma.us))
  - Comparative set where PNHS was built about 6 years ago and PSHS just finished, allowed for comparison of science lab designs.
• Scituate Gates Middle School ([www.scituate.k12.ma.us/index.php/gates](www.scituate.k12.ma.us/index.php/gates))
  - A newly constructed middle school, focused on project-based learning
• Shady Hill School, Cambridge (private K–8) ([www.shs.org](www.shs.org))
  - HUB Center Makerspace - a dedicated maker space in STEM building with science labs
• Somerset Berkley High School ([somersetberkley.org/](somersetberkley.org/))
  - Built about 4 years ago, used 2011 MSBA labs guidelines
• Springfield Central High School ([central.springfieldpublicschools.com/](central.springfieldpublicschools.com/))
  - Recent renovation with new and renovated science labs based on 2011 MSBA guidelines
• Tufts University Center for Engineering Education and Outreach ([ceeo.tufts.edu/](ceeo.tufts.edu/))
  - Resource development and program support for engineering education
• Tufts University Eliot-Pearson Makerspace ([sites.tufts.edu/devtech/research-2/makerspace/](sites.tufts.edu/devtech/research-2/makerspace/))
  - A makerspace designed for early childhood programming
• Watertown High School ([sites.google.com/a/watertown.k12.ma.us/fablab/](sites.google.com/a/watertown.k12.ma.us/fablab/))
  - A high school Fab Lab, housed in the school library
• Watertown Middle School ([sites.google.com/watertown.k12.ma.us/wmmsmaker/](sites.google.com/watertown.k12.ma.us/wmmsmaker/))
  - A library makerspace which serves the students, teachers and school community
• Watertown Public Library – HATCH Makerspace ([www.watertownlib.org/hatch](www.watertownlib.org/hatch))
  - Makerspace affiliated with town library, but housed in a separate location

Organizations and individuals interviewed
Beyond the schools and programs visited above, the following individuals and organizations were additionally interviewed for this review:
• BettyAnn Howson, American Chemical Society
• Beyond Benign
• Dwight Peavey, Brandeis University, retired from EPA
• Hilary Hackbart, Massachusetts Department of Labor Standards
• Laboratory Safety Institute
• Massachusetts Department of Elementary and Secondary Education
  - Career and Technical Education Office
  - STEM Office
• Massachusetts Department of Fire Safety, Code and Compliance Office
Summary of input provided at conference sessions
Draft findings and recommendations from this review were presented at four events across Massachusetts to solicit input from a variety of stakeholders and better understand potential implications of the report. The four events included:

- MSBA Designer Roundtable, October 23, 2018
- Massachusetts Association of Science Teachers Conference, October 26, 2018
- Massachusetts Science Education Leadership Association Conference, November 1, 2018
- MA STEM Summit, November 14, 2018

A summary of input provided across the four events is provided below.

Grade-space spaces:

- Staff appreciated that MSBA is attending to elementary science and technology/engineering in school design.
- Strong appreciation for the inclusion of sinks and work space for science in generalist elementary classrooms.
- Several people mentioned the need for storage at elementary, but did not specified what in particular needed to be stored.
- Input showed an appreciation for the option of a specialized science and technology/engineering room at elementary and the option of a makerspace.
  - Also acknowledgement and appreciation that such rooms require dedicated staff.
- Agreement on the importance of flexibility in STEM spaces to accommodate variety of curriculum activities.
- Several questioned the assumption of 24 students as the basis for class size; in each case they noted that typical class sizes were larger in their school.
- One proposed draft recommendation we made was to define the size of 6th grade science labs as being equivalent in size to elementary specialist rooms (smaller than other middle school science labs). Staff who commented on this typically felt that overall school flexibility was more important (that room may not always be a sixth grade room) and that sixth grade was more like 7th and 8th grade than elementary grades. There was better support for a smaller room when and if the 6th grade science room was included in an elementary school rather than a middle school.
- Feedback indicated that not including an acid neutralization system or holding tank is fine; it would not substantively impact the program.
- People appreciated contextualizing makerspaces in relationship to more typical technology education (tech ed) spaces; that makerspaces are not a new category of space but an evolution of spaces already present in schools.
- Staff expressed an appreciation for understanding the shift in tools and equipment available in makerspaces as compared to traditional shops or tech ed spaces, particularly the inclusion of digital tools (machines that are programmed).

Balancing costs
• People recognized the cost of including some elements (such as sinks in elementary classrooms), and that funds are limited in districts. They also recognized those places where costs can be reduced (such as not needing an acid neutralization system in middle and high school science labs).

• A key received message was the importance of staff training for both safety in and management of STEM spaces. Many asked where training can be obtained, or where such resources can be found. A number of people expressed concern that there is not or would not be funding to provide appropriate safety equipment or training in their district.

Open questions
• What are some implications of designs where students across a wide range of grades (e.g., K through 8) share the same STEM space (such as a makerspace)?
• Where can safety training be obtained, or what resources are available?
About the authors

Jake Foster, Ph.D.
Founder, STEM Learning Design, LLC

*STEM Learning Design* supports school redesign and STEM program design that reflects a school’s mission and future student needs, with an emphasis on how design plays out in classroom space and use. As past STEM leader at the Massachusetts Department of Elementary and Secondary Education, Jake has significant knowledge, understanding, and experience with education policy, STEM programming, professional development, school support, and strategies for systemic change. He was a lead developer and writer of the Massachusetts Science and Technology/Engineering Standards and standards for Digital Literacy and Computer Science. He was a member of the Next Generation Science Standards writing team, and Massachusetts’ representative for the NGSS development process collaborating with 22 other states. Jake was a member of the MSBA high school science lab committee (~2009–2010) to inform the 2011 guidelines. Jake’s early career included teaching high school physical and earth sciences, coaching middle school educators, and preservice teacher education. fosterjg@verizon.net

Laura Smith
Contributing Consultant

Laura began her career as an elementary and middle school teacher then went on to coordinate PreK–5 district curriculum, all with a strong focus on science. In these roles she has supported initiatives to build science classrooms in district elementary schools and STEM laboratories in middle school. She trained staff on science laboratory and technology/engineering safety procedures, evaluated classrooms to ensure they met safety standards, educated building administrators on safety requirements, and maintained supplies in the district. Laura continues her work by providing professional development to unpack the Massachusetts STE and NGSS Standards to support quality instruction, curriculum alignment, and assessment development. She is a Board member of the Massachusetts Science Education Leadership Association and a science educator in the STEM Education and Teacher Development Department at UMass Dartmouth.
3.1.3 INITIAL SPACE SUMMARY

A. MSBA Space Summary Template
B. Floor Plans of Existing Facility
C. Narrative for Variances
D. Program Diagram–Existing vs. Proposed
3.1.3 INITIAL SPACE SUMMARY

A. MSBA Space Summary
   Template
<table>
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<th>Existing Conditions</th>
<th>Existing to Remain/Renovated</th>
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**PROPOSED**

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<td>SPED Office/Team Chair &amp; Dept. Head</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Arts &amp; Music</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art Classroom - 32 seats</td>
<td>708</td>
<td>2,074</td>
</tr>
<tr>
<td>Art Workroom at Storage &amp; Lab</td>
<td>180</td>
<td>180</td>
</tr>
<tr>
<td>Band - 50 - 100 seats</td>
<td>140</td>
<td>1,499</td>
</tr>
<tr>
<td>Radio - 50 - 100 seats</td>
<td>140</td>
<td>1,499</td>
</tr>
<tr>
<td>chorus - 50 - 100 seats</td>
<td>140</td>
<td>1,499</td>
</tr>
<tr>
<td>Music Practice</td>
<td>49</td>
<td>196</td>
</tr>
</tbody>
</table>
### Proposed Space Summary - High Schools

#### Existing Conditions

<table>
<thead>
<tr>
<th>ROOM TYPE</th>
<th>NFA1</th>
<th># OF RMS</th>
<th>area totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Storage</td>
<td>2</td>
<td>151</td>
<td>573</td>
</tr>
<tr>
<td>Teacher Planning</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Common Room/Gallery (included in gross)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Locations & Technology

<table>
<thead>
<tr>
<th>ROOM TYPE</th>
<th>NFA1</th>
<th># OF RMS</th>
<th>area totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology/Engineering Rooms</td>
<td>6,592</td>
<td>0</td>
<td>28,150</td>
</tr>
<tr>
<td>Music Storage</td>
<td></td>
<td>3</td>
<td>191</td>
</tr>
<tr>
<td>Teacher Planning</td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Common Room/Gallery</td>
<td></td>
<td>4</td>
<td>3,488</td>
</tr>
<tr>
<td>Teacher office</td>
<td>2</td>
<td>158</td>
<td>316</td>
</tr>
<tr>
<td>ETA Storage</td>
<td>0</td>
<td>151</td>
<td>90</td>
</tr>
</tbody>
</table>

#### High School Space Summary

<table>
<thead>
<tr>
<th>ROOM TYPE</th>
<th>NFA1</th>
<th># OF RMS</th>
<th>area totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room to Remain/Remodeled</td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>New Total</td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Notes:**
- All space is included in gross square feet.
- **Auditorium Use:**
  - **Auditorium:** 6,969
  - **Theater:** 1,302
  - **Performing Arts Classroom:** 1,200
  - **Performing Arts Classroom / Black Box:** 1,200

**Comments:**
- **Excess PE Spaces Policy:**
  - **Gymnasium:** 7,200
  - **Alt. PE (Wellness / Project Adv.):** 1,486
  - **Fitness Room:** 220

**MSBA Guidelines**
- **Refer to MSBA Educational Program & Space Standard Guidelines**
- **New Total:** 19,674

**Health/Physical Education**
- **HEALTH & PHYSICAL EDUCATION:** 19,674
- **Excess PE Spaces Policy:**
  - **Gymnasium:** 7,200
  - **Alt. PE (Wellness / Project Adv.):** 1,486
- **Health Classroom (Heath Ed Teachers):** 845

**Media Center**
- **MEDIA CENTER:** 4,982
- **Excess Auditorium Spaces Policy:**
  - **Auditorium:** 6,969
  - **Theater:** 1,302
  - **Performing Arts Classroom:** 1,200
  - **Performing Arts Classroom / Black Box:** 1,200
# Proposed Space Summary - High Schools

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Existing Conditions</th>
<th>Existing to Remain/Renovated</th>
<th>New</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Auditorium / Prep Storage</strong></td>
<td>7,919</td>
<td>10,626</td>
<td>13,156</td>
<td></td>
</tr>
<tr>
<td><strong>Make-up / Changing Room / Green Room</strong></td>
<td>900</td>
<td>1,350</td>
<td>2,050</td>
<td></td>
</tr>
<tr>
<td><strong>Performing Arts Bethken Space</strong></td>
<td>700</td>
<td>700</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td><strong>DINING &amp; FOOD SERVICE</strong></td>
<td>574</td>
<td>2,055</td>
<td>2,629</td>
<td></td>
</tr>
<tr>
<td><strong>MEDICAL</strong></td>
<td>8,671</td>
<td>8,659</td>
<td>6,041</td>
<td></td>
</tr>
<tr>
<td><strong>ADMINISTRATION &amp; GUIDANCE</strong></td>
<td>1,133</td>
<td>1,117</td>
<td>835</td>
<td>835</td>
</tr>
<tr>
<td><strong>DINING &amp; FOOD SERVICE</strong></td>
<td>100</td>
<td>150</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td><strong>CUSTODIAL &amp; MAINTENANCE</strong></td>
<td>1,133</td>
<td>1,117</td>
<td>835</td>
<td>835</td>
</tr>
</tbody>
</table>

### Room Details

- **Room Type**: Room NFA, # of RMS, area totals
- ** Лаунард / Prep Storage**: 7,919
- **Make-up / Changing Room / Green Room**: 900
- **Performing Arts Bethken Space**: 700
- **DINING & FOOD SERVICE**: 574
- **MEDICAL**: 8,671
- **ADMINISTRATION & GUIDANCE**: 1,133

**Date**: 9/10/2019

**Preliminary Design Program**

- **DINING & FOOD SERVICE**
  - 500
- **MEDICAL**
  - 600
- **ADMINISTRATION & GUIDANCE**
  - 835
- **CUSTODIAL & MAINTENANCE**
  - 100

**Comments**

- **Room Type**: Room NFA, # of RMS, area totals
- **Comment**: Revised - 10/25/19
## Proposed Space Summary - High Schools

### ROOM TYPES

<table>
<thead>
<tr>
<th>ROOM TYPE</th>
<th>Existing Conditions</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing</strong></td>
<td></td>
<td><strong>New</strong></td>
</tr>
<tr>
<td><strong>Storeroom</strong></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Network / Telecom Room</strong></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Outdoor Equipment Storage</strong></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Total Building Net Floor Area (NFA)</strong></td>
<td>115,334</td>
<td></td>
</tr>
<tr>
<td><strong>Proposed Student Capacity / Enrollment</strong></td>
<td>1,670</td>
<td></td>
</tr>
</tbody>
</table>

### NON-PROGRAMMED SPACES

- Individual Room Net Floor Area (NFA): includes the net square footage measured from the inside face of the perimeter walls and includes all specific spaces assigned to a particular program area including such spaces as non-communal toilets and storage rooms.

### OTHER

Total Building Gross Floor Area (GFA): includes the net square footage measured from the outside face of exterior walls. It is assumed to equal the difference between the Total Building Gross Floor Area and area not accounted for above.

### GROSSING FACTOR

- Grossing Factor (GFA/NFA): 1.46

### ARCHITECT CONFIRMATION

I hereby certify that all of the information provided in this “Proposed Space Summary” is true, complete and accurate and, except as agreed to in writing by the Massachusetts School Building Authority, in accordance with the guidelines, rules, regulations and policies of the Massachusetts School Building Authority to the best of my knowledge and belief. A true statement, made under the penalties of perjury.

Name of Architect Firm: Lamoureux Pagano Associates | Architects

Name of Principal Architect: Kathryn Crockett, AIA, LEED AP, President

Signature of Principal Architect: [Signature]

Date: 9/10/2019
3.1.3 INITIAL SPACE SUMMARY

B. Floor Plans of Existing Facility
Doherty Memorial High School
299 Highland Street, Worcester, MA 01602
3.1.3 INITIAL SPACE SUMMARY

B. Existing Building Floor Plan

Existing Second Floor Plan

1" = 40'-0"

LEGEND

- Academic / Education
- Circulation
- Mechanical / Electrical / Toilets
- Other
- Administration, Guidance
- Custodial & Maintenance
- Media Center
- Vocational / Technical
- Art & Music
- Dining & Food Service
- Medical
- Auditorium / Drama
- Health & Physical Education
- Special Education

Doherty Memorial High School
299 Highland Street, Worcester, MA 01602
Doherty Memorial High School
299 Highland Street, Worcester, MA 01602
3.1.3 INITIAL SPACE SUMMARY

C. Narrative for Variances
The following is a summary of the variances between the proposed and MSBA recommended areas for the major Space Summary Template categories based on a 1670 student high school facility serving grades 9 – 12 (one of seven high schools within the Worcester Public Schools district).

See Section 3.1.2.B for greater detail regarding the spatial requirements to support the Doherty Memorial High School program.

**CORE ACADEMIC**

<table>
<thead>
<tr>
<th>Proposed</th>
<th>103,440 NSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSBA Guidelines</td>
<td>80,000 NSF</td>
</tr>
</tbody>
</table>

While classroom and faculty planning spaces largely align with MSBA recommendations, additional square footage is required for:

- The extensive English Language Learners (ELL) curriculum program.
- Language labs will be shared between the ELL and World Language departments.
- Common rooms are required within each academic department and within each 9th grade team. These spaces allow for collaboration between multiple classes, for pull out instruction, group work, and presentations.
- An additional Biotechnology Science Lab to support the District’s Advanced Academy in Biotechnology.
- The AVID classroom is a dedicated classroom space for the Advancement Via Individual Determination (AVID) program.
- For this major urban high school, the large group seminar room would have multiple programming purposes including: team teaching presentations, and faculty planning and professional development seminars.
- Computer Science Classrooms are needed to a new state requirement for digital literacy and computer science courses, as well as to support many of the Advanced Placement classes offered at Doherty. The Computer Science and AP courses use software which requires higher processing power, which is not available on mobile devices. In addition, the classrooms will house computer literacy classes for a high proportion of students that do not have access to devices at home. These computers will also support standardized testing requirements. It is expected that the computer labs will provide about 120 testing spaces and will be supplemented by mobile devices throughout the school.

These spaces represent the majority of the additional square footage required.
SPECIAL EDUCATION
Proposed: 32,900 NSF
MSBA Guidelines: 14,620 NSF

The variance is primarily attributable to several District Wide Special Education programs offered at Doherty Memorial High School, as well as to support district wide initiative to maximize opportunities for inclusion of all students:

- Life Skills
- Adult Daily Living classroom will serve Life Skills students as well as new citizens and the full student population in independent living skills such as cooking, laundry, and hygiene.
- Learning Disability Centers support a district wide program for students with reading and writing disabilities.
- A SPED Adaptive PE teaching station directly adjacent to the gymnasium to house PE classes for students with permanent or temporary mobility issues. This space will also be used for Unified Sports and as an indoor venue for Special Olympics.
- Behavior Modification (STEP Classroom and STEP Clinician)
- OT/PT support spaces required for Life Skills and general student population.
- The Vocational Learning Center follows the district model initiated at South High, with a space where students with special needs can receive support with college and career preparations.

ART & MUSIC
Proposed: 12,200 NSF
MSBA Guidelines: 8,350 NSF

Due to high student participation and demand, the following additional spaces are required in the Art & Music category:

- As Doherty’s three existing Art classrooms result in a waitlist, the education program requires one additional Digital Arts Lab
- The educational program requires an additional space for a piano lab/music engineering class, as well as a dedicated classroom for music theory/music appreciation courses.
- A shared teacher planning space for the arts and music teachers.

VOCATIONS & TECHNOLOGY (TECHNICAL EDUCATION)
Proposed: 28,150 NSF
MSBA Guidelines: 17,280 NSF
Each year over 400 students are waitlisted after applying to the District’s Worcester Technical High School. In an effort to provide CTE/CVTE opportunities to all students, the Worcester Public School District has instituted a policy to distribute Chapter 74 and Career pathway programs throughout all high schools in the district. In addition to the well established and highly subscribed Engineering and Technology Academy (the area for which will be expanded as part of this project) the School committee has approved three additional Chapter 74 Programs:

- Programming and Web Development
- Marketing & Finance
- Construction Craft Laborer

HEALTH & PHYSICAL EDUCATION
Proposed: 37,852 NSF
MSBA Guidelines: 25,552 NSF

Doherty has the highest rate of physical education and athletic participation, performance and achievements in the city. The following additional spaces are required in the Health & Physical Education category:

- Due to enrollment, the educational program and functional space where the entire school population could congregate, a 18,000 SF gym size is required
- Multi-purpose Alternative PE (Wellness) and Fitness/Weight Room spaces providing two additional teaching stations
- The educational program requires two Health Classrooms as part of the Health and Physical Education suite of spaces. These health ed teachers have a distinctive role separate from the PE teachers and require classroom type spaces.

MEDIA CENTER/READING ROOM
Proposed: 11,200 NSF
MSBA Guidelines: 10,338 NSF

The Social Emotional Learning Center is a program to serve in-house suspension students with technical opportunities.

AUDITORIUM / DRAMA
Proposed: 17,500 NSF
MSBA Guidelines: 10,400 NSF
The school and district expressed desire for the auditorium to seat at least half of the student population (835 students) for assemblies, resulting in an increased area to support an additional 85 seats for faculty and others.

Additionally, Doherty Memorial High School has a strong existing Technical Theater (Performing Arts) program. With consideration for the high student interest and the revised 2019 Arts Frameworks, the proposed program requires a Theater Classroom, a Performing Arts Classroom/Black Box Theater for small-scale performances and a performing arts maker space.

**DINING & FOOD SERVICE**

Proposed: 15,936 NSF  
MSBA Guidelines: 13,156 NSF

The additional space required is to accommodate the kitchen and serving area needed for the large number of on-site prepared foods and associated storage requirements. For an efficient meal service, the proposed serving area will require additional space. A satellite grab-and-go station is desired as a means to provide breakfast and dinner to students in need and is an additional space.

**MEDICAL**

Proposed: 3,055 NSF  
MSBA Guidelines: 1,410 NSF

The majority of the additional square footage is needed to fulfill the Department of Public Health requirements for a licensed clinic in addition to the typical school nurse spatial needs. The community partner for the health clinic, Family Health Services sees over half of the student population. Also included in the program area is a food pantry and clothing distribution area to provide supplies to needy students and their families.

**ADMINISTRATION & GUIDANCE**

Proposed: 9,659 NSF  
MSBA Guidelines: 6,041 NSF

Most of the variances are with individual spaces customized to align with the existing Doherty High management structure and to accommodate the additional staff that provide social emotional and transition support to the students.
CUSTODIAL & MAINTENANCE
Proposed: 3,593 NSF
MSBA Guidelines: 2,878 NSF
The Doherty program calls for outdoor equipment storage which is not on the MSBA space summary template. This feature accounts for most of the additional area required.

OTHER
Proposed: 4,500 NSF
MSBA Guidelines: 0 NSF
The school requires a robust Technical services suite which will include a server room, receiving and storage and offices for technical support staff. The space will also act as a living lab for the Programming and Web Development Chapter 74 program. Refer to the Educational Program for more details.

TOTALS:

NET SQUARE FOOTAGE
Proposed: 279,985 NSF
MSBA Guidelines: 190,024 NSF
Total: +89,961

GROSS SQUARE FOOTAGE
Proposed: 419,997 NSF
MSBA Guidelines: 270,540 NSF
Total: +149,437

Note that MSBA advised to carry 1.5 grossing factor for proposed (based on recent high school design experience) while the MSBA column still shows a 1.42 grossing factor.
3.1.3 INITIAL SPACE SUMMARY

D. Program Diagram—Existing vs. Proposed
### Initial Space Summary

**ACADEMIC**
- **Existing:** 49,686 NSF
- **Proposed:** 103,440 NSF

**SPECIAL EDUCATION**
- **Existing:** 5,340 NSF
- **Proposed:** 32,900 NSF

**VOCATIONAL/TECHNICAL**
- **Existing:** 6,562 NSF
- **Proposed:** 28,150 NSF

**HEALTH & PHYSICAL EDUCATION**
- **Existing:** 19,674 NSF
- **Proposed:** 37,852 NSF

**MEDIA CENTER**
- **Existing:** 4,262 NSF
- **Proposed:** 11,200 NSF

**ART/MUSIC**
- **Existing:** 5,832 NSF
- **Proposed:** 12,200 NSF

**AUDITORIUM**
- **Existing:** 6,668 NSF
- **Proposed:** 17,500 NSF

**DINING & FOOD SERVICE**
- **Existing:** 7,919 NSF
- **Proposed:** 15,936 NSF

**MEDICAL**
- **Existing:** 574 NSF
- **Proposed:** 3,055 NSF

**ADMIN & GUIDANCE**
- **Existing:** 6,877 NSF
- **Proposed:** 9,659 NSF

**CIRCULATION, MECHANICAL, TOILETS, PARTITIONS, ETC.**
- **Existing:** 52,666 NSF
- **Proposed:** 139,992 NSF

**CUSTODIAL & MAINTENANCE**
- **Existing:** 1,940 NSF
- **Proposed:** 3,593 NSF

### Additional Area Required by Educational Program
- **Total Building Area Required by Educational Program:** 419,977 G.S.F.
- **Total Building Area:** 168,000 G.S.F.
3.1.4 EVALUATION OF EXISTING CONDITIONS

A. Legal Title to the Property
B. Determination of Historical Registrations
C. Determination of Development Restrictions
D. Evaluation of Building Code Compliance
E. Evaluation of AAB Rules & Regulations
F. Evaluation of Significant Structural, Environmental, Geotechnical or other Physical Conditions
G. Determination for Need and Schedule for Soils Exploration & Geotechnical Evaluation
H. Phase 1 Environmental Site Assessment
I. Assessment of the Facility for the Presence of Hazardous Materials
J. Supporting Documents
3.1.4 EVALUATION OF EXISTING CONDITIONS

A. Legal Title to the Property
   1. Narrative
   2. Doherty Memorial High School Site
   3. Foley Stadium Site
   4. Chandler Magnet School Site
This section includes three properties:

**Doherty High School Property Information**

The City of Worcester acquired for school purposes the properties on Highland Street through transfer or the parkland in 1961.

Under Act of 2012 the City included a covenant regarding the disposition of the Doherty School Site should the School land no longer be needed and declared surplus property.

Supporting documents are as follows:

1. 1960 Chap. 121. AN ACT AUTHORIZING THE CITY OF WORCESTER TO USE CERTAIN PARK LAND FOR SCHOOL PURPOSES
2. Doherty High School – SJC Decree – March 8, 1961
4. City Managers Memorandum to City Council to convey land, and included covenant on DHS – CC – Legislation – 11/22/2011
5. 2012 CHAPTER 203 AN ACT AUTHORIZING THE CONVEYANCE, LEASE AND CHANGE OF USE OF CERTAIN PARK LANDS IN THE CITY OF WORCESTER
6. Newton Hill Deeds
7. City Solicitors Title opinion

Based on the information provided by the City, LPA and our consulting engineers, has determined that the property is available for development.
Survey to be done under the next project phase

**Foley Stadium Property Information**

The City of Worcester was gifted the land Chandler street on March 31, 1923. Deed notes restrictions forever for athletic, playground, park, or public use

Supporting documents are as follows:

1. Deed: Book 2294 page 37–38, Book 2272 page 521
2. Plan 1963 reconstruction
Based on the information provided by the City, LPA and our consulting engineers would advise that the deed restrictions be reviewed by the City Attorneys during the next phase. Survey to be done under the next project phase.

Chandler Magnet School Property Information

The City of Worcester was granted the land in or about February 1951. Topographic and survey plan was included with the 1951 original drawing set for the school construction.

Supporting documents are as follows:
1. Deed: Book 3324 page 231
2. Deed: Book 3403 page 61
3. Plan: Book 172 plan 106
4. Plan Chandler magnet abutters
5. Topo and survey plan (refer to 3.1.4 G)

Based on the information provided by the City, LPA and our consulting engineers, three appear to have no restrictions on development, however there is an easement associated with the utilities. LPA and our consulting engineers would advise that easement, or any restrictions, be reviewed by the City Attorneys during the next phase. Survey to be done under the next project phase.
Chap. 121. AN ACT AUTHORIZING THE CITY OF WORCESTER TO USE CERTAIN PARK LAND FOR SCHOOL PURPOSES.

Be it enacted, etc., as follows:

SECTION 1. The city of "Worcester is hereby authorized to use for school purposes any part or parts of certain land in said city known as Newton Hill and bounded on the north by Highland street, on the south by Pleasant street, on the east by Park avenue and on the west by Newton square, and presently held by said city for park purposes; provided, that the board of park commissioners of said city shall, by vote at a regular or special meeting of said board, assent to such use; and, provided further, that said use is authorized by a vote of a majority of all the members of the city council of said city; and provided, further, that said use is further authorized by decree of the supreme judicial court.

SECTION 2. This act shall take effect upon its passage.

Approved February 29, 1960
This cause came on to be heard for a final decree and the parties consenting hereto in open court, upon consideration thereof, it is ordered, adjudged and decreed that the City of Worcester be and is hereby authorized to use twenty acres of park land known as Newton Hill in the City of Worcester as delineated on the attached plan entitled "LAND ACQUIRED BY CITY OF WORCESTER FOR SCHOOL PURPOSES, NEWTON HILL," dated February 1961 and specifically described in a description attached hereto entitled "LAND ACQUIRED BY CITY OF WORCESTER FOR SCHOOL PURPOSES, NEWTON HILL".

And the City of Worcester shall further cause a copy of this Decree and the attached plan and description to be recorded in the Worcester District Registry of Deeds within sixty days of the date of this Decree.

By the Court, (Spalding, J.)

/s/ Chester A. Dolan, Jr.

A true copy,

Attorn:

March 8, 1961

Clerk
A parcel of land belonging to the City of Worcester, Parks and Recreation Commission.

Beginning at a point on the southerly line of Highland Street as relocated 1870, North 68° 0' 00" East four hundred eighty (480) feet from a point ten (10) feet southerly of a grill hole in a stone monument marked W by James South 68° 0' 00" East by said southerly line of Highland Street thence northerly forty-two (42) feet to a point; thence South 68° 0' 00" West by land belonging to the City of Worcester Parks and Recreation Commission seven hundred (700) feet to a point; thence North 68° 0' 00" West by land belonging to the City of Worcester Parks and Recreation Commission two hundred ninety (290) feet to a point; thence North 68° 0' 00" West by land belonging to the City of Worcester Parks and Recreation Commission sixty-four and fifty-six hundredths (64.56) feet to a point; thence North 68° 0' 00" West by land belonging to the City of Worcester Parks and Recreation Commission ten hundred fifty-five (155) feet to a point; thence North 68° 0' 00" West by land belonging to the City of Worcester Parks and Recreation Commission six hundred thirty-five and forty-one hundredths (635.41) feet to the point of beginning.

Containing 90 Acres.

Shown on plan entitled "LAND ACQUIRED BY CITY OF WORCESTER FOR SCHOOL PURPOSES, BEXTON HILL." Said plan is recorded herewith.

Recorded March 10, 1961 at 9h. 21m. A.M.

KNOW ALL MEN BY THESE PRESENTS

That the BRISTOL COUNTY SAVINGS BANK, a corporation duly established by

law, having its place of business in Taunton, in the County of Bristol, and Commo-

wealth of Massachusetts, holder of a mortgage from...Mortgage Corporation dated October 22, 1955 and recorded with the Registry of Deeds in

District Registry of Deeds, Book 2726, Page 49, which...mortgage was assigned by Able Mortgage Corporation to Bristol County

Savings Bank, by...instrument dated January 6, 1956 and recorded with said Registry of Deeds in

District Registry Book 2724, Page 440, acknowledges satisfaction of the same.
CITY OF WORCESTER
PARKS & RECREATION COMMISSION

ELM PARK
NEWTON HILL
AREA = 871,451 SQ.FT = 20 ACRES

BUREAU OF ENGINEERING CITY OF WORCESTER
LAND ACQUIRED BY CITY OF WORCESTER FOR SCHOOL PURPOSES
NEWTON HILL
SCALE 1"=50' FEBRUARY 1961
November 18, 2011

TO THE WORCESTER CITY COUNCIL

COUNCILORS:

I am pleased to provide your Honorable Body with an update regarding the disposition of the historic Fire Alarm & Telegraph Building located at 230 Park Avenue. City Council, my Administration and our community recognizes that this wonderful structure, in a beautiful setting within historic Elm Park, is in eminent threat of complete loss if we do not pursue a comprehensive historic revitalization effort.

The short- and long term needs of the facility are great. The cost to fully restore the Building, to historic standards, is in the millions of dollars. It is quite obvious, from both the identified costs of a reconstruction effort and what will be the long term maintenance requirements, that it is prohibitive for the City to carry out this effort on its own given our great needs, City-wide priorities and continued fiscal strain. It was clear we had to look to the private sector, in a public/private partnership, to achieve our goals, maintain public use, and minimize and mitigate any direct costs to City. It is, quite frankly, a sign of the times for our economy is unlikely to turn any time soon (and I am an optimist) and this is a model we have achieved in so many other endeavors.

As you are aware, with your support and encouragement, the City has issued two (2) separate Request for Proposals (RFP) since 2009. The community goals for the Fire Alarm & Telegraph Building, as articulated within the RFPs, are as follows:

- The transfer and disposition of the Fire Alarm and Telegraph Building and complete, private restoration of the Property to all applicable historic standards with great respect to its presence within Elm Park.
• The leasing of park land, with and upon all necessary hearings and approvals, to accommodate the transfer/ disposition of the Building and the required site development (parking lot, curb cuts, ADA considerations, walks, plantings, etc.). The leasing of parkland is necessary to support the new, adaptive reuses to include the use by the community (trail heads and community space within facility). This requires the rights to pass and repass over private property to access these amenities.

• Permanent access granted to the public to a community meeting space and associated amenities, once the Building is transferred, renovated and privately owned.

• The thoughtful adaptive reuse that is complementary to the adjacent commercial districts.

• The recognition of the leasing of up to three (3) acres of parkland by the addition of parkland elsewhere in the City and other proposals to show our care for the preservation of parkland.

• The development of appropriate signage that will complement the historic renovation and adaptive reuse of the Building, the historic nature of this area (within Elm Park and adjacent to the restored Rogers Kennedy Memorial), the community space within the Building, and the park amenities that can be accessed, etc.

• The clear preference to have this property (transferred Building and leased land) back on the City’s tax role; and

• The complete engagement of the City Council, Legislature and the community in the approval processes for the disposition and leases.

My Administration reviewed all RFPs as submitted and determined that the two best proposals were nearly a statistical dead heat. A proposal by Spencer Savings Bank for a retail banking location ranked first, and a proposal by Preservation Worcester for leased office/ retail spaces and their non-profit offices ranked a close second. I reviewed this with my staff in detail. While both proposals had merit, defined community uses and met the stated goals, there was clearly a need to push this process further to achieve the best for the community and all involved. At that time, I believed there was a chance to secure both, new private interests in the Building, to ensure that actual, private financing could be achieved in this economy and to meet the community expectations, goals and uses. I must note that time would not be on our side for a multi-
year effort just to secure the private financing of such a project due to the deteriorating nature of the structure.

The RFP process was a very thorough effort and it resulted in the clear top rated submissions. However, the process would not allow the flexibility required to forge the public/private relationship I sought. I consulted with the City Solicitor on a strategy to reject all proposals and forge a new relationship between both parties (Spencer Savings Bank and Preservation Worcester). By rejecting all RFPs, the process to transfer and dispose of the Building would now require the City to seek Home Rule Legislation to direct dispose and transfer the facility. I knew from the start we would have to seek Legislative approvals (Article 97) and all local approvals for the leasing of parkland so this added step would be a reasonable one, with a goal of having both pieces of legislation filed (after final City Council approvals) concurrently.

I then began the process of working with Spencer Savings Bank and Preservation Worcester on an arrangement where both would have defined roles in the bright future of the Fire Alarm and Telegraph Building. Through direct negotiations, I worked to establish a long term relationship with these parties for the future of the Fire Alarm and Telegraph Building. Friends of Newton Hill and Greater Worcester Land Trust representatives were also involved in these conversations. While negotiations took longer than all parties would have preferred, I wholeheartedly believe it has resulted in the very best opportunities for all involved.

I am very pleased to announce that an agreement has been reached between the City, Spencer Savings Bank and Preservation Worcester for the adaptive reuse of the Fire Alarm and Telegraph Building that, upon full implementation, hits every established community goal we set for this project. It provides for the transfer and disposition of the Building to the Bank for the adaptive reuse of the property as a retail banking location on the second floor. The Bank will finance the entire project with the exception of the participation of Worcester foundations that will contribute $275,000 to assist in the fit out and the build out of the community space on the first floor and $100,000 of City environmental remediation funding to address existing hazardous materials within the structure. I am very grateful to the foundations that believe this project and its established goals meet their high thresholds for approval. Preservation Worcester will lease the majority of the first level of the facility that contains the community space and
related amenities and they will manage these spaces for community use. In addition, the Bank will upgrade the signalized intersection at Park Avenue and Elm Street to a four-way signal with pedestrian sequencing and will provide a parking lot next to the building not only for business use but also for public use (Friends of Newton Hill, Disc Golf Course, trail heads, community space within building, etc.)

As mentioned, the City will need to transfer the building to the Bank, and to lease, on a long term basis to the Bank, approximately three (3) acres of parkland surrounding the property, as depicted in the photograph below.

The City and the Bank will work together to seek and secure all necessary approvals for transfer/ disposition, long term leases, necessary legislation (to include reverter clauses and additional parkland protections), and zoning and permitting approvals. The Bank will completely renovate the building to historic standards, undertake the adaptive reuse of the property, manage the lease and relationship with Preservation Worcester and develop the leased land to support the adaptive reuse of the property.

The Home Rule/ Article 97 Legislation, to be filed with the Great and General Court of the Commonwealth of Massachusetts, will:

- Allow for the direct disposal/ transfer of the Building, as is, to the Bank at no cost; and
• Allow for the long term lease (70 years with options) of three (3) acres of City parkland to the Bank for $1.00 per year; and

• Specify the full renovation, and required site improvements and amenities for the adaptive reuse; and

• Define the reversion of the building and the ground lease back to the City if certain conditions are not met; and

• Define the conversion of City property known as Doherty High School BACK to public park purposes if, at some future date, 40, 50, 60 years from now Doherty High School is no longer required for public school purposes and is deemed for surplus, FIRST, by the Worcester Public School Department and Worcester School Committee per all applicable processes, regulations, and law. We recognize the tremendous educational resource Doherty High is to our community and the great work done here each and every day, month and year. This ensures that work continues indefinitely until such a time, in the distant future, it may no longer be needed for WPS purposes. Then and only then would it be transferred back to park purposes (Elm Park parkland was taken when Doherty High was built without any recognition of that loss). This is done as part of our effort to recognize that three (3) acres of Elm Park will be leased for 70 years; and

• Detail the areas of the renovated facilities and site that will have some designated, public uses with appropriate security, oversight, and controls, to include some designated parking and rights to pass and repass over the leased land to access trail heads for Newton Hill; and

• Allow the construction of a remote ATM on site, per all applicable rules, regulations and ordinances, with a storage facility part of this construction, that will allow for the storage of park related equipment and materials by the Friends of Newton Hill (the storage area as managed through the lease with Preservation Worcester). The City will complement this storage facility with another City storage facility to be constructed elsewhere on Newton Hill for additional equipment and storage; and

• Factor the City’s purchase of thirteen (13) acres of open space land from the Sisters of Providence abutting Green Hill Park land as part of our effort to replace the three (3) acres that will be leased for 70 years; and

• Address all of the Commonwealth’s Constitution Article 97 terms and conditions regarding the conversion of public parkland upon which the property (structure) rests as well as the surrounding three (3) acres of public parkland; and
• Include all the necessary granting of easements for the project redevelopment.

My Administration and I will work with the Bank and Preservation Worcester to seek the necessary local and State approvals in support of this Home Rule/ Article 97 Legislation. This includes all necessary approvals from Parks and Recreation Commission, Conservation Commission, Historic Commission, City Council, School Committee, State Legislature, and Governor. Additionally, the Bank, with the support and cooperation of the City and PW, will seek and secure the necessary local, State and Federal approvals to proceed with the renovation and adaptive reuse of the Building and leased land, including, among others, the local Planning Board, Zoning Board of Appeals, Conservation Commission, and Historic Commission, as well as the Massachusetts Historic Commission and National Park Service. The Bank will also enter into an approved lease with Preservation Worcester.

This unique public/private partnership achieves all our goals for the revitalization of this beautiful historic structure while recognizing the fiscal limitations of the City (in the short and long terms) and the threat of imminent loss of the resource.

In my endeavor to facilitate the highest and best use for this property, I reached out to various interest groups to gain perspective and support for this worthwhile redevelopment project. In fact, due to this unique partnership between the Bank and Preservation Worcester, I have consulted with Mass Audubon, the Greater Worcester Land Trust, the Friends of Newton Hill and others. I am pleased we have reached this milestone. The process going forward to secure all the necessary approvals engages the entire community at levels of interaction and information transfer that far surpass any public/private project I have ever had the pleasure to be involved in.

I expect to forward the Home Rule Legislation to your Honorable Body, as well as all necessary accompanying documentation, for the City Council Meeting of November 29, 2011. I will also submit a detailed listing of all milestones and tasks, to include the various Boards, Commissions, City Council, Legislature and Governor approvals for your information and use.

I must take this opportunity to express my sincere gratitude to Michael Robbins and the Board of Spencer Savings Bank, Deborah Packard and the Board of Preservation
Worcester, Colin Novick and the Greater Worcester Land Trust, Rick Miller of the Friends of Newton Hill, the Worcester Foundations (to be named later), Robert O’Conner and the State’s Department of Conservation and Recreation and my staff to include Heather Gould, Senior Project Manager and Timothy McGourthy, Chief Development Officer, for their incredible patience, persistence, creativity, thoughtfulness and desire to get us to this juncture. There is much work ahead, no doubt, but with this effort to date as a guide, we have an incredible opportunity to making it become a reality.

Respectfully submitted,

[Signature]

Michael V. O'Brien
City Manager
2012 CHAPTER 203
AN ACT AUTHORIZING THE CONVEYANCE, LEASE AND CHANGE OF USE OF CERTAIN PARK LANDS IN THE CITY OF WORCESTER.

Whereas, The deferred operation of this act would tend to defeat its purpose, which is to authorize forthwith the conveyance, lease and change of use of certain park lands in the city of Worcester, therefore it is hereby declared to be an emergency law, necessary for the immediate preservation of the public convenience.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same as follows:

SECTION 1. The city of Worcester may convey by sale the former fire alarm building located within Elm Park at 230 Park Avenue, and may lease up to 3.0 acres of land surrounding the building to Spencer Savings Bank, or its sole designee, for the purpose of renovating the building in its current footprint and structure, and any additions and supporting spaces due to the grade characteristic requirements of the architectural access board and the Americans With Disabilities' Act, to historic preservation standards acceptable to the city manager for use as a retail branch of the bank and for the construction of an independent structure for a remote teller and automated teller machine; provided, however, that these structures shall be renovated or constructed in conformance with historic preservation standards acceptable to the city manager for use as a retail branch of the bank. The city of Worcester constructed and maintained the 6,735 square foot fire alarm station building in Elm Park along Park Avenue near the Elm Street intersection under the authority of chapter 574 of the acts of 1914, and such building is on the National Register of Historic Places. The building, as renovated, shall house a community meeting room to be managed by Preservation Worcester, a nonprofit collaboration organized for the preservation of historic buildings and places within the city of Worcester. The community meeting room and related amenities shall consist of at least 51 per cent of the entire first floor of the building. The 3.0 acre lease shall include at least 6 spaces dedicated for the sole purpose of parking for Elm Park users and the community room and the remaining parking spaces shall be available to users of Elm Park and the community room after bank hours.

The lease to the bank shall be for an initial term of 70 years, with the option for 3, 10-year extensions to be exercised at the option of the bank no sooner than 5 years prior to expiration of the original or any extended term of the lease. Such
lease shall include the following conditions: (i) that the property shall revert to park land should the building ever be demolished; and (ii) that the authority granted by this act shall expire and the lease shall terminate unless renovations to the building are commenced within 3 years from the effective date of this act and constructed to a conclusion within a commercially reasonable time thereafter. Such lease shall further provide that, in the event that the bank shall cease operations in the building for any 12 consecutive months, the lease shall terminate and the property shall revert to park land without any further action by the city, the city council or the general court; provided, however, that the city shall file a notice of lease termination and reversion to park land and such notice shall be recorded in the Worcester district registry of deeds.

In the event that Preservation Worcester shall cease to operate or exist, the bank shall attempt to find another not-for-profit acceptable to the city with a mission of parks, open space, recreation and preservation to use and manage the community room for the remainder of the lease term. A conveyance under this section shall be subject to paragraphs (a), (b) and (g) of section 16 of chapter 30B of the General Laws.

SECTION 2. The city of Worcester may enter into leases for the construction and use of communications technology on an area of land containing approximately 2,500 square feet within Elm Park located at the summit of Newton Hill. The city may, in conjunction with such leases, also grant any necessary utility easements through Elm Park to Newton Hill to support such use. The summit on Newton Hill shall continue to be the historic location of a certain flag pole. The income from the leases authorized in this section shall be dedicated to the management and improvement of Elm Park.

SECTION 3. In consideration of the conveyance and leases set forth in sections 1 and 2, and in recognition that Doherty high school is located within Elm Park under the authority granted by chapter 121 of the acts of 1960, the city of Worcester hereby declares that should the city and the Worcester public schools determine that such property is no longer needed for Worcester public schools purposes, the authority granted by said chapter 121 shall expire and the land previously transferred from park land to school land shall revert to park land upon said determination.

SECTION 4. Notwithstanding chapter 267 of the acts of 1950, the city of Worcester may change the use of an additional portion of Green Hill Park containing approximately 36,060 square feet, adjacent to the 34,550 square foot
area dedicated to water supply purposes under said chapter 267, for the maintenance of 2 water supply system tanks and the installation and maintenance of public safety and emergency communications towers, stations and facilities; provided, however, that the city may grant any necessary easements and leases to construct and support such telecommunications technology in, around, to and from the current water supply system tanks, mains and public safety radio transmission towers.

SECTION 5. In conjunction with the reconstruction of Belmont street, the city of Worcester may construct a new bus stop shelter on such portion of Green Hill park that abuts Belmont street near the intersection of Skyline drive. The city shall grant a temporary easement of approximately 1,545 square feet within Green Hill Park to allow for the construction of the bus stop shelter and a permanent easement of approximately 1,272 square feet within the park for public use of the shelter upon its completion. The city shall place such bus shelter under the care, custody and control of the city commissioner of public works and parks for street purposes.

SECTION 6. In consideration for and as a condition of the conveyances, changes of use and leases authorized in sections 1, 2, 4 and 5, the city of Worcester, individually or together with the Greater Worcester Land Trust, shall record a permanent conservation restriction meeting the requirements of sections 32 and 33 of chapter 184 of the General Laws over approximately 4.6 acres of land along Plantation parkway and adjacent to Green Hill Park currently owned by the commonwealth under the care and control of the University of Massachusetts and formerly of the Worcester Business Development Corporation and being a triangle in the westernmost section of Worcester assessor's Parcel 57-004-00A-2 and described in a plan on file with the city of Worcester department of public works and parks, and in furtherance of the purposes of this provision, the University of Massachusetts, any of its entities, and any other state department, agency or entity involved, shall have any authority under this act which is necessary and proper to approve and grant such permanent conservation restriction over the property described in this section.

SECTION 7. The city of Worcester shall prepare and record in the Worcester district registry of deeds the plans of land describing the precise boundaries of the parcels of land altered pursuant to this act.

Approved, August 3, 2012.
Wetherell John W.

Know all men by these presents, that I, John W. Wetherell of Worcester in the County of Worcester and Commonwealth of Massachusetts, Esquire, in consideration of the sum of One Dollar and other good and valuable considerations to me paid by the City of Worcester aforesaid, the receipt whereof is hereby acknowledged, do hereby grant, bargain, sell, and convey unto the said City of Worcester and its successors and assigns, a certain small tract or parcel of land containing fifteen thousand and fifty eight (15,508) square feet, more or less, situated on the northeastly side of Park Avenue and near the foot of Newton Hill as called bounded and described as follows to wit: Beginning at the southeast corner thereof on said Park Avenue at a corner of land formerly of Charles Oakes and James N. Wells, thence running North 75° West by land of said Edward G. Frost one hundred and seventy feet to a corner at an iron, land thus surveyed by the quarters and Wetherell W. Wetherell, his wife, to said City of Worcester, thence running North 15° West by land so surveyed by the quarters and Wetherell W. Wetherell to said City of Worcester as aforesaid, thirty three (33') feet to a corner, at land of William G. Lincoln, thence running and running North 85° West by land of said William G. Lincoln, two hundred and forty five (245) feet to said Park Avenue; thence thence running and running South 32° 15' West, one hundred and thirty two and three tenths (132.3) feet to the place of beginning, as forever otherwise the same may be bounded, measured or described. Being a part of the same estate conveyed to me by William G. Lincoln by his deed dated the Twenty ninth day of May in the year one thousand eight hundred and sixty nine and recorded in the Registry of Deeds for said City of Worcester, Book 789, Page 485. Provided always.
however, and this conveyance is made upon the express conditions and stipulations following, which are a part of the consideration moving the grantee hereunto; that is to say:

First. That the City of Worcester shall not at any time hereafter lay any assessment for betterments of any name, character, or description whatsoever upon any of the remaining lands of the grantee in consequence of the dedication of the estate hereby conveyed, or that adjoining to the use and purposes of a Public Park.

Second. That the City of Worcester shall release the grantee from the payment of all taxes and assessments of every kind, kindred, or to be levied by or upon the land hereby conveyed for the year eighteen hundred and eighty-eight.

To have and to hold, the granted premises unto the said City of Worcester and its successors and assigns, to its and their own use and behoof forever. And I, the grantor, for myself and my heirs, successors, and assigns, do warrant with the said grantee and its successors and assigns that I am lawfully seized in fee simple of the granted premises, that they are free from all incumbrances, except the conditions hereinafter contained and expressed, that I have good right to sell and convey the same to the said grantee and its successors and assigns forever, and that I will and my heirs, successors, and assigns, shall warrant and defend the same to the grantee and its successors and assigns forever against the lawful claims and demands of all persons, except as to the conditions aforesaid.

In witness whereof, I have signed.

John W. Withnell

[Signature]

In the presence of:

J. Henry Hall, Esq., Notary Public.

Commonwealth of Massachusetts. Worcester, June 1, 1888.

I, Henry Hall, Notary Public, have personally appeared before the above named John W. Withnell, and acknowledged the foregoing instrument to be his free act and deed.

Before me, J. Henry Hall, Justice of the Peace.

[Signature]
Know all men by these presents that we, John W. Wethersfield and Abigail W. Wethersfield, wife of the said John W. of the City of Worcester, in the County of Worcester and Commonwealth of Massachusetts, in consideration of the sum of one dollar and other good and valuable considerations to us paid by the City of Worcester aforesaid, the receipt whereof is hereby acknowledged, do hereby give, grant, bargain, sell and convey unto the said City of Worcester and its successors and assigns forever all that tract or parcel of land containing fifty five and seventy seven one hundredths (55.77) acres more or less, situated at the junction of Pleasant and Highland Streets in said Worcester and more particularly described as follows, to wit: Beginning at the most westerly point thereof on said Pleasant Street at a corner of land of Real Estate of the City of Worcester which point is two (2) feet northwesterly from a stone monument set in the ground; thence running North forty three degrees forty six minutes West by said Pleasant Street two hundred and thirty seven one hundredths (237.37) feet to an angle; thence running North forty six degrees West by said street one hundred and fifty two (152) feet to an angle; thence running North thirty one degrees twenty seven minutes West sixty seven and thirty seven one hundredthds (67.37) feet to an angle; thence running North thirty five degrees fifty three minutes West by said street one hundred and seventy eight and seventy three one hundredthds (178.73) feet to an angle; thence running North ten degrees forty six minutes and seventy seven and eight tenths (47.63) feet to an angle; thence running North eighty one degrees forty six minutes West by said street two hundred and eight and thirty nine one hundredthds (39.39) feet to said Highland Street; thence running and running by said Highland Street South forty three degrees twenty five minutes one hundred and ninety one and nine tenths (497.9) feet to land formerly belonging to the heirs of the late John Ham mond thence running and running South eleven degrees thirty four minutes West by land formerly belonging to said heirs and by land of William B. Hackett eleven hundred and sixty seven and four tenths (167.4) feet to an angle; thence running South forty five degrees West by land of said Hackett and by land of John W. Wethersfield one of the grantees (in his own right) three hundred and two and five tenths (320.5) feet to a corner at land of Edward S. Frost.
thence turning and running South 57° 35' West by land of said Edward B. Treat five hundred and thirteen (153) feet to a corner at land of said Uriel C. C. Perkins; thence turning and running North 35° 30' West by land of said Perkins; thence running and running South 62° 16' West by land of said Perkins three hundred and sixty three (363) feet to the place of beginning at said Cleaveland Street, or whoever otherwise the same be bounded, measured or described. Being a portion of the estate devised to the grantees as joint tenants by Revere Newton late of Worcester deceased, by his last Will and Testament duly proved and allowed. Meaning and intending hereby to convey all the land owned by us as such joint tenants that is situated between Cleaveland and Highland Streets. Provided always, however, and this conveyance is made upon the express conditions stipulations and reservations, which are a part of the consideration moving the grantees to this conveyance, that is to say: First. That the City of Worcester shall not at any time thereafter lay any assessments for Outenents of any name, character or description whatsoever, upon any of the remaining land of the grantees or either of them, in consequence of the dedication of the estate hereby conveyed, to the uses and purposes of a Public Park. Second. That the City of Worcester shall relieve the grantees from the payment of all taxes and assessments of every kind levied by it upon the land hereby conveyed, for the year eighteen hundred and eighty eight, or to be levied. Third. That the grantees may (and they hereby do) preserve the Farm Buildings now standing on the premises and the foundations under them, and the right to themselves and their legal representatives to remove the same, at any time within fifteen years from the date of this deed, or within the expiration of one year from the decease of the survivor of the grantees, if such event shall occur before the expiration of said fifteen years. And the further right that within the time of such removal by them or their legal representatives they shall have the entire and absolute use and occupation free from rent of about two acres of land, under and around said buildings.
Bounded and described as follows, to wit: Beginning at the northwesterly corner thereof, at a point on said Pleasant Street which is one hundred and ninety (190) feet southerly (measured by the line of said Street) from a stone bound at the intersection of the easterly line of Pleasant Street by the southerly line of Highland Street; thence southeasterly by said Pleasant Street four hundred and fifty (450) feet to a point; thence southeasterly and running southeasterly by a line drawn at a right angle (at this point) with said Pleasant Street, two hundred (200) feet to a corner; thence southeasterly by a straight line four hundred and fifty (450) feet to a corner which is two hundred (200) feet eastward of the point of departure; thence southeasterly by a straight line, two hundred (200) feet to the place of beginning.

To have and to hold the granted premises unto the said City of Worcester and its successors and assigns, to its and their use, use and behoof forever. And we the grantees for ourselves and our heirs, executors and administrators do covenant with the said grantees and its successors and assigns that we are lawfully seized in fee simple of the granted premises, that they are free from all encumbrances, except the conditions stipulations and reservations herebefore contained and expressed: that we have good right to sell and convey the same to the grantees and its successors and assigns forever, and that we will and our heirs, executors and administrators shall warrant and defend the same to the grantees and its successors and assigns forever, against the lawful claims and demands of all persons, except as to the conditions, stipulations and reservations aforesaid.

In witness whereof, we the said John H. Nettrrewell and Master W. Nettrrewell have hereunto set our hands and sealed the first day of June in the year of our Lord one thousand eight hundred and eighty eight.

John H. Nettrrewell (seal)
Master W. Nettrrewell (seal)

J. Henry Hall, Justice of the Peace
Johnson, Nathan S.  

Parks Commissioner. Know all men by these presents, that whereas, the Board of Park Commissioners of the City of Worcester in the County of Worcester and Commonwealth of Massachusetts has by a vote duly called on the twenty-eighth day of May, A.D. 1888, in the exercise of the authority conferred on it by law, taken in fee for the purpose of a Public Park, the tract of land hereinafter described. Now therefor, in compliance with the provisions of law in that behalf provided, the said Board within sixty days after the taking of said land, hereby files and causes to be recorded in the Worcester District Registry of Deeds, the following description thereof, to wit:

A certain tract situated in said City of Worcester, bounded and described as follows: Beginning at a point where the westerly line of Elm Park intersects the southerly line of Highland Street; thence turning and running westerly by said Highland Street, to land of John W. and Nectar W. Wetherell; thence turning and running southerly by land of said Wetherells, to a corner of land belonging to Geo. Willard S. Howes, now bargained to be conveyed to the city of Worcester; thence turning and running southeasterly by land of said Howes, or of said city, to a point in the westerly line of Elm Park; thence turning and running westerly by said westerly line of Elm Park to land held by Chauncey G. Harrington as trustee; thence turning and running westerly by said land of said Harrington to a corner of land of Nathan S. Johnson; thence turning and running northerly by the westerly lines of said Harrington's land, to a corner of land of said Johnson; thence turning and running northerly by said northern lines of land of said Harrington, to a point on the westerly line of Elm Park; thence turning and running northerly by said westerly line of Elm Park to the point of beginning. The area comprising as near as may be one hundred and seventeen thousand five hundred and seventy two (117572) square feet. The corners thereof, so far as known, are as follows: Nathan S. Johnson.

In witness whereof, the Board of Park Commissioners of said City of Worcester have hereby set their hands this twenty-fifth day of June in the year one thousand eight hundred and eighty-eight.
Harrington Chauncey G. Oakes, Commissioner. Know all men by these presents, that whereas, the Board of Park Commissioners of the City of Worcester, in the County of Worcester and Commonwealth of Massachusetts, has, by a vote duly passed on the Fourth day of June, A.D. 1889, in the exercise of the authority conferred on it by law, taken in fee, for the purpose of a Public Park, the tract of land hereinafter described.

Now, therefore, in compliance with the provisions of law in that behalf provided, the said Board, within sixty days after the taking of said land, hereby file and cause to be recorded in the Worcester District Registry of Deeds, the following description thereof, to wit: a certain tract situated in said City of Worcester, bounded and described as follows: On the East by Elm Park, on the North, West, and South by lands of Nathan J. Johnson, comprising as near as may be, the area of thirty-six thousand (36,000) square feet. The owner thereof, as far as known, are as follows: Chauncey G. Harrington.

In witness whereof, the Board of Park Commissioners of said City of Worcester, have hereunto set their hands, this Fourth day of June in the year one thousand eight hundred and eighty-nine.

Edward Winslow Lincoln
A. G. Hadwen
Edward E. Davis
James Draper
Martin Green

[Signature]


dated 2nd day of May, A.D. 1889, in the presence of me, Henry J. Miller, Esq.,

Know all men by these presents, that I, William W. E. Lincoln of the City and County of Worcester and Commonwealth of Massachusetts, in consideration of the sum of one dollar, and other valuable considerations paid by the City of Worcester, the receipt whereof is hereby acknowledged, do hereby
gave, grant, bargain, sell and convey unto the said city of
Worcester, that certain tract of land situate in said city on
the westerly side of the New Garden or Eden Park and
Cash avenue so called, bounded and described as follow:
Beginning at the northwesterly corner of said premises
and by land formerly of John Hammond deceased, then
running by a line 15° 15' W. eight hundred and eighty
and 70 feet to a stone monument set in the ground and
to a point on said Cash Avenue; thence southerly 250 feet
more or less by said avenue to land of John W. Withcull
thence southeasterly by land of said Withcull two hundred
and forty six ¾ feet to a point on land of said Withcull
thence North 1° 39' W. two hundred and eighty four feet
to an angle: thence North 10° 30' two hundred and twenty
feet to a corner and to land formerly of John Hammond,
said two last lines being bounded westerly by land formerly
of Henry Newton: thence by the John Hammond land
S. 43° 58' 6. five hundred and ninety eight feet to the
point of beginning, being all the land I own on Newton
Hills as called, in said City of Worcester. It being under-
stood and agreed between the parties that the
said grantees is not to be assailed by said city for any
betterments to any other land he may own in said Worcester
by reason of this tract and this remaining portion of Newton
Hills being purchased for and dedicated to the purpose of
a Public Park.

To have and to hold the granted
premises, with all the privileges and appurtenances thereto
belonging, to the said city of Worcester its successors and
assigns, to their own use and behoof forever. And I do here-
by, for myself and my heirs, executors and administrators
convenant with the said grantees and its...and assign that
I am lawfully seized of fee simple of the granted premises
that they are free from all encumbrances except the taxes
which may be assessed for the year 1885, which said city
agrees to assume and pay, and I have good right to sell
and convey the same as aforesaid, and that I will and
my heirs, executors and administrators shall warrant and
defend the same to the said grantees and its successors
and assigns forever against the lawful claims and demands
of all persons. And for the consideration aforesaid...
I, Daniel_, do hereby release unto the said grantees its successors and assigns all right, title, and interest in the granted premises. In witness whereof, we the said William S. Lincoln and Elizabeth T. Lincoln, have set our hands and seals this fourth day of June in the year one thousand eight hundred and eighty eight, signed, sealed and delivered. Witness our hands and seals.

W = S. Lincoln (seal)

W = E. Lincoln (seal)

In presence of

W = C. Barton & W. E. Richardson of Massachusetts.

Nellie O. Lincoln
Worcester 21, June 7, 1888. Then personally appeared the above named William S. Lincoln and acknowledged the foregoing instrument to be his free act and deed. Before me, W = C. Barton, Justice of the Peace.

Measuring David S. Know all men by these presents that I, Daniel S. Measuring of Worcester, in the County of Worcester, City of Worcester and Commonwealth of Massachusetts, in consideration of One Dollar paid by the City of Worcester, the receipt whereof is hereby acknowledged, do hereby give, grant, bargain, sell and convey unto the said City of Worcester, a certain tract of land situated in said Worcester, known as Government Square, bounded and described as follows:

Northly by Kimball Street two hundred and sixty eight feet, westerly by Weller Street one hundred and fifty feet, southerly by Bremen Street two hundred and sixty eight feet and easterly by Eriqant Street one hundred and fifty feet. The said premises are situated on the northwesterly part of said Worcester. Provided and this conveyance is upon the express condition that the said tract of land shall always remain open as a public park and shall be called by the grantees "Government Square." Over the tract of land described Government Square on a plan of lots recorded with the Worcester District Registry of Deeds, Book 467, Page 656.

To have and to hold the granted premises with all the privileges and appurtenances thereto belonging, to the said City of Worcester and its successors and assigns, to their use and behoove forever. And I do hereby, for myself and my heirs, executors and administrators, covenant with the said grantees and its
August 23, 2019

Russell K. Adams
Ass’t. Commissioner - Engineering & Architectural Services
Department of Public Works
City of Worcester, Massachusetts

Re: Title Opinion – Newton Hill

Mr. Adams,

You requested a formal title opinion confirming the ownership of the property known as Newton Hill where a new Doherty High School would be constructed.

I have examined deeds recorded in the Worcester District Registry of Deeds, as well as several special acts of the legislature that affirm the city’s ownership, and can report to you that title of the Newton Hill site is held by the city of Worcester.

The city of Worcester acquired this property in 1888 through a series of three deeds and two orders of taking:

- Deed of John W. Wetherill conveying 15,000 s.f. of land to the city of Worcester dated June 1, 1888 and recorded in the Worcester District Registry of Deeds in Book 1266 at Page 642;
- Deed of John W. Wetherill conveying 45.77 acres of land to the city of Worcester dated June 1, 1888 and recorded in the Worcester District Registry of Deeds in Book 1266 at Page 644;
- Deed of William S. Lincoln 5.2 acres of land to the city of Worcester dated June 4, 1888 and recorded in the Worcester District Registry of Deeds in Book 1266 at Page 648;
- Order of Taking of 2.7 acres of land from Nathan S. Johnson adopted on May 28, 1888 by the Board of Park Commissioners of the city of Worcester.
and recorded in the Worcester District Registry of Deeds in Book 1266 at Page 647;

- Order of Taking of 0.8 acres of land from Chauncey adopted on June 4, 1888 by the Board of Park Commissioners of the city of Worcester and recorded in the Worcester District Registry of Deeds in Book 1266 at Page 648.

These acquisitions were made for park purposes under authority of c. 263 of the acts of 1884.

In 1914 the city of Worcester received special legislation authorizing the construction of a fire alarm station. See c. 574 of the acts of 1914. This building is now used as a bank branch and is located on the opposite side of the park as Doherty High.

Doherty High School was built under authority c. 121 of the acts of 1960 which resulted in a decree issued from the state’s highest court authorizing the city to construct the school within a designate area of the park. Under section three of chapter 203 of the Acts of 2012, should the Worcester Public Schools determine that the Doherty High land is no longer needed for school purposes, then the authority granted by the 1960 act would expire.

Sincerely,

David M. Moore
City Solicitor
Know All Men by These Presents

Whereas by the provisions of Chapter 471 of the Acts of 1922 of Massachusetts, the City of Worcester was authorized by vote of the School Committee and with the approval of the Mayor, to receive by deed of gift and hold in fee, land, buildings and other structures in said City to be used as an athletic field for public school and other athletics and public events for which admission may be charged, and

Whereas Walter J. Cookson, John A. Clough, being unmarried, Louis E. Bragg, John P. Dyer, Francis M. Cahill, being unmarried, Arthur D. Butterfield, Harvey S. Gruver and Joseph Beals, Trustees, are the owners of certain real estate situated on the northerly side of Chandler Street in the City of Worcester which was conveyed to them by Roger Kinnicutt, T. Hovey Gage and Edward B. Peace, all of said Worcester and Commonwealth of Massachusetts, Trustees under the will of Hester N. Watherell, late of said Worcester, said deed being dated June 24, 1922, and recorded in Worcester District Registry of Deeds, Book 2272, Page 521. Reference is made to said deed for a full description of the premises so conveyed to them.

Know All Men by These Presents that we, Walter J. Cookson, John A. Clough, Louis E. Bragg, John P. Dyer, Francis M. Cahill, Arthur D. Butterfield, Harvey S. Gruver, and Joseph Beals, Trustees for the uses specified in Chapter 471 of the Acts of the Legislature of Massachusetts for the year 1922, and in execution of every other power in us hereto enabling, and in consideration of One Dollar ($1.00) and other valuable considerations paid by the City of Worcester, a municipal corporation in the County of Worcester and Commonwealth of Massachusetts, the receipt whereof is hereby acknowledged, we hereby REISE, RELEASE and forever QUIESSENT unto the said City of Worcester and its successors and assigns, a certain tract of land with the buildings thereon on the northerly side of Chandler Street in said Worcester containing by estimation twelve (12) acres more or less, bounded, and described as follows: Beginning at a stone monument at the most westerly corner of premises on the westerly side of Pleasant Street now or formerly owned by Lena B. Powers; thence southwesterly in a straight line to a point in the northeasterly line of Chandler Street sixty (60) feet distant southeasterly from land now or formerly belonging to A. B. Hartburn; thence southeasterly by said northeasterly line of Chandler Street to land now or formerly of one Shimer; thence northeasterly by said Shimer land, land now or formerly of Elbridge G. P. Guy, City of Worcester; Fred W. Barnes, S. Louise Waite, Leon Brunnell, Mary A. Doyle, James F. Ryan, and George F. McNulty to land now or formerly of Simon Lasher; thence northwesterly by said Lagasse land, land now or formerly of Sumner M. Hill and said Lena B. Powers to the point of beginning.

Excepting from the above description a parcel of land containing 2980 square feet, more or less, conveyed by Lincoln N. Kinnicutt, Trustee, to City of Worcester, by deed dated December 3, 1910, recorded in said Registry, Book 1950, Page 319. Together with the right of way described in and conveyed to us in the deed from Roger Kinnicutt, et al. Trustees dated June 24, 1922, recorded in Worcester District Deeds, Book 2272, Page 521, said right of way being described in said deed to us as follows: "Together with a right of way from Pleasant Street westerly over a strip of the grantors' remaining land sixty (60) feet wide and extending from said Pleasant Street westerly to the point of beginning, and lying immediately north of the tract owned by said Lena B. Powers above referred to, the same being lot five (5) on a plan recorded in said Registry, Book 1538, Page 652, and over a further tract westerly of said sixty (60) feet tract, being a quarter circle with its center at the point of beginning of the granted premises and with a radius of sixty (60) feet."

The granted premises are subject to the following restrictions to the due observance of which the grantee, its successors and assigns, by the acceptance of this gift, agree, namely: That the premises shall forever be used for athletic, playground, park or other public use or purpose of the City of Worcester.

To Have and To Hold the granted premises, with all the privileges and appurtenances thereto belonging, to the said City of Worcester and its successors and assigns, to their own use and behoof forever, in accordance with Chapter 471, Acts of 1922, of Massachusetts. And we do hereby for ourselves and our heirs, executors and administrators, covenant with said grantee and its successors and assigns that the granted premises are free from all incumbrances made or suffered by us.

Walter J. Cookson (seal) Francis E. Cahill (seal)
Susan D. Cookson (seal) Arthur D. Butterfield (seal)
John A. Clough (seal) Orpha Lee Butterfield (seal)
Louis E. Bragg (seal) Harvey S. Gruber (seal)
Grace H. Bragg (seal) Mary K. Gruber (seal)
John P. Dyer (seal) Joseph Beals (seal)
Mary E. Dyer (seal) Grace H. Beals (seal)

Commonwealth of Massachusetts.

Worcester, ss. Mar 31 1923. Then personally appeared the above named Joseph Beals and acknowledged the foregoing instrument to be his free act and deed, before me

George A. Gaskill Justice of the Peace.

Ly commission expires Oct 15 1923.

I, Peter F. Sullivan, Mayor of the City of Worcester have read the foregoing deed and I hereby approve the same.

Peter F. Sullivan

Approved as to legal form.

William C. Hallish City Solicitor

At the regular meeting of the School Committee of the City of Worcester duly held in accordance with the requirements of law on Friday evening March 2, 1923, at which a quorum was present and voted, it was unanimously V O T E D: That the School Committee accept from the Trustees of the Public School Athletic Field, by deed of gift, the Athletic Field purchased and partially developed by public subscription. (See Chap. 47 of the Acts of 1922). Subsequent to this action, the meeting adjourned. A true record

Attest:

Joseph Beals Clerk of the School Committee
City of Worcester

Rec'd March 31, 1923 at 12h. 52m. P. L. Ent'd & Ex'd.

* * * * * * *

Carruth

I, David V. Carruth of Clinton, Worcester County, Massachusetts for consideration paid, grant to Alexander Zelent and Frances Zelent, husband and wife, both of said Clinton, with W A R A N T Y covenants the land in said CLIFFTON bounded and described as follows: Beginning at a point in the southerly line of Spruce Street one hundred feet (100) easterly from the intersection of the easterly line of Birch Street with said southerly line of Spruce Street the northeasterly corner of the lot and a corner of land of Fred Schubert and running thence south 41° 47' E. by land so of said Schubert one hundred and fifty (150) feet to land of Heirs of F. V. F. Kramer; thence south 48° 23' E. sixty-four (64) feet to a stone bound at land of said Kramer; thence north 41° 37' E. one hundred and fifty (150) feet by said Kramer, land to the southerly line of Spruce Street; thence north 48° 23' W. by said southerly line of Spruce Street sixty-four (64) feet to the bound first mentioned.

Containing 9600 square feet more or less, and being the easterly portion of the premises conveyed to me by the Heirs of F. V. F. Kramer by deed dated August 26th 1921, and recorded with Worcester District Deeds Book 2255, Page 154. With the restriction that no building shall ever be erected within twelve (12) feet of the line of Spruce Street. Together with all lights of grantor in said Spruce Street. Subject to the taxes for 1923. Subject to a mortgage to the Clinton Savings Bank for $3000.00.

I, Clara A. Carruth wife of said grantor release to said grantee all rights of POWER HOUSE AND HOUSE AND and other interests therein.

W I T N E S S our hands and seals this thirtieth day of March 1923

David V. Carruth (seal)
Clara A. Carruth (seal)

Commonwealth of Massachusetts

Worcester, ss. March 30th 1923. Then personally appeared the above-named David V. Carruth and acknowledged the foregoing instrument to be his free act and deed, before me.

Charles L. Stevens Justice of the Peace.

Ly commission expires Nov. 9 1929.

Rec'd April 2, 1923 at 8h. 30m. A. M. Ent'd & Ex'd.

* * * * * * *
KNOW ALL MEN BY THESE PRESENTS
that I, Roger Kimnicut, T. Hovey Gage and Edward E. Pease, all of Worcester, in the County of Worcester and Commonwealth of Massachusetts, Trustees under the last will of Hester M. Wetherell, late of said Worcester, duly proved and allowed by the Probate Court for said County on October 17, 1899, do, by virtue and in execution of the power to us given in and by said will and of every other power and authority us hereunto enabling, and in consideration of the sum of Twenty-one Thousand Five Hundred ($21,500) Dollars to us paid by Walter J. Cockson, John A. Clough, Louis E. Bragg, John P. Dyer, Francis H. Cahill, Arthur D. Butterfield, Harvey S. Gruber and Joseph Beals, all of said Worcester, the receipt whereof is hereby acknowledged, and in further consideration of the acceptance by the grantees herein of the restrictions hereinafter named, hereby GRANT, BAR-
GAIN, SELL and CONVEY unto the said Walter J. Cockson, John A. Clough, Louis E. Bragg, John P. Dyer, Francis H. Cahill, Arthur D. Butterfield, Harvey S. Gruber and Joseph Beals a certain tract of land on the southern side of Chandler Street in said Worcester containing by estimating twelve (12) acres more or less, bounded and described as follows:
Beginning at a stone monument at the most westerly corner of premises on the westerly side of Pleasant Street now or formerly owned by Lena B. Powers; thence southwesterly in a straight line to a point in the northwesterly line of Chandler Street sixty (60) feet distant southeasterly from land now or formerly belonging to A. M. Hartshorne; thence southeasterly by said northwesterly line of Chandler Street to land now or formerly of one Shimer; thence southwesterly by said Shimer land, land now or formerly of Elbridge C. P. Day, City of Worcester, Fred V. Barnes, S. L. Leavitt, Les B. Wood, A. Doyle, James F. Ryan, and George F. McInerny to land now or formerly of Simon Laggasse; thence northwesterly by said Laggasse land, land now or formerly of Sumner W. Hill and said Lena B. Powers to the point of beginning.
Excepting from the above description a parcel of land containing 2888 square feet, more or less, conveyed by Linwood W. Martin, Trustee, to City of Worcester, by deed dated December 1, 1910, recorded in said Registry, Book 1950, Page 319. Together with a right of way from Pleasant Street westerly over a strip of the grantees' remaining land sixty (60) feet wide and extending from said Pleasant Street westerly to the point of beginning, and lying immediately north the line of land referred to, the same being lot five (5) on a plan recorded in said Registry, Book 1235 Page 653, and over a further tract westerly of said sixty (60) foot tract, being a quarter circle with its center at the point of beginning of the granted premises and with a radius of sixty (60) feet. The granted premises are subject to the following restrictions to the due observance of which the grantees, their successors and assigns, by the acceptance of this gift, agree, namely: That the premises shall forever be used for athletic, playground, park or other public use or purpose of the City of Worcester. The grantees assume and hereby agree to pay nineteen-twenty-fourths (19/24) of the taxes assessed on the granted premises for the year 1922.
TO HAVE and TO HOLD the granted premises, with all the privileges and appurtenances thereto belonging, to the said Walter J. Cockson, John A. Clough, Louis E. Bragg, John P. Dyer, Francis H. Cahill, Arthur D. Butterfield, Harvey S. Gruber and Joseph Beals, their heirs, successors and assigns, to their own use and behoof forever, but in trust for the uses specified in Chapter 471 of the Acts of the Legislature of Massachusetts for the year 1922.
IN WITNESS WHEREOF we hereunto set our hands and seals this 24th day of June 1922.

Roger Kimnicut (seal)
T. Hovey Gage (seal)
Edward E. Pease (seal)

Commonwealth of Massachusetts
Worcester, ss. June 24, 1922. Then personally appeared the above named Roger Kimnicut and acknowledged the foregoing instrument to be his free act and deed, before me.

Charles A. Hamilton Justice of the Peace
My commission expires Jan. 15, 1923.

Rec'd June 30, 1922, at 10h. 55m. A. M. Ent'd & Ex'd.

* * * * * * * *

The Worcester Bank & Trust Company of the City and County of Wor-cester, Bank & Trust Company of the City and County of Worcester, Worcester, Commonwealth of Massachusetts, holder of a mortgage from Dana D. Barrow to Worcester Bank & Trust Company dated Feb. 10, 1917, recorded with the Worcester District Deeds, Book 2020, Page 81, acknowledges receipt of a FACTION of this document, and

IN WITNESS WHEREOF the said Worcester Bank & Trust Company has caused its corporate seal to be hereunto affixed and these presents to be signed, acknowledged, and delivered in its name and behalf by Samuel H. Clary its Vice-President, hereof duly authorized, this 29th day of June.
WHEREAS, at the meeting of the School Committee of the City of Worcester on November 29, 1950,

IT WAS VOTED to request the City Manager and the City Council to take by eminent domain about twenty-two (22) acres of land near the junction of Chandler and May Streets for the site of a new junior high school, and

WHEREAS on February 20, 1951 the said request was approved by the City Manager of the City of Worcester, and

WHEREAS on March 6, 1951 the City Council of the City of Worcester ordered that the sum of Thirty-Two Thousand ($32,000) Dollars be borrowed for the purpose of providing funds for construction of a junior high school or a senior-junior high school, including the cost of original equipment and furnishings of the same, near the intersection of May and Chandler Streets under the provisions of Chapter 253 of the Acts of 1950, and

WHEREAS on March 6, 1951 the City Council of the City of Worcester ordered that the proceeds of said loan order in the amount of Thirty-Two Thousand ($32,000) Dollars be appropriated for the taking in fee by eminent domain of approximately twenty-two (22) acres of land with the trees and buildings thereon near the intersection of May and Chandler Streets for school purposes, said sum to be appropriated to the account of Department of Public Works, Bureau of Public Buildings, School-Moore Acres and said sum now being available for the purpose of the present taking, and

WHEREAS on March 6, 1951 the City Council of the City of Worcester ordered that the sum of Thirty-Two Hundred ($3200) Dollars be appropriated for the purpose of taking in fee by eminent domain of approximately twenty-two (22) acres of land with the trees and buildings thereon near the intersection of May and Chandler Streets for school purposes, said sum to be appropriated to the account of Department of Public Works, Bureau of Public Buildings, School-Moore Acres and said sum now being available for the purposes of the present taking.

NOW THEREFORE:

BE IT ORDERED

1. That the City Council of the City of Worcester does herewith declare that public necessity and convenience require the taking in fee by eminent domain for school purposes approximately twenty-two (22) acres of land known as Moore Acres, including the trees and buildings thereon near the intersection of May and Chandler Streets and hereinafter more particularly described.
2. That the City of Worcester by the City Council by power of the provisions of General Laws, Chapter 79 and all and every other power and authority it enabling does hereby take in fee by eminent domain for school purposes approximately twenty-two (22) acres of land known as Moore Acres, including the trees and buildings thereon, near the intersection of May and Chandler Streets bounded and described as follows:

A PARCEL OF LAND SUPPOSED TO BELONG TO
HYMAN BURWICK AND L. BURWICK

BEGINNING at a stone bound on the Westerly line of May Street at the Southeasterly corner of land now or formerly of W. and A.M. Place;

THENCE South 23° 14' 30" West by said Westerly line of May Street 55.90 feet to a point 2 feet Westerly of a stone monument marked "WH";

THENCE Southerly by said Westerly line of said May Street and by a curve to the left with a radius of 520 feet 144.06 feet to land now or formerly of Moore Acres Inc.;

THENCE Westerly by said land of Moore Acres Inc. 148.25 feet to a corner;

THENCE Northerly by said land of Moore Acres Inc. 65 feet to an angle;

THENCE deflecting to the right and continuing Northerly by said land of Moore Acres Inc. 152 feet to land of said Place;

THENCE Easterly by said Place land 150 feet to the place of beginning.

CONTAINING about 31,000 square feet and being the same premises described in a deed to H. and L. Burwick dated November 14, 1947, and recorded in the Worcester District Registry of Deeds, Book 3092, Page 478.

The described parcel being designated as Parcel #1 on Plan entitled "Revised Plan of Proposed Takings for Redwood Junior High School, Chandler and May Streets, Worcester, Massachusetts," dated February 1951.

A PARCEL OF LAND SUPPOSED TO BELONG TO
R. & J. COVITZ

BEGINNING at the southeasterly corner of the premises herein described, at the southwesterly corner of land now or formerly of W. and A.M. Place at a stone monument, said monument being N 71° 39' 35" W, 223.35 feet from the westerly line of May Street;

THENCE northwesterly by land now or formerly of Moore Acres, Inc., 70.23 feet to a corner on the easterly line of a proposed street;

THENCE northeasterly, by the easterly line of said proposed street and the easterly line of said Moore Avenue extended, 169.23 feet to a point;
THENCE northerly by said Moore Avenue and by a curve to the left, whose radius is 223.85 feet, 39.84 feet to a corner;

THENCE easterly, by land now or formerly of Moore Acres Inc., 12.75 feet to a point at said Place land, said point being 0.53 feet southerly of a stone monument at the northwest corner of said Place land;

THENCE southerly by said Place land 209.17 feet to the place of beginning,

CONTAINING 8,000 square feet more or less, and being the same tract described in deed to R. & J. Govitz dated December 23, 1946, and recorded in Worcester District Registry of Deeds, Book 3037, Page 424.

The described parcel being designated as Parcel #2 on a Plan entitled "Revised Plan of Proposed Takings for Rockwood Junior High School, Chandler and May Streets, Worcester, Massachusetts, dated February 1951".

A PARCEL OF LAND SUPPOSED TO BELONG TO FAIRLAWN HOMES INC.

BEGINNING at a point on the northwesterly line of Moore Avenue, so-called, at the northeasterly corner of the premises herein described, said point being the southeast corner of other land of said Fairlawn Homes, Inc.;

THENCE southerly by the westerly line of said Moore Avenue extended, 94.46 feet to a concrete monument;

THENCE continuing by the westerly line of said Moore Avenue extended, 80.54 feet to a point at land now or formerly of Moore Acres, Inc.

THENCE westerly by said land of Moore Acres, Inc. 135.00 feet to a corner;

THENCE northerly by said land of Moore Acres, Inc. 175.00 feet to a point at other land of Fairlawn Homes, Inc.

THENCE easterly by other land of Fairlawn Homes, Inc. 135.00 feet to place of beginning.

CONTAINING about 23,625 square feet, and being a portion of the premises described in a deed to Fairlawn Homes Inc. dated March 29, 1950, and recorded in Worcester District Registry of Deeds, Book 3257, Page 499.

The described parcel being designated as Parcel #3 on Plan entitled "Revised Plan of Proposed Takings for Rockwood Junior High School, Chandler and May Streets, Worcester, Massachusetts, dated February 1951".

A PARCEL OF LAND SUPPOSED TO BELONG TO C.R. PROCTOR

BEGINNING at the southeasterly corner of the premises herein
northeasterly line of Chandler Street from a point 2 feet northeasterly of a stone monument marked "W.H.";

THENCE northeasterly, by said northeasterly line of Chandler Street 90 feet to land now or formerly of R.R. Toren;

THENCE northeasterly by said land of Toren, 115.00 feet to a point at land now or formerly of Moore Acres, Inc.;

THENCE southeasterly by said land of Moore Acres, Inc. 90 feet to a corner;

THENCE southwesterly by said land of Moore Acres, Inc., 115.00 feet to a place of beginning.

CONTAINING about 10,350 square feet and being same premises described in a deed to C.R. Proctor, dated June 21, 1950, and recorded in the Worcester District Registry of Deeds, Book 3262, Page 558.

The described parcel being designated as Parcel #4 on Plan entitled "Revised Plan of Proposed Takings for Rockwood Junior High School, Chandler and May Streets, Worcester, Massachusetts, dated February 1951." 

A PARCEL OF LAND SUPPOSED TO BELONG TO C. HAROLD BERG AND WILLIAM E. ZIMMERMAN

BEGINNING at the southeasterly corner of the premises herein described, on the westerly line of May Street, and at the northeasterly corner of land now or formerly of C.E. Shaw et al;

THENCE N 20° 15' 40" E by the westerly line of May Street 49.67 feet to a point 2 feet westerly of a stone monument marked "W.H.";

THENCE northerly by said May Street and by a curve to the left, whose radius is 477.11 feet, 129.89 feet to a point 2 feet westerly of a stone monument marked "W.H.";

THENCE northerly by said May Street and by a curve to the right, whose radius is 520.00 feet, 187.79 feet to a corner at land now or formerly of Hyman & L. Burwick;

THENCE westerly by said Burwick land 148.25 feet to a corner;

THENCE northerly by said Burwick land 65.00 feet to an angle;

THENCE northeasterly by said Burwick land 152.00 feet to land now or formerly of W.A. and A.M. Place;

THENCE W 71° 39' 35" W, by said Place land 73.35 feet to a stone monument at land now or formerly of R.J. Covitz;

THENCE northwesterly by said Covitz land 70.23 feet to a corner at a proposed street;

THENCE northeasterly by said Covitz land 163.23 feet to a point;

THENCE still northeasterly by said Covitz land and by a curve to the left whose radius is 223.35 feet 39.84 feet to a corner;
THENCE easterly by said Covitz land 12.75 feet to land now or formerly of said Place;

THENCE N 21° 23' 50" E by said land of Place, 0.53 feet to an iron pipe at land now or formerly of Walberg;

THENCE N 21° 25' 45" E by said land of Walberg and land of Issaelt, 395.89 feet to an iron pipe at land now or formerly of Loud;

THENCE N 72° 26' 20" W by said land of Loud, 30.04 feet to a drill hole in fence post foundation;

THENCE N 17° 41' 10" E by said land of Loud, 94.92 feet to a corner on the easterly line of Moore Avenue, so-called;

THENCE crossing said Moore Avenue, N 72° 18' 50" W, 60 feet to the westerly line of said Moore Avenue, at land now or formerly of Fairlawn Homes, Inc.;

THENCE southerly by said land of Fairlawn Homes, Inc. 94.46 feet to a concrete monument at an angle;

THENCE southerly by said land of Fairlawn Homes, Inc. 80.54 feet to a corner;

THENCE westerly by said land of Fairlawn Homes, Inc. 135.00 feet to a corner;

THENCE northerly by said land of Fairlawn Homes, Inc. 175.00 feet to a corner;

THENCE N 72° 18' 50" W, by other land now or formerly of Moore Acres, Inc. 135.66 feet to an angle at the easterly line of Ashmore Road so-called;

THENCE crossing said Ashmore Road at an angle, N 41° 26' 20" W 58.23 feet to an angle at other land now or formerly of Moore Acres, Inc.;

THENCE N 72° 15' 05" W by said land of Moore Acres, Inc. 136.91 feet to a corner;

THENCE S 17° 38' 40" W, by land of owners unknown and by land now or formerly of Diamond Building Corp., 170.31 feet to a corner;

THENCE N 71° 19' 15" W by said land of Diamond Building Corp. and of owners unknown, and by a stone wall, 285.32 feet to an angle;

THENCE N 69° 11' 35" W by land of owners unknown 169.73 feet to an angle at the southerly line of Manhattan Road, so-called;

THENCE N 70° 20' 05" W by the southerly line of said Manhattan Road, 64.26 feet to a corner at land now or formerly of P.B. & M.J. Wood;

THENCE S 19° 56' 25" W by land of P.B. & M.J. Wood and land of F.W. & H.R. Barton, 179.73 feet to a corner;

THENCE N 69° 10' 40" W by land of F.W. and H.R. Barton 73.01 feet to an iron pipe;

THENCE S 21° 24' 03" W by land of owners unknown 107.1 feet to a
stone monument at an angle;

THENCE S 21° 41' 30" W by a stone wall 77.11 feet to a corner of walls;

THENCE $ 56° 36' 55" E by a stone wall 142.86 feet to an angle;

THENCE $ 59° 20' 20" E by a stone wall, 234.82 feet to an angle at land now or formerly of L.F. Hoffman;

THENCE $ 63° 23' 15" E by said land of Hoffman, 268.51 feet to a 12' tree;

THENCE $ 62° 49' 40" E by said land of Hoffman, 80.35 feet to a drill hole in a rock;

THENCE $ 64° 37' E by said land of Hoffman, 219.37 feet to a corner of walls;

THENCE $ 43° 35' 20" W by said land of Hoffman, 380.25 feet to a stone monument at an angle;

THENCE $ 32° 53' 35" W by said land of Hoffman, 130.62 feet to a point on the northwesterly line of Chandler Street;

THENCE $ 51° 51' E, by said northwesterly line of Chandler Street 187.00 feet to a point at land now or formerly of B.R. Toren;

THENCE northwesterly and easterly by said land of Toren and by a curve to the right, whose radius is 20 feet, 31.42 feet to the end of said curve;

THENCE northwesterly by said land of Toren 150 feet to a corner;

THENCE southeasterly by said land of Toren 81.00 feet to a corner;

THENCE southeasterly by said land of Proctor 90 feet to a corner;

THENCE southeasterly by said land of Proctor, 115.00 feet to a point on the northwesterly line of Chandler Street;

THENCE $ 51° 51' E, by said northwesterly line of Chandler Street 94.10 feet to a point 2.00 feet northeasterly of a stone monument marked "W.H."

THENCE southeasterly by said northeasterly line of Chandler Street and by a curve to the right whose radius is 2603.89 feet, 307.29 feet to said land of G.E. Shaw et al;

THENCE N 61° 16' 05" E, by said land of Shaw 65.19 feet to a corner;

THENCE N 28° 32' 15" W by said land of Shaw 110.16 feet to a corner;
THENCE S 87° 44' 20" E by said land of Shaw 111.21 feet to place of beginning.

CONTAINING 19.93 Acres more or less.

The described parcel being designated as Parcel #5 on Plan entitled "Revised Plan of Proposed Takings for Rockwood Junior High School, Chandler and May Streets, Worcester, Massachusetts, dated February 19x3.

3. And the City Council does herewith award the sum of Thirty-Four Thousand One Hundred Twenty-Five ($34,125.00) Dollars for damages sustained by the several owners in their respective properties by reason of such taking.

<table>
<thead>
<tr>
<th>Name</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Hyman and Lillian Burwick</td>
<td>$4000.00</td>
</tr>
<tr>
<td>Raymond and Joyce Govitz</td>
<td>750.00</td>
</tr>
<tr>
<td>Fairlawn Homes Inc.</td>
<td>1875.00</td>
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<tr>
<td>Cecile R. Proctor</td>
<td>9375.00</td>
</tr>
<tr>
<td>C. Harold Berg and William E. Zimmerman</td>
<td>18125.00</td>
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</tbody>
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The same to be charged to the account of Department of Public Works, Bureau of Public Buildings, School-Moore Acres.

In City Council March 13, 1951
Order Adopted by a yea and nay vote of Six yea to 3 nays.
Russell T. Ober, Clerk

A Copy. Attest:

I hereby certify that the foregoing is a true copy of the order of taking adopted by the City Council of the city of Worcester, March 13, 1951.

Clerk of the City Council of the city of Worcester.

Recorded March 21, 1951 at 11h. 10m. A. M.

END OF INSTRUMENT

Know All Men by These Presents

That we, CHESTER C. DOE and LILLIAN E. DOE, both
IN CITY COUNCIL DULY ASSEMBLED ON FEBRUARY 5, 1952

WHEREAS by the decree of the City Council and with the approval of the School Committee as required under the provisions of General Laws, Chapter 43, section 34, and with the approval of the City Manager as required under the provisions of General Laws, Chapter 43, section 30, a certain area on the northeasterly line of Chandler Street and the westerly line of May Street, was, on March 13, 1951, taken by eminent domain for school purposes and the taking was duly recorded on March 21, 1951 at the Worcester County Registry of Deeds in Book 3324, Page 231.

WHEREAS a parcel of land consisting of 10,300 square feet of land together with a building thereon then and there owned by Cecile Proctor, was likewise included in the aforesaid taking as of the same date, and

WHEREAS in partial settlement of the eminent domain taking of the damage caused the aforesaid Cecile Proctor, the
City Council did on October 23, 1951, order the City Manager to sign, execute and deliver to her a deed to a parcel of land consisting of 15,910.86 square feet of land as hereinafter described, the aforesaid deed having been duly executed, delivered and recorded on November 29, 1951 in Book 3382, Page 392, and

WHEREAS the aforesaid Cecile Proctor by order of the City Council dated October 23, 1951, was given the right to sever and cut loose from its foundation the building numbered 529 on Chandler Street which was constructed upon the lot which consisted of 10,300 square feet of land and the further right to sever and remove that building from its present site to the new lot, consisting of 15,910.86 square feet of land, which was then conveyed to her by the City of Worcester, and

WHEREAS the School Committee by a vote taken on February 1, 1952, notified the City Council that the lot consisting of 15,910.86 square feet of land on the northeasterly line of Chandler Street as hereinafter described, was no longer needed for a public purpose.

NOW THEREFORE,

The City Council in session duly assembled on Feb. 5, 1952 does, for the consideration hereinafore described, ratify the execution and delivery of the deed from the City of Worcester to Cecile Proctor recorded on November 29, 1951 in Book 3382, Page 392, and does herewith abandon that parcel of land on the northeasterly line of Chandler Street and consisting of 15,910.86 square feet of land as hereinafter described and does herewith order the City Clerk to record at the Worcester District Registry of Deeds, this Declaration of Abandonment.

Beginning at a point on the northeasterly line of Chandler Street at land now or formerly of Lillian F. Hoffman et al., thence North 32° 53' 25" East by land of said Lillian F. Hoffman et al. one hundred thirty and sixty-two hundredths (130.62) feet to a stone monument; thence South 51° 51' East by land of the City of Worcester one hundred twenty-eight and ninety-seven hundredths (128.97) feet to a point; thence South 38° 09' West by a line which was formerly the northwesterly line of Moore Avenue one hundred ten and seven hundredths (110.07) feet to a point; thence southwesterly, westerly and
northwesterly by a regular curve, the radius of which is twenty and no hundredths (20.0) feet by the said former line of Moore Avenue thirty-one and forty-two hundredths (31.42) feet to a point; thence North 51° 51' West by the said northeasterly line of Chandler Street ninety-seven and no hundredths (97.00) feet to the place of beginning.

Said tract contains fifteen thousand nine hundred ten and eighty-six hundredths (15,910.86) square feet.

NOTICE TO THE CITY COUNCIL

At a meeting of the School Committee held at City Hall on the first day of February, 1952,

IT WAS VOTED:

1. To notify the City Council of the City of Worcester, that a parcel of land on the northeasterly line of Chandler Street consisting of 15,910.86 square feet as hereinafter described and being a portion of the site which the School Committee approved on November 29, 1950, as a proper site suitable for the erection of a junior high school for the City of Worcester and which parcel was taken by eminent domain for school purposes by the City of Worcester by an order adopted March 13, 1951 and all duly recorded in the Registry of Deeds for Worcester County on March 21, 1951 in Book 3324, Page 231, is in the opinion of the School Committee, no longer required for a public purpose.

2. That the conveyance of the aforesaid parcel of land, consisting of 15,910.86 square feet, by the City of Worcester to Cecile Proctor, and duly recorded at the Registry of Deeds on November 29, 1951 in Book 3382, Page 392, the deed thereto having been duly executed by the City Manager in compliance with an order of the City Council that he do so, dated October 23, 1951, is hereby confirmed.
I, Raymond L. Divoll, being Clerk of the School Committee for the City of Worcester do herewith certify that at a meeting of the School Committee held at City Hall in the City of Worcester on the first day of February, 1952, it was voted:

1. To notify the City Council of the City of Worcester, that a parcel of land on the northeasterly line of Chandler Street consisting of 15,910.86 square feet as hereinafter described and being a portion of the site which the School Committee approved on November 29, 1950, as a proper site suitable for the erection of a junior high school for the City of Worcester and which parcel was taken by eminent domain for school purposes by the City of Worcester by an order adopted March 13, 1951 and all duly recorded in the Registry of Deeds for Worcester County on March 21, 1951 in Book 3326, Page 231, is in the opinion of the School Committee, no longer required for a public purpose.

2. That the conveyance of the aforesaid parcel of land, consisting of 15,910.86 square feet, by the City of Worcester to Cecile Proctor, and duly recorded at the Registry of Deeds on November 29, 1951 in Book 3382, Page 392, the deed thereto having been duly executed by the City Manager in compliance with an order of the City Council that he do so, dated October 23, 1951, is hereby confirmed.

And, I do herewith further certify that on February 4, 1952, I filed a copy of the foregoing notice to the City Council with the City Clerk for the City of Worcester.

A true copy attest:

[Signature]

Raymond L. Divoll, Clerk of the School Committee for the City of Worcester

CERTIFICATE OF RECORDING OFFICER

The undersigned hereby certifies, as follows:

(1) That he is the duly qualified Assistant City Clerk of the City of Worcester, and the keeper of the records and the journal of proceedings of the City Council of the City of Worcester;

(2) That attached hereto is a true and accurate copy of the ratification of the execution and delivery of a deed from the City of Worcester to Cecile Proctor on November 29, 1951 and which deed is recorded in Book 3382, page 392 and likewise a true and accurate copy of the Declaration of Abandonment of the land referred to in the aforesaid deed, as adopted at a meeting of the City Council held on the fifth day of February, 1952 by the unanimous vote of the Councilors all of which is duly recorded in the office of the City Clerk;
(3) That said meeting was duly convened and held in all respects in accordance with law and to the extent required by law due and proper notice of such meeting was given; that a legal quorum was present throughout the meeting, and a legally sufficient number of members of the Governing Body voted in the proper manner and for the adoption of said ratification and abandonment as therein set forth; and all other requirements and proceedings under law incident to its proper adoption, have been duly fulfilled, carried out and otherwise observed;

(4) That a certified copy of the notice by the School Committee to the City Council as voted by the said School Committee on February 1, 1952 was delivered to the undersigned by Raymond L. Divoll, Clerk of the School Committee for filing with the Council Declaration for Abandonment and the said notice is hereto attached;

(5) That an impression of the seal has been affixed below, and it constitutes the official seal of the City of Worcester and this certificate is hereby executed under such official seal.

(6) That the undersigned is duly authorized to execute this certificate.

IN WITNESS WHEREOF the undersigned has hereunto set his hand this eighth day of February 1952.

(SEAL)

ATTEST:

/e/ Russell T. O'Beir
Asst.City Clerk

Recorded March 12, 1952 at 9h. 44m. A. M.

END OF INSTRUMENT

ALMER J. HECK
of Millbury, Worcester County, Massachusetts

being married, for consideration paid, grant to EDWARD S. RUSKIN

of Worcester,

with mortgage encumbrances, to secure the payment of TWO THOUSAND (2000) - - - - - - - - - - - - - - Dollars

in one year with twelve (12%) per cent interest, per annum

payable in advance

as provided in a note of even date,

A certain tract or parcel of land situated on the northeast side of North Main Street in the Town of Millbury, County of Worcester, containing 39,636 sq. ft. of land and bounded and described as follows:
We, Hyman Burwick and Lilyan Burwick, husband and wife, as tenants by the entirety,

of Worcester, Worcester County, Massachusetts,

being unmarried, for consideration paid, grant to City of Worcester, a municipal corporation,

of Worcester County, Massachusetts

with quitclaim reserve

the land in said Worcester, bounded and described as follows:

BEGINNING at a stone bound on the Westerly line of May Street at the Southeasterly corner of land now or formerly of W. and A. M. Place;

THENCE South 23° 14' 30" West by said Westerly line of May Street 55.90 feet to a point 2 feet Westerly of a stone monument marked "WH";

THENCE Southerly by said Westerly line of said May Street and by a curve to the left with a radius of 520 feet 144.06 feet to land now or formerly of Moore Acres Inc.;

THENCE Westerly by said land of Moore Acres Inc. 148.25 feet to a corner;

THENCE Northerly by said land of Moore Acres Inc. 65 feet to an angle;

THENCE deflecting to the right and continuing Northerly by said land of Moore Acres Inc. 152 feet to land of said Place;

THENCE Easterly by said Place land 150 feet to the place of beginning.

CONTAINING about 31,000 square feet and being the same premises described in a deed to H. and L. Burwick dated November 14, 1947, and recorded in the Worcester District Registry of Deeds, Book 3092, Page 476.

The described parcel being designated as Parcel #1 on Plan entitled "Revised Plan of Proposed Takings for Rockwood Jun or High School, Candler and May Streets, Worcester, Massachusetts, dated February 1951".
3.1.4 EVALUATION OF EXISTING CONDITIONS

B. Determination of Historical Registrations
Doherty High School building/site is **not** listed on either the Massachusetts Cultural Resource Information System (MACRIS) or the National Register of Historic Places. The adjacent park, Elm Park and Newton Hill are on both MACRIS and the national Register NRIND 07/01/1970 3, NRMRA 03/05/1980 3.

Attached is copy of the 1910 plan of the park’s development by Olmstead Brothers, the Elm Parks historical listing and supporting documentation.

The Alternative sites being reviewed are **not listed** on either the Massachusetts Cultural Resource Information System (MACRIS) or the National Register of Historic Places.

In accordance with MSBA requirements, a Project Notification Form will be filed with the Massachusetts Historical Commission for the selected site. This will be scheduled to be filed early in the Schematic Design Phase.
# National Register of Historic Places Inventory - Nomination Form

## 1. Name

- **Common:** Elm Park
- **And/or Historic:**

## 2. Location

- **Street and Number:** See Continuation Sheet attached
- **City or Town:** Worcester
- **State:** Massachusetts
- **Code:** 20
- **County:** Worcester
- **Code:** 027

## 3. Classification

<table>
<thead>
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<th>Classification</th>
<th>Category</th>
<th>Ownership</th>
<th>Status</th>
<th>Accessible to the Public</th>
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</thead>
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<td>Yes: Unrestricted</td>
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<tr>
<td></td>
<td></td>
<td>Private</td>
<td>Unoccupied</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Both</td>
<td>Preservation work in progress</td>
<td>No</td>
</tr>
</tbody>
</table>

## 4. Owner of Property

- **Owner’s Name:** City of Worcester
- **Street and Number:** City Hall Atten: Park Commission

## 5. Location of Legal Description

- **Registry of Deeds:**
  - **Street and Number:** Worcester County Court House
  - **City or Town:** Worcester
  - **State:** Mass.
  - **Code:** 20

## 6. Representation in Existing Surveys

- **Title of Survey:** Massachusetts Historical Commission State Inventory
- **Date of Survey:** 1968
- **Federal:** No
- **State:** Yes
- **County:** No
- **Local:** No

- **Depository for Survey Records:**
  - Massachusetts Historical Commission, Office of Secretary
  - **Street and Number:** State House, Beacon Street
  - **City or Town:** Boston
  - **State:** Mass.
  - **Code:** 20
The Park consists of two parcels, the original Park, bounded by Elm, Russell, Highland and Park, deeded to the City by Levi Lincoln and John Hammond in 1854, and the 60 acre 1888 addition of the area called Newton Hill, from which was cut 20 acres for the Dougherty High School and about 8 acres for street widening. It was purchased in 1854, developed in 1874, and enlarged in 1888.
The claim that Elm Park is the first public park in America naturally turns on definitions of first, public (acquired and administered by a municipality), and park (exclusively recreational). Though this claim is made by a plaque in the Park, on the basis of land acquisition made in 1854, Central Park in New York counters with a land acquisition begun in 1853, though not completed until 1856, and other claims are made elsewhere. But the historic importance of Elm Park is not only an arguable claim to national priority and a positive one to state priority but its local importance as a landmark in park development. Edward Winslow Lincoln, Commissioner of Shade Trees, 1870-1885, of Parks, 1885 to his death in 1895, made Elm Park a model, with ponds, walks, mixed use of native and foreign trees and shrubs. When Newton Hill was added to Elm Park, it, too, became a model park, its tree-covered drumlin contrasting with the original low-lying section. Out of this original purchase of 28 acres grew a park system of over 1000 acres, in which the citizens of Worcester take great pride. The records of the Park Commission speak of Elm Park, which Edward Winslow Lincoln "thought and wrought" and direct that it shall be kept as he originally planned it. Lincoln's careful planning of the 1870's was a model and an inspiration later generations have followed.
9. **MAJOR BIBLIOGRAPHICAL REFERENCES**


Annual Report of the Board of Park Commissioners, *City of Worcester, Year Ending November 1897.*


Annual Report of the Parks-Commission of the City of Worcester for the Year Ending November 30, 1896. (See Continuation Sheet)

10. **GEOGRAPHICAL DATA**

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<th>CORNER</th>
<th>LATITUDE</th>
<th>LONGITUDE</th>
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<td>NW</td>
<td>71° 47' 31&quot;</td>
<td>42° 16' 14&quot;</td>
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<td>70° 48' 53&quot;</td>
<td>42° 15' 12&quot;</td>
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<tr>
<td>SE</td>
<td>71° 48' 53&quot;</td>
<td>42° 15' 12&quot;</td>
</tr>
<tr>
<td>SW</td>
<td>71° 47' 31&quot;</td>
<td>42° 15' 12&quot;</td>
</tr>
</tbody>
</table>

**APPROXIMATE ACREAGE OF NOMINATED PROPERTY:** 0

**LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES**

<table>
<thead>
<tr>
<th>STATE</th>
<th>CODE</th>
<th>COUNTY</th>
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</tbody>
</table>

11. **FORM PREPARED BY**

**NAME AND TITLE:** Richard W. Hale, Acting Chairman

**ORGANIZATION:** Massachusetts Historical Commission-Office of Secretary

**DATE:** April 2, 1970

**STREET AND NUMBER:** State House

**CITY OR TOWN:** Boston

**STATE LIASON OFFICER CERTIFICATION**

As the designated State Liaison Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service. The recommended level of significance of this nomination is:

- National □
- State □
- Local □

**Name:** [Signature]

**Title:** Secretary of the Commonwealth

**Date:** April 2, 1970

**NATIONAL REGISTER VERIFICATION**

I hereby certify that this property is included in the National Register.

**Chief, Office of Archeology and Historic Preservation**

**Date:** JUL 1, 1970

**ATTEST:** [Signature]

**Keeper of The National Register**

**Date:** MAY 25, 1970
2. Bounded by: Elm Street, Russell Street, Highland Street, Pleasant Street, and private properties on the West and North of Federal and Marmon Places, and excluding the property of the Worcester High School on Highland Street.

<table>
<thead>
<tr>
<th>DATE OF RECEIPT</th>
<th>No.</th>
<th>NUMBER</th>
</tr>
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</table>

- **Review**

<table>
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<th>Historian</th>
<th>Comments</th>
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<tbody>
<tr>
<td>OK</td>
<td>Form is very sloppy; OK because there is the property about which I never requested.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Architect</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td>As a part - but description really needs to be done better.</td>
</tr>
</tbody>
</table>

- **Editorial Processing**

- **Date:** 8/4/70
- **File:** X

- **Annual Edition Entry:** 8/4/70
NPS Number 70-7-20-0001
Title: Elm Park
Loc. Worcester County, Massachusetts
Elm Park Proven from West

2 1/2 x 4 3/4
100 sc
21V"
1. NAME

COMMON: Elm Park
AND/OR HISTORIC: 

2. LOCATION

STREET AND NUMBER: See Continuation Sheet attached
CITY OR TOWN: Worcester
STATE: Mass.

3. MAP REFERENCE

SOURCE: City of Worcester-Elm Park
SCALE: 1:100, photostatically reduced by 2/4
DATE: 1964

4. REQUIREMENTS

TO BE INCLUDED ON ALL MAPS
1. Property boundaries where required.
2. North arrow.
3. Latitude and longitude reference.
STATE Massachusetts
COUNTY Worcester

ENTRY NUMBER 10-120 07/01
DATE 7/170

NAME Elm Park

LOCATION

STREET AND NUMBER: See Continuation Sheet Attached
CITY OR TOWN: Worcester
STATE: Massachusetts
COUNTY: Worcester

SCALE: 1:24,000
DATE: 1960

REQUIREMENTS

1. Property boundaries where required.
2. North arrow.
3. Latitude and longitude reference.
Hon. John F. X. Davoren  
Secretary of the Commonwealth  
Chairman  
Massachusetts Historical Commission  
Boston, Massachusetts 02133

Dear Mr. Davoren:

We are pleased to inform you that the historic properties listed on the enclosure have been placed on the National Register of Historic Places. Senators Edward M. Kennedy and Edward W. Brooke and the appropriate Representatives have also been notified. Please withhold any publicity on this until you have received a carbon copy of the Congressional correspondence.

Sincerely yours,

Ernest Allen Connally  
Chief, Office of Archeology  
and Historic Preservation

Enclosure

Entered in the National Register  
JUL 1 1970

cc:  
HR  
RGamble:ma  
6/24/70  
BASIC FILE RETAINED IN HR
Properties added to the National Register of Historical Places

MASSACHUSETTS

Fitzhugh Lane House
Trinity Church
Elm Park

Gloucester, Massachusetts
Boston, Massachusetts
Worcester, Massachusetts
Hon. Harold D. Donohue  
House of Representatives  
Washington, D.C.  

Dear Mr. Donohue:  

We are pleased to inform you that Elm Park in Worcester, Massachusetts, has been nominated by the State Liaison Officer appointed by the Governor for the implementation of the National Historic Preservation Program in Massachusetts and has been entered into the National Register of Historic Places. Senators Edward M. Kennedy and Edward W. Brooke have also been provided with this information. By copy of this letter, the State Liaison Officer, Hon. John F. X. Davoren, Secretary of the Commonwealth, Chairman, Massachusetts Historical Commission, Boston, Massachusetts 02133, has likewise been notified. A leaflet explaining the National Register is enclosed.  

Sincerely yours,  

(SGD) GEORGE B. HARTZOG, JR.  

Director  

Enclosure  

Entered in the National Register  

JUL 1 1970  

cc:  
Hon. John F. X. Davoren, Secretary of the Commonwealth, Chairman, Massachusetts Historical Commission, Boston, Massachusetts 02133  

Director, Northeast Region
Hon. Edward M. Kennedy
United States Senate
Washington, D. C.

Dear Senator Kennedy:

I am pleased to inform you that the historic properties listed on the enclosure have been nominated by the State Liaison Officer appointed by the Governor for the implementation of the National Historic Preservation Program in Massachusetts and have been entered into the National Register of Historic Places. Senator Edward W. Brooke and the appropriate Representatives have also been provided with this information. By copy of this letter, the State Liaison Officer, Hon. John F. X. Davoren, Secretary of the Commonwealth, Chairman, Massachusetts Historical Commission, Boston, Massachusetts 02133, has likewise been notified. A leaflet explaining the National Register is enclosed.

Sincerely yours,

(Sgd) GEORGE H. MARTZOG, JR.
Director

Enclosures

Entered in the National Register
cc:
Hon. John F. X. Davoren, Secretary of the Commonwealth, Chairman, Massachusetts Historical Commission, Boston, Massachusetts 02133

Duplicate letter sent to: Hon. Edward W. Brooke
United States Senate
Washington, D. C.
Properties added to the National Register of Historical Places

MASSACHUSETTS

FitzHugh Lane House
Trinity Church
Elm Park

Gloucester, Massachusetts
Boston, Massachusetts
Worcester, Massachusetts
U.S. Historical Site Listing Gives Protection to Elm Park

Worcester’s Elm Park, said to be the first land set aside for a public park in the United States, was placed on the National Register of Historic Places July 1, officials of the National Park Service in Washington said yesterday.

This listing will protect the area from highway and urban renewal project, or any projects financed by federal funds or licensed by the government in Washington, Park Service officials said.

The city’s acquisition of Elm Park in 1654 “was the first purchase of land for a public park in the United States,” according to a plaque located near the Russell Street entrance.

The park was expanded with the inclusion of 60 acres of Newton Hill land in 1834. The park was expanded with the inclusion of 60 acres of Newton Hill land in 1834. Doherty High School was built on Newton Hill in recent years, opening in 1963.

After the Elm Park area was deeded to Worcester in 1854, the park was designed and developed by Edward Winslow Lincoln, Worcester’s commissioner of shade trees, in 1874, according to information supplied by Massachusetts when it nominated the park for federal protection earlier this year.

Expanded in 1888

The National Geographic Magazine has ranked Boston Common the oldest, saying it was set aside for public pasture in 1074. According to the American Antiquarian Society, Central Park wasn’t established until 1858.

The park was expanded with the inclusion of 60 acres of Newton Hill land in 1834. Doherty High School was built on Newton Hill in recent years, opening in 1963.
1. Town  Worcester
   Name of area (if any)  Elm Park

3. General date or period 1854, 1888

4. Is area uniform (explain):
   in style?  n/a
   in condition?  yes
   in type of ownership?  yes
   in use?  yes

5. Map. Use space below to draw a general map of the area involved. Indicate any historic properties for which individual reports are completed on Forms B thru F, using corresponding numbers. Show street names (including route numbers, if any) and indicate north. Indicate with an "x" existing houses not inventoried on Form B.
   This area is listed in the National Register of Historic Places; please refer to the nomination form

6. Recorded by  Richard Hale
   Organization  Mass. Historical Commission
   Date  1970
Please refer to the map in the Multiple Property Cover Sheet for this property

Multiple Property Cover Sheet Reference Number: 64000304
ELM PARK—WORCESTER, MASS.

PLANTING LIST FOR SOUTH SECTION.

Plan 4.

Olmsted Bros. Inc., Brookline, Mass.,
Landscape Architects, 2nd March, 1921.

1. Forsythia suspensa, 205 plants, 4' apart,
Weeping Golden Bell.
2. Amelanchier canadensis, 20 plants, 4' apart,
Shad Bush.
3. Berberis vulgaris, 88 plants, 4' apart,
Common Barberry.
4. Euonymus vestitus, 305 plants, 2' apart,
Broad-leaved Evergreen Creeper.
5. Betula nigra, 17 plants,
River Birch.
6. 17 Beds, 327 plants, 4' apart,
Rhododendrons, 166 plants,
White Karrin.
Ligustrum ovalifolium, 167 plants,
Regel's Privet.
7. Cercidiphyllum japonicum, 4 plants,
Katsura Tree.
8. Aesculus hippocastanum red, 1 plant,
Red Flowering Horse Chestnut.
9. Aesculus parviflora, 1 plant,
Dwarf Horse Chestnut.
10. 4 Beds, 240 plants, 4' apart,
Ilex verticillata, 80 plants,
Black Alder.
Viburnum lantana, 80 plants,
Sheepberry.
Clethra alnifolia, 50 plants,
Sweet Shrub.
11. Nyssa sylvatica, 5 plants,
Sour Gum.
12. 5 Beds, 224 plants, 3' apart.
Azalea arborescens, 200 plants,
Azalea.
Azalea vasculum, 224 plants,
Swamp Azalea.
13. 4 Beds, 142 plants, 3' apart,
Azalea calandulaceae, 70 plants,
Flame Azalea.
Azalea viscosa, 72 plants,
Southern Azalea.
14. 6 Beds, 186 plants, 4' apart,
Lonicera tatarica, 86 plants,
Tatarian Bush Honeysuckle.
14. **Continued.**
Liysium regelianum, 100 plants,
Regal's Privet.

15. Sophora japonica, 2 plants,
Japanese Pagoda Tree.

16. 2 Beds, 120 plants, 3' apart,
Spiraea van houttei, 60 plants,
Van Houte's Spiraea.
Berberis thunbergi, 60 plants,
Japanese Barberry.

17. 3 Beds, 54 plants, 5' apart,
Berberis vulgaris, 18 plants,
Common Barberry.
Cornus mas, 18 plants,
Cornelian Cherry.
Philadelphus avalanche, 18 plants,
Avalanche Mock Orange.

18. 6 Beds, 357 plants, 5' apart,
Viburnum acetifolium, 125 plants,
Dockmackie.
Viburnum molle, 125 plants,
Japanese Snowball.
Viburnum cassinoides, 107 plants,
Vithered.

19. Tsuga canadensis, 14 plants,
Hemlock.

20. Rosa blanda, 270 plants, 2' apart,
Early Wild Rose.

21. Abies concolor, 2 plants,
White Fir.

22. Kalmia latifolia, 170 plants, 3' apart,
Mountain Laurel.

23. 2 Beds, 150 plants, 4' apart,
Cornus paniculata, 75 plants,
Gray Dogwood.
Viburnum acetifolium, 75 plants,
Dockmackie.

24. 2 Beds, 28 plants 5' apart,
Viburnum opulus, 14 plants,
Highbush Cranberry.
Viburnum molle, 14 plant s,
Japanese Snowball.

25. Not used.

26. 11 Beds, 363 plants, 3' apart,
Berberis thunbergi, 100 plants,
Japanese Barberry.
Euonymus radicans, 203 plants,
Evergreen Creeper.
27. Not used.
28. 2 Beds, 315 plants, 3' apart,
    Pachysandra terminalis, 215 plants,
    Japanese Spurge.
    Mahonia aquifolia, 100 plants,
    Holly-leaved Barberry
29. Euphorbus carriere, 120 plants, 3' apart,
    Carrier's Evergreen Creeper.
30. Azalea hendent hybrid, 135 plants, 4" apart,
    H dent Azalea.
31. Pyrus parrmanni, 1 plant,
    Parrmann's Flowering Crab.
32. Populus fastigiata, 7 plants,
    Lombardy Poplar.
33. Cornus florida, 4 plants,
    Flowering Dogwood.
34. Cornus fruticosa rubra, 1 plant,
    Red Flowering Dogwood.
35. Cercis canadensis, 1 plant,
    Red Bud.
36. Cercis canadensis alba, 5 plants,
    White Judea Tree.
37. Crataegus coccinea, 2 plants,
    Scarlet Thorn.
38. Crataegus mollis, 2 plants,
    Scarlet Thorn.
39. Crataegus coccinea flore pleno, 2 plants,
    Paul's Double Scarlet Thorn.
40. Magnolia conspicua, 3 plants,
    Showy Magnolia.
41. Magnolia soulangeana, 2 plants,
    Soulange's Magnolia.
42. Magnolia stellata, 2 plants,
    Hall's Magnolia.
43. Pyrus koidzia, 4 plants,
    Boshel's Flowering Crab.
44. Lonicera vulgaris, 42 plants, 4' apart,
    Common Privet.
45. 2 Beds, 35 plants, 5' apart,
    Viburnum tomentosum, 10 plants,
    Japanese Snowball,
    Spiraea van houttei, 15 plants,
    Van Houtte's Spiraea.
    Philadelphus coronarius, 10 plants,
    Sweet-scented Mock Orange.
46. 1 Bed 22 plants, 3' apart,
    Spiraea bumala, 11 plants,
    Spiraea.
    Spiraea thunbergii, 11 plants,
    Thunberg's Spiraea.
47. Symphoricarpos racemosa, 118 plants, 3' apart,
    Snowberry.
48. Symphoricarpos vulgaris, 116 plants, 3' apart,
    Indian Currant.
47. Syringa Michel Buchner, 5' apart, 3'-4'
   Lilac, Lilac variety

48. Syringa Charles the Tenth, 5' apart, 3'-4'
   Red purple, Lilac variety

49. Syringa Jean Mace, 5' apart, 3'-4'
   Blue mauve, Lilac variety

50. Syringa Charles Joly, 5' apart, 3'-4'
   Violet purple, Lilac variety

51. Syringa Ludwig Spaeth, 5' apart, 3'-4'
   Purple red, Lilac variety

52. Syringa Congo, 5' apart, 3'-4'
   Dark purple, Lilac variety

53. Syringa Madame Casimir Perier, 5' apart, 3'-4'
   White, Lilac variety

54. Ulmus americana - use trees 6" caliper or larger
   American elm

55. Syringa japonica, 8'-10'
   Japanese tree Lilac

56. Acer saccharum - trees 6" caliper or larger
   Sugar Maple

57. Viburnum molle, 5' apart, 3'-4'
   Kentucky Viburnum

58. Viburnum sieboldi, 5' apart, 3'-4'
   Siebold Viburnum

59. Berberis amurensis, 3'-4'
   Amur Barberry

60. Syringa persica, 5' apart, 3'-4'
   Persian Lilac

61. Quercus rubra, 10-12'
   Red Oak

62. Acanthopanax pentaphyllum, 4' apart, 2'-5'
   - use plants now
   Fiveleaf Aralia

   on ground near 72" Elm

63. Cotoneaster horizontalis, 2' apart, 12"-15"
   Rock Cotoneaster

Worcester Parks and Recreation Commission -4,
Elm Park Plan 14
<table>
<thead>
<tr>
<th><strong>Inventory No:</strong></th>
<th>WOR.9032</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Historic Name:</strong></td>
<td>Newton Square World War II Memorial</td>
</tr>
<tr>
<td><strong>Common Name:</strong></td>
<td></td>
</tr>
</tbody>
</table>
| **Address:** | Pleasant St  
Pleasant and June Sts |
| **City/Town:** | Worcester |
| **Village/Neighborhood:** | June Street |
| **Year Constructed:** | 1947 |
| **Architect(s):** |   |
| **Architectural Style(s):** |   |
| **Use(s):** | Military Other; Other Governmental or Civic |
| **Significance:** | Art; Community Planning; Military; Politics Government |
| **Area(s):** |   |
| **Designation(s):** |   |
| **Building Materials(s):** |   |

The Massachusetts Historical Commission (MHC) has converted this paper record to digital format as part of ongoing projects to scan records of the Inventory of Historic Assets of the Commonwealth and National Register of Historic Places nominations for Massachusetts. Efforts are ongoing and not all inventory or National Register records related to this resource may be available in digital format at this time.

The MACRIS database and scanned files are highly dynamic; new information is added daily and both database records and related scanned files may be updated as new information is incorporated into MHC files. Users should note that there may be a considerable lag time between the receipt of new or updated records by MHC and the appearance of related information in MACRIS. Users should also note that not all source materials for the MACRIS database are made available as scanned images. Users may consult the records, files and maps available in MHC's public research area at its offices at the State Archives Building, 220 Morrissey Boulevard, Boston, open M-F, 9-5.

Users of this digital material acknowledge that they have read and understood the MACRIS Information and Disclaimer (http://mhc-macris.net/macrisdisclaimer.htm).

Data available via the MACRIS web interface, and associated scanned files are for information purposes only. THE ACT OF CHECKING THIS DATABASE AND ASSOCIATED SCANNED FILES DOES NOT SUBSTITUTE FOR COMPLIANCE WITH APPLICABLE LOCAL, STATE OR FEDERAL LAWS AND REGULATIONS. IF YOU ARE REPRESENTING A DEVELOPER AND/OR A PROPOSED PROJECT THAT WILL REQUIRE A PERMIT, LICENSE OR FUNDING FROM ANY STATE OR FEDERAL AGENCY YOU MUST SUBMIT A PROJECT NOTIFICATION FORM TO MHC FOR MHC’S REVIEW AND COMMENT. You can obtain a copy of a PNF through the MHC web site (www.sec.state.ma.us/mhc) under the subject heading “MHC Forms.”
SOS! Survey Questionnaire

Save Outdoor Sculpture!, National Institute for the Conservation of Cultural Property
3299 K Street, NW, Washington, D.C. 20007 (1-800-421-1381)

• Read the entire form carefully before beginning the survey.
• Type or print using a ballpoint pen when filling out this form. Legibility is critical.
• Do not guess at the information; an answer of “Unknown” is more helpful.
• For sculptures with several separate sculptural components, complete one questionnaire for the entire work. If necessary, complete relevant sections of the SOS! Survey Questionnaire for each component and staple them together.
• If possible, attach a photograph, photocopy, slide or other reproduction of the sculpture to this form.
• Refer to SOS! Handbook for further clarification of terminology.
• Contact your local SOS! Project Coordinator if you have any questions.

PART I: BASIC DESCRIPTIVE INFORMATION

Title of Work (if unsure, note “unknown”; if artist named work “Untitled,” note accordingly)
Newton Square Memorial

Alternate Title(s)

Primary Artist(s) Unknown
Person(s) responsible for the overall conception and creation of the work. Frequently the artist’s name will appear toward the back, lower edge or another inconspicuous place on the sculpture, followed by the abbreviations “Sc.” “Sculp” for sculptor/sculpted.

Other Collaborators (check as many as apply).
☐ Carver
☐ Designer
☐ Architect
☐ Other (Designate role, e.g., landscape architect, engineer)

Foundry/Fabricator
If the piece was cast, the foundry name or monogram symbol, as well as cast date, may appear on the base of the sculpture or another inconspicuous place.

Execution Date (often found by sculptor’s name) 1947

Other Dates (check as many as apply)
Other dates to report might include the date the sculpture was commissioned, copyrighted, cast (often found beside the foundry’s name) or dedicated.
☐ Cast
☐ Copyright
☐ Dedicated
### Media (material(s) sculpture/base made of)

Sculpture:  
- Ceramic
- Concrete
- Glass
- Metal
- Plastic
- Stone
- Water
- Wood
- Undetermined
- Other (specify)  

If known, name specific medium (e.g., bronze, Cor-Ten steel, oak, fiberglass)

**Concrete, Fieldstone, Bronze & other metals.**

Base (if media differs from sculpture, please indicate)  
- Ceramic
- Concrete
- Glass
- Metal
- Plastic
- Stone
- Water
- Wood
- Undetermined
- Other (specify)  

If known, name specific medium (e.g., granite, marble, limestone, concrete)

---

**Was information obtained by direct observation?**  
☐ Yes  ☐ No  
If no, attach photocopy of source.

**Approximate Dimensions** (indicate unit of measure)  
Always measure from the tallest and widest points.

Sculpture:  
- Height
- Width
- Depth  

Base:  
- Height
- Width
- Depth  

**Markings/Inscriptions** (check as many as apply)

Is the artist's signature visible on the piece?  
☐ Yes, examined and found signature  
☐ No, examined sculpture/base but did not see any signature  
☐ Unable to determine, couldn't get close enough to check

If signature is visible, record here:

Does the work have foundry/fabricator marks?  
☐ Yes, examined and found foundry marks  
☐ No, examined sculpture/base but did not see foundry mark  
☐ Unable to determine, couldn't get close enough to check

If foundry mark/mark is visible, record here:

Record the signature(s) and any additional markings or inscriptions that appear on the sculpture or base. Indicate their location (e.g., back of base, lower left). Use a slash (/) to indicate separate lines of inscription.
Record the text of any associated nearby identification or commemorative plaques.

In memory of those who gave their lives

200 names.

In Carved Eagle: Newton Square Memorial
For Service 1941-1946

Are any inscriptions badly worn or unreadable?  □Yes  □No  □Unable to determine

PART II: LOCATION/JURISDICTION INFORMATION

The sculpture is currently located at:
Street address or site location  Corner of Pleasant St + June St
City  Worcester  County  Worcester  State  MA

Owner/Administrator (name of agency, institution or individual that currently owns or administers the sculpture and is responsible for its long-term care)
Name  COMMUNITY
Department/Division  Public Parks Dept.
Street Address  Greentield
City  Worcester  State  MA  Zip Code  01605
Contact Name  Telephone (508) 799-1180

If sculpture has been moved, please list former location(s) or owner(s).
Environmental Setting (The general vicinity and immediate locale surrounding a sculpture play a major role in its overall condition.)

Location Type (check as many as apply to immediate surroundings)

- Battlefield
- College Campus
- Library
- Plaza/Courtyard
- School
- Town Square
- Zoo
- Bridge
- Courthouse
- Municipal Building
- Post Office
- Sports Facility
- Traffic Circle
- Cemetery
- Garden
- Park
- Religious Building
- State Capitol
- Transit Facility
- Other (specify)

General Vicinity (check as many as apply)

- Rural (low population, open land)
- Town
- Coastal (bordering salt water)
- Plains (valley or plateau lands)
- Suburban (residential setting near a major city)
- Urban/metropolitan
- Desert
- Mountain

Immediate Locale (check as many as apply)

- Industrial
- Street/Roadside (within 20 feet)
- Tree Covered (overhanging branches or trees nearby)

Is the sculpture in a protected setting? (check if applicable)

- Protected from the elements (e.g., niche, canopy)
- Protected from the public (e.g., fenced)

Any other significant environmental factor (i.e., near airport or subway)?
PART III: CONDITION INFORMATION

Structural Condition (check as many as apply)
Instability in the sculpture and its base can be detected by a number of factors. Indicators may be obvious or subtle. Visually examine the sculpture and its base.

Is the armature/internal support unstable/exposed? (look for signs of exterior rust)
- Sculpture □    Base □

Any evidence of structurally instability? (look for cracked joints, missing mortar or caulking or plant growth)
- Sculpture □    Base □

Any broken or missing parts? (look for elements (i.e., sword, rifle, nose) that are missing due to vandalism, fluctuating weather conditions, etc.)
- Sculpture □    Base □

Any cracks, splits, breaks or holes? (look for fractures, straight-line or branching, which could indicate uneven stress or weakness in the material)
- Sculpture □    Base □

Surface Appearance (check as many as apply)

Bird guano (e.g., bird droppings, other animal/insect remains)
- Sculpture □    Base □

Black crusts
- Sculpture □    Base □

Etched, pitted or otherwise corroded (usually applies to metal)
- Sculpture □    Base □

Metallic staining (e.g., run-off from copper, iron, etc.)
- Sculpture □    Base □

Organic growth (e.g., moss, algae, lichen or vines)
- Sculpture □    Base □

White crusts
- Sculpture □    Base □

Chalky or powdery (applies to stone only)
- Sculpture □    Base □

Granular, sugary or eroding (applies to stone only)
- Sculpture □    Base □

Spalling or sloughing (applies to stone only) (parallel splitting off of the surfaces)
- Sculpture □    Base □

Other (e.g., applied adhesives, spray paint, graffiti, gouges)

Some graffiti, stones are pulling away from each other. Generally in bad condition. Needs extensive repairs.
This monument has been patched & repaired previously.

Does water collect in recessed areas of the sculpture and/or base?
- Yes □    No □    Unable to determine □
Surface Coating

Does there appear to be a coating?

☐ Yes ☐ No ☐ Unable to determine

If known, identify type of coating.

☐ Gilded ☐ Painted ☐ Varnished ☐ Waxed ☐ Unable to determine

Is the coating in good condition?

☐ Yes ☐ No ☐ Unable to determine

Basic Surface Condition Assessment (check one)

In your opinion, what is the general appearance or condition of the sculpture?

☐ In urgent need of treatment ☐ Well-maintained

☐ Would benefit from treatment ☐ Unable to determine

PART IV: OVERALL DESCRIPTION

Briefly describe the sculpture, its subject/theme and its overall condition. For figurative works, use the abbreviations PR (proper right) and PL (proper left) to indicate the right or left side of the statue from the perspective of the statue (i.e., your right or left side if you were positioned on the base facing in the same direction as the statue). For abstract works, describe the predominant forms, colors, shapes and textures. For descriptions of either abstract and figurative pieces, avoid judgmental language. For condition, indicate any broken or missing parts and describe evidence of cracks, graffiti, etc.

A granite tablet sits in stone.

Decorative Plaques, four with soldiers names.

Eagle carved out with "Newton Square Memorial for Service 1941-1966" inscribed within it.

There was supposed to be a decorative recessed bench/plaque on the back of monument.

That is no longer there.
PART V: SUPPLEMENTAL BACKGROUND MATERIALS

In addition to your on-site survey, any supplemental secondary information you can provide related to the artist or portrait subject, to the historical commissioning, patronage or funding of the work, as well as previous conservation treatment histories will be welcomed. When citing sources, provide enough detail to enable researchers to locate the information easily. Include the full citations of each source (i.e., author, title, publisher, date, pages). If possible, photocopy source materials and attach. Make sure attached sources are clearly identified.

☐ Book

☐ Magazine or journal article

☐ Newspaper article or account

☒ Unpublished archival or manuscript materials

☐ Other (specify)

Where can a photograph or illustration of the work be obtained?

If photographic image is attached, please identify type of image.

☐ Photograph

☐ Photocopy

☐ Slide

☐ Illustration

☐ Other (specify)
PART VI: SURVEYOR INFORMATION AND WAIVER

Date of On-site Survey: 11-20-94

Waiver of Liability, Photographic and Data Rights for Volunteers, Agents or Employee Participants

I acknowledge that I am a participant in Save Outdoor Sculpture!, a project cosponsored by the National Institute for the Conservation of Cultural Property (NIC) and the National Museum of American Art, Smithsonian Institution. The project's purpose is to determine the location, description and basic condition of sculpture in the United States, to raise awareness about the condition of our nation's sculpture and to promote its long-term care and maintenance.

In furtherance of these objectives, I will record certain information on the SOS! Survey Questionnaire, provide certain illustrations and take certain photographs. I hereby declare that, to the extent these text, illustrations and photographs may be eligible for copyright protection, all of my rights and interest in them are hereby waived. It is my intention to place these written works, illustrations and photographs in the public domain and I warrant that I will not assert any copyright claim in them.

I further declare and acknowledge that I am a volunteer, agent or employee for my sponsoring organization and am not a volunteer, agent or employee of the Smithsonian Institution or the NIC. I agree to hold harmless the NIC and Smithsonian, its museums, bureaus, entities, employees and officials from any and all damages, injuries or claims that may arise out of my participation in the SOS! project.

This waiver shall be effective as of the date above.

Typed or Printed Name of Participant: Julie Clark
Box 459 Holy Cross College St
Worcester, MA 01610

Signature of Participant: [signature]

Fill in blanks below and return to your local SOS! Project Coordinator.

Name: __________________________
Address: ________________________ City: ____________________
State: __________________________ Zip Code: __________ Telephone ( ): ________
SOS! Survey Questionnaire: ADDENDA # 1

Massachusetts SOS! requests the following additional information to assist with our state-wide survey for inclusion in the Massachusetts Historical Commission records:

Sketch Map: Draw a map showing the sculpture's location in relation to the nearest cross street and/or major natural features. Show all buildings and their relationships to the piece. Label streets including route numbers, if any. Circle and number the inventoried sculpture. Indicate north.

Sketch Map for Courtyards, Plazas, etc: Provide a sketch map for pieces that are part of a larger complex such as a plaza, courtyard, or the like.
Historical Narrative: Explain the history of the sculpture and how it relates to the development of the community. This can explore its intention or use, its association with specific individuals and groups, and its relationship to local historical trends and events. Associations include those the sculpture has with designers, owners, groups or organizations. If the sculpture is commemorative, describe the event(s) or person(s) commemorated.
Results

Below are the results of your search, using the following search criteria:
Town(s): Worcester
Street No: 299
Street Name: Highland
Resource Type(s): Building
Name: Doherty Memorial High School

For more information about this page and how to use it, click here

No Results Found.
3.1.4 EVALUATION OF EXISTING CONDITIONS

C. Determination of Development Restrictions
   1. Development Restrictions
   2. Plan 715–74
Development Restrictions for the Doherty Memorial High School site include the following:

- The Property line is as established in 1961 when the land was taken for school purposes by legislation. Newton Hill Park/Elm Park land was purchased in 1854 and the park’s development was begun about 1910 on plans from Olmstead Brothers.

- Property line was delineated at the PSR phased based on the record information, and will be surveyed in the field as part of the PSR/SD phase. The topography and site information were determined from the City’s GIS records, and site visits appropriate for this phase by the engineers. There are no wetlands on the site or surrounds, the site is not located within the 100-year flood plain; nor is it a Priority Habitat of Rare Species or Estimated Habitat of Rare Wildlife.

- Refer also to F.2 Site–Civil Evaluation of Existing Conditions, including narrative, for more pertinent information development considerations.

- The Transfer of the former telegraph / communications building and additional land from the park in 2011 included language that if the School was to cease operations and the property declared surplus, the property would revert back to parkland.

- The current school must remain active for the duration of the construction as there is no swing space available, this topic is covered under the proposed development schemes and Alternative sites.
3.1.4 EVALUATION OF EXISTING CONDITIONS

D. Evaluation of Building Code Compliance
   1. Evaluation of Building Code Compliance
   2. Building Code Egress Floor Plans
General: The City of Worcester’s Doherty Memorial High School is a three–level building that was originally constructed in 1966 against the hillside of Newton Hill Park in a “terraced/stepped wing” concept high school configuration. The school has a gymnasium, auditorium and other program/support areas located throughout the building. It has not undergone additions or major renovations since its construction; however, there have been a small number of repair/maintenance projects relative to Roof Systems, Health Clinic, In–House Suspension Renovation, Phased HVAC replacement, and Locker replacement with select toilet room and Science room renovations scope. The following table lists the original and subsequent projects chronologically:

<table>
<thead>
<tr>
<th>ARCHITECT/ENGINEER AND PROJECT</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW Buckley, Inc.: Dr. Leo T. Doherty Memorial HS (Original Documents)</td>
<td>January 28, 1964</td>
</tr>
<tr>
<td>FTB, Company is Unknown: Auditorium Drawings (Seating)</td>
<td>1965</td>
</tr>
<tr>
<td>Worcester Public Schools (WPS): Roof Replacement Drawings</td>
<td>1995</td>
</tr>
<tr>
<td>WPS: Health Clinic Renovations</td>
<td>1996</td>
</tr>
<tr>
<td>WPS: In–house Suspension Reno</td>
<td>2002</td>
</tr>
<tr>
<td>BKA Architecture and Interiors: HVAC Modifications</td>
<td>2004</td>
</tr>
<tr>
<td>BKA Architecture and Interiors/Sei Co: Phase I HVAC Replacement</td>
<td>March 22, 2004</td>
</tr>
<tr>
<td>Dixon Salo/Sei Co: Phase II HVAC Replacement</td>
<td>March 15, 2005</td>
</tr>
<tr>
<td>Nault Architects/Lindgren &amp; Sharples, P.C. : Phase III HVAC Improvements</td>
<td>March 18, 2009</td>
</tr>
<tr>
<td>City of Worcester Architectural Services: Locker Replacement, Select Toilet Room &amp; Science Room Renovations</td>
<td>April 1, 2011</td>
</tr>
</tbody>
</table>

The ninth edition of the MA Building Code became effective on Oct 20 2017. This evaluation of building code compliance is based on the following applicable codes:

<table>
<thead>
<tr>
<th>CODE TYPE</th>
<th>APPLICABLE CODE (MODEL CODE AS MODIFIED WITH MA AMENDMENTS)</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>521 CMR: MA Architectural Access Board</td>
<td></td>
</tr>
<tr>
<td>Electrical</td>
<td>527 CMR 12.00: MA Electrical Code (2017 National Electrical Code)</td>
<td></td>
</tr>
</tbody>
</table>
3.1.4 EVALUATION OF EXISTING CONDITIONS

D.1 Evaluation of Building Code Compliance

<table>
<thead>
<tr>
<th>CODE TYPE</th>
<th>APPLICABLE CODE (MODEL CODE AS MODIFIED WITH MA AMENDMENTS)</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevators</td>
<td>524 CMR: MA Elevator Code (2013 ASME A17.1)</td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td>2015 International Mechanical Code, IMC</td>
<td></td>
</tr>
<tr>
<td>Plumbing</td>
<td>248 CMR 10.00: MA Plumbing Code</td>
<td></td>
</tr>
<tr>
<td>Energy Conservation</td>
<td>2015 International Energy Conservation Code, IECC and 780 CMR 13.0</td>
<td></td>
</tr>
<tr>
<td>Sheet Metal</td>
<td>271 CMR: MA Board of Examiners of Sheet Metal Workers</td>
<td></td>
</tr>
</tbody>
</table>

Notes:

a. 780 CMR 9th Edition Amendments either replace, revise, modify or add to the IBC and IEBC

Work Area and Classification of Work: 2015 IEBC 301.1, allows for the permit applicant to select one of three different compliance methods:

- Prescriptive Compliance Method (Additions and Alterations must generally comply with the code for new construction);
- Work Area Compliance Method (Additions must comply with the code for new construction; Alteration compliance is based on the Level of Work being performed);
- Performance Compliance Method (Additions must comply with the code for new construction; Alterations shall be performed so as not to reduce the safety or sanitary characteristics of the existing building).

If the proposed scope of work were to be a Renovation/Addition option, it involves addition(s) and comprehensive interior/exterior renovations. Based on that scope, LPA|A has prepared this code evaluation on the assumption that the Work Area Compliance Method will be selected.

Occupancy: The existing building is, and will continue to be, classified as E – Educational occupancy. Per 780 CMR: IBC 508.4, Assembly areas that are accessory to Group E occupancies are not required to be separated. This would apply to the existing Auditorium. If replaced, the new Auditorium would be classified as an Assembly use A–3

Construction Type: Based on LPA|A’s field observations and review of the original construction documents, the existing building has noncombustible masonry walls and primarily unprotected steel frame. Therefore, the existing building construction type best fits as Type IIB in the current building code. Any proposed addition must be separated in accordance to table 706.4 and with height and area limitations (see next).

Height and Area Limitations: Per 2015 IEBC 1101.1, an addition to a building shall comply with the code for new construction without requiring the existing building to comply with height and area
limitations for new construction, except as required by Chapter 11. An addition may not increase the height of an existing building beyond that allowed by Chapter 5. An addition may not increase the area of an existing building beyond that allowed by Chapter 5 unless a fire separation is provided in accordance with 2015 IBC. The following table describes allowable height and area limitations based on the existing building’s Type and Use Group, as modified for Street Frontage in excess of 25% of the perimeter. Height and area modifications for Automatic Sprinkler Systems are also included; although the existing building does not currently have full automatic sprinkler coverage, an addition or significant renovation would trigger the requirement to provide sprinkler coverage for the entire building.

<table>
<thead>
<tr>
<th>CODE REFERENCE</th>
<th>TYPE: IIB</th>
<th>USE GROUP: E–EDUCATIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HEIGHT</td>
<td>AREA</td>
</tr>
<tr>
<td>780 CMR: IBC Table 504.4, 504.3, 506.2; Tabular Values for Existing Building Condition</td>
<td>2–story; 55 feet</td>
<td>14,500 SF</td>
</tr>
<tr>
<td>780 CMR: IBC Table 504.4, 504.3; Tabular Values Automatic Sprinkler System Increase (delta)</td>
<td>1–story; 20 feet</td>
<td>NA</td>
</tr>
<tr>
<td>780 CMR: IBC 506.3 Frontage Increase (100% Open)</td>
<td>NA</td>
<td>10,875 SF TBD</td>
</tr>
<tr>
<td>780 CMR: IBC 506.2; Automatic Sprinkler System Increase (delta)</td>
<td>NA</td>
<td>29,000 SF</td>
</tr>
<tr>
<td><strong>Total Potential: Height and Area Allowed</strong></td>
<td><strong>3–story; 75 feet</strong></td>
<td><strong>54,375 SF (per floor)</strong></td>
</tr>
</tbody>
</table>

The existing school appears to be comprised of two buildings connected horizontally via corridor and appears to have additional fire separation at the auditorium and gymnasium. It is assumed that the building met the building code appropriate for its period. Building additions would require either complete separation with a fire wall or the entire building, new and old, would need to conform to the current building code including but not limited to code sections ‘Height and Area Limitations’ as well as full sprinkler system. At its highest point above grade, is 2–stories and approximately 22 feet high and 34 feet high on average. There is a notable 20–foot frontage increase in grade from Highland Street to the Main Entrance that the main driveway has to overcome. The building’s height complies with the base tabular value of 2–stories and allowable building height is well below the 55–foot requirement and may be applicable depending on the improvement scenario. The building does not have full automatic sprinkler coverage; and the proposed scope of work could trigger the requirement to provide sprinkler coverage throughout. The low floor to floor dimension will be a challenging factor. The existing building height and number of stories, as modified by the Automatic Sprinkler System increase, allows building addition opportunities, but is likely to be challenged by the existing building’s structural ability to accept additional loads safely and that comply with current building codes.
Although there is no Building Code Summary in the 1964 Construction Documents, the floor plans and other drawings indicate masonry block wall assemblies throughout with metal stud partition between classrooms and situational occurrences of wood stud partitions between life skills programmed classrooms.

It could be interpreted that that masonry block walls were meant to separate clusters of classrooms. If that is the case, then the building is capable of current code compliance with allowable area limitations as modified by fully sprinklered system allowances.

<table>
<thead>
<tr>
<th>EXISTING BUILDING AREA LEVEL</th>
<th>AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building 1 First Floor (100 Wing)</td>
<td>40,000 SF</td>
</tr>
<tr>
<td>Building 1 Second Floor (200 Wing)</td>
<td>34,900 SF</td>
</tr>
<tr>
<td>Building 2 Second Floor (300 Wing)</td>
<td>48,000 SF</td>
</tr>
<tr>
<td>Building 2 Third Floor 400 Wing</td>
<td>57,000 SF</td>
</tr>
</tbody>
</table>

**Fire Resistance Ratings:** The following table summarizes the required fire resistance ratings for building elements of Type IIB construction, based on 2015 IBC 601 and other applicable code sections:

<table>
<thead>
<tr>
<th>BUILDING ELEMENT</th>
<th>FIRE RESISTANCE RATING REQ’$ (hrs)</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Structural Frame</td>
<td>0</td>
<td>a</td>
</tr>
<tr>
<td>Bearing Walls – Exterior</td>
<td>0</td>
<td>a</td>
</tr>
<tr>
<td>Bearing Walls – Interior</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Nonbearing Walls and Partitions – Exterior</td>
<td>0</td>
<td>a</td>
</tr>
<tr>
<td>Nonbearing Walls and Partitions – Interior</td>
<td>0</td>
<td>b</td>
</tr>
<tr>
<td>Floor Construction and Secondary Members</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Roof Construction and Secondary Members</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Required Separation of Occupancies (Between A, E)</td>
<td>i</td>
<td></td>
</tr>
<tr>
<td>Furnace rooms with equipment over 400,000 BTU</td>
<td>0</td>
<td>c, h</td>
</tr>
<tr>
<td>Rooms w/boilers where the largest piece of equipment is over 15 psi &amp; 10 hp</td>
<td>0</td>
<td>c, h</td>
</tr>
<tr>
<td>Refrigerant machinery room</td>
<td>0</td>
<td>c, h</td>
</tr>
<tr>
<td>Paint shops not classified as Group H</td>
<td>1</td>
<td>c</td>
</tr>
<tr>
<td>Laboratories and vocational shops, not classified as Group H, in a Group E occupancy</td>
<td>0</td>
<td>c, h</td>
</tr>
<tr>
<td>Laundry rooms over 100 square feet</td>
<td>0</td>
<td>c, h</td>
</tr>
<tr>
<td>Waste and linen collection rooms over 100 SF</td>
<td>0</td>
<td>c</td>
</tr>
</tbody>
</table>
3.1.4 EVALUATION OF EXISTING CONDITIONS

D.1 Evaluation of Building Code Compliance

### Rooms containing fire pumps in non-highrise buildings

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing and New Stairways</td>
<td>1</td>
</tr>
<tr>
<td>Existing Mechanical/Electrical Shafts</td>
<td>0</td>
</tr>
<tr>
<td>New Mechanical/Electrical Shafts</td>
<td>1</td>
</tr>
<tr>
<td>New and Existing Corridors</td>
<td>0</td>
</tr>
</tbody>
</table>

**NOTES:**

a. Not less than the fire-resistance rating required based on Fire Separation Distance (FSD); see 780 CMR: IBC Table 601.0. Exterior walls (including columns) in “E” Use Group occupancies of Type IIB Construction require one (1) hour rating when the FSD is less than 10’.

b. Not less than the fire-resistance rating required by other sections of the code; see 780 CMR: IBC Table 601.

c. Fire resistance rating is based on the presence of an automatic sprinkler system; see 780 CMR: IBC Table 601.

d. Fire resistance rating is based on exit stairways connecting not more than four (4) stories; see 780 CMR: IBC 1019, 1023.

e. Fire resistance rating is based on Use Group E, the presence of an automatic sprinkler system and vertical shaft openings connecting not more than 3 stories; see IEBC 803.2.1 Exception. 6.

f. Fire resistance rating is based on vertical shaft openings connecting not more than 4 stories; see 780 CMR: IBC 713.4.

g. Fire resistance rating is based on the presence of an automatic sprinkler system; see 780 CMR: IBC Table 1020.1.

h. Must be separated from the remainder of the building by a wall able to resist the passage of smoke with self-closing doors.

i. No required separation; see 780 CMR: IBC Table 508.4

#### Exterior Wall rating:

The existing exterior walls do not need to comply with the rating requirements for new construction; however, any new addition(s) must comply. The exterior wall rating requirements and opening limitations are based on the fire separation distance for each wall. The fire separation distance is measured perpendicular to the exterior wall to an imaginary lot line between two buildings (i.e. the existing building and an addition) on the same lot. The following table summarizes the required fire resistance ratings for exterior walls of Type IIB construction and “E” occupancy, based on 2015 IBC Table 602 and other applicable code sections:

<table>
<thead>
<tr>
<th>FIRE SEPARATION DISTANCE = X (feet)</th>
<th>FIRE RESISTANCE RATING REQUIREMENTS (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X &lt; 5</td>
<td>1</td>
</tr>
<tr>
<td>5 &lt; X &lt; 10</td>
<td>1</td>
</tr>
<tr>
<td>10 &lt; X &lt; 30</td>
<td>0</td>
</tr>
<tr>
<td>X &gt; 30</td>
<td>0</td>
</tr>
</tbody>
</table>
**Vertical Openings:** All existing vertical openings connecting two or more floors must be enclosed with 1-hour rated construction and approved opening protectives, unless the openings meet one of the exceptions in 2015 IEBC 803.2.1

**Finishes:** The interior finish of walls and ceilings in exits and corridors, as well as all new interior finishes, must comply with 2015 IEBC 903.3, which ultimately relates to the 2015 IBC Table 803.11:

<table>
<thead>
<tr>
<th>USE GROUP</th>
<th>E (with sprinklers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exit Stair</td>
<td>Class B</td>
</tr>
<tr>
<td>Exit Access Corridors</td>
<td>Class C</td>
</tr>
<tr>
<td>Rooms and Enclosed Spaces</td>
<td>Class C</td>
</tr>
</tbody>
</table>

**Means of Egress:** Means of egress including the number of exits and egress capacity must be sufficient for the number of occupants on all floors (per 780 CMR: MA Amendment Section 102.2.2). Refer to the following table as well as 3.1.4.D Building Code Compliance Floor Plans for an assessment of the existing building’s egress capacity. Note that this table is based on existing conditions without a full coverage automatic fire sprinkler system.

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>BUILDING</th>
<th>OCCUPANT LOAD</th>
<th>EGRESS CAPACITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2047</td>
<td>3500</td>
</tr>
<tr>
<td>2</td>
<td>1+2</td>
<td>2201</td>
<td>2675</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>1430</td>
<td>2510</td>
</tr>
</tbody>
</table>

**Additional Evaluations:**

**Architectural Access Board Rules and Regulations Compliance (Accessibility for Persons with Disabilities):** Refer to 3.1.4.E. M.A.A.B. Evaluation for requirements.

**Preliminary Architectural Existing Conditions:** Refer to F.1 Architectural Existing Conditions Report.

**Prelim. Site/Civil Existing Conditions:** Refer to F.2 Site/Civil Existing Conditions & Traffic Report.

**Prelim. Structural Existing Conditions:** Refer to F.3 Structural report.

**Prelim. Fire Protection Systems Existing Conditions:** Refer to F.4 Fire Protection report.

**Prelim. HVAC/Plumbing Existing Conditions:** Refer to F.5 HVAC/Plumbing report.
### Prelim. Electrical/Data/Security/Telephone/PA Existing Conditions:
Refer to F.6 Fire Protection report.

### Prelim. Food Service Existing Conditions:
Refer to F.7 Food Service report.

### Prelim. Hazardous Materials Existing Conditions:
Refer to F.8 & F.9 Haz/Mat report.

### Plumbing Fixtures:
Per 248 CMR 10.00: Uniform State Plumbing Code, the minimum number of plumbing fixtures, for Use Groups E–Educational and A–Assembly, must be in accordance with the following table:

<table>
<thead>
<tr>
<th>BUILDING CLARIFICATION</th>
<th>USE GROUP</th>
<th>TOILETS</th>
<th>URINALS (MALE)</th>
<th>LAVs (EACH SEX)</th>
<th>DRINKING FOUNTAIN</th>
<th>BATH/SHOWER</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational – Secondary</td>
<td>E</td>
<td>1 per 30</td>
<td>1 per 90</td>
<td>1 per 90</td>
<td>1 per 75</td>
<td></td>
<td>a, b, c, d</td>
</tr>
<tr>
<td>Auditorium or any Multi-Purpose Room used for community service</td>
<td>E</td>
<td>1 per 200 seats</td>
<td>1 per 600 seats</td>
<td>1 per 200 seats</td>
<td></td>
<td></td>
<td>b, e</td>
</tr>
<tr>
<td>Teachers/Staff</td>
<td>E</td>
<td>1 per 20</td>
<td>1 per 25</td>
<td>33%</td>
<td>1 per 40</td>
<td></td>
<td>a</td>
</tr>
<tr>
<td>Kitchen Staff</td>
<td>E</td>
<td>1 per 20</td>
<td>1 per 25</td>
<td>33%</td>
<td>1 per 40</td>
<td>1 per 15</td>
<td>a</td>
</tr>
</tbody>
</table>

**NOTES:**

- **a**: A minimum of one Service Sink per floor is required.
- **b**: Secondary schools that conduct sport programs or physical activities on school premises/grounds and include a Gymnasium must provide separate men and women shower facilities to accommodate the students. 248 CMR 10.10 (h).
- **c**: Schools which incorporate Vocational Trade programs, where students may become unclean due to work activities, must provide separate men and women shower facilities to accommodate the students. 248 CMR 10.10 (h).
- **d**: Emergency Wash Stations are required in laboratory classrooms where flammable liquids and open flame devices are used. 248 CMR 10.10 (h).
- **e**: Auditorium and/or Multi–Use Room toilet facilities must be within 300 feet. 248 CMR 10.10 (h).
### LEGEND

<table>
<thead>
<tr>
<th>Category</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessory Storage/Mechanical</td>
<td></td>
</tr>
<tr>
<td>Assembly with Fixed Seating, Concentrated</td>
<td></td>
</tr>
<tr>
<td>Assembly without Fixed Seating, Unconcentrated</td>
<td></td>
</tr>
<tr>
<td>Business Areas</td>
<td></td>
</tr>
<tr>
<td>Educational Classroom</td>
<td></td>
</tr>
<tr>
<td>Educational Shop/Vocational</td>
<td></td>
</tr>
<tr>
<td>Kitchen</td>
<td></td>
</tr>
<tr>
<td>Library Reading Rooms</td>
<td></td>
</tr>
<tr>
<td>Library Stack Area</td>
<td></td>
</tr>
<tr>
<td>Stages &amp; Platforms</td>
<td></td>
</tr>
</tbody>
</table>

### Existing First Floor Plan

<table>
<thead>
<tr>
<th>Occupancy</th>
<th>Area</th>
<th>SF/Occ</th>
<th>Occupant Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessory Storage/Mechanical</td>
<td>4941 SF</td>
<td>300</td>
<td>17</td>
</tr>
<tr>
<td>Assembly w/out fixed seats, unconcentrated</td>
<td>9373 SF</td>
<td>15</td>
<td>825</td>
</tr>
<tr>
<td>Assembly with fixed seats - concentrated</td>
<td>4759 SF</td>
<td>7</td>
<td>680</td>
</tr>
<tr>
<td>Business - Office</td>
<td>5684 SF</td>
<td>100</td>
<td>568</td>
</tr>
<tr>
<td>Educational Classrooms</td>
<td>2893 SF</td>
<td>20</td>
<td>145</td>
</tr>
<tr>
<td>Kitchen, Commercial</td>
<td>2313 SF</td>
<td>200</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>37220 SF</td>
<td></td>
<td>2047</td>
</tr>
<tr>
<td>Total Egress Capacity: 3500</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Existing Second Floor Code Plan

```
1" = 40'-0"
```

<table>
<thead>
<tr>
<th>Occupancy</th>
<th>Area</th>
<th>SF/ Occupant</th>
<th>Occupant Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessory Storage/Mechanical</td>
<td>19325 SF</td>
<td>300</td>
<td>15</td>
</tr>
<tr>
<td>Assembly w/out fixed seats, unconcentrated</td>
<td>4340 SF</td>
<td>300</td>
<td>15</td>
</tr>
<tr>
<td>Business - Office</td>
<td>1533 SF</td>
<td>100</td>
<td>154</td>
</tr>
<tr>
<td>Educational Classrooms</td>
<td>36409 SF</td>
<td>20</td>
<td>1821</td>
</tr>
<tr>
<td>Educational Other</td>
<td>2975 SF</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>66833 SF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Egress Capacity: 2675
### Existing Third Floor Code Plan

1" = 40'-0"

<table>
<thead>
<tr>
<th>Occupancy</th>
<th>Area</th>
<th>SF/Occupant</th>
<th>Occupant Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessory Storage/Mechanical</td>
<td>1845 SF</td>
<td>300</td>
<td>7</td>
</tr>
<tr>
<td>Assembly with fixed seats - concentrated</td>
<td>1081 SF</td>
<td>#seats/15</td>
<td>700</td>
</tr>
<tr>
<td>Business - Office</td>
<td>840 SF</td>
<td>100</td>
<td>9</td>
</tr>
<tr>
<td>Educational Classrooms</td>
<td>21869 SF</td>
<td>20</td>
<td>1094</td>
</tr>
<tr>
<td>Educational Other</td>
<td>14877 SF</td>
<td>50</td>
<td>298</td>
</tr>
<tr>
<td>Total</td>
<td>52373 SF</td>
<td></td>
<td>2108</td>
</tr>
</tbody>
</table>

Total Egress Capacity: 2510
3.1.4 EVALUATION OF EXISTING CONDITIONS

E. Evaluation of AAB Rules & Regulations
MA Building Code 780 CMR requires that accessibility for persons with disabilities comply with 521 CMR Architectural Access Board (AAB) Regulations. At the time of this report, the applicable version is the 2006 edition of 521 CMR. 521 CMR 3.3 Existing Buildings regulates jurisdiction for renovations/alterations to existing buildings, based on 1) the full and fair cash value of the building, and 2) the cost of the work done over a 36-month period. If the cost of the work over any 36-month period exceeds 30% of the full and fair cash value of the building, the entire building must be made fully accessible. The full and fair cash value of Doherty Memorial High School (building only) is $25,261,427; 30% of $24,503,584 is $7,351,075. Since the total cost of even a “no-build” Code Upgrade Option is estimated to be well in excess of $7,351,075, the existing building, as well as any addition, will be required to fully comply with 521 CMR accessibility requirements for new construction.

If full compliance with 521 CMR is thought to be impracticable, an application for Variance may be made to the AAB. Variances have typically been granted only when the applicant can prove that “the cost of compliance would be excessive without substantial benefit to persons with disabilities”. Nevertheless, it is often worthwhile to request a variance when facing substantial modifications and their associated costs; the AAB may accept reasonable compliance alternatives that satisfy the intent of the regulations at much lower cost.

521 CMR
SECTION: DESCRIPTION:

3.00 JURISDICTION
- Doherty Memorial High School’s building-only value (per City of Worcester online Assessor’s records) is $20,049,600.
- The City of Worcester’s Assessment Ratio for Total Real/Personal Property, per MA-DOR Final 2014 Equalization Study dated 1/29/2015, is 0.97.
- The Full and Fair Cash Value of the Doherty Memorial HS building only is therefore $24,503,584 ($25,261,427/0.97).
- 30% of $20,669,691 = $7,351,075.
- If the work performed amounts to greater than $7,351,075, then the entire building is required to comply with 521 CMR.
- If the work is performed over a period of time, the total cost of such work in any 36-month period is added together in applying 521 CMR 3.3 Existing Buildings.

4.00 APPEAL AND VARIANCE
- If full compliance with 521 CMR is thought to be impracticable, an application for Variance may be made to the AAB.
521 CMR
SECTION: DESCRIPTION:

11.00 COMMERCIAL BUILDINGS
- Commercial areas of the building open to the public, including but not limited to doctors’ and counseling offices, must comply with 521 CMR.

12.00 EDUCATIONAL FACILITIES
- Administrative spaces, instructional spaces, and areas open to students or the general public shall comply with 521 CMR.
- Amphitheaters, lecture halls and classrooms shall comply with 521 CMR 14.00 PLACES OF ASSEMBLY.
- Libraries: At least 5% (but not less than one) of tables, study carrels, computer workstations and fixed seating must be accessible (clear 36” aisle, clear floor space, 27” h. x 30” w. x 19” d. knee clearance, 28–34” table/counter height).
- Libraries: Checkout areas must comply (36” min. counter height/length). Card catalogs must comply (36” min. height).
- Libraries: Stack aisles must be min. 36” clear; 42” preferred. Height is unrestricted.
- Kitchens in classrooms must comply with 521 CMR 32.00 KITCHENS.
- Sinks at classrooms and labs: At least 5% (but not less than one) in each classroom or lab must be accessible (clear 36” aisle, clear floor space, 27” h. x 30” w. x 19” d. knee clearance, 28–34” table/counter height). At least 50% of storage shelf space must be accessible (within forward and side reach). Controls and operating mechanisms must comply with 521 CMR 39.00 CONTROLS.
- Drinking fountains in classrooms must comply with 521 CMR 36.00 DRINKING FOUNTAINS.
- Recreational Facilities at Educational Facilities must comply with 521 CMR 19.00 RECREATIONAL FACILITIES.

14.00 PLACES OF ASSEMBLY
- Fixed seating: Number of accessible spaces is required per the table below:

<table>
<thead>
<tr>
<th>Total Seating</th>
<th>Wheelchair Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>4–25</td>
<td>1</td>
</tr>
<tr>
<td>26–50</td>
<td>2</td>
</tr>
<tr>
<td>51–300</td>
<td>4</td>
</tr>
<tr>
<td>301–500</td>
<td>6</td>
</tr>
</tbody>
</table>
The existing conditions drawings indicate a total of 730 fixed Auditorium seats.

A total of nine (9) accessible wheelchair spaces are required at the Auditorium. Spaces must be 36” w. x 60” l., level and comply with 521 CMR 29.00 FLOOR SURFACES. If more than 150 seats are provided, accessible wheelchair spaces must be provided in more than one location and provide a variety of admission prices and views comparable to those for the general public. Companion seats, designated by signage, must be provided next to each accessible wheelchair space. Currently there are no designated wheelchair spaces or companion seats; however there appears to be some space at the rear of the Auditorium that may be used for that purpose.

An additional 1% of all fixed seats, or a total of eight (8) additional seats at the Auditorium, must be aisle seats with no armrests on the aisle side, and must be identified by signage. Aisle seats need not be on a level surface. Currently there are no assigned armless aisle seats.

The existing conditions drawings, as field verified by LPA|A, indicate a total of 426 telescoping bleacher seats at the Gymnasium (4-sections on each; each section 16’ wide x 5-rows deep with no central aisle; 1.5’/seat).

A total of six (6) accessible wheelchair spaces are required at the Gymnasium. Spaces must be 36” w. x 60” l., level and comply with 521 CMR 29.00 FLOOR SURFACES. Accessible wheelchair spaces may be clustered for bleachers having sight lines that require slopes greater than 5%. Companion seats, designated by signage, must be provided next to each accessible wheelchair space. Currently there are no cutouts for accessible seating spaces or assigned companion seats at the existing wood bleachers.

Permanently installed assistive listening systems are required in assembly spaces that 1) accommodate more than 50 persons, or 2) have both an audio-amplification system and fixed seating.

Other assembly spaces may be provided with a portable assistive listening system (minimum number of receivers equal to at least 4% of the total number of seats).

Access to performing areas (i.e. Stage) must be within the place of assembly. Presently the only Stage access, from the Auditorium, is by stairs on either side of the Stage.
521 CMR
SECTION: DESCRIPTION:

- Box office ticket counters must be accessible (portion of counter must be 36” l. min.; 36” h. max.). No ticket counters or box office were observed.
- Dressing rooms must comply with 521 CMR 33.00 DRESSING, FITTING AND CHANGING ROOMS.

17.00 RESTAURANTS

- 521 CMR 17.00 applies to the Cafeteria.
- At least 5% of tables must be accessible. Accessible tables must be distributed throughout the space. A 36” min. clear aisle is required between accessible tables. Knee clearance of at least 27” h. x 30” w. x 19” d. is required. Tops of tables must be within 28–34” h.
- All dining areas (raised, sunken, outdoor, etc.) must be accessible.
- Food service lines must have 36” wide aisles.
- Tray slides must be mounted no higher than 34”.
- Self-service shelves and dispensing devices for tableware, dishes, condiments, food and beverages, as well as vending areas/machines, must comply with zone of reach per 521 CMR 5.00 DEFINITIONS.
- Cash register transaction counters must be mounted no higher than 36”.
- TV’s, if provided, must have closed caption decoders.

19.00 RECREATIONAL FACILITIES

- Gymnasiums, wellness rooms, weightlifting rooms, locker rooms and all associated spectator areas must be accessible.
- Locker rooms must have a 36” clear accessible route around all lockers.
- At least 5% of lockers must be accessible (operable with a closed fist; mounted no higher than 42” h.).
- If locker benches are provided, there must be a 36” wide (minimum) aisle between benches/lockers and a 5’ turning diameter near the accessible lockers.
- Playgrounds require an accessible route to reach playground equipment and around the playground. Currently it appears that not all parts of the playground are accessible due to slope and ground surface.

20.00 ACCESSIBLE ROUTE

- Accessible Routes complying with 521 CMR 20.00 are required both inside and outside the facility. They may not include stairs, steps or escalators, even if those elements are required to be accessible.
521 CMR
SECTION: DESCRIPTION:

- **Accessible routes** are required from accessible parking, accessible passenger loading zones, and public streets to accessible public entrances, and must coincide with the route taken by the general public. Presently there are no accessible routes from the sidewalk on Highland Street toward the school. Although there might be sidewalks present on the site, the sloping grades far exceed compliance parameters in 521 CMR 21.00 for slope. There are various access points but lack connecting pathways that would be difficult to make accessible.

- At least one accessible route must connect all accessible buildings, facilities (i.e. athletic fields, etc.), elements and spaces (outdoor classroom, plaza, etc.) that are on the same site. Given that the high school uses Foley Stadium, the site is considered to include sidewalks and connections that students and the public may use.

- An **accessible route** must have a minimum clear width of 36” except at doors and openings less than 24” deep where it must comply with 521 CMR 26.00 DOORS AND DOORWAYS.

- Protruding objects may not reduce the required clear width. Objects 27–80” above floor level (i.e. display cases, public telephones, overhead conduits, stair stringers, etc.) may not protrude more than 4” into the **accessible route**.

- Minimum 80” headroom is required along an **accessible route**. Corridors and walks appear generally to comply.

- Where more than one means of egress is required from a space or element, that space/element (i.e. Gym, Auditorium, Cafeteria, Music Rooms, Science Labs, Media Center, etc.) must have at least two **accessible** means of egress.

- Exit discharges must provide a continuous path of travel from an exit to a public way by means of a walkway or ramp. If the public way is more than 100’ from the exit, an exterior area of rescue assistance may be provided no closer than 100’ from the building.

- Areas of rescue assistance are not required at existing buildings undergoing alterations or buildings with a supervised automatic sprinkler system.

- Inside the existing building there are several spaces that are not on an accessible route, including the following:
  - Elevated risers at Level 2 Classroom (10th grade team).
  - Elevated risers at Level 2 Choral and Band Rooms.
  - Stage from front of Auditorium
521 CMR

SECTION: CURB CUTS

21.00 CURB CUTS

- The existing Highland Street sidewalk has 4 curb cuts that feed the school. Three of the four are AAB-compliant accessible curb cuts and are all located at crosswalk junctions.
- Slope of curb cuts (1:12 max.; cross slope max. 1:50) and transitions (1/2” max.); existing curb cuts appear to comply but should be field verified.
- Curb cuts may not allow accumulating water, ice or debris; typical.

SECTION: WALKWAYS

22.00 WALKWAYS

- Walks, sidewalks, courts, plazas and other pedestrian walkways must be at least 48” wide excluding curb stones.
- Walkways with running slope in excess of 1:20 (5%) are ramps (except that at sidewalks on streets with natural topography exceeding 1:20 (5%), ramps are not required).
- Cross slope may not exceed 1:50 (2%).
- Level changes greater than 1/2” require a curb cut, walkway, ramp, elevator or platform lift.

SECTION: PARKING AND PASSENGER LOADING ZONES

23.00 PARKING AND PASSENGER LOADING ZONES

- Number of accessible spaces is provided per table below:

<table>
<thead>
<tr>
<th>Total Parking in Lot</th>
<th>Required Minimum Number of Accessible Spaces</th>
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<tr>
<td>15–25</td>
<td>1</td>
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<tr>
<td>26–50</td>
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<td>51–75</td>
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<td>76–100</td>
<td>4</td>
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</tr>
<tr>
<td>501–1000</td>
<td>2% of total</td>
</tr>
<tr>
<td>1000+</td>
<td>20 plus 1 for each 100 over 1000</td>
</tr>
</tbody>
</table>

- There is a total of 249 existing parking spaces on the site, based on review of
521 CMR

SECTION: DESCRIPTION:

existing site plans and online aerial imagery.

- A total of 7 accessible parking spaces are required. One of every eight accessible spaces must be van accessible. One (1) designated accessible parking space serves Doherty Memorial HS was observed; one at the side faculty parking area. No van-accessible designated spaces were observed. No accessible spaces located near the main entrance.

- Accessible spaces must be located within 200' of the closest accessible entrance (and on the shortest accessible route between parking and the accessible building entrance), or an accessible drop-off area must be provided within 100' of the entrance. Currently, the only assigned accessible parking space is more than 200' from the main entry; likewise, there are no curb cuts at drop-off areas and are more than 100' from the main entry.

- Accessible parking spaces must be at least 8' wide plus a 5' (8' at van-accessible) access aisle. Sidewalks adjacent to accessible parking spaces must have curb cuts at access aisles.

- Accessible parking spaces must be at least the same as adjacent spaces in accordance with MA Building Code or local zoning.

- Slope shall not exceed 1:50 (2%) in any direction.

- Spaces must be marked by high-contrast painted lines.

- Accessible parking spaces must be identified by signage, located at the head of the space and not more than 10' away. Tops of signs may be between 5-8' high.

- Passenger loading zones must provide an access aisle at least 5' x 20', adjacent and parallel to the vehicle pull-up space. At passenger loading zones, a minimum of 9’-6" vertical clearance is required. Slope may not exceed 1:50 (2%) in any direction.

24.00 RAMPS

- Maximum slope is 1:12; maximum cross-slope is 1:50. The existing Main Street ramp, at its steepest (between Levels 1 and 2), rises 16’ with a total run of 192’ and complies with 521 CMR for maximum slope.

- Maximum rise for any run is 30”.

- Minimum clear width between handrails is 48”.

- Minimum dimension of landings is 60” x 60”. The majority of landings are not in compliance.

- Handrails must be continuous with 12” extensions at top and bottom (parallel to ground surface); one at 34-38” and the other at 18-20”. Currently, handrails do
not comply with 521 CMR; the horizontals are interrupted by verticals and are not within the allowable height ranges.

- Ramps require edge protection (curbs at least 2” high) at drop-offs.

### ENTRANCES

- All public entrances must be *accessible*. Public entrances are those other than service, loading or employee use only. The majority of Public entrances are not accessible.
- Vestibule doors must have 48” plus door swing width between them. The existing condition should be verified.
- Mats ½” or less must be secured (all edges). Mats ½” to ½” must have beveled edges. Mats over ½” must be recessed. Grate openings may not exceed ½” space in direction of travel.
- Non-`accessible` entrances must have signage indicating the location of the `accessible` entrance.

### DOORS AND DOORWAYS

- *Accessible* doorways and openings must have a minimum clear opening of 32”.
- Push and pull side maneuvering clearances must comply with figures 21d and 21e; except that doors with automatic opening devices are exempt. Many locations appear not to comply; for example, the toilet rooms generally lack 18” clear on the pull side.
- Maximum forces for pushing or pulling open a door are 15 lbs. for exterior doors and 5 lbs. for interior, sliding or folding doors.
- Door thresholds may not exceed ½” and be beveled at 1:2 (max.) both sides.
- Door hardware must be operable with one hand without tight grasping, pinching or twisting; and be located 36–48” above floor level. Most operable door hardware was observed to be lever-type; however, some knobs and non-compliant door pulls were seen.
- Doors opening to hazardous locations (loading areas, mechanical areas, electric rooms, etc.) must have a knurled or roughened surface.

### STAIRS

- Tread depth and riser height must be uniform within any flight.
- Undersides of nosings may not be abrupt
- Handrails are required both sides and must be continuous without interruption by
521 CMR
SECTION: DESCRIPTION:

- newel posts or other obstructions. The inside handrail on switchback or dogleg stairs shall always be continuous.
- Handrails must be between 34–38” from top of gripping surface to the stair nosing. Typically, handrails were measured at approximately 33” above the nosing and do not comply.
- Handrails must extend 12” beyond top nosing (parallel to floor) and one tread (sloping) + 12” (parallel to floor) beyond bottom nosing; except where it would cause a safety hazard. Existing handrail extensions are typically missing and do not comply.

28.00 ELEVATORS:
- Elevator operation must be automatic; the current facility lacks an elevator in either building and generally not accessible.
- Elevator cab must be minimum 54” x 68” clear.
- Door opening width must be 32” clear (minimum).
- Controls must be no higher than 54” for side approach and 48” for front approach, and must have raised and Braille characters as well as audible indicators.
- 2–way emergency communication system inside car is required.
- Currently the Stage is inaccessible from the Auditorium; it can be reached only by stair. 521 CMR 28.12 WHEELCHAIR LIFTS/LIMITED USE ELEVATORS, however, allows for use of a vertical lift, limited use elevator or inclined wheelchair lift to provide an accessible route to a performing area (stage) in an Assembly occupancy.
- Vertical lift platform size must be a minimum of 36” wide x 54” deep.
- Limited use elevator cab size must be a minimum of 36” wide x 60” deep with the door opening on the 36” side.
- Inclined wheelchair lift platform size must be a minimum of 30” wide x 48” long.

29.00 FLOOR SURFACES
- Ground and floor surfaces including floors, walks, ramps and curbs must be slip–resistant. While MA–AAB does not specifically define slip resistance in technical terms, it is generally accepted in the industry that a static coefficient of friction of 0.6 is recommended for accessible routes and 0.8 for ramps in accordance with ASTM D 2047 Standard Test Method for Coefficient of Friction.
- The prevalent existing flooring surface is VCT.
- The prevalent existing flooring in toilet type rooms is ceramic tile.
3.1.4 EVALUATION OF EXISTING CONDITIONS

521 CMR
SECTION: DESCRIPTION:

30.00 PUBLIC TOILET ROOMS
- All public toilet rooms must comply with 521 CMR.
- The existing Boys and Girls Toilet Rooms are generally in poor condition with missing components. While most do have enough space for pull side door clearances, most toilet rooms do not have an accessible toilet stall or accessible sink and therefore, generally, do not comply with 521 CMR.
- The remaining existing student and staff/faculty toilet rooms (both multi and single user, including locker room areas) are generally, with some exceptions, inaccessible due to maneuvering clearances, proximity of doors in series, stall size, fixture types, etc.

31.00 BATHING ROOMS
- Shower rooms and bathtubs must comply with 521 CMR
- Showers require clear floor space sloped no more than 1:50.
- Individual shower stalls must be minimum 36” x 36”; or 30” x 54”; with folding seat, grab bars and adjustable spray unit. The existing Girls’ showers are shown as 3’-0” x 3’-2”, but lack the required clear floor space, grab bars, folding seat and fixture type to be compliant.
- All shower areas lack moisture ventilation.
- Existing Boy’s gang showers appear to have adequate floor space and clearances, but lack grab bars, folding seat and fixture type to be compliant.

32.00 KITCHENS:
- The main Cafeteria Kitchen is not open to the public and therefore is not required to comply with accessibility requirements. Food service lines and transaction areas at the Kitchen/Cafeteria, however, must comply with 17.00 RESTAURANTS.
- Non-commercial kitchens in classrooms (i.e. Life Skills) or community use spaces must comply with this section.
- Countertops must be no higher than 34” and comply with kneespace requirements in this section.
- Sinks, ovens, cooktops, refrigerators and related controls must comply with this section.

34.00 STORAGE:
- Fixed storage facilities (cabinets, shelves, closets, drawers, etc.) must comply
3.1.4 EVALUATION OF EXISTING CONDITIONS

E. AAB Evaluation

521 CMR
SECTION: DESCRIPTION:

with this section if required to be accessible.

- Current MA–AAB regulations do not specifically require staff/faculty storage to be accessible: however, any storage used by students or the general public (lockers, material storage cabinets, coats, etc.) must be accessible.
- Corridor and locker room lockers typically have non-compliant hardware; at least 5% must be accessible.

35.00 TABLES AND SEATING:

- Where fixed tables or seating are provided, at least 5% (but not less than one) shall be accessible.
- There can be no fixed seats at accessible tables.
- A minimum 36” wide access aisle must be provided between accessible tables.
- Accessible tables and counters must be from 28–34” above the floor and have kneespace at least 27” high x 30” wide x 19” deep.

36.00 DRINKING FOUNTAINS:

- Drinking fountains and water coolers must have clear floor space allowing a parallel approach, or have kneespace at least 27” high x 30” wide x 17–19” deep.
- Spout height must be no more than 36” above the floor.
- Controls must be operable with one hand and must not require tight grasping, pinching or twisting.

37.00 PUBLIC TELEPHONES

- If provided, pay phones must be accessible, hearing-aid compatible and be equipped with volume control.
- If three or more public phones are provided together, one must be a text telephone.
- There are no existing pay phones nor plans to provide them.

39.00 CONTROLS

- Controls and operating mechanisms in accessible spaces must be accessible with regard to clear floor space, height, location and operation.

40.00 ALARMS

- Emergency warning systems, if provided, must have both audible/visual alarms complying with 40.00 Alarms.
41.00 SIGNAGE

- Permanent rooms/spaces (including toilet rooms, room numbers, stair signs, etc.) must be designated by signage complying with 41.00 Signage. Currently there is very little room/space signage, and what is provided is generally not AAB-compliant.
- Signage must be located 60” above the floor to the centerline of sign.
- Signage must have raised and Braille characters.
0299 HIGHLAND ST

Location: 0299 HIGHLAND ST
Acct#: 11-INX-00001
Owner: CITY OF WORCESTER SCHOOL DEPT
Assessment: $23,401,000
PID: 54068

Building Count: 1

Current Value

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<th>Improvements</th>
<th>Land</th>
<th>Total</th>
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Owner of Record

Owner: CITY OF WORCESTER SCHOOL DEPT
Co-Owner: 
Address: 20 IRVING ST
WORCESTER, MA 01609
Sale Price: $0
Certificate: 
Book & Page: 00000/
Sale Date: 01/01/1988

Ownership History

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Building Information

Building 1: Section 1

Year Built: 1960
Living Area: 188,980
Replacement Cost: $25,261,427
Building Percent Good: 60
Replacement Cost Less Depreciation: $15,156,900

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<td>MODEL</td>
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</table>
Legend

Land Use: AVE MASONRY

Stories: 2

Occupancy

Exterior Wall 1: Brick/Stone
Exterior Wall 2
Roof Structure: Flat
Roof Cover: T&G Comm
Interior Wall 1: Plaster
Interior Wall 2
Interior Floor 1: Vinyl/Asphalt
Interior Floor 2
Ext. Qual.: AVERAGE
Int. Qual.: AVERAGE
Bldg Use: CHARTER SCHL
1st Floor Use: 9030
Heat/AC: Steam
Frame Type: Masonry
Baths/Plumbing: Average

Building Photo

[Building Photo](http://images.vgsi.com/photos2/WorcesterMAPhotos/\00\07\16)

Building Layout

[Building Layout](http://images.vgsi.com/photos2/WorcesterMAPhotos//Sketches/)

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<td>Gross Leasable Area</td>
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<td>GLU</td>
<td>GLA - Upper Story</td>
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<td>Open Porch</td>
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<table>
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<tr>
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Land

Land Use

Land Line Valuation
Outbuildings

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Valuation History

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<td>2017</td>
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<td>$17,846,900</td>
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</table>

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3.1.4 EVALUATION OF EXISTING CONDITIONS

F. Evaluation of Significant Structural, Environmental, Geotechnical or other Physical Conditions
   1. Existing Conditions Narrative—Architectural
   2. Existing Conditions—Site Civil/Landscape
      a. Existing Conditions—Site Traffic Analysis
   3. Existing Conditions Report—Structural
   4. Existing Conditions Report—Fire Protection
   5. Existing Conditions Report—Plumbing & HVAC
   6. Existing Conditions Report—Electrical
   7. Existing Conditions Report—Food Services
GENERAL
History: Doherty Memorial High School was built in 1964–1965 and opened in 1966 as a comprehensive high school. Up until about 1965 and prior to its dedication, the school project had many names. It was referred to as either New Classical High School, West Senior High School, Newton Hill High School, Third Comprehension Senior High School, or Newton Hill Senior High School. By 1965, the project was generally referred to as Doherty Memorial High School.

Apart from how it nestled into the side of Newton Hill, the school has several other unique features. One of those distinctions relates to the sprawling footprint and decentralized core spaces. The auditorium, gymnasium, cafeteria and library do not share a direct adjacency with any other core program space and could not be more remote from each other.

Since its construction, there have been no major additions or renovations, except as noted in this report. The original building remains largely intact without significant modifications; however, most of the finishes show signs of heavy wear/use. Ceiling heights may have been average when first built, but now suffer from lowered replacement ceilings after the school received retrofitted utility modifications, wireless access point infrastructure, and several select areas received air conditioning; in particular, the library and main administration and satellite administration office suites.

I. SITE ANALYSIS

Refer to separate Civil/Environmental, Traffic and Landscape Site Assessments in this section.

II. BUILDING ASSESSMENT

The timeline for Doherty Memorial High School’s original construction, and any repairs / renovations that followed, is indicated below with observational commentary:

EXTERIOR ENVELOPE – ROOFING SYSTEMS:

General Description: The building was entirely re-roofed in or about 1995 with a low-slope EPDM membrane roofing system including roof insulation, brake-formed aluminum roof edge with galvanized steel water dam, cover board and EPDM roofing/flashing membrane. There is no indication in the 1995 Construction Documents that a roof vapor barrier was specified or installed. It appears that the original BUR roof was removed when re-roofing was completed, the roof decking appears from review of the existing drawings to be metal decking, except at the Gymnasium building where it indicates insulated planking and tees (tectum). Reroofing drawings indicate 2 layers of 1–1/2” was added over the existing decking, the slope matching the original existing slope. The EPDM roofing appeared generally to be in
good condition given its age. At 24 years post installation, the roof is in the last third of its useful and expected life cycle.

Observations:

- Existing roof drains are not overflow-type and several were cluttered with debris.

- Painted roof elements show significant wear from unprotected exposure.

- Minor ponding issues in close proximity to RTU curbs and ballast.

- Vertical EPDM membrane flashing is typically less than 8” (and in many cases 4” or less in some circumstances) high.

- Above-roof high pressure natural gas piping is supported on prefabricated steel roller assemblies on pressure-treated wood sleepers over an extra layer of EPDM membrane.

- There are no walkway pads at roof access hatch openings, tops/bottoms of roof ladders or around/between rooftop HVAC equipment that requires regular maintenance.

- Past roof leak in the gymnasium
3.1.4 EVALUATION OF EXISTING CONDITIONS

F.1 Architectural Evaluation

EXTERIOR ENVELOPE – WALLS:

Per the original Construction Documents and LPA’s observations of visible conditions, the exterior wall assembly typically consists of 4” nominal face brick, 1” ± air space, 1.75” thick urethane insulation board (specified K–value of 0.14 and max. moisture vapor transmission of 9.7 perm–inch average), troweled–on fibrated mastic dampproofing and 8–12” thick reinforced (ladder-type welded steel wire with bright finish) CMU back-up wall. The interior face of the CMU back-up wall is typically exposed and painted. Thru–wall flashing at windows, door, miscellaneous penetrations and bottom–of–wall weep holes was specified as 2 oz. copper sheet coated with asphalt mastic on both sides; and was detailed with 3/8” pea gravel fill. Masonry anchors were specified as eye–and–pintle type steel wire with bright finish.

The exterior brick masonry is in generally good condition; however, there are multiple instances of infill patching, damage (cracking and movement due to thermal expansion, efflorescence from moisture vapor drive, etc.). It was reported and observed that some of these conditions were previously repaired; however, many others still require remedial work.

Observations:
### 3.1.4 EVALUATION OF EXISTING CONDITIONS

#### F.1 Architectural Evaluation

- Deteriorating mortar and replacement caulking at brick infill
- Infill brick or wood (not finished or sealed) at former wall penetrations
- Efflorescence and trapped surface dirt

**EXTERIOR ENVELOPE – WINDOWS, STOREFRONT AND CURTAINWALL:**

**Window systems** (typical at south facing lower level Classrooms and support spaces) are 3–1/4” deep, clear anodized aluminum, fixed and operable (with single pane glass and insulated porcelain enamel steel infill panels. Most Classroom windows have opaque vinyl–fabric roller shades in fair to poor condition.

**Storefront Entrance Systems** (typical at Highland Street facing entries) are 3–1/4” deep, clear anodized aluminum, fixed sidelights and transoms with wire glass and single pane glass lite in aluminum entrance doors. Door hardware does not meet AAB requirements. Storefront systems are barely functional, but are candidates for replacement.

**Curtain Wall or Storefront ribbon window systems** (typical at classrooms) are 4–1/2” deep aluminum sashes in aluminum frames with single pane glass where some sashes are fixed and some operable. There are also opaque insulated wall panels at the floor and ceiling. At the gym, the panels are translucent(gym). Curtain wall/ribbon wall systems are functional and inefficient to current standards and are candidates for replacement.

**Observations:**

![Window with deteriorating mortar and replacement caulking at brick infill](image1.png)

![Infill brick or wood (not finished or sealed) at former wall penetrations](image2.png)
• Original windows, storefront and curtain wall show deterioration appropriate for their age. Additionally, weather-stripping is missing, show heavy wear or damaged at many locations and should be replaced with a more energy efficient and sealed system.

• Perimeter sealants have exceeded their service life and are candidates for replacement.

• Glass is broken in several locations.

• Porcelain panels have faded, are rusting and have minimal insulation.

• Unit ventilator louvers in poor condition, infill at former louver/exhaust locations in poor condition.

• Expanse of window wall systems are poor insulators and contribute to energy dependent systems.

• Refer to the hazardous materials report on the glazing/caulking

**EXTERIOR ENVELOPE – DOORS AND FRAMES:**

Apart from the Entry, Stair and Storefront door openings described above, the remaining exterior door openings are hollow metal frames with either steel or solid core wood doors. In all cases the wood doors are in poor condition and should be replaced. Exterior hollow metal and aluminum frames were specified to receive a zinc galvanized coating; however, we observed corrosion and deterioration at many locations. The outdoor storage room has a steel overhead sectional door with cast iron corner protection at the exterior masonry jambs that show moderate corrosion at the bottom and some at wearing spots.

Observations:
3.1.4 EVALUATION OF EXISTING CONDITIONS

F.1 Architectural Evaluation

- Corrosion and deterioration at the bottom of jambs of hollow metal frames, headers and edges.

- Exterior wood doors have failed (paint coating has peeled off, veneer is delaminating, corners and edges are damaged, etc.)

INTERIOR – FINISHES & EQUIPMENT:

Classrooms: Classroom floors are generally 12” x 12” vinyl composition tile (VCT) with 6” resilient base. Classroom walls are typically a combination of painted Concrete Masonry Units (CMU) or painted drywall and metal stud partitions. There is evidence of a progressive ceiling replacement plan where there is a mix of replacement 2x2 and 2x4 ACT starting at the lower floors. At the upper floor, little to no ceilings were replaced. Classrooms are equipped with a wide mix of chalkboards, whiteboards and tackboards. Obsolete tube-type wall-mounted televisions were observed in most Classrooms and in other spaces; there is a moderate presence of retro-fitted short throw projectors observed throughout the school. Only a few Classrooms have secure storage closets for personal belongings and supplies; most teachers utilize lockable file cabinets for this purpose. Classrooms generally have operable windows as a means for fresh air and temperature control as there is limited amount of air-conditioned spaces.
Corridors: Similar to the Classrooms, Corridor floors are generally 12” x 12” VCT with 6” resilient base. Walls are also generally painted CMU with 6” resilient base or cove tile base (built up locker base). Ceilings vary as previously mentioned. Corridor pad-locked lockers are full-height 9” w. x 72” h. single door painted steel on a built-up locker base with soffit above for a built-in appearance.

Toilet Rooms: All of the Toilet Rooms have original 1” x 1” ceramic mosaic tile floor/base. Some Toilet Rooms were recently renovated with replacement overhead braced toilet partitions and fixture. Walls are typically painted CMU. Urinal screens were in some locations. Ceilings are generally painted plaster. Accessible toilet stalls appeared to be random in location as well as gender equity. Mirrors were observed as missing in some locations. Most toilet rooms seemed to either be in a state of repair or incomplete in updating/maintenance as not one room seem to be complete.

Cafeteria/Kitchen: An oddly shaped space with low ceilings given its overall size. Similar to the Classrooms, Cafeteria flooring is 12” x 12” VCT with 6” resilient base. Kitchen and Serving line flooring both have 6” x 6” quarry tile and base. Walls are painted CMU and has one expansive
ribbon window wall. Cafeteria ceilings are 2’ x 4’ ACT with plaster soffits, while those in the Kitchen are painted plaster.

Auditorium/Stage: The Auditorium flooring is sealed concrete beneath the fixed seating and at the aisles. The Stage has hardwood and softwood tongue & groove flooring. Walls are a mix of hardwood veneer and acoustical wood fiber panels, approximately 2’ w. x 4’ h., in a staggered pattern in two color tones. The ceiling is painted plaster and modulates in height from lowest in the back up to the lighting catwalk (accessed from each side by a concealed metal ladder) and then back down to the proscenium opening. The Stage has several lines of rigging for lighting and various curtains. The Stage is separated from the Auditorium by an automatic fusible-link fire curtain. The original Contract Documents indicate a total of 750 seats. There was no evidence of a projection screen, we did not observe a ceiling-mounted projector and assume that one is brought in on a cart along with a portable screen when needed.

Gymnasium: The Gymnasium has a tongue-and-groove hardwood flooring system for competition basketball; it is set into a depression in the concrete slab and is in fair condition. A past roof leak damage a portion of the floor and was repaired. Subsequently, the repaired area has a distinctive look when compared to the existing floor. Walls are painted CMU with sparse wall pads. Steel
framing, deck and HVAC/Electrical items are exposed and painted. The Gym is equipped with original wood (Southern Yellow Pine) telescopic bleachers; they are reportedly in poor condition and missing cutouts for accessible seating. There are bisecting wood coiling dividing partitions both in the gym and the adjacent special exercise room. The Gym is equipped with 6 manually-operated fold-down basketball backstops (2 rectangular glass for main court competition and 6 rectangular wood for side court practice). There is direct access outside via a dedicate vestibule.

Administrative and Staff/Faculty Office Areas: Offices and Staff/Faculty areas typically have 12” x 12” VCT flooring with 6” resilient base. Walls are either painted CMU or painted GWB, and ceilings are original 1’ x 1’ ACT. There are some built-ins such as the reception counter and mailbox unit; it appears there have been some additional furniture brought in to accommodate growing staff, however, the requirements for accessible transaction areas was observed. The Main Office lacks visibility to the main corridor and the majority of the school. Guidance offices and the Health Clinic are also located in proximity to this area and despite all the spaces being undersized, they are treated similarly relative to finishes.
3.1.4 EVALUATION OF EXISTING CONDITIONS

F.1 Architectural Evaluation

Stairways: Stairs typically have concrete-filled steel pans/risers with steel tube stringers and aluminum pipe guards/handrails/posts. Precast terrazzo treads and terrazzo tile on landings are typical flooring materials; some stairways have rubber safety nosing at the top of the landing. The underside of stair runs and landings is typically painted plaster.

INTERIORS – DOORS, FRAMES AND HARDWARE:

Doors and transom panels are a mix of solid core wood with clear or painted finish and painted hollow metal. Condition of doors ranges from fair to poor. Frames are generally painted hollow metal in fair condition. Interior door hardware varies; most doors have levers or fixed pulls although there are some (presumably non-original modifications) doors with knob-type hardware. Generally speaking, the finish hardware appears to have taken a fair amount of abuse or even missing and should be replaced in its entirety as part of any renovation.
STRUCTURAL: Refer to separate Structural Assessment in this section.

FOOD SERVICES: Refer to separate Food Services Assessment in this section.

MECHANICAL/ELECTRICAL: Refer to separate Fire Protection, Plumbing, HVAC and Electrical Assessments in this section.

HAZARDOUS MATERIALS: Refer to separate Hazardous Materials Assessments in section 3.1.4.I
3.1.4 F.2. Existing Conditions, Civil Engineering & Landscape

1.0 INTRODUCTION

Nitsch Engineering has prepared this Existing Conditions Site Evaluation Report as part of a Massachusetts School Building Authority (MSBA) Module 3 - Feasibility Study for the redevelopment of Doherty Memorial High School in Worcester, MA. The report corresponds to the MSBA Module 3 Preferred Development Program (PDP) and focuses on elements that relate specifically to the site development aspects of the Feasibility Study, referencing MSBA Section 3.1.4 F.2. Evaluation of Existing Conditions (Site)

2.0 EVALUATION OF EXISTING CONDITIONS

2.1 General

Nitsch Engineering conducted an existing site conditions assessment for the Doherty Memorial High School to evaluate site features and characteristics that may affect site redevelopment alternatives. The assessment was based on record information provided to us by the City of Worcester, presented in the City of Worcester’s graphic information system (GIS) database, presented in the Massachusetts Geographic Information System (GIS), and on information obtained by visual site observations made on May 22, 2019 and July 22, 2019 by Nitsch Engineering personnel.

The information provided by the City of Worcester related to the project site included but is not limited to the following documents:

- A land acquisition plan of the parcel dated February 1961 (WCRD Book 254, Plan 72);
- A Commonwealth of Massachusetts Supreme Judicial Court Decree dated March 8, 1961 (WCRD Book 4178, Page 415) defining use of the parcel for a school, referencing the above noted plan;
- Municipal utility records; and
- Assessor’s parcel data.

2.2 Physical Characteristics

Location and Configuration

The subject site (Site) is located at 299 Highland Street in Worcester, MA. The associated parcel is listed as Worcester Assessor’s Office Parcel Number 11-INX-00001 and includes approximately 20 acres (based on Assessor’s data) and is owned by the City of Worcester School Department. The Site is situated on the south side of Highland Street, approximately 500’ east of Newton Square and 400’ west of the intersection of Highland Street and Park Avenue (MA state Routes 9/12/122A). The Site is bounded to the east, south, and west by the so-called “Newton Hill” portion of Elm Park. The Site is generally rectilinear, with an average width of approximately 750’ (north / south), and an average length of 1,400’ (east / west). The parcel frontage on Highland Street is 1,342’+/-.

Zoning Conditions

The Site is located within the RS-7 Residential zoning district; single & two-family residential dwelling district with 7,000sf minimum lot size. The existing school use is allowed by right in this district. No portion of the Site appears to be located within other zoning districts, historic districts, or other overlay districts.
Easements and other Property Limitations

There do not appear to be any easements, rights of way, historic registrations, or other encumbrances related to use on the Site, based on City of Worcester Assessor’s data. The parcel was formally part of Elm Park and was conveyed to the City of Worcester for school use in 1961, as defined by a Massachusetts Supreme Judicial Court Degree (WCRD Book 4178, Page 415) related to the use of the parcel by the City of Worcester for school use. Based on the documents provided to us by the City of Worcester, the existing site appears to be available for development. The actual property limits and configuration will be determined by a topographic and boundary survey to be completed by a registered professional land surveyor in the next MSBA project phase.

Existing Development

Roughly 14 acres of the Site is developed with the existing Doherty Memorial High School, vehicle parking and access areas, pedestrian walks, and athletic/practice fields. The pavements and bituminous curbs in nearly all areas of the Site are in a deteriorated condition and exhibit signs of failure, including significant cracking, raveling, and extensive patching. The front access drive (see Site Access section below) is in somewhat better condition than the pavements in other areas.

Picture 1: Pavement Deterioration
Upper Parking Lot

Picture 2: Pavement Deterioration
East Access Drive

Picture 3: Pavement Deterioration
Upper Parking Lot

Picture 4: Pavement Deterioration
Service / Loading Area
Site Access and Parking
The Site is accessed by three curb cuts on the south side of Highland Street. The eastern-most curb cut provides access to a parking and service area immediately adjacent to the east side of the school building and to an upper parking lot on the southeast portion of the developed site and which borders the athletic/practice fields. It appears that the southerly end of the upper parking lot extends beyond the school parcel and into the remaining land of Elm Park. This portion of the parking lot is commonly shared by school users and by park users accessing Newton Hill trails.

The second curb cut on the east side of the site is the entrance to the front access drive / bus loop on the north side (main entrances) of the school building. The bus loop intersects with the access drive to the service yard / loading area and exits the site at the western-most curb cut. See the Traffic and Circulation Assessment section of this report for more detailed information.

Pedestrians access the Site via sidewalks on Highland Street, and from unpaved trail connections to Elm Park (via Newton Hill). Sidewalks extend onto the Site from Highland Street at each of the three curb cuts. The Highland Street sidewalk is also connected to the bus loop by two walks with stairways. Internal pedestrian circulation is accommodated by paved walkways and steps. None of the pedestrian
access pathways appear to comply with the American Disabilities Act (ADA) or the Massachusetts Architectural Access Board (AAB) requirements or specifications.

Topography

The Site has been developed in a tiered configuration in response to relatively steep topographic conditions. The first tier is elevated approximately 10-15 feet from Highland Street and the second tier is elevated roughly another 15 feet. The south side of the second tier represents the limit of the developed portion of the Site, around EL. 550-555 (30’ up from EL. 520-525 at Highland Street. The undeveloped portion of the site to the south exhibits steep topography averaging 25%. The athletic/practice field on the east side of the site is generally coincident with the upper tier.

Tree cover and vegetation

Vegetation on the developed portion of the Site is completely cleared for lawn and turf, except for minor landscaped areas and several mature trees that remain from the pre-developed site. The undeveloped areas of the site are vegetated with mature tree growth (mixed deciduous and coniferous) and moderate to thick undergrowth.

Soils

Based on National Resources Conservation Service (NRCS) data, the soils on the southern (upper) portion of Site consist of Paxton soil and areas to the north are mapped as Hinckley-Urban Land Complex. Paxton soil consists of glacial till and typically exhibits a shallow restrictive layer that can result in a seasonal perched water table and is classified as a Hydrologic Soil Group (HSG) C soil with relatively low permeability. Hinkley soil is more well-drained and is classified as an HSG-A soil and does not exhibit shallow or perched groundwater conditions. It is unclear where the transition between these two soils lies on the Site, as the area between these two mapped soils has been developed for the school. In general, the soils are not likely to represent a significant development constraint in terms of bearing capacity, workability, groundwater management, or erosion. Although disturbance of the currently undeveloped southern slopes of the Site could result in seasonal high groundwater management needs.

Nitsch Engineering noted during our site visit several areas between the two tiers for the school building where ledge was apparent at the ground surface.
Environmental Resources and Hydrology

There do not appear to be any wetland resource areas or other environmentally sensitive areas on or within close proximity to the Site. There are no rare species (NHESP designated) habitats, or vernal pools on or directly adjacent to the Site. The Site is not within nor directly adjacent to any FEMA flood hazard areas.

2.3 Existing Site Utilities

Storm Drainage

The Site includes a conventional closed pipe runoff collection and conveyance system that consists of a series of catch basins and connecting structures and pipes. The on-site system conveys collected runoff generated by the developed areas of the Site, as well as the northerly face of Newton Hill, to the municipal surface drainage system in Highland Street. The municipal surface drain in Highland Street is an 18” pipe at a relatively flat 0.004ft/ft slope toward Newton Square to the west.

Nitsch Engineering is not aware of any reported deficiencies in the stormwater collection and conveyance system. However, it is unlikely that the system meets current municipal standards in terms of municipal or state stormwater quality management standards.

Sanitary Sewerage

Sanitary sewage generated by the existing school building is discharged to a 15” sanitary sewer main in Highland Street. As is the adjacent surface drain, the sanitary sewer main is relatively flat with an average slope in the vicinity of the school of 0.003ft/ft, directly flow toward Newton Square to the west. Nitsch Engineering has not received record documents of the on-site sanitary sewer structures or pipe routing, but no deficiencies in terms of flow or capacity conditions have been reported. During our site visit we did not observe an exterior grease trap from the school kitchen.

Water

Record documents indicate that domestic water and fire protection services are provided to the Site via a 16” low-service water main in Highland Street. The water main was installed in 1894 and was cleaned and lined in 1986. Services from the main include a connection on the west side of the Site that provides water to three site hydrants, and a connection on the east side that provides water to three site hydrants and includes an on-site branch that connects to the school building. The building domestic water service/meter is located on the south side / east end of the lower school building tier.

Natural Gas

A natural gas meter was observed in the same vicinity as the water service connection noted above, on the south side / east end of the lower school building tier. See narratives by the project Mechanical/Electric/Plumbing consultants for information on existing gas service conditions.

Electrical

Electrical service is provided to the Site via underground conduit. Electrical equipment is present at the east side of the lower school building tier, adjacent to the east parking lot. See narratives by the project Mechanical/Electric/Plumbing consultants for information on existing electric service conditions.

Telecom

See narratives by the project Mechanical/Electric/Plumbing consultants for information on existing tele-communications service conditions.
2.4 Traffic and Circulation

Nitsch Engineering conducted a site visit on May 22, 2019 to observe the existing traffic circulation and queue lengths on adjacent streets during drop-off and pick-up periods, as well as the parking utilization at the existing Doherty Memorial High School. Because this assessment focuses strictly on the issues above, traffic operations are secondary to the goals of the report and therefore we did not collect Automatic Traffic Recorder (ATR) counts or Turning Movement Counts (TMC) and an evaluation of roadway and intersection capacity analyses and traffic signal warrants was not performed. Nitsch Engineering observed the site circulation associated with the weekday morning drop-off, weekday afternoon pick-up, and general queue lengths around the school site. The observation occurred during sunny conditions with a temperature of 70 degrees.

Doherty Memorial High School Site Access and Egress

The school is accessed using three curb cuts on Highland Street. The easternmost curb cut provides access to the two main parking lots at the school. The other two curb cuts provide access to the main office, the visitor parking and a third parking lot. They also are used mainly for the bus drop-off and pick-up.

Doherty Memorial High School Traffic Circulation and Pick-up/Drop-off

Please refer to the map that follows the Tables for actual count locations.

Table 1 – Doherty School Drop-Off Quantity

<table>
<thead>
<tr>
<th>Time / Movement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
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<td>35</td>
<td>13</td>
<td>16</td>
<td>18</td>
<td>5</td>
<td>0</td>
<td>18</td>
<td>45</td>
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<td>28</td>
<td>43</td>
<td>13</td>
<td>26</td>
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<td>17</td>
<td>23</td>
<td>12</td>
<td>16</td>
<td>0</td>
<td>14</td>
<td>8</td>
</tr>
<tr>
<td>7:30 AM 7:45 AM</td>
<td>5</td>
<td>1</td>
<td>7</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
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<td>87</td>
<td>41</td>
<td>49</td>
<td>0</td>
<td>32</td>
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Table 2 – Doherty School Pick-Up Quantity

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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
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<td>2</td>
<td>7</td>
<td>2</td>
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<td>3</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>27</td>
<td>21</td>
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<tr>
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<td>0</td>
<td>1</td>
<td>2</td>
<td>40</td>
<td>1</td>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td>2:00 PM 2:15 PM</td>
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<td>3</td>
<td>0</td>
<td>2</td>
<td>40</td>
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<td>14</td>
<td>7</td>
<td>87</td>
<td>23</td>
<td>92</td>
<td>67</td>
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</tbody>
</table>
Traffic Circulation Count Location Map
Existing Morning Drop-off Circulation:
The Doherty Memorial High School traffic arrives at Highland Street from 6:45 AM through 7:45 AM. The parents arrive at Highland Street from east and west to drop-off their students along the curb on both sides of Highland Street. Buses arrive at the main entrance driveway through Highland Street to drop-off students from 6:45 AM through 7:15 AM. A total of fourteen buses drop off students at the school.

Existing Afternoon Pick-up Circulation:
The Doherty Memorial High School traffic arrives at Highland Street from 1:15 PM through 2:15 PM. The parents arrive at Highland Street from east and west and park along the curb on both sides of Highland Street and wait to pick-up their students. We observed queue lengths of approximately 900 feet on both sides of Highland Street during the afternoon pick-up time. Buses arrive at the main entrance driveway through Highland Street to pick-up students from 1:00 PM through 1:45 PM. A total of fourteen buses pick-up students at the school.

Doherty Memorial High School Parking Supply and Demand
Nitsch Engineering performed a parking supply and demand count on May 22, 2019. The utilization of the lots was taken at 9:30 AM.

Lot A (Faculty/Student)
- Total Spaces: 84
- Occupied: 79
- Accessible: 1 (empty)
- Note: 12 cars were parked illegally.
- Utilization: 107%

Lot B (Student)
- Total Spaces: 131
- Occupied: 120
- Accessible: None
- Note: 5 cars were parked illegally, and 5 others were parked behind the building.
- Utilization: 99%

Lot C (Faculty/Staff)
- Total Spaces: 16
- Occupied: 12
- Accessible: None
- Utilization: 75%

Lot D (Faculty/Staff)
- Total Spaces: 18
- Occupied: 18
- Accessible: None
- Note: No pavement markings
- Utilization: 100%
2.5 Development Constraints

Certain physical characteristics of the Site represent development constraints and/or significant redevelopment cost factors including the following:

Pavements

Nearly all the bituminous pavement on the Site is in a poor/failing condition. Under any redevelopment scenario, all paved areas and curbs affected by the project are likely to require complete replacement, except for portions of the front access drive / bus loop.

Topography

Any redevelopment or reuse scenario for the Site would need to consider the implications of the existing topography. Expansion of the currently developed portion of the Site will require extensive earth moving, probable retaining wall construction, and possible ledge removal.

Stormwater Management System

Because the Site is subject to the City of Worcester Wetland Protection Bylaw, any substantial site construction would require compliance with the Massachusetts Department of Environmental Protection Stormwater Management Standards (per the requirements of the municipal bylaw regulations). As such, it is likely that upgrade and/or replacement of the most, if not all, of the existing drainage infrastructure will be required under most potential redevelopment scenarios.

Sanitary Sewer Service

Although no deficiencies have been reported, due to the age of the school it is likely that replacement of the existing sanitary sewer service connection will be warranted under any redevelopment scenario. Further, installation of an exterior grease trap will be required for new construction of the Site, and may be required for a renovation project, depending on the extent of the renovation. Should this system element be necessary for a renovation project, modification of the interior building plumbing system could be required to facilitate separation of kitchen sanitary waste piping.
Dr. Leo T. Doherty High School-
Existing Structural Conditions

299 Highland Street
Worcester, Massachusetts
July 1, 2019

Introduction:
Dr. Leo T. Doherty High School is a 168,000 ft² brick and insulated wall panel clad school building being investigated for renovation, and possible addition. The two-story school building was built in 1966 and has not undergone significant structural modifications or additions since construction. It is our understanding that the goal of the current renovation and addition project is to increase the size of the school to better suit the needs of the increased student population and address the general upkeep of the building and mechanical deficiencies of the existing building. This report will describe the general conditions of the existing structure to aid in planning for a building renovation and addition and should be used in conjunction with the “Building Code Review” outlining the Massachusetts State Building Code requirements that must be followed.

Basis of the Report:

- This report is based on the visible observations during our site visits on June 4 & 6, 2019.

Our observations of the existing building were limited to what was readily visible. We did not evaluate strengths of materials, remove finishes, or take measurements.

Building Description:
The school consists of two slender two-story buildings built into the lower side of Newton Hill in Worcester, Massachusetts. The two buildings are parallel and are built into the side of the hill. The floor levels between the buildings are stepped with the second floor of the lower building aligning with the first floor of the upper building. There are two bridges connecting the buildings at the main corridors; refer to Figure 1 for Floor Plan.

The lower building houses the Auditorium, Cafeteria, Main Offices, and Classrooms. The Upper building houses a majority of the Classrooms and the Gymnasium/Engineering Department. The buildings generally consist of brick veneer, insulated wall panels, concrete masonry unit (CMU) walls/partitions, steel floor framing, concrete slabs (structural slabs and slabs on steel deck), steel bracing, and steel roof framing. The roof decking is typically steel deck, except at the Gymnasium where insulated plank decking was used. The construction methods and materials are typical of 1960’s school construction.
The buildings do not appear to be constructed with structural expansion joints. The two wings are continuous from end to end with no noticeable structural joints. Also, the two bridge connectors appear to be structurally connected at each end. We did not notice floor or wall thermal cracking consistent with lack of expansion joints.

General upkeep to the building has included re-roofing (1995), limited mechanical updating, and day-to-day maintenance. The interior of the building is in good condition with normal wear and aging. The exterior of the building is generally in good condition, but there is some masonry damage that will require repair as part of the renovation work. Most of the masonry expansion joints have been re-caulked multiple times, with the lower half of the building appearing to have been caulked most recently and still in acceptable condition. The upper portion of the joint does not appear to have been caulked during the most recent work and should be included in future work. Some minor cracking due to thermal movement will need to be repaired, as well as some lintel bearing conditions where the horizontal leg of the angle has become exposed due to the mortar deteriorating.

**Existing Conditions:**

**General Exterior:**
The exterior walls are typically brick veneer backed up by unreinforced CMU walls or insulated wall panels. The brick veneer is attached to the CMU walls with header bricks built integrally with the CMU. The brick veneer is in generally good condition with some noticeable thermal cracks and movement. The brick mortar is in generally good condition, except at a few lintel locations where the mortar has fallen out of the joint to expose the horizontal leg of the lintel. The exposed portion of the concrete foundation walls appear to be in generally good condition. There are a few locations of exposed reinforcing, likely due to rusting of the reinforcing and spalling the concrete to expose the reinforcing.
General Interior:
In general, the interior of the building appears to be in good condition. The CMU partitions and exposed concrete floors appear to be in good condition. There are a few locations at flooring tiles on framed slabs where there has been cracking and movement, which is not uncommon, but will need to be addressed during a renovation.

Building Structure:
The two-story buildings consist of:

- Foundations:
  - 16” Concrete frost walls (2-#6 T&B) with continuous 2'-4” wide footing.
  - 12” Concrete retaining walls with continuous 5'-0” wide footing at South walls of buildings to resist stepped soil conditions.
  - Spread footings below columns, designed for soil bearing pressure of 6,000 psf.
  - Interior concrete walls (2-#6 T&B) below CMU partitions 8” and wider.

- Columns:
  - Steel tube columns. TS4x4, TS5x5, TS6x6 and additional rectangular sizes.
  - Wide flange steel columns. W6’s, W8’s & W10’s.

- Floors (at grade):
  - 4” Concrete slab-on-grade at classrooms and common spaces.
  - 6” Concrete slab-on-grade at mechanical room.

- Walls
  - Interior walls are unreinforced concrete masonry units (CMU) at corridors, select interior partitions, and at perimeter of Gymnasium, Auditorium, and Mechanical Room.
  - Exterior walls are unreinforced CMU with brick veneer, or insulated wall panels.
  - Select interior partitions are metal studs with plaster.

- Floors (framed):
  - 2 ½” & 3” Concrete slab on metal form deck with 6x6 welded wire fabric at Classrooms.
  - 4” Reinforced structural concrete slabs reinforced with #3’s at second floor area surrounding the gymnasium.
  - 6” Reinforced structural concrete slabs reinforced with #3’s at connector bridges.
  - Joists: Classroom floors are typically framed with 16J & 18J Joists spaced at 24” o.c.
  - Beams: Non-composite W-beams (Typically W14’s and W16’s @ 2'-0” o.c. spanning 28 feet). Beams at the floors are typically located on column lines, corridors, or other non-repetitive framing layouts.
  - Girders: Non-composite W-beams (Typically W14’s & W16’s spanning 16 feet). Girders over Cafeteria are W24’s.

- Roof:
  - Steel wide flange beams on column lines, corridors, and at non-typical bays.
  - Steel roof joists at framing infill between column lines (16J joists @ 4'-0” o.c.)
  - Long-span steel roof joists at Auditorium and Cafeteria roofs.
  - Long-span steel beams (W36’s) with steel beam infill at Gymnasium roof.
  - Steel roof deck (1 ½” metal roof deck).
  - Insulated plank decking on bulb tees at Gymnasium roof.
  - Flat plate diagonal strapping for lateral forces (Typically 3”x ¼”).

- Bracing:
  - Steel bracing towers at several column lines at each building Unit. Bracing towers are constructed with steel plates and steel rods.
Classroom Conditions:
The classroom portions of the structure have remained relatively unchanged since original construction and appear to be in generally good condition. The classroom wings are efficiently framed with tube columns, wide-flange beams on column lines, and steel joists for the main floor framing. The framed floors are typically concrete slabs supported by metal form deck. The interior finishes of the classroom portions of the buildings are typically CMU partitions, vinyl tile floors, and drop ceiling tiles. The exterior brick veneer and CMU backup walls appear to be in good condition, with minimal thermal cracking and deterioration. Most interior partitions appear to extend from the floor to the underside of the floor, or roof, above. CMU walls at the exterior walls and at many of the corridor walls appear to be built around the steel framing and columns.
Other interior partitions appear to be built up to the floor/roof level, but do not appear to be anchored to the framing above, and will likely need to be laterally braced to conform to the Building Code requirements for seismic detailing as part of future renovations.

The steel framing is rarely exposed, but where it is, the joists and steel beams appear to be in good condition with no noticeable deterioration. Floor and interior finishes, in general, also appear to be in good condition with regular maintenance.

Exterior finishes of the building are in generally good condition, but the brickwork does require some attention. There has been some minor thermal movement in the brick veneer, but most of the cracking could be repaired with re-pointing the brick. There are several locations where former windows, or louvers, have been removed from the exterior and replaced with plywood sheathing (see Figure 4). We recommend removing the plywood and infilling the masonry wall properly with CMU and brick veneer. There are several brick lintels on the South wall of the classroom buildings where the brick lintel has become exposed at the bearing location. The exposure has caused some rusting and deterioration, but the members appear to be in adequate condition to re-point and repair the wall.

The roof of the classroom wings appear to be in generally good condition. It is our understanding that regular maintenance has included replacing roof top mechanical equipment and re-roofing the building in 1995. Maintenance personnel indicated that they were not aware of roof leaks or other significant issues with the roof. There were a couple of large pine trees at the North-East corner of the building that overhang the roof with branches that appear to touch the roof. Regular maintenance should include trimming the branches back to avoid contacting the roof.

**Gymnasium/Engineering Building Conditions:**
The Gymnasium and Engineering building includes several heavy use areas, including the Gymnasium, Weight Rooms, Locker Rooms, and Engineering Rooms. The framing for this
portion of the building is slightly different than the rest of the building. The framed floors appear to be formed concrete slabs supported by wide-flange steel beams. The roof framing at the gymnasium used long-span W36 beams with infill framing, bulb tees, and insulated plank decking. The roof surrounding the gymnasium is framed with wide-flange beams and metal roof decking. The insulated plank decking at the gymnasium will not conform to current seismic requirements of the Building Code due to lack of diaphragm strength, especially if the decking becomes wet or deteriorated. We recommend removing and replacing the plank decking with steel decking as part of any significant renovation/addition, otherwise the decking may remain. There were very few locations where flooring or other finishes were damaged due to day-to-day use, except at the Gymnasium areas where normal use includes weightlifting and abusive sports.

The interior CMU partitions appear to be in good condition with a few minor thermal cracks, but overall there were no noticeable signs of settlement or movement. Typically, the CMU partitions are built up to and around the steel columns and roof framing, but there are a few partitions between rooms that were built up to the underside of the steel beams or metal deck, and are not attached to framing at the roof level. These walls will need to be anchored to the roof diaphragm since they are a seismic hazard.

The floors appear to be in generally good condition. The gymnasium and exercise room have depressed slabs with a wood floor system. Many of the other areas have exposed concrete slabs (on-grade & framed). There is normal wear and tear at the heavy use areas, like weight rooms, locker rooms and exercise rooms. We did notice some cracking in the weight room, which is a structural concrete slab supported on steel beams. The cracking should be reviewed further during a renovation to verify that the impact loads from weightlifting has not impaired the strength of the slab.

Similar to the classroom areas, most of the steel roof framing is covered by finishes, but we were able to view the exposed steel in the Gymnasium and above the ceiling tiles at a few additional locations. The steel framing, insulated plank decking, and metal decking that was observed appeared to be in good condition, with no noticeable signs of deterioration.

**Addition Feasibility:**
The existing building is significantly undersized for the current student population, and an addition will likely be required if the school remains in use for a similar student population moving forward. We reviewed the existing Structural Drawings to determine if plans for vertical expansion were included in the original design. The foundations and framing members were not designed with the intent of supporting a vertical addition and any expansion will likely need to be...
a horizontal expansion with future additions being built adjacent to the existing building. Due to the undersized seismic force-resisting system, we recommend any additions be seismically isolated from the existing building to avoid imparting lateral forces on the existing building.

**Conclusions and Recommendations:**
The purpose of this report is to identify any structural deficiencies and liabilities that will need to be addressed during any substantial renovation, which we understand, is being considered. The report is based on the premise that the existing building will remain in use as a school. We have reviewed the general conditions of the building, but did not remove finishes or perform computations to determine structural capacities. The following items are meant to highlight structural conditions or deficiencies noted in the report.

**General Information:**
- **Existing building area is 168,000 ft².** Proposed building size is unknown, but will likely double the current area.
- Classroom wings structure is in generally good condition. Structural repairs would be limited to cosmetic repairs and addressing the proposed addition.
- Gymnasium/Engineering structure is in generally good condition.
  - Floor of the weight room should be reviewed as part of any renovation project to verify impact loads from weights has not damaged framed concrete slab.
- Interior CMU partitions that are built to the underside of floor/roof and not connected to the structural framing will need to be seismically braced. Mainly appears to apply to interior partitions not located at corridors or column lines.
- Brick veneer requires general maintenance, including:
  - Local repointing.
  - Replacement of control joint caulking, noticeably the upper half of the building.
  - Remove plywood infill at abandoned openings and infill with masonry to match the existing wall systems.
- Structural steel members are generally hidden by finishes, but based on the condition of the finishes we expect the structure to be in serviceable condition.
- Vertical expansion is not feasible. Additions should be built adjacent to the existing building with seismic expansion joints separating the buildings.

Christopher Tutlis, PE
Bolton & DiMartino, Inc.
EXISTING CONDITIONS

General Building Description:

The Doherty Memorial High School (DoHS) is located at 299 Highland St, Worcester, Ma. The building was constructed in the mid 1960s, and is a concrete and steel building with brick facade. The original construction documents (OCDs) define 4 sections of building, A, B, C, D. The A and B sections form 1 long wing close to and parallel to Highland St. The C and D sections form a 2nd long wing parallel to Highland St, but behind the A / B wing. The building is built on a hill, so that the 2nd floor of the A-B wing is level with the 1st floor of the C-D wing. There are 2 connecting corridors between the A-B 2nd floor and the C-D 1st floor.

The “A” portion of the building is primarily 1-floor - but contains the auditorium, stage, and boiler room, which are 2-story spaces. It also contains the music rooms and several support spaces under a lower roof around the auditorium.

The “B” portion of the building is 2 floors, and contains on the 1st floor: the administrative offices, health area, Cafeteria and kitchen, business classrooms, guidance, and support spaces. The B area 2nd floor contains the media center and classrooms.

The C area is 2-floors, with general classrooms on the 1st floor, and a 50-50 mix of science and general classrooms on the 2nd floor.

The D area is also 2 floors. The 1st floor has been almost entirely converted to an engineering and technology academy, but also contains the maintenance garage. The 2nd floor contains the 2 gyms, locker-rooms, and athletic support spaces.

There have been several renovations, but no major additions. The original construction documents (OCDs) show the building is primarily non-combustible, with some exceptions. There is combustible construction in the auditorium including 1/4” plywood wall finish glued to sheetrock, wood-deck-lighting-catwalk in the ceiling, wood stage floor over wood joists on raised concrete deck, wooden stair treads and risers to a narrow wooden platform in front of the main stage. This platform is a wood-combustible concealed space running the length of the stage connecting the 2 short stairs at each end. The music rooms also have tiered, built-in, wood risers. And there is some wood framing and miscellaneous wood blocking noted in the OCD wall and building sections – in particular the exterior, canopies.

Since the original construction period, a few larger spaces have been divided into several smaller spaces with new partitions. Whether the framing of these partitions is combustible or non-combustible is not known.

NFPA would consider most concealed spaces containing miscellaneous exposed wood or other combustible materials as “combustible concealed spaces” requiring sprinkler protection.
Current total building area is approximately 169,000 gross square feet.

Since no portion of the building exceeds 2 floors, the highest floor level is approximately 15 ft (well under 30 ft) above the lowest fire department access. All roofs are flat - the (highest) gym and cafeteria roofs are both approximately 26 ft above grade. The building’s main entrance is about 120 feet from the street.

Fire Protection:

There is no existing fire protection system within the building.

Per the City of Worcester Water Dept., the Highland Street main is a 16”, Circulating main there is no underground water loop around the entire high school, but the OCDs show 2 branches off the Highland St city main – one at each end of the school. The East branch feeds the building’s domestic water supply, plus 3 site hydrants. This branch is 8” up to the 6” domestic water take-off, then is 6” to the remaining hydrants. The West branch is 8” over its entire length, and also shown as feeding 3 site hydrants. On our 6-4-19 site visit, we saw only 2 of the 3 West-side site hydrants. We did not observe a site hydrant centered behind the C-wing.

Note: Existing water service into the building is a single 6” line serving just the plumbing system. If fire protection is added, current code will require a separate line into the building (from the 8” East branch) for Fire Protection.

NFPA 13 sets a maximum floor area per floor per riser of 52,000 sqft. If a sprinkler system is installed through-out (as will be required by current code for either a new building or renovation-addition), at least 2 risers will be required. The space available in the existing water-service / boiler room will need to be carefully reviewed to confirm if it is sufficient for 2 risers, a new 8” backflow preventor, and the plumbing water service entrance. There is, however, an abandoned-in-place generator by the water service – if the generator were removed it would free up considerable space for new equipment.

Ceilings:

Most ceilings are suspended acoustical tile. Restrooms, the kitchen, locker rooms, etc. all have inaccessible, hard ceilings. The administrative offices and a few other rooms have splined (inaccessible) ceilings. The gym, most mechanical spaces, and some storage spaces have no ceiling.

New FP piping could be run in exposed areas and above the hung ceilings pretty readily. In some locations, space for all new utilities might be an issue, as building structure is a mix of open-bar-joists and solid steel, wide-flange beams. Where solid beams are deep, there is very limited space between the ceiling and bottom of beams.
The auditorium has a hung ceiling over the entire seating area. If the above-ceiling space was entirely enclosed, it would be a non-combustible concealed space and would not require sprinkler protection. We noted on our site visit, however, that the occupied space connects to the above-ceiling space thru the catwalk. Though it appears some effort was made to seal the catwalk from the above-ceiling space, it was not entirely successful. There is a path from smoke and heat to enter the catwalk thru the stage-lighting opening, then pass below the catwalk-walkway into the above ceiling space. Thus the entire above ceiling area would require sprinklers, OR the above-ceiling space must be totally enclosed. There is no safe structure to move about on above the ceiling, so if sprinklers were the selected option, they would likely require removal and re-installation of the entire ceiling. The lighting catwalk would also require sprinklers, due to it’s combustible wood decking.

Layout:

There are a few existing building layout issues that increase fire hazards and / or would increase fire protection costs.

The A-B wing 2nd floor is connected to the C-D wing 1st floor via 2 enclosed, exterior corridors. Both corridors have open space under half or more of the walk-way. Since the walkway is considered “occupied space”, sprinkler protection would be required below the walkways. This would need to be a “dry system”, with dedicated, air-filled piping running from the exterior corridors back to the FP service entrance.

There are numerous exterior canopies, including:

1. 2 large, L-shaped canopies at the front of the building,
2. 1 large one over-hanging, occupied-space above a former loading dock at the front of the D-area, and
3. 11 small canopies at single or double-door exits.

All of the canopies are shown (in the OCDs) as containing combustible construction. The 11 small canopies, however, all appear to extend only 4’ from the building – so would not require sprinkler protection.

The 2, large, L-shaped canopies would need to be protected by a dry system.

The occupied space above the former loading dock is only 12’ deep, so could be protected by dry sidewalls off of the wet system.

The Both canopies are approximately 9" deep, so could be protected with dry sidewalls piped off the wet system. There are also 4 other entrance doors that are recessed more than 4’ into the building. These would also require dry-sidewall sprinkler protection of the exterior roof area. Two of these entrances have glass-only (no solid wall) above the doors – so would need to be protected from the side. Because the entrance roof is lower...
than most room ceilings, this would result in either exposed sprinkler piping in that adjacent room, or the need for a soffit to enclose the dry sprinkler piping.

The roof is currently accessible only thru 3 roof hatches. With this large a building, plus proposed solar panel arrays on the roof, the local fire dept. is likely to want better roof access.

**Hazard Levels:**

Classrooms, offices, hallways, gymnasiums, and cafeterias are generally considered “Light hazard” relative to fire-suppression. Light Hazard areas require the lowest level of sprinkler protection. Being a high school, there are science lab gas supplies, which would raise the hazard level of those rooms to ordinary hazard group 2 (OH2).

A few rooms designated as “storage rooms” on the OCDs have since been converted to other uses such as classrooms or meeting rooms. The storage rooms that still exist are generally small (well under 1,000 sqft), with materials stored under 12’ high. Most of these areas would be considered “miscellaneous storage”, and designed as an OH2 occupancy.

Storage rooms with shelving over 30” deep (aisle to aisle), have a higher hazard rating—which depends on the type of materials stored. There are several storage rooms, including (but not limited to) Andy’s Attic, and 2, high-density (movable shelving) storage areas that fall into this category—with back-to-back shelving that is over 30” deep—

Other “Ordinary hazard” areas would include (group 1) the main kitchen and kitchen service areas, and (group 2) storage-areas, and the stage. As the existing stage is approximately 2,000 sqft (well over the code limit of 1,000 sqft), it will require a standpipe hose station on each side.

Note: existing rear-wall smoke vents at the top of the stage wall appear to be manually operated, and are in poor condition, with visible light shining thru in multiple locations. These will need to be replaced.

**Storage:**

Storage is a critical issue that should be addressed as part of any renovation or new construction. When a building has insufficient or poorly located storage space, other spaces not intended or designed for storage can end up being used for storage.

While there appears to be sufficient storage space at Doherty HS (many storage rooms were half-or-less full), storage was still leaking into some spaces not intended for storage. We reviewed all storage rooms for which the custodian had keys, and found several mechanical and electrical rooms with some storage. Storage leaking into such areas...
violates code. This may be due to poor adjacency of existing storage rooms to where the stored materials get used. We also noted that all athletic storage rooms for which the custodian had keys had very little stored in them. Six other athletic storage rooms, for which the custodian had no key, were packed full. This suggests there may have been a security issue with storage in the other rooms.

Storage height is another important aspect of the storage issue. Sprinklers require between 18” and 3’ clearance between the sprinkler deflector and the top of storage (depending on the type of sprinkler and type of stored material). When storage space is insufficient, storage often extends right up to the ceiling or roof deck. Materials stored in this way would obstruct a sprinkler’s water flow, potentially keeping it from reaching the fire. This would also be a code violation. We did not observe any storage at excessive-heights at Doherty.

If a new Fire Protection system is installed, it is important that the use of every room to be sprinkled be clearly defined. Storage rooms require a higher level of sprinkler protection than offices, classrooms, or other spaces containing fewer combustible materials. Thus it is important that storage be confined to designated storage rooms, and not leak into other spaces having a lesser level of protection.

A storage plan should both include an assessment of “who needs to store what” and “how much should be stored”, as well as an assessment of available storage areas, and the maximum storage height permitted in each space.

According to the custodian Joe Santos, most flammable or combustible liquids in the school have been eliminated. Exceptions include:

1. Science chemicals, which are stored in a listed flammable cabinet or within fume hoods.
2. Mower and snow blower fuel, which is also stored in listed containers in the maintenance shop area.

We did not observe any other flammable or combustible liquids, or any unusual hazards in the existing flammable storage.

The custodian, Joe Santos, was not aware of, and we did not see any storage extending up over 12’ in height. This is good, and will also help minimize FP hazard levels and costs.

There are several storage rooms in the gym area that have a higher hazard rating than “ordinary”. Athletic storage typically includes large amounts of plastic materials, or plastic bins used to organize smaller materials. Plastic is made from oil so is highly flammable. Where plastic storage extends above 5 ft in height, the space earns an “extra hazard” (EH) rating. EH areas require more sprinklers, more closely spaced, on larger piping than other areas.
While the school shelving standard appears to be 12 to 18” deep wood shelves, we noted a half dozen or so rooms with deeper wood shelving. Because the wood shelving itself is combustible, it earns a higher hazard if over 2’ deep (vs 30” for metal shelving). Several rooms had solid wood shelving over 2’ deep.

Other than the correctable storage-issues noted above, we did not identify any other areas that would be considered “Extra hazard”.

Local Requirements:

According to The Worcester Fire Department’s Captain Thomas Bull, the city has no special fire protection requirements beyond State and NFPA requirements.
July 5, 2019

Mr. Christopher Lee
Lamoureux • Pagano Assoc., Arch.
108 Grove Street, Suite 300
Worcester, MA 01605

Re: Mechanical Systems Survey at the Doherty High School in Worcester, MA

Dear Mr. Lee:

The following is a summary report outlining our observations and comments regarding the status of the HVAC and plumbing systems at the Doherty High School in Worcester, MA.

SITE INSPECTION

In June of 2019 we performed site inspections of the existing building. Our observations along with review of the original contract documents and information provided by facility personnel regarding the current building operating status were used extensively in assembling this report.

GENERAL

The building is a 2-story structure with a lower/ground floor level which varies in its below grade depth but for the most part is above grade. The building was constructed in circa 1964.

The building is primarily constructed of concrete and masonry brick/block and steel. Many of the windows in the structure are of original vintage single glazed type with steel frames.

PLUMBING

Fixtures:

The existing buildings plumbing systems appear adequate in quantity for the current occupancy use at the time the structure was built however, further review of total occupancies, fixture distribution, travel distances and accessibility must be reviewed during any renovation project to determine applicable upgrades. Many restrooms surveyed, did not comply with ADA or MA accessibility codes. Although several bathrooms had accessible fixtures most failed compliance on numerous levels including the lack of accessible fixtures and the absence of proper wheelchair space.

Existing water closets are of the wall mount flush valve type most of which were not of the water conserving 1.6 gallon per flush type as required by current code. The lavatory sinks are of the wall hung style, but also fail accessibility compliance on several levels. Urinals appear adequate
in number to accommodate current code requirements however we did notice several out of service.

In some select areas, fixtures have been upgraded to ADA style with few having auto sensing flush valves. However, even in these cases some fixture clearance dimensions did not meet all the ADA dimensional requirements.

Boys’ locker rooms have showers of a gang configuration and girls’ locker rooms have individual stalls. Each shower has an individual hot and cold water valve control although central mixing valves are present for the hot water feed to the showers. All the boys gang showers and a majority of the girl’s locker room showers have been deactivated and are no longer used.

In the main cafeteria kitchen there is one (1) double-bowl food preparation sink with adjacent garbage disposer, one (1) 3-bowl pot/scullery sink and one hand wash sink. The 3-bowl pot sink and 2-bay prep sink appear to discharge to a common grease trap located in the floor prior to entering the buildings sewer system. Adjacent to the main kitchen area is what, at one time, was a dish wash room which contains a Hobart dishwasher and pre-wash sink. However, it appears the dish wash room and pre-wash sink area has been converted into a storage room as the dishwasher is no longer used and the sink had its faucet removed. There is a clothes washer in the dish wash/storage room.
Several plumbing deficiencies noted in the kitchen areas as follows:

- The food preparation sink is not indirectly wasted as required by the plumbing code. Indirect waste configuration limits the possibility of waste water backing up into the food prep. sink.
- The garbage disposer should not discharge through the grease trap.
- Current code and regulations would require an exterior grease trap be provided to intercept all waste from the kitchen fixtures and floor drains.
- Upgrades may require revitalization of the dish washer area as now dish washing must occur in the main kitchen.
- The clothes washer and dryer are each located at opposite ends of the kitchen area. This makes for managing of the washed items difficult. As such they should be located adjacent to one another.

Food Prep. Sink (No Indirect Waste)

There are numerous sinks within other areas of the building as well as many classrooms in Building B which primarily support hand wash functions. Most building C classrooms did not have sink fixtures. A science lab on the 3rd floor appears to have been recently renovated and has acid resistant fixtures.

There is at least one Janitor’s sink with floor style sink on each floor fitted with service sink faucet fixture. We did notice many of these fixtures did not have a vacuum breaker which is required to limit the possibility of water supply contamination. In addition, there are numerous drinking fountains located throughout the building in varying states of service. The fountains
vary from porcelain unrefrigerated fixtures to electric water cooler style most all of which are not of the ADA accessible type.

An emergency shower/eye wash fixture is located in a science lab area chemical storage room. The fixture is supplied by cold water only whereas during a renovation a tempered water supply would need to be provided. A self-contained wall hung eye wash unit was located in prototype/woodworking shop but did not appeared to have been serviced for some time.

The computer modeling classroom had a 5-HP air compressor with 60-gallon receiver. The unit appeared to service local machinery needs and was in fair condition.

Unless noted otherwise, it appears most of the fixtures are original vintage many of which are not of the water saving type. There are various instance of select fixtures throughout the building.
being placed out of service. Apparently maintenance is routinely performed on faucets, toilet fill valves, etc. as needed.

_Cold Water Service:_

A 4” water service feeds the buildings domestic water needs. The 4” line enters the boiler room in the lower level of building A. The 4” runs through OS&Y style gate valves and a water meter prior to feeding the building. The domestic water piping is distributed throughout the building primarily routed above ceilings.

There is no pressure reducing valve (PRV) or backflow preventer installed on the incoming water service. A PRV would only be required if the incoming water service exceeded 80 psi. Although the school in general should not create an increase in potential cross contamination hazard, due to the presence of the various elevated hazards such as science labs, etc. a backflow preventer should be added to protect the municipal water supply. In addition, cold and hot water to science lab tables must be properly protected with backflow preventers.

Due to the age of much of the water piping there is a high probability that the water service could have lead containing solder in the fittings. Although not a large source of lead contamination it should be tested and monitored and/or corrected if found to be a problem. With the age of the piping a complete replacement of the domestic water system during any substantial renovation is highly recommended.

_Domestic Hot Water Service:_

The domestic hot water needs of the building are primarily supported by three (3) A.O. Smith Copper Tube style water heaters installed in 2005. The water heaters circulate water to a large horizontal storage tank with a capacity estimated as upwards of 2,000-gallons. These water heaters replaced an old indirect fired storage tank which had utilized the heating plant boiler water to generate domestic hot water. At 14 years, the water heaters are nearing the end of their useful service life and should be considered for replacement with high efficiency style condensing boilers during any substantial renovation project.

There is no mixing valve located on the main hot water supply to temper the water for general building use. As such the water heater is set to deliver a constant 130°F +/- water supply. Current code would require differing water temperatures at different types of fixtures. Restrooms bathroom sinks must not discharge hot water at a temperature exceeding 110-112°F for safety reasons, whereas the service fixtures (janitor’s sinks, kitchenette sinks, etc.) are required to have hot water temperatures in excess of 120°F for sanitation reasons. A central mixing valve coupled with local mixing valves and/or adjustable stop mixing fixtures would be required to achieve this level of control.
Storage of hot water below hundred and 130° F can lead to bacteria growth within the system. As such, to prevent this we recommend keeping domestic hot water tank temperatures at 140° F thereby also requiring the need for a central mixing valve.

Domestic Hot Water Heaters

There are two (2) recirculation pumps on the domestic hot water system, which are required since there are fixtures located beyond 100 feet of the hot water source. The building code requires hot water to be available within 100 feet of any hot water consuming fixture. Due to today’s lower flow fixtures, recirculation is required even closer to fixtures to prevent long delays for hot water and associated wasted water at fixtures.

*Drainage Systems:*

Although much of the sanitary sewer system is concealed from view, in general the system consists of waste and vent lines fabricated of cast iron with a mix of hub & spigot and no-hub
(newer) type joints. The sanitary sewer lines run below the slab and exit the building to a municipal sewer system. We noticed no outward signs of recent sanitary system failure other than those indicated herein.

For the science rooms the system was upgraded from its original materials with acid waste type plastic piping tied to an underground exterior limestone chip tank prior to discharging to the sanitary sewer system.

An art room located on Level 2 was found to have a solids interceptor in-line from the sinks. One of the sinks was not draining and appeared to be clogged. An adjacent room that also had a solid interceptor on its sink fixtures did not appear to being used as an art room at the current time.

Original plans show floor drains within the exterior storage and maintenance areas discharging to an exterior sand/gas trap. This trap should be inspected prior to reuse during a renovation.

The roof is drained via an internal roof leader system which discharges to a municipal storm water system. With the exception of some visible water stains on the ceilings of unknown origin and some notable clogged roof drain strainers, we noticed no outward signs of storm drainage system failure. There are no emergency overflow drains mounted on the roof. If the roof cannot support the weight of water backing up until overflow from the edge of the roof, emergency overflow drains must be added as part of any substantial renovation including reroofing. Several roof drains strainers were noted as missing or clogged during our inspection.

**Gas Service:**

A 6” low pressure natural gas service exits grade at the rear of building A, reduces to a 4” line at the gas meter and then increases to an 8” line prior to entering the building at the boiler room. The gas main appears to primarily support the buildings heating boilers and domestic hot water heaters as kitchen cooling equipment is electric. Due to its size the gas line should have a thermally actuated fire shut-off valve. The gas is supplied to the building by Eversource.
Boilers:

The buildings heating requirements are currently served by three (3) 2005 vintage Burnham model #V1114 cast iron sectional hot water boilers. The boilers each have a rated gross heating output of 2,730,000 BTUH for a total heating plant output of 8,190,000 BTUH. Each boiler is fitted with a Webster Cyclonetic natural gas-fired power burner. All units discharge into a common breeching prior to entering a masonry chimney. The internal condition of the chimney is unknown.

One of the existing cast iron boilers has a cracked section and has been placed out of service until repair which, according to facility personnel, has been scheduled for the coming weeks. Often
times susceptibility to cracked sections may be caused by low flow and/or low water return temperature thru the boilers. The boilers are primary/secondary pumped which should mitigate a low flow based failure issue however, we saw no signs of minimum return water temperature control. If the building loop temperature is reset too low this could cause low water temperatures to enter the boilers potentially causing thermal shock/stress. In addition, over the last several years we have noted an excessive number of cracked sections in boilers of this type and age from this manufacturer. It was indicated to use from sources related to the manufacturer that there was a casting issue during that time period that led to an excessive number of premature failed sections.

The boilers are approximately 50% thru their useful expected service life of 30 years as defined in the American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) Applications Handbook. This coupled with their low efficiency and high historical record of sectional failures that them prime candidates for replacement during a substantial renovation. If the existing building heating terminals were to remain the plant could also be considered for a hybrid upgrade approach where only one of the boilers could be replaced with a high efficiency condensing boiler which would operate when the system water temperatures are lower.
Combustion air for the boiler room is supplied from a series of high and low wall louvers.

Boilers are connected to the Owner’s control vendor, Automated Building Systems (ABS). The controls enable and stage the boilers and associated pumps and perform system hot water reset control.

*Hydronic Distribution:*

Hot water from the heating plant is distributed to the building via a supply and return distribution system which runs above ceilings in most cases to serve the heating terminal units. The system circulates hot water to fin-tube radiation, classroom unit ventilators, fan coil units and heating & ventilating units located throughout the building.
The boiler room has a boiler pump for each of the three (3) boilers and three (3) end suction floor mounted system pumps serving the heating circulation zones. The system pumps are manufactured by Bell & Gossett, have 5 HP motors and are each rated for 305 GPM at 32 feet of head. In addition to these pumps, there are tertiary pumps serving various wings and segments of the building.

Main System Pumps P-1.1 thru P-1.3

The pumps appear to be in fair operational condition. Most pumps appear to have been installed during upgrade projects which occurred circa 2005. The pumps are within their useful service life as defined in ASHRAE and could be considered for reuse during a renovation project. However, we would recommend serious consideration be given to upgrading the pumps and system for variable flow. This could also involve removal and/or replacement with ECM type pumps of the tertiary pumps located throughout the building.

System water expansion is accommodated through the use of a bladder type expansion tanks.
Ventilation:

There are a mix of classroom unit ventilators and fan coil units located throughout much of the classroom segments of the building. These classroom unit ventilators are located along exterior walls with each having an outdoor air louver and associate control dampers to allow outdoor air to enter the classroom space through the unit ventilator. During occupied periods, the unit fans run continuous to provide space ventilation and electric dampers modulate the hot water valve and face & bypass dampers (where applicable) to maintain space temperature.

In instances where unit ventilators are present, exhaust is supported by multiple roof exhaust fans supporting rooms via above ceiling ductwork and vertical duct chases. The exhaust fans appear to exhaust just the minimum amount of outside air for ventilation and are not sized to exhaust 100% outside air which occurs when the unit ventilators go into free cooling/economizer mode.
Most of the classroom building sections underwent significant heating and ventilation system renovations during the last decade or more with major upgrades occurring circa 2005. A majority of these renovations involved replacing the classroom unit ventilators with fan coil units. The former outdoor air intakes which serviced the unit ventilators were internally capped and outdoor air was provided through multiple roof mounted energy recovery ventilation (ERV) units. The ERV’s are manufactured by Greenheck and incorporate energy recovery wheel segments which recovery heat from the exhaust airstream to preheat the incoming outdoor air. Gas furnace sections are provided within the units to further temper the air when outdoor air conditions require such. The ERV units are ducted to the classrooms with exhaust air using old exhaust duct chases leading to registers in the classrooms. Outdoor air supply from the ERV’s are ducted to the classrooms via supply duct to ceiling diffusers.

ERV(right), MAU(left) and EF Fans

The current outdoor air ventilation rates for normal classrooms appear to comply with current ventilation standards however final room occupancy and use must be verified to determine full
compliance. Ventilation rates for science rooms and art rooms are deficient in that these rooms require much higher outdoor air and exhaust rates to meet comply with current code.

Upon inspection of the valving arrangement at one of the existing unit ventilators it was found to be piped with a 3-way control valve. 3-way valves are not inducive to energy saving variable flow systems. These valves should be changed to 2-way type upon major renovation and upgrade of the hydronic system.

The locker room unit ventilators are of original vintage and appear to be in a state of disrepair. These units were configured to bring in larger quantities of outdoor air to support the locker room higher ventilation and exhaust air needs. Any renovation must include replacement of these units. Replacement with ERV style systems enabled off of occupancy sensors would be highly recommended to maximize energy savings and comply with the most current energy code.

Most of the fan coil and unit ventilators are nearing 15 years of age placing them towards the later part of the useful expected service life of 20 years as defined by ASHRAE. As such, any substantial renovation should include a phased replacement of these units. Due to acoustical concerns, unit ventilators are not desired in classroom environments unless there is no other options.

The auditorium is heated and ventilated through the use of a central air handler located within the boiler room. The air handler provides outdoor ventilation air through a roof intake with space exhaust via a roof exhaust fan. Due to the high amount of outdoor air required, we suspect current energy codes would require an energy recovery heat reclaim device on a system such as this. The auditorium unit appears to be original to the building and has exceeded its useful service life as defined in ASHRAE and as such is a prime candidate for replacement.

The cafeteria ventilation is supported by a rooftop ERV system similar to those provided for the classrooms. The system provides ventilation air for the space. The cafeteria space is heated with perimeter fin-tube radiation.

The gymnasium spaces are served by ducted heating and ventilation units. These units appear to be original to the building and have exceeded their useful expected service life as defined by ASHRAE and as such should be replaced during a renovation project.

The media center as well as various offices are supported by the ERV systems for ventilation as well as ductless split style heat pump systems for cooling and heating. Perimeter fin-tube radiation is also provided on exterior exposure walls for supplemental heating.
The kitchen area has a fan coil unit for space heating. Make-up air for the kitchen is supplied via a roof mounted Greenheck 100% outdoor air make up unit. The unit appears to have been installed at about the same time as the ERV upgraded project around 2005.

The kitchen hood over the cook line does not appear to comply with current code and NFPA 96 standards. The hood has mesh type filters with no grease cup. It also appears to be enclosed in drywall which, depending on the materials used may not allow for proper clearances. We were unable to gain access to the hood ductwork to verify if its construction was welded as required by code. An exhaust fan on the roof supports the hood. The fan did not appear to comply with required NFPA 96 and UL 762 listings for kitchen hood duty and discharged air towards the roof as opposed to the required up blast configuration. No chemical suppression system was detected at the hood however the current appliance configuration would appear to not need one. Due to the above deficiencies, the hood system should be serious candidate for upgrade and/or replacement during a renovation project.

In general, all building restrooms appear to have ducted exhaust systems although it was unknown if they are operational. The systems should be replaced during a renovation to support new ventilation requirements for areas such as these as well as to insure future reliability.

Most of the major HVAC systems supporting the school are controlled by a building energy management system (EMS). The EMS system was installed and is currently supported by Automated Building Systems, Inc (ABS). Although a further review with the EMS vendor...
would be required to ascertain the extent of this system it is our current understanding that the system controls all the rooftop ERV units as well as most of the fan coil units, unit ventilators, exhaust fans, etc… It should be noted the packaged Greenheck units have factory furnished controls which control much of their internal operation with the EMS simply commanding occupied, unoccupied modes and potentially reset temperatures. Reuse of these units may require a unitary control upgrade to achieve some of the indoor air quality (IAQ) and energy saving features required by current code and standards.

If you have any questions regarding this report please do not hesitate to contact our office.

Sincerely,
Seaman Engineering Corporation

Kevin R. Seaman (e-signature)

Kevin R. Seaman P.E. LEED® AP
President
June 28, 2019

Doherty High Community School
299 Highland Street
Worcester, MA 01602

RE: Existing Electrical Systems Review

Prepared by: Azim Rawji, P.E.

SUMMARY

ART has completed site surveys and reviewed available drawings for the existing Doherty High School building in Worcester, Massachusetts. We have developed a Good/Fair/Poor rating system for the various electrical systems.

The rating system was developed to give a concise, overall assessment for each system. In general, a system rated “Good” typically is up to date with current codes and well suited for current and future space intent. A “Fair” rated system may have some equipment in need of replacement or portions not suited for current or future space programming. Systems that are rated “Poor,” are not well served for current or future space programming, and are outdated or obsolete. There are many reasons fair or poor ratings, including but not limited to age, current code compliance and maintenance.

The Massachusetts State Building Code 780 CMR requires all buildings and structures and all parts thereof, both existing and new, and all systems and equipment therein which are regulated by the State Building Code to be maintained in a safe, operable and sanitary condition. All service equipment, means of egress, devices and safeguards which are required by the State Building Code in a building or structure, or which were required by a previous statute in a building or structure, when erected, altered or repaired, shall be maintained in good working order. It is unknown whether any of the existing systems have been maintained or tested per the manufacturer’s recommendations or system standards over the years they have been in service.
BUILDING ELECTRICAL SYSTEMS

1. **Electrical Service:**

   The existing electrical service is rated 1200 Amperes, 480/277 Volt, 3-phase, 4-wire. The primary electrical service originates at Highland Street and runs underground to a Utility Co. transformer on the exterior of the building. The electrical distribution equipment is by Westinghouse.

   The Westinghouse electrical equipment is approximately 40 years old and at the end of its useful working life. The distribution equipment is no longer being manufactured or supported.

   Rating: Poor

2. **Normal Distribution**

   Most of the panelboards in the building are by Westinghouse; additional panelboards installed over the years are by Eaton. The panelboards are located throughout the building in electrical rooms and are circuit breaker type. The branch circuit panelboards by Westinghouse are past their useful life; the Eaton panelboards have useful life left. Several different types of wiring methods were observed namely wires in raceway, metal clad (MC) cable, and armored cable (AC). It appears that some of the feeder and branch circuits utilize the conduit as the grounding path and do not have a dedicated grounding conductor. The grounding can become ineffective due to rust and bad connections between conduits and boxes over time. It is recommended that the electrical distribution equipment be replaced together with all branch circuit wiring due to age.

   Rating: Poor

3. **General Purpose Power**

   The general-purpose power in the building is inadequate. The classrooms have inadequate number of receptacle outlets. Additional outlets have been installed in some rooms over the years in surface raceways. The branch circuits most likely utilize the conduit as the grounding path and do not have a dedicated equipment grounding conductor. The grounding can become ineffective due to rust and bad connections between conduits and boxes over time. New wiring devices and branch wiring is recommended.

   Rating: Poor

4. **Emergency /Standby Power**

   The existing generator is no longer functional and past its useful working life. The generator is by Katolight rated at 125kW/156kVA, 480/277V, 3 Phase, 4-Wire.

   Rating: Poor
5. **Egress & Exit Lighting**

The egress and exit lighting are through battery powered exit signs and emergency lighting units. The overall coverage appears to be inadequate; ART observed that emergency lighting was not installed at all the exit discharge leading to a public way. The overall coverage of exit signs appears to be inadequate. Non-lit exit signs were observed in the building.

Rating: Poor

6. **Lighting & Controls**

The lighting in the building is a mixture of fixtures (recessed, surface, pendant, etc.) with T5, T8, compact fluorescent (CFL), LED screw-in, incandescent and HID lamps. The lighting system is inefficient and does not meet current energy codes. Lighting control is primarily by wall mounted switches. Automatic control of lighting is not provided.

The theatrical dimming system in the auditorium is by Kliegl Bros. The system is obsolete and past its useful working life.

Rating: Poor

7. **Telecommunications Cabling Infrastructure**

The telecommunications system comprises mostly of Category 5/5e cables for data and voice communications. Telecommunications equipment is not installed in dedicated rooms or closets and does not comply with clearances required by the BICSI standards. The system is outdated and does not comply with the BICSI standards for telecommunications infrastructure.

The network switching equipment is by HP; there are some Wi-Fi access points in the building, but they do not provide adequate coverage. The Wi-Fi access point are by Cisco. The system is slow and barely meets current requirements. A new standards compliant telecommunications infrastructure, network switching equipment and wireless access points are recommended.

The telephone system comprises of POTS lines from the utility company and digital handsets by Vtech. The telephone distribution system is in the electrical/mechanical rooms. Telephone handsets are in the administration offices. The handsets in the classrooms cannot make outside calls and are part of the public address system.

Rating: Poor

8. **Fire Alarm System**

The fire alarm system is a conventional 8-zone fire alarm panel by Flexalarm, the Gamewell Company. The system is original to the building and past its useful working life. The system is tone-visual type. An annunciator is provided in the main administrative office. The fire alarm does not comply with
current codes. The initiating and visual signaling devices are inadequate and do not comply with NFPA-72 standards. The height and location of manual pull stations do not comply with current codes.

Rating: Poor

9. Public Address (PA) and Clock Systems

The PA system is by Bogen. The system comprises of the headend in the main administrative office, speakers located in common areas and speakers and handsets in the classrooms. The existing system is capable of all call paging but is not integrated with the telephone system. The replacement parts for the system are hard to get. The system is outdated and past its useful working life.

The existing master clock system is by Cincinnati Time Systems. The system is non-functional, and many have been replaced with battery operated clocks. The system is obsolete and past its useful working life.

Rating: Poor

10. Audio-Video Systems

The audio-video system comprises of a projector located in classrooms. Future programming needs will require upgrades to the projectors and interactive boards. The classrooms are also equipped with television monitors which appear to be non-functional. The local sound systems in the cafeteria/gym/auditorium are outdated.

Rating: Poor

11. Video Surveillance & Access Control

The video surveillance system by Genetec with Axis cameras. The system complies with current standards but requires additional cameras for adequate coverage.

Building entry is through Axis video entry station. The system is a retrofit and allows visitors to be buzzed into the school. The existing system is operational and complies with current standards.

Rating: Fair
DOHERTY MEMORIAL HIGH SCHOOL

WORCESTER, MA

FOODSERVICE BASIS OF DESIGN NARRATIVE

JUNE 28, 2019
OVERVIEW

On June 4, 2019, in collaboration with the office of Lamoureux Pagano Associates, Colburn & Guyette performed a site visit of the existing foodservice operation at the Doherty Memorial High School in Worcester. Our goal for this exercise is to give a high-level overview of the existing building conditions as it relates to foodservice, equipment condition and conformance with health codes. The intent of our report is to provide assistance with the decision-making process for future renovations or new construction to the foodservice facilities, as they relate to the overall proposed school project.

GENERAL

The Doherty Memorial High School population is approximately 1,500 students, grades 9 through 12. The current space for the Food Service operation is approximately 2,500 square feet. The Food Service Staff was not available at the time of the walk-through, so we were unable to ask questions about operational issues.

SITE OBSERVATION

Typical high school cafeteria functions are present. This includes dry and refrigerated storage, work/prep space, cooking lines, pot washing and serving lines.

There is one walk-in cooler and one walk-in freezer. The walk-in freezer was locked at the time of the walk through. The freezer box is showing wear to its external walls. It appears to have had a new door installed. The walk-in cooler was accessible, and it was packed with product. The shelving was full and additional product was stacked in the aisle space. The cooler box was also showing wear at its external walls. Again, the walk-in cooler appears to have had a new door installed. The dry storage room was also locked at the time of the walk through, but the dishroom was being used to storage dry goods. Our guess is that because the dry storage room was full, the dishroom was being used as a back-up storage room.

The food prep space included four (4) butcher block tables, one (1) stainless steel work table and one (1) stainless steel prep table with two (2) sinks. There is also a dedicated handsink to this space. The four butcher block tables were showing signs of wear. The tops are faded and do not appear to have been maintained with a wood preservative. None of the tables had convenience outlets. The prep table with sinks had a disposal unit attached to it but it was no longer functioning. Equipment in the food prep space includes two (2) floor mixers, two (2) food slicers, one (1) 2-Door Reach-In Refrigerator, one (1) 1-Door Reach-In Freezer and one Reach-In Heated Cabinet. The floor mixers are older and do not have the current safety accessories that are required. The two slicers are in good condition. The 2-Door Reach-In...
is an older unit. The 1-Door Reach-In Freezer is in good condition. The Reach-in Heated Cabinet is an older unit.

The two cooking lines include one (1) triple deck pizza oven, two (2) single convection ovens, two (2) Kettles, one (1) steamer, one (1) 2-Burner Range, one (1) Griddle and the associated exhaust hood above. The triple deck pizza oven appears to be in good condition. The two single convection ovens are older units. The two kettles appear to be in good condition as well as the steamer, 2-Burner Range and Griddle. The size of the exhaust hood is too small based on the cooking equipment below. It does not have the required overhang to capture grease laden vapor or smoke, as well as heat. The hood is also missing a Fire Suppression System with drops above the 2-Burner Range and Griddle, as required by the NFPA Code.

Currently there is a three-bay pot sink for washing and sanitizing. This three-bay pot sink area does not have a dedicated handsink which is required by the Health Food Code. There is also a dishroom in this space that is no longer being used as a dishroom. Currently it is being used as a back-up dry storage space. The original dishroom equipment is still present; dishmachine, soiled and clean stainless-steel tables and two drop-off windows.

There are three serving lines. The counters are stainless steel cabinetry with associated sneeze guards. Some of the hardware is broken. Original hot wells have been replaced with new units. Each of the three serving lines has two cashier stations, one at each end. Some countertop filler pieces at the cashier stations have been added. These pieces are laminated plywood with exposed edges. This does not meet the Food Code. The hardware for the POS systems at the cashier stations are mounted on the wall above on an unfinished piece of plywood. This does not meet the Food Code.

The ceiling appears to be painted plaster. The walls appear to be painted plaster and block. The walls do have some repaired plaster exposed, as well as cardboard covering gaps at piping penetrations. The flooring is 4" tiles. For the most part the flooring is in good shape. Per the local health department, walls, ceiling and floors are to be smooth and easily cleanable. The lighting is fluorescent lighting and natural light through windows.

The following photos were taken during our site visit. These photos are intended to help support existing condition descriptions within the report.
Walk-In Cooler

Dishroom as Back-Up Storage
Butcher Block Prep Table

Wall Damage and Cardboard Cover
Exhaust Hood overhang does not capture
Broken Hardware at Serving Counter
Non-Working Disposer and Wall Damage
Unfinished Plywood Shelf

RECOMMENDATIONS

MSBA provides 2,800 square feet for a full-service kitchen under the current guidelines based on a student population of 1,500. The existing foodservice space is approximately 2,500 square feet, 300 square feet undersized. In either a renovation or new construction, new walk-in refrigerated storage should be sized appropriately to meet the number of meals to be provided. Dry Storage should be sized properly and consolidated as well.

The food prep area should have stainless steel tables with storage shelving above and below. Convenience outlets should be located at the work and prep tables. New energy efficient Reach-In Refrigerators should be provided in this area for ease of access and speedy preparation. The floor mixers should be replaced with new models with current safety features.

Ideally, all the cooking equipment would be replaced with new more efficient equipment. Although, the Triple Deck Pizza Oven, Steamer, 2-Burner Range, Griddle and two Kettles appear to be in good working condition can be reused. Both Single Convection Ovens should be replaced with new more efficient
Convection Ovens. The exhaust hood above the equipment should be replaced with a new right-sized hood and associated fire suppression system. Also, a ventilation demand control system should be considered for the exhaust hood to reduce energy costs.

The 3-Bay Pot Sink area requires a dedicated handsink. And depending on the program moving forward, a mechanical dishmachine with a proper dishroom should be considered.

The three serving counters should be replaced with new counters, providing the proper hot and cold wells to meet the schools lunch program and national requirements. Refrigerated and Heated storage should be integrated to provide back-up supplies at serving line.

The ceiling and floors appear to be in decent condition. The walls need some repairs and to be provided with a finish that will meet the Food Code.

END OF REPORT
3.1.4 EVALUATION OF EXISTING CONDITIONS

G. Determination for Need & Schedule for Soils Exploration & Geotechnical Evaluation
1. Narrative
2. Doherty Memorial High School Site
3. Foley Stadium Site
4. Chandler Magnet School Site
The Doherty High School site along with, the alternate sites, Foley Stadium and Chandler Magnet School, soils explorations were not conducted at this stage, as the City had record information that was deemed sufficient at this stage of the project to give an understanding of the conditions. Following summarizes this data, and the need for further explorations during the upcoming phases.

**Doherty School Site:**

- Building planning began in the early 60’s and the building was completed in 1966
- The site prior to the construction was a park, and the plans from Olmstead were available, that indicate there were minimal changes made to the site until the school was constructed,
- Full plans for the school were available, which included the pre-construction topography, and the soils exploration test logs conducted. (attached)
- When constructed in the 60’s, the site was largely a soils cut situation, except at the sports field, where there was a considerable fill used to level off the play fields
- USGS Maps show the lower site areas as Thin Glacial Till, the upper area as Thick Glacial Till, and notes the earthen fill area at the field. Ledge outcroppings or large boulders are visible. (attached)
- There have been no changes to the site since the construction that would affect the geotechnical analysis, and no issues with the foundations or slabs at the school

Under the next phases of the project, further analysis will be conducted by Lahlaf Geotechnical Consultants, after the general building footprint is established. Additionally, as Worcester soils have naturally occurring arsenic in the soils, an LSP will test the soils for soils arsenic levels, and other testing they deem necessary. The latter testing will be conducted along with the geotechnical testing.
Foley Stadium Site—Alternate Site:

- The track and field’s appear to have been constructed sometime in the 1920’s based on review of available record topographical mapping.
- The stadium stands were constructed in 1940 as a WPA project. Drawings are available; that indicate spread footings and the existing structure. This structure was demolished and a new stadium was constructed in 1963. Available drawings indicate this newer building and stadium was founded on piles. The stadium drawings are available.
- The fields were improved in 2007, and the drawing set included logs of test boring program performed at the fields (attached). The geotechnical report was not available.
- Boring logs appear to have been conducted for the purpose of the field improvements, most borings were advanced to only 5 ‘those advanced to deeper levels, show a combination of urban fill materials, including coal ash mix. Overlying organic silt, with sand, gravel or clay under.
- USGS Maps indicate that the site upper site area as Glacial stratified Deposits, course deposits, and the lower area as swamp deposits. Based on review of the test borings conducted for the 2007 project show the latter material appears to extend well into the site.
- LPAA had conducted study for an adjacent building, and the borings showed fill material over peat, underlain by gravel, and knowledge that many of the commercial buildings along Beaver brook are founded on piles, or have settlement issues.
- The Brook runs through the site and is in an 84” conduit that is close to the surface, record plans are not available.

The Above data was forwarded to Lahlaf Geotechnical, who advised based on the information the building could not be founded on spread footings, and would need to be supported on piles or similar
systems and the foundations appropriately designed for the system determined after the investigation and report.

The Structural Engineer addresses foundation summaries in their narrative.

The data was also reviewed by Lord Associates, LSP, who noted that *MADEP MCP notification exemption for coal ash pertains to oil or hazardous materials found in fill with coal ash, but is not intended to cover material that is predominantly ash, which this does not appear to be.*

*While outside of the notification requirements, disposal of said fill may still present some difficulty and/or at least a premium with respect to pre-characterization testing and disposal fees. For budgeting and from a risk-preventive perspective, they would recommend a similar treatment of soils that may contain elevated arsenic and PAH compounds that are found in association with coal ash as was managed similar projects, which entailed providing sufficient clean fill cover over the material, to prevent any exposure. Full analysis would need to be conducted at the next phase. Soils material from the geotechnical borings can be used for testing.*

Under the next phases of the project, further analysis will be conducted by Lahlaf Geotechnical Consultants, after the general building footprint is established. Environmental testing would also need to be conducted.

General assumptions on the budget were made and would need to be reflective of the future recommendations.

**Chandler Magnet School Site—Alternative Site:**

- Building completed in the early 1950’s
- The site prior to the construction was undeveloped woodland
- Full plans for the original school were available, which included the pre-construction topography, and the soils exploration test logs conducted at that time. Note that “rock obstruction” was noted at 4 – 8 feet at most of the test pits (attached).
The site was largely a soils cut situation, except at the sports field, where there was a cut/fill situation.

USGS Maps show lower site areas at Chandler Street as Glacial stratified Deposits, course deposits the lower site areas as Thin Glacial Till, the upper area as Thick Glacial Till, and notes the earthen fill area at the rear field. (attached)

There have been no changes to the site since the construction that would affect the geotechnical analysis, and no reported issues with the foundations or slabs at the school.

Under the next phases of the project, further analysis will be conducted by Lahlaf Geotechnical Consultants, after the general building footprint is established. Additionally, as Worcester soils have naturally occurring arsenic in the soils, an LSP will test the soils for soils arsenic levels, and other testing they deem necessary.
TEST BORING DATA

FEB 2, 1963 TO
FEB 26, 1963

STANDARD PENETRATION TEST
WEIGHT OF HAMMER 140 LB
HAMMER FALL 30"
SAMPLER O.D. 2"

BORING - 5
ELEV. 487.00'

210  FROST
325  LOAM
170  FILL OR
14  TOPSOIL
17  DRY
19  FIRM
62  SAND
55  COMPACT
38  GRAVEL
51  WATER
69  WET
114  V. COMP.
135  GRAVEL
155

BORING - 6
ELEV. 487.00'

5
5
10
10
15
15
20
20

235  FROST
169  FILL OR
167  TOPSOIL
107  DRY
187  FIRM
75  SAND
67  COMPACT
56  GRAVEL
89  WATER
78
78
114
129
147
132

BORING - 7
ELEV. 487.20'

5
5
10
10
15
15

172  FROST
215  V. COM.
155  DRY
32  LOOSE
33  SAND
25  GRANULATION
350  FILL
87
54
45
45
11
41
35
29
33
28

BORING - 8
ELEV. 486.10'

5
5
10
10
15
15

176  FROST
212  LOAM
25  DRY
6  LOOSE
6  SAND
10  FILL
25
40
56
54
49
35
28
33
28

BORING - 9
ELEV. 486.20'

5
5
10
10
15
15

219  FROST
135  LOAM
58
55
69
90
70
144
41
22
22
17
16
24
25
24
25
31
35
35
68

NO REFUSAL
NO REFUSAL
NO REFUSAL
NO REFUSAL
NO REFUSAL
NO REFUSAL
NO REFUSAL
**Boring Number:** CDM-1

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts  
**Project Name:** Foley Field  
**Project Number:**

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<th>Sample No.</th>
<th>Sample Length (in)</th>
<th>Sample Recovery (in)</th>
<th>Blows per foot</th>
<th>N Value</th>
<th>Testing (ft)</th>
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**Sample Types:**  
- AS: Auger/Grab Sample  
- CS: California Sampler  
- BX: 1.5" Rock Core  
- GP: Geoprobe  
- HP: Hydro Punch  
- SS: Split Spoon  
- ST: Shelby Tube  
- WS: Wash Sample

**Drilling Method:**  
- HSA: Hollow Stem Augers RC  
- SSA: Solid Stem Augers CT  
- HA: Hand Augers  
- AR: Air Rotary  
- DTR: Dual Tube  
- FR: Foam Rotary  
- MR: Mud Rotary

**Consistency vs Blowcount/Foot:**  
- Granular (Sand):  
  - Very Loose: 0-4  
  - Loose: 4-10  
  - Medium Dense: 10-20  
  - Dense: 20-30  
  - Very Dense: >30  
- Fine Grained (Clay):  
  - Very Soft: 2  
  - Soft: 4  
  - Medium Stiff: 6  
  - Stiff: 8  
  - Very Stiff: >10

**Modified Bunnister Classification:**  
- and: 35-50%  
- some: 20-35%  
- little: <10%  
- trace: <10%  
- moisture, density, color

Reviewed by:  
Date:  
Boring Number: CDM-1
CAMP DRESSER & McKEE

Boring Number: CDM-2

Client: City of Worcester  
Project Location: Worcester, Massachusetts

Drilling Contractor/Driller: New Hampshire Boring, Inc / Paul
Pre-Drk Method:
Drilling Method/Casing: Geoprobe / 5' Macro Sleeve
Hammer Weight/Drop Height: Spoon Size: lb / in / in O.D.
Surface Elevation (ft.): 487
Total Depth (ft.): 5

Ground Water:
Depth (ft) Date
NE
Abandonment Method: Backfill with cuttings
Logged By: Laurel Gionet
Drilling Date: Start: 1/30/2006 End: 1/30/2006

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<th>Sample Number</th>
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<th>Sample Recovery (in)</th>
<th>Blows per 100 inches</th>
<th>Testing (In)</th>
<th>Graphic Log</th>
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<td>BOE at 15 feet.</td>
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- GSA: Solid Stem Augers
- HA: Hand Augers
- AR: Air Rotary
- DTR: Drill Through Casing
- DTC: Drill Through Casing
- FR: Foam Rotary
- MR: Mud Rotary
- CT: Cable Tool
- JET: Jetting

Consistency vs Blowcount/Foot
- Granular (Sand): Fine Grained (Clay):
  - Very Loose: 0-4
  - Loose: 4-10
  - Medium Dense: 10-30
  - Very Dense: >30
  - Very Soft: 2
  - Soft: 2-4
  - Medium Stiff: 4-8
  - Stiff: 8-15

Modified Burnister Classification
- and some 35-50%
- some 20-35%
- little 10-20%
- trace <10%
- moisture, density, color

Reviewed by: 
Date: 
Boring Number: CDM-2
# Boring Number: CDM-3

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul  
**Pre-Drill Method:**
- **Drilling Method/Casing:** Geoprobe / 5' Macro Sleeve  
- **Hammer Weight/Drop Height/Spoon Size:** lb / in / in O.D.

**Surface Elevation (ft.):** 487  
**Total Depth (ft.):** 5

### Elev Depth  |  Sample  | Sample  | Sample  | Sample  | In-Situ  | Graphic Log  | Strata  | Material Description  | Remarks
--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
487.0  | 0  | S-1  | 60  | 60  |  |  |  | 18" Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots  |  
482.0  | 5  |  |  |  |  |  |  | Dry, light brown, fine to coarse SAND and GRAVEL, trace silt  | BOE at 5.5 feet
477.0  | 10  |  |  |  |  |  |  |  |  
472.0  | 15  |  |  |  |  |  |  |  |  
467.0  |  |  |  |  |  |  |  |  |  

### Sample Types
- **AS:** Auger/Grab Sample  
- **CS:** California Sampler  
- **BX:** 1 1/2 Rock Core  
- **NX:** 2 1/2 Rock Core  
- **OP:** Geoprobe  
- **HP:** Hydro Punch  
- **SS:** Split Spoon  
- **ST:** Shelby Tube  
- **WS:** Wash Sample

### Drilling Method
- **HSA:** Hollow Stem Augers  
- **SSA:** Solid Stem Augers  
- **HA:** Hand Augers  
- **AR:** Air Rotary  
- **DTR:** DTH Drill  
- **FR:** Foaming Rotary  
- **MR:** Mud Rotary

### Consistency vs Blowcount/Foot
- **Granular (Sand):**
  - Very Loose: 0-4
  - Loose: 4-10
  - Medium Dense: 10-30
  - Dense: 30-50
  - Very Dense: >50
- **Fine Grained (Clay):**
  - Very Soft: 2
  - Soft: 2-4
  - Medium Silty: 4-8
  - Stiff: 8-15
  - Very Stiff: >15

### Modified Burmister Classification
- **and:** 35-50%
- **some:** 20-35%
- **little:** 10-20%
- **trace:** <10%
  - moisture,
  - density,
  - color

**Reviewed by:**

**Date:**

**Boring Number:** CDM-3
Boring Number: CDM-4

Client: City of Worcester
Project Location: Worcester, Massachusetts

Drilling Contractor/Driller: New Hampshire Boring, Inc / Paul
Pre-Drill Method:
Drilling Method/Casing: Geoprobe / 5' Maco Sleeve
Hammer Weight/Drop Height/ Spoon Size: lb / in / in O.D.
Surface Elevation (ft.): 487
Total Depth (ft.): 5

Ground Water:
Depth (ft) Date
NE
Abandonment Method: Backfill with cuttings
Logged By: Laurel Glonet
Drilling Date: Start: 1/30/2006 End: 1/30/2006

<table>
<thead>
<tr>
<th>Elev. Depth (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Sample Recovery (in)</th>
<th>Blow per 6 inches</th>
<th>Test Method</th>
<th>Testing Set</th>
<th>Graphic Log</th>
<th>Strata</th>
<th>Material Description</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>467.0</td>
<td>S-1</td>
<td>60</td>
<td>35</td>
<td>35</td>
<td>2</td>
<td>Field Log</td>
<td>Field Test</td>
<td>Field Test</td>
<td>Topsoil</td>
<td>8&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
<td>BOE at 5 feet</td>
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<tr>
<td>462.0</td>
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<td>2</td>
<td>Field Log</td>
<td>Field Test</td>
<td>Field Test</td>
<td>Fill</td>
<td>6&quot; Dry, black, coal ASH Bottom 24&quot;: Moist, brown, SILT, little gravel, little fine to coarse sand, little coal ash.</td>
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<tr>
<td>477.0</td>
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<td></td>
<td></td>
<td>2</td>
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<td>2</td>
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<td>467.0</td>
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<td>2</td>
<td>Field Log</td>
<td>Field Test</td>
<td>Field Test</td>
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Sample Types: AS Auger/Grab Sample, CS California Sampler, BX 1.5" Rock Core, NX 2.1" Rock Core, GP Geoprobe, HP Hydro Punch, SS Split Spoon, ST Shelby Tube, WS Wash Sample
Drilling Method: HSA Hollow Stem Augers RC, SSA Solid Stem Augers CT, HA Hand Augers JET, AR Air Rotary D D, DTR Dual Tube DTC, FR Foam Rotary, MR Mud Rotary


Modified Bumerater Classification and 35-50% and some 20-35% little 10-20% trace <10% moisture, density, color

Reviewed by: Date: Boring Number: CDM-4
**Boring Number:**
**CDM-5**

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul  
**Pre-Drift Method:**

**Drilling Method/Casing:** Geoprobe / 5' Macro Sleeve  
**Hammer Weight/Drop Height/ Spoon Size:** lb / in / in O.D.

**Surface Elevation (ft.):** 467  
**Total Depth (ft.):** 5

<table>
<thead>
<tr>
<th>Elev. Depth (ft)</th>
<th>Sample Type</th>
<th>Sample Weight (lb)</th>
<th>Sample Length (in)</th>
<th>Sample Recovery (in)</th>
<th>Blows per inches</th>
<th>In-Situ Testing (lbs)</th>
<th>Graphic Logs</th>
<th>Strata</th>
<th>Remarks</th>
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<tr>
<td>0</td>
<td>S-1</td>
<td>60</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
<td>Topsoil</td>
<td></td>
<td>BOE @ 5.5 feet</td>
</tr>
<tr>
<td>482.0</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Moist, dark brown, clayey SILT, little gravel, trace fine to coarse sand, trace brick</td>
<td></td>
<td></td>
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<tr>
<td>477.0</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>472.0</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
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<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Material Description:**
- 12" Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots.
- Moist, dark brown, clayey SILT, little coal ash, little gravel, trace fine to coarse sand, trace brick.

**Ground Water:**
- Depth (ft): Date
- NE

**Abandonment Method:** Backfill with cuttings

**Logged By:** Laurel Gionet  
**Drilling Date:** Start: 1/30/2005  
**End:** 1/30/2006

---

**Sample Types:**
- AS: Auger/Grab Sample
- CS: California Sampler
- BX: 1.5" Rock Core
- NX: 2.1" Rock Core
- GP: Geoprobe
- HP: Hydro Punch
- SS: Spilt Spoon
- ST: Shelby Tube
- WS: Wash Sample

**Drilling Method:**
- NQA: Hollow Stem Augers
- SSA: Solid Stem Augers
- CT: Cable Tool
- HA: Hand Augers
- JET: Jetting
- AR: Air Rotary
- D: Drilling
- DTR: Dual Tube
- DTC: Drill Through Casing
- FR: Foam Rotary
- MR: Mud Rotary

**Consistency vs Blowcount/Foot:**
- Very Loose: 0-4
- Loose: 4-10
- Medium Dense: 10-30
- Dense: 30-50
- Very Dense: >50
- Very Soft: 2
- Soft: 2-4
- Medium Stiff: 4-4
- Stiff: 6-15
- Very Stiff: 15-30
- Hand: >20

**Modified Burmister Classification:**
- Very Loose: 0-4
- Loose: 4-10
- Medium Dense: 10-30
- Dense: 30-50
- Very Dense: >50
- Very Soft: 2
- Soft: 2-4
- Medium Stiff: 4-4
- Stiff: 6-15
- Very Stiff: 15-30
- Hand: >20

**Reviewed by:**

**Date:**

**Boring Number:** CDM-5
# Boring Number: CDM-6

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts  
**Project Name:** Foley Field  
**Project Number:**

<table>
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<th>Elevation (ft)</th>
<th>Sample</th>
<th>Sample Length (in)</th>
<th>Recovery (in)</th>
<th>In-Situ Testing (ft)</th>
<th>Graphic Log</th>
<th>Strata</th>
<th>Material Description</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>487.0</td>
<td>S-1</td>
<td>60</td>
<td>52</td>
<td>13</td>
<td>Topsoil</td>
<td></td>
<td>15&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
<td></td>
</tr>
<tr>
<td>482.0</td>
<td>S-2</td>
<td>60</td>
<td>50</td>
<td>13</td>
<td>Fill</td>
<td></td>
<td>Dry, black to brown, coal ASH, some fine sand, little silt, little gravel</td>
<td></td>
</tr>
<tr>
<td>477.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silt</td>
<td></td>
<td>Moist, blue-gray, clayey SILT, little gravel, 3&quot; layer of brown, fine to coarse SAND, trace silt, trace gravel</td>
<td></td>
</tr>
<tr>
<td>472.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BOE at 10 feet</td>
<td></td>
</tr>
</tbody>
</table>

**Sample Types:**  
- AS: Auger/Grab Sample  
- CS: California Sampler  
- BX: 1.5" Rock Core  
- NX: 2.1" Rock Core  
- GP: Geoprobe  
- HP: Hydro Punch  
- SS: Split Spoon  
- ST: Shelby Tube  
- WS: Wash Sample

**Drilling Method:**  
- CS: Hollow Stem Augers  
- CT: Cable Tool  
- HA: Hand Augers  
- JET: JET Drilling  
- AR: Air Rotary  
- D: Driving  
- DTR: Dual Tube  
- DTC: Drill Through Casing  
- FR: Foam Rotary  
- MR: Mud Rotary

**Consistency vs Blowcount/Foot:**  
- Granular (Sand):  
  - Very Loose: 0-4  
  - Loose: 4-10  
  - Medium Dense: 10-30  
  - Very Dense: >50  
- Fine Grained (Clay):  
  - Very Soft: 2  
  - Soft: 2-4  
  - Medium Stiff: 4-8  
  - Stiff: 8-15  
  - Hard: >20

**Modified Bernoulli Classification:**  
- and 35-50%  
- some 20-35%  
- little 10-20%  
- trace <10%

Reviewed by:  
Date:  
Boring Number: CDM-6
### Boring Number: CDM-7

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts  
**Project Name:** Foley Field  
**Project Number:**

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul  
**Pre-Drill Method:**  
**Drilling Method/Casing:** Geoprobe / 6' Macro Sleeve  
**Hammer Weight/Drop Height/Spoon Size:** lb / in / in O.D.  
**Surface Elevation (ft.):** 487  
**Total Depth (ft.):** 5

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<th>Sample Type</th>
<th>Sample Nos</th>
<th>Sample Length (in)</th>
<th>Sample Weight (lb)</th>
<th>Blows per Foot</th>
<th>Blows per 6 inches</th>
<th>In-Situ Testing (ft)</th>
<th>Graphic Log</th>
<th>Material Description</th>
<th>Remarks</th>
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<tr>
<td>487.0</td>
<td>S-1</td>
<td>60</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
<td></td>
</tr>
<tr>
<td>482.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2&quot; gray, angular GRAVEL</td>
<td></td>
</tr>
<tr>
<td>477.0</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10&quot;: Moist, gray to black, coal ASH, some fine to coarse sand, little gravel, trace brick</td>
<td></td>
</tr>
<tr>
<td>472.0</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>BOE at 5 feet</td>
<td></td>
</tr>
<tr>
<td>467.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sample Types**  
- AS: Auger/Grab Sample  
- CS: California Sampler  
- BX: 1.5" Rock Core  
- NX: 2.5" Rock Core  
- GP: Geoprobe  
- HP: Hydraulic Punch  
- SS: Split Spoon  
- ST: Shelby Tube  
- WS: Wash Sample

**Drilling Method**  
- HSA: Hollow Stem Augers  
- SSA: Solid Stem Augers  
- CT: Cable Tool  
- HA: Hand Augers  
- AR: Air Rotary  
- D: Driving  
- OTR: Dual Tube  
- FTC: Drill Through Casing  
- FR: Foam Rotary  
- MR: Mud Rotary

**Consistency vs Blowcount/Foot**  
- Granular (Sand):  
- Fine Grained (Clay):  
- Very Loose: 0-4  
- Very Soft: 2  
- Loose: 4-10  
- Soft: 2-4  
- Medium Dense: 10-30  
- Medium Stiff: 4-8  
- Dense: 30-50  
- Stiff: 8-15  
- Very Dense: >50  
- Very Stiff: 15-30  
- Hard: >30

**Modified Buxenier Classification**  
- and 35-50%  
- some 20-35%  
- little 10-20%  
- trace <10%  
- moisture, density, color

**Reviewed by:**  
**Date:**  
**Boring Number:** CDM-7
# Boring Number: CDM-8

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts  
**Project Name:** Foley Field  
**Project Number:**

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul  
**Pre-Drill Method:**
**Drilling Method/Casing:** Geoprobe / 5' Macro Sleeve  
**Hammer Weight/Drop Height/Spoon Size:** lb / in / in O.D.  
**Surface Elevation (ft.):** 487  
**Total Depth (ft.):** 5

<table>
<thead>
<tr>
<th>Elev. Depth (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Re-Tested (in)</th>
<th>In-Situ Testing (in)</th>
<th>Graphic Log</th>
<th>Strata</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>487.0</td>
<td>S-1</td>
<td>60</td>
<td>45</td>
<td></td>
<td></td>
<td>Topsoil</td>
<td></td>
<td>6&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
</tr>
<tr>
<td>482.0</td>
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<td></td>
<td></td>
<td></td>
<td>Fill</td>
<td></td>
<td>Top 24&quot;: Moist, brown, clayey SILT, little fine to coarse sand, trace gravel</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Bottom 15&quot;:</td>
<td></td>
<td>Moist, black to gray, coal ASH, trace brick</td>
</tr>
</tbody>
</table>

**BOE at 5 feet**

---

**Sample Types**  
- AS: Auger/Grab Sample  
- BS: California Sampler  
- BX: 1.5” Rock Core  
- NX: 2.1” Rock Core  
- GP: Geoprobe  
- HP: Hydro Punch  
- SS: Split Spoon  
- ST: Shelby Tube  
- WS: Wash Sample

**Drilling Method**  
- HSA: Hollow Stem Augers  
- SSA: Solid Stem Augers  
- CT: Cable Tool  
- HA: Hand Augers  
- AR: Air Rotary  
- DTR: Dual Tube  
- FR: Foam Rotary  
- MR: Mud Rotary

**Consistency vs Blowcount/Foot**

- **Granular (Sand):**
  - Very Loose: 0-4  
  - Loose: 4-10  
  - Medium Dense: 10-30  
  - Very Dense: >50

- **Fine Grained (Clay):**
  - Very Soft: 2  
  - Soft: 2-4  
  - Medium Stiff: 4-8  
  - Very Stiff: 15-30

**Modified Bellmaner Classification**

- None: and 35-50%  
- Some: 20-35%  
- Little: 10-20%  
- trace: <10%

**Reviewed by:**

**Date:**

**Boring Number:** CDM-8
**Boring Number:**
**CDM-9**

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts

**Ground Water:**

**Depth (ft):** Date  
NE
Abandonment Method: Backfill with cuttings
Logged By: Laurel Gionet
Drilling Date: Start: 1/30/2006  End: 1/30/2006

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<th>Elev. Depth (ft)</th>
<th>Sample Depth</th>
<th>Sample Number</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Sample Recovery (in)</th>
<th>Blows per 6 inches</th>
<th>In-Situ Testing (ft)</th>
<th>Graphic Log</th>
<th>Strata</th>
<th>Material Description</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>487.0</td>
<td>0</td>
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<td>60</td>
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<td></td>
<td></td>
<td>Topsoil</td>
<td>14&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fill</td>
<td>Moist, gray, SILT, some fine sand, little coal ash, trace gravel (iron stained)</td>
<td></td>
</tr>
<tr>
<td>482.0</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BOE at 5 feet</td>
<td></td>
</tr>
</tbody>
</table>

**Sample Types**  
- AE: Auger/Grab Sample  
- CA: California Sampler  
- BX: 1.5" Rock Core  
- NX: 2.1" Rock Core  
- GP: Geoprobe  
- HP: Hydro Punch  
- SS: Split Spoon  
- ST: Shelby Tube  
- WS: Wash Sample

**Drilling Method**  
- HSA: Hollow Stem Augers RC  
- SSA: Solid Stem Augers CT  
- HA: Hand Augers  
- AR: Air Rotary  
- FR: Foam Rotary  
- MR: Mud Rotary  
- Reverse Circulation  
- JET: Jetting  
- DTC: Drill Through Casing

**Consistency vs Blowcount/Foot**  
- Granular (Sand):  
  - Very Loose: 0-4  
  - Loose: 4-10  
  - Medium Dense: 10-20  
  - Very Dense: >20
- Fine Grained (Clay):  
  - Very Soft: 2  
  - Soft: 2-4  
  - Medium Stiff: 4-8  
  - Hard: >30

**Modified Burmister Classification**  
- and some 35-50%  
- little 10-20%  
- trace <10%

**Reviewed by:**  
**Reviewed on:** Date:  
**Boring Number:** CDM-9
**Boring Number:** CDM-10

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Drilling Method</th>
<th>Consistency vs Blowcount/Foot</th>
<th>Modified Bultelet Classification</th>
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</thead>
<tbody>
<tr>
<td>AS Auger/Grab Sample</td>
<td>HSA Hollow Stem Augers</td>
<td>Granular (Sand):</td>
<td>and 35-50%</td>
</tr>
<tr>
<td>CS California Sampler</td>
<td>SSA Solid Stem Augers CT Cable Tool</td>
<td>Fine Grained (Clay):</td>
<td>some 20-35%</td>
</tr>
<tr>
<td>NX 1.5&quot; Rock Core</td>
<td>JET Jetting</td>
<td>Very Loose:</td>
<td>little 10-20%</td>
</tr>
<tr>
<td>GP Geoprobe</td>
<td>AR Air Rotary</td>
<td>4-10</td>
<td>trace &lt;10%</td>
</tr>
<tr>
<td>HP Hydro Punch</td>
<td>DTC Drill Through Casing</td>
<td>Medium Dense:</td>
<td>moisture, density, color</td>
</tr>
<tr>
<td>SS Split Spoon</td>
<td>FR Foam Rotary</td>
<td>Dens &lt;50</td>
<td></td>
</tr>
<tr>
<td>ST Shelby Tube</td>
<td>MR Mud Rotary</td>
<td>Very Dense:</td>
<td></td>
</tr>
<tr>
<td>WS Wash Sample</td>
<td></td>
<td>Very Soft:</td>
<td></td>
</tr>
</tbody>
</table>

**Elev/Depth (ft):**  
- 467.0
- 482.0
- 477.0
- 472.0
- 467.0

**Material Description**  
- **Topsoil:** Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots
- **Fill:** Moist, blue-gray, silty CLAY, trace fine sand, trace ash
- **Clay:** Moist, black, coal ASH, little gravel, little fine to coarse sand, trace silt, trace brick, trace glass

**BOE at 5 feet**

**Reviewed by:**

**Date:**

**Boring Number:** CDM-10
### Boring Number: CDM-11

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts  
**Project Name:** Foley Field  
**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul  
**Pre-Drill Method:**  
**Drilling Method/Casing:** Geoprobe / 5' Macro Sleeve  
**Hammer Weight/Drop Height/ Spoon Size:** lb / in / in O.D.  
**Surface Elevation (ft.):** 487  
**Total Depth (ft.):** 10

### Material Description

<table>
<thead>
<tr>
<th>Depth (ft)</th>
<th>Sample</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S-1</td>
<td>Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
</tr>
<tr>
<td>482.0</td>
<td>S-2</td>
<td>Moist, blue-gray, silt CLAY, trace gravel, trace roots</td>
</tr>
<tr>
<td>477.0</td>
<td>S-3</td>
<td>Moist, brown, fine SAND and SILT, little gravel, trace ash</td>
</tr>
<tr>
<td>472.0</td>
<td></td>
<td>14&quot;: Moist, brown to black, coal ASH, little fine to coarse sand</td>
</tr>
<tr>
<td>487.0</td>
<td></td>
<td>Moist, brown to black, coal ASH, some silt, little gravel, 3&quot; layer of brown coarse sand</td>
</tr>
</tbody>
</table>

**Top 6": Moist, brown to black, ASH, some silt, little gravel**

**Wet, light gray, fine to coarse SAND, trace silt**

**Wet, light gray, SILT, trace fine sand.**

**BOE at 15 feet.**

**Sample Types**  
- AS: Auger/Grab Sample  
- BS: California Sampler  
- BX: 1.5" Rock Core  
- NX: 2.1" Rock Core  
- GP: Geoprobe  
- HP: Hydra Punch  
- SS: Split Spoon  
- ST: Shelby Tube  
- WS: Wash Sample

**Drilling Method**  
- HSA: Hollow Stem Augers  
- RC: Reverse Circulation  
- SSA: Solid Stem Augers  
- CT: Cable Tool  
- HA: Hand Augers  
- JET: Jetting  
- AR: Air Rotary  
- DTR: DTH Drill  
- DTC: Drill Through Casing  
- FR: Foamed Rotary  
- MR: Mud Rotary

**Consistency vs Blowcount/Foot**  
- Granular (Sand):  
  - Very Loose: 0-4  
  - Loose: 4-10  
  - Medium Loose: 10-20  
  - Medium Dense: 30-50  
  - Dense: 50-100  
  - Very Dense: >100

- Fine Grained (Clay):  
  - Very Soft: 2  
  - Soft: 2-4  
  - Medium Soft: 4-8  
  - Stiff: 8-15  
  - Very Stiff: 15-30  
  - Hard: >30

**Modified Burmister Classification**  
- and 35-50% sand
- some 20-35%
- little 10-20%
- trace <10%
- moisture, density, color

**Reviewed by:**

**Date:**  
**Boring Number:** CDM-11
# CAMP DRESSER & McKEE

## Boring Number: CDM-12

### Client: City of Worcester

### Project Location: Worcester, Massachusetts

### Project Name: Foley Field

### Drilling Contractor/Driller: New Hampshire Boring, Inc / Paul

### Pre-Drill Method:

### Drilling Method/Casing: Geoprobe / 5' Macro Sleeve

### Hammer Weight/Drop Height/Spoon Size: lb / in / in O.D.

### Surface Elevation (ft.): <487

### Total Depth (ft.): 5

### Ground Water: Depth (ft) Date

### Abandonment Method: Backfill with cuttings

### Logged By: Laurel Gionet

### Drilling Date: Start: 1/30/2006 End: 1/30/2006

### Elevation Depth (ft) | Sample Type | Sample Number | Sample Length (in) | Blow Count (ft) | In-Situ Testing (ft) | Graphic Log | Strata | Material Description | Remarks
---|---|---|---|---|---|---|---|---|---|---
0 | 12" Topsoil | S-1 | 60 | 36 | Topsoil | 12" Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots | Fill | BOE at 5 feet.

### Sample Types

- AS: Auger/Grab Sample
- BX: 1.5" Rock Core
- CX: 2.1" Rock Core
- GP: Geoprobe
- HP: Hydraulic Punch
- SS: Split Spindle
- ST: Shelby Tube
- WS: Wash Sample

### Drilling Method

- HSA: Hollow Stem Auger
- RCA: Reverse Circulation
- SSA: Solid Stem Auger
- CT: Cable Tool
- HA: Hand Auger
- JET: Jetting
- AR: Air Rotary
- D: Driving
- DTR: Dual Tube
- DTC: Drill Through Casing

### Consistency vs Blowcount/Foot

- Granular (Sand):
  - Very Loose: 0-4
  - Loose: 4-10
  - Medium Loose: 10-30
  - Medium Dense: 30-50
  - Very Dense: >50

- Fine Grained (Clay):
  - Very Soft: 2
  - Soft: 2-4
  - Medium Soft: 4-8
  - Stiff: 8-15
  - Very Stiff: >15

### Modified Burmister Classification

- and trace moisture,
- some little 10-20%
- % trace <10% density, color

### Reviewed by: Date: Boring Number: CDM-12
# Boring Number: CDM-13

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts  
**Project Name:** Foley Field  
**Project Number:**

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul  
**Pre-Drill Method:**

**Drilling Method/Casing:** Geoprobe / 5" Macro Sleeve  
**Hammer Weight/Drop Height/Spoon Size:** lb / in / in O.D.

**Surface Elevation (ft.):** 487  
**Total Depth (ft.):** 10

---

### Material Description

<table>
<thead>
<tr>
<th>Elevation (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Consistency vs Blowcount/Foot</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S-1</td>
<td>60</td>
<td>LOOSE 4-10</td>
<td>Moist to black, coal ASH, little silt, trace brick, trace glass</td>
</tr>
<tr>
<td>0</td>
<td>S-2</td>
<td>60</td>
<td>MEDIUM 30</td>
<td>Moist, brown to black, coal ASH, little gravel, little sand</td>
</tr>
<tr>
<td>472.0</td>
<td></td>
<td></td>
<td></td>
<td>BOE at 10 feet</td>
</tr>
<tr>
<td>467.0</td>
<td></td>
<td></td>
<td></td>
<td>8' Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
</tr>
</tbody>
</table>

**Bedding:**
- 8" Topsoil
- 6" Moist, blue gray, clayey SILT, trace ash, trace gravel

---

**Sample Types:**
- AS: Auger/Grab Sample
- CS: California Sampler
- BX: 1.25" Rock Core
- GP: Geoprobe
- HP: Hydro Pneuch
- SS: Split Spoon
- ST: Shelby Tube
- WS: Wash Sample

**Drilling Method:**
- HSA: Hollow Stem Augers
- RSA: Solid Stem Augers
- CT: Cable Tool
- JET: Jetting
- D: Driving
- DTC: Drill Through Casing

**Consistency vs Blowcount/Foot:**
- Very Loose: 0-4
- Soft: 4-10
- Medium Dense: 10-30
- Dense: 30-50

**Fine Grained (Clay):**
- Very Soft: 2
- Medium Stiff: 4-6
- Stiff: 8-15
- Hard: >15

---

**Reviewed by:**

**Date:**

**Boring Number:** CDM-13
**Boring Number:**
**CDM-14**

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts  
**Project Name:** Foley Field  
**Project Number:**

<table>
<thead>
<tr>
<th>Depth (ft.)</th>
<th>Date</th>
<th>Ground Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>NE</td>
<td>Backfill with cuttings</td>
</tr>
</tbody>
</table>

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul Paul

**Pre-Drill Method:**
- Geoprobe / 5' Maco Sleeve

**Mercury Weight/Drop Height/ Spoon Size:** lb / in / in O.D.

**Surface Elevation (ft.):** 467

**Total Depth (ft.):** 5

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Recovery (in)</th>
<th>Blunt Blade</th>
<th>In-Situ Testing (in)</th>
<th>Graphic Log</th>
<th>Strata</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S-1</td>
<td>60</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td>Topsoil</td>
<td></td>
<td>12&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fill</td>
<td></td>
<td>Moist, black to gray, coal ASH, little silt, little gravel</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BOE at 5 feet.</td>
</tr>
</tbody>
</table>

**Sample Types:**
- AS: Auger/Grab Sample  
- BX: California Sampler  
- NX: 1.5" Rock Core  
- GP: Geoprobe  
- HP: Hydro Punch  
- SS: Split Spoon  
- ST: Shelby Tube  
- WS: Wash Sample

**Drilling Method:**
- HSA: Hollow Stem Augers  
- CT: Cable Tool  
- JT: Jetting  
- D: Driving  
- DTR: Dual Tube  
- DTC: Drill Through Casing

**Consistency vs Blowcount/Foot:**
- Granular (Sand):  
  - Very Loose: 0-4  
  - Loose: 4-10  
  - Medium Dense: 10-30  
  - Very Dense: >50
- Fine Grained (Clay):  
  - Very Soft: 2  
  - Soft: 2-4  
  - Medium Stiff: 4-15  
  - Very Stiff: >15

**Modified Burnister Classification:**
- and 35-50%  
- some 20-35%  
- little 10-20%  
- trace <10%

**Reviewed by:**

**Date:**

**Boring Number:** CDM-14
### CAMP DRESSER & McKEE

**CDM**

**Boring Number:**
**CDM-15**

- **Client:** City of Worcester
- **Project Location:** Worcester, Massachusetts
- **Project Name:** Foley Field
- **Project Number:**

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul

<table>
<thead>
<tr>
<th>Pre-Drill Method:</th>
<th>Drilling Method/Casing:</th>
<th>Hammer Weight/Drop Height/ Spoon Size:</th>
<th>Surface Elevation (ft.):</th>
<th>Total Depth (ft.):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Geoprobe / 5' Macro Sleeve</td>
<td>lb / in / in O.D.</td>
<td>467</td>
<td>15</td>
</tr>
</tbody>
</table>

**Ground Water:**

- **Depth (ft.)** | **Date**
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>1-30</td>
</tr>
</tbody>
</table>

**Abandonment Method:** Backfill with cuttings

**Logged By:** Laurel Gionet

**Drilling Date:**
- **Start:** 1/30/2006
- **End:** 1/30/2006

---

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Sample Recovery (in)</th>
<th>In-Situ Testing</th>
<th>Graphic Log</th>
<th>Strata</th>
<th>Material Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>487.0</td>
<td>S-1</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
<td></td>
</tr>
<tr>
<td>482.0</td>
<td>S-2</td>
<td>60</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Moist, brown, SILT, some gravel, trace fine to coarse sand.</td>
<td></td>
</tr>
<tr>
<td>477.0</td>
<td>S-3</td>
<td>60</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dry, black to gray, coal ASH</td>
<td></td>
</tr>
<tr>
<td>472.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Wet, brown, coal ASH and fine to coarse SAND</td>
<td></td>
</tr>
<tr>
<td>467.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Wet, gray, fine to coarse SAND, little gravel, trace silt</td>
<td></td>
</tr>
</tbody>
</table>

**BOE at 15 feet**

---

**Sample Types**
- AS: Auger/Grab Sample
- BX: California Sampler
- NX: 1.5" Rock Core
- GP: Geoprobe
- HP: Hydraulic Punch
- SS: Split Spoon
- ST: Shelby Tube
- WS: Wash Sample

**Drilling Methods**
- HSA: Hollow Stem Augers
- SCA: Solid Stem Augers
- HA: Hand Augers
- AR: Air Rotary
- DTR: Dual Tube
- FR: Foam Rotary
- MR: Mud Rotary

**Consistency vs Blowcount/Foot**
- Granular (Sand):
  - Very Loose: 0-4
  - Loose: 4-10
  - Medium Dense: 10-30
  - Dense: 30-50
  - Very Dense: >50
- Fine Grained (Clay):
  - Very Soft: 2
  - Soft: 2-4
  - Medium Stiff: 4-8
  - Stiff: 6-10
  - Very Stiff: 15-30

**Modified Burmister Classification**
- and 35-50%
- some 20-35%
- little 10-20%
- trace <10%
- moisture, density, color

---

**Reviewed by:**

**Date:**

**Boring Number:** CDM-15
# CAMP DRESSER & McKEE

**Boring Number:** CDM-16

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul

**Pre-Drill Method:**

**Drilling Method/Casing:** Geoprobe / 5' Macro Sleeve

**Hammer Weight/Drop Height/Spoon Size:** lb / in / in O.D.

**Surface Elevation (ft.):** 487

**Total Depth (ft.):** 5

**Ground Water:**

**Depth (ft) Date**  
NE

**Abandonment Method:** Backfill with cuttings

**Logged By:** Laurel Gionet  
**Drilling Date:** Start: 1/30/2006  End: 1/30/2006

<table>
<thead>
<tr>
<th>Elevation (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Sample Fin</th>
<th>Blow per 6 inches</th>
<th>In-Situ Testing (ft)</th>
<th>Material Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S-1</td>
<td>60</td>
<td>31</td>
<td></td>
<td></td>
<td>10&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots Moist, black, SILT and SAND, some ash, trace gravel</td>
<td>BOE at 5 feet.</td>
<td></td>
</tr>
</tbody>
</table>

### Sample Types

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS</td>
<td>Auger/Grab Sample</td>
</tr>
<tr>
<td>CS</td>
<td>California Sampler</td>
</tr>
<tr>
<td>BX</td>
<td>1-1/2 Rock Core</td>
</tr>
<tr>
<td>NX</td>
<td>2-1/2 Rock Core</td>
</tr>
<tr>
<td>GP</td>
<td>Geoprobe</td>
</tr>
<tr>
<td>HP</td>
<td>Hydro Punch</td>
</tr>
<tr>
<td>SS</td>
<td>Split Spoon</td>
</tr>
<tr>
<td>ST</td>
<td>Shelby Tube</td>
</tr>
<tr>
<td>WS</td>
<td>Wash Sample</td>
</tr>
</tbody>
</table>

### Drilling Method

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSA</td>
<td>Hollow Stem Augers</td>
</tr>
<tr>
<td>SSA</td>
<td>Solid Stem Augers</td>
</tr>
<tr>
<td>CT</td>
<td>Core Tool</td>
</tr>
<tr>
<td>JET</td>
<td>Jetting</td>
</tr>
<tr>
<td>DTR</td>
<td>Drill Through Casing</td>
</tr>
<tr>
<td>DRC</td>
<td>Reverse Circulation</td>
</tr>
<tr>
<td>DTC</td>
<td>Drill Through Casing</td>
</tr>
</tbody>
</table>

### Consistency vs Blowcount/Foot

<table>
<thead>
<tr>
<th>Granular (Sand):</th>
<th>Fine Grained (Clay):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Loose:</td>
<td>0-4</td>
</tr>
<tr>
<td>Loose:</td>
<td>4-10</td>
</tr>
<tr>
<td>Medium Dense:</td>
<td>10-30</td>
</tr>
<tr>
<td>Dense:</td>
<td>30-50</td>
</tr>
<tr>
<td>Very Dense:</td>
<td>&gt;50</td>
</tr>
<tr>
<td>Very Soft:</td>
<td>2</td>
</tr>
<tr>
<td>Soft:</td>
<td>2-4</td>
</tr>
<tr>
<td>Medium Stiff:</td>
<td>4-8</td>
</tr>
<tr>
<td>Stiff:</td>
<td>8-15</td>
</tr>
<tr>
<td>Very Stiff:</td>
<td>15-30</td>
</tr>
<tr>
<td>Hard:</td>
<td>&gt;30</td>
</tr>
</tbody>
</table>

### Modified Burmister Classification

- and 35-50%
- some 20-35%
- little 10-20%
- trace <10%
- moisture, density, color

**Reviewed by:**  
**Date:** Boring Number: CDM-16
# Boring Number: CDM-17

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts  
**Project Name:** Foley Field  
**Project Number:**

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul  
**Pre-Drill Method:**

**Drilling Method/Casing:** Geoprobe / 5' Macro Sleeve  
**Hammer Weight/Drop Height/ Spoon Size:** lb / in / in O.D.

**Surface Elevation (ft.):** 487  
**Total Depth (ft.):** 5

<table>
<thead>
<tr>
<th>Elevation (ft.)</th>
<th>Sample Type</th>
<th>Sample Description</th>
<th>Sample Length (in)</th>
<th>Sample Recovery (in)</th>
<th>In-Situ Testing (lbs)</th>
<th>Graphic Log</th>
<th>Strata</th>
<th>Material Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>487.0</td>
<td>S-1</td>
<td>Freeze core</td>
<td>60</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td>6&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace rocks</td>
<td>Dry, black to gray, coal ASH, little silt, trace brick, trace gravel, trace sand</td>
</tr>
<tr>
<td>492.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BOE at 5 feet.</td>
<td></td>
</tr>
</tbody>
</table>

**Material Description:**

- 6" Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace rocks
- Dry, black to gray, coal ASH, little silt, trace brick, trace gravel, trace sand

**Consistency vs Blowcount/Foot:**

- Granular (Sand):
  - Very Loose: 0-4
  - Loose: 4-10
  - Medium Dense: 10-30
  - Very Dense: >30

- Fine Grained (Clay):
  - Very Soft: 2
  - Soft: 2-4
  - Medium Stiff: 4-8
  - Stiff: 8-15
  - Very Stiff: 15-30
  - Hard: >30

**Modified Burmister Classification:**

- and 35-50%
- some 20-35%
- little 15-20%
- trace <10%

**Sample Types:**

- AS: Auger/Grab Sample
- CS: California Sampler
- BK: 1 1/2" Rock Core
- NX: 2 1/2" Rock Core
- GP: Geoprobe
- HP: Hydro Punch
- SS: Split Spoon
- ST: Shelby Tube
- WS: Wash Sample

**Drilling Method:**

- HSA: Hollow Stem Augers
- SSA: Solid Stem Augers
- CT: Cable Tool
- JET: Jetting
- AR: Air Rotary
- D: Driving
- DTC: Drill Through Casing
- FR: Foam Rotary
- MR: Mud Rotary

**Reviewed by:**

**Date:**
Boring Number: CDM-18

Client: City of Worcester
Project Location: Worcester, Massachusetts
Project Name: Foley Field
Project Number:

Ground Water:
 Depth (ft) Date
  10 1-31
Abandonment Method: Backfill with cuttings
Logged By: Laurel Gionet
Drilling Date: Start: 1/31/2006 End: 1/31/2006

<table>
<thead>
<tr>
<th>Elev. Depth (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Sample Recovery (%</th>
<th>Blows Per 6 Inches</th>
<th>In-Situ Testing</th>
<th>Graphic Log</th>
<th>Strata</th>
<th>Material Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>467.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace cobbles</td>
<td>Moist, brown, clayey SILT, some gravel, little sand</td>
</tr>
<tr>
<td>482.0</td>
<td>S-1</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dry, black and gray, coal ASH, trace brick</td>
<td></td>
</tr>
<tr>
<td>477.0</td>
<td>S-2</td>
<td>60</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Wet, brown and black, organic SILT and PEAT</td>
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</tr>
<tr>
<td>472.0</td>
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<td>60</td>
<td>45</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Wet, gray, GRAVEL and fine to coarse SAND, little silt</td>
<td></td>
</tr>
<tr>
<td>467.0</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BOE at 15 feet.</td>
<td></td>
</tr>
</tbody>
</table>

Sample Types: AS Auger/Grab Sample, BX 1.5" Rock Core, NX 2.1" Rock Core, GP Geoprobe, HP Hydro Punch, SS Split Spoon, ST Shelby Tube, WS Wash Sample
Drilling Method: HSA Hollow Stem Auger, RC Reverse Circulation, CT Cable Tool, HA Hand Augers, JET Jetting, AR Air Rotary, D DTC Drill Through Casing, DT Dual Tube, FR Foam Rotary, MR Mud Rotary
Granular (Sand): and 35-50%, some 20-35%, little 10-20%, trace <5%
Fines Grained (Clay): moisture, density, color

Reviewed by:       Date:       Boring Number: CDM-18
**Boring Number:**
**CDM-19**

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts

**Project Name:** Foley Field  
**Project Number:**

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul  
**Pre-Drill Method:**

**Drilling Method/Casing:** Geoprobe / 5' Macro Sleeve  
**Hammer Weight/Drop Height/Spoon Size:** lb / in / ln O.D.

**Surface Elevation (ft.):** 487  
**Total Depth (ft.):** 15

---

<table>
<thead>
<tr>
<th>Elev. Depth (ft.)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Blows/ft. (6 inches)</th>
<th>In-Situ Testing (lb)</th>
<th>Graphic Log</th>
<th>Material Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>467.0</td>
<td>S-1</td>
<td>60</td>
<td>30</td>
<td></td>
<td></td>
<td>Topsoil</td>
<td>10&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
<td></td>
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<tr>
<td>467.0</td>
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<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td>Graphic Organic Silts</td>
<td>Wet, brown, GRAVEL and fine to coarse SAND, trace silt, BOE at 15 feet</td>
<td></td>
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<tr>
<td>462.0</td>
<td>S-2</td>
<td>60</td>
<td>15</td>
<td></td>
<td></td>
<td>Fill</td>
<td>Moist, black to gray, coal ASH</td>
<td></td>
</tr>
</tbody>
</table>

**Ground Water:**  
**Depth (ft):** Date  
11 1-31

**Abandonment Method:** Backfill with cuttings

**Logged By:** Laurel Gionet  
**Drilling Date:** Start: 1/31/2006  
**End:** 1/31/2006

---

**Sample Types:**  
- AS: Auger/Grab Sample  
- BS: California Sampler  
- BX: 1.5" Rock Core  
- NX: 2.1" Rock Core  
- GP: Geoprobe  
- HP: Hydro Punch  
- SS: Split Spoon  
- ST: Shelby Tube  
- WS: Wash Sample

**Drilling Method:**  
- HSA: Hollow Stem Augers  
- RS: Solid Stem Augers  
- HA: Hand Augers  
- JET: Jetting  
- AR: Air Rotary  
- D: Drilling  
- DTR: Dual Tube  
- DTC: Drill Through Casing

**Consistency vs Blowcount/Foot:**  
- Granular (Sand):  
  - Very Loose: 4-10  
  - Loose: 4-10  
  - Medium Dense: 10-30  
  - Dense: 30-50

- Fine Grained (Clay):  
  - Very Soft: 2  
  - Soft: 2-4  
  - Medium Silt: 4-8  
  - Very Dense: >50  
  - Very Stiff: 15-30  
  - Hard: >30

**Modified Bursheater Classification:**  
- Granular: and some 20-35%  
- Fine Grained: little 10-20%  
- Trace <10%

---

**Reviewed by:**  
**Date:**  
**Boring Number:** CDM-19
**Boring Number:**

**CDM-20**

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts  
**Project Name:** Foley Field  
**Project Number:**

---

### Field Data

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul  
**Pre-Drill Method:**  
**Drilling Method/Casing:** Geoprobe / 5' Macro Sleeve  
**Hammer Weight/Drop Height/Spoon Size:** lb / in / in O.D.  
**Surface Elevation (ft.):** 487  
**Total Depth (ft.):** 15

---

<table>
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<tr>
<th>Elev. Depth (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Sample Core (in)</th>
<th>Blows per ft</th>
<th>Bit Use</th>
<th>Testing (ft)</th>
<th>Graphic Log</th>
<th>Strata</th>
<th>Material Description</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>487.0</td>
<td>S-1</td>
<td>60</td>
<td>38</td>
<td></td>
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<td></td>
<td>Topsoil</td>
<td>18&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
<td>Moist, brown, clayey SILT, with frequent layers of coal ash and brick</td>
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<tr>
<td>487.0</td>
<td>S-2</td>
<td>60</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fill</td>
<td>Moist, black and gray, coal ASH</td>
<td>Moist, black and gray, coal ASH</td>
</tr>
<tr>
<td>477.0</td>
<td>S-3</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Organic Sil</td>
<td>Wet, black, organic SILT</td>
<td>Wet, black, organic SILT</td>
</tr>
<tr>
<td>472.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Organic Sil</td>
<td>Wet, brown, GRAVEL and fine to coarse SAND, little silt</td>
<td>Wet, brown, GRAVEL and fine to coarse SAND, little silt</td>
</tr>
</tbody>
</table>

---

**Sample Types:**  
AS: Auger/Grab Sample  
GS: California Sampler  
BX: 1.5" Rock Core  
NX: 2.1" Rock Core  
GP: Geoprobe  
HP: Hydro Punch  
SS: Split Spoon  
ST: Shelby Tube  
WS: Wash Sample  
HSA: Hollow Stem Augers  
SSA: Solid Stem Augers  
HA: Hand Augers  
AS: Air Rotary  
DTR: DTR Dual Tube  
FR: Foam Rotary  
MR: Mud Rotary  
RC: Reverse Circulation  
RC: Cable Tool  
JET: Jetting  
D: Driving  
DTC: Drill Through Casing  

---

**Consistency vs Blowcount/Foot:**

- **Granular (Sand):**  
  - Very Loose: 0-4  
  - Loose: 4-10  
  - Medium Dense: 10-30  
  - Dense: 30-50  
  - Very Dense: >50

- **Fine Grained (Clay):**  
  - Very Soft: 2  
  - Soft: 2-4  
  - Medium Stiff: 4-8  
  - Stiff: 8-15  
  - Very Stiff: >15

**Modified Burmister Classification:**

- and 35-50%  
- some 20-35%  
- little 10-20%  
- trace <10%

---

**Reviewed by:**

**Date:**

**Boring Number:** CDM-20
## Boring Number: CDM-20

### Project Information
- **Client:** City of Worcester
- **Project Location:** Worcester, Massachusetts
- **Project Name:** Foley Field
- **Project Number:**
- **Ground Water:**
  - Depth (ft): 11
  - Date: 1-31
- **Abandonment Method:** Backfill with cuttings
- **Logged By:** Laurel Gianet
- **Drilling Date:** Start: 1/31/2006, End: 1/31/2006

### Drilling Details
- **Drilling Contractor/Driller:** New Hampshire Boring, Inc. / Paul
- **Pre-Drip Method:**
- **Drilling Method/Casing:** Geoprobe / 5' Macro Sleeve
- **Hammer Weight/Drop Height/ Spoon Size:** lb / in / in O.D.
- **Surface Elevation (ft):** 487
- **Total Depth (ft):** 15

### Material Description

<table>
<thead>
<tr>
<th>Elev/Depth (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>In-Situ Testing (ft)</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>487.0</td>
<td>S-1</td>
<td>60</td>
<td>38</td>
<td>Moist, brown, clayey Silt, with frequent layers of coal ash and brick</td>
</tr>
<tr>
<td>482.0</td>
<td>S-2</td>
<td>60</td>
<td>34</td>
<td>Moist, black and gray, coal ASH</td>
</tr>
<tr>
<td>477.0</td>
<td>S-3</td>
<td>60</td>
<td>60</td>
<td>Wet, black, organic Silt</td>
</tr>
<tr>
<td>472.0</td>
<td></td>
<td></td>
<td></td>
<td>Wet, brown, GRAVEL and fine to coarse SAND, little silt</td>
</tr>
</tbody>
</table>

### Sample Types
- AS: Auger/Grab Sample
- CS: California Sampler
- EX: 1.5" Rock Core
- GP: Geoprobe
- HP: Hydro Punch
- SS: Split Spoon
- ST: Shelby Tube
- WS: Wash Sample

### Drilling Method
- HSA: Hollow Stem Augers/RC
- SSA: Solid Stem Augers
- HA: Hand Augers
- DTR: DRT Dual Tube
- FR: Foam Rotary
- MR: Mud Rotary
- Reverse Circulation
- Cable Tool
- JET
- Driving
- DTC: Drill Through Casing

### Consistency vs Blowcount/Foot

<table>
<thead>
<tr>
<th>Granular (Sand):</th>
<th>Fine Grained (Clay):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Loose: 0-4</td>
<td>Very Soft: 2</td>
</tr>
<tr>
<td>Loose: 4-10</td>
<td>Soft: 2-4</td>
</tr>
<tr>
<td>Medium Dense: 10-30</td>
<td>Medium Stiff: 4-8</td>
</tr>
<tr>
<td>Dense: 30-50</td>
<td>Stiff: 0-15</td>
</tr>
<tr>
<td>Very Dense: &gt;50</td>
<td>Very Stiff: 15-30</td>
</tr>
</tbody>
</table>

### Modified Silt Classification
- and some 35-50%
- some 20-35%
- trace <10%
- moisture, density, color

### Reviewed by: [Signature]

### Date: [Date]

### Boring Number: CDM-20
Boring Number: CDM-21

Client: City of Worcester  Project Name: Foley Field
Project Location: Worcester, Massachusetts

Pre-Drill Method:
Drilling Contractor/Driller: New Hampshire Boring, Inc / Paul
Drilling Method/Casing: Geoprobe / 5' Macro Sleeve
Hammer Weight/Drop Height/ Spoon Size: lb / in / in O.D.
Surface Elevation (ft.): 487

Total Depth (ft.): 15

<table>
<thead>
<tr>
<th>Elevation (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Bore Per 6 Inches</th>
<th>In-Situ Testing</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>487.0</td>
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<td>42</td>
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<td></td>
<td>13&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
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<tr>
<td>482.0</td>
<td>S-1</td>
<td>60</td>
<td>36</td>
<td></td>
<td></td>
<td>Dry, brown, SILT, little gravel, little fine sand</td>
</tr>
<tr>
<td>477.0</td>
<td>S-3</td>
<td>60</td>
<td>60</td>
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<td>Dry, black, coal ASH</td>
</tr>
<tr>
<td>472.0</td>
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<td></td>
<td>Dry, black to gray, coal ASH, trace brick</td>
</tr>
<tr>
<td>467.0</td>
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<td></td>
<td></td>
<td></td>
<td>Wet, brown orange, GRAVEL, little fine to coarse sand, trace silt</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td>Wet, dark gray to black, organic SILT</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>Wet, gray, fine to coarse SAND and GRAVEL, trace silt</td>
</tr>
</tbody>
</table>

Sample Types
- AS: Auger/Grab Sample
- BX: 1.5" Rock Core
- CS: California Sampler
- GP: Geoprobe
- HP: Hydro Pencil
- SS: Split Spoon
- ST: Shelby Tube
- WS: Wash Sample

Drilling Method
- HSA: Hollow Stem Augers
- CT: Cable Tool
- JET: Jetting
- DTR: Dual Tube
- FR: Foam Rotary
- MR: Mud Rotary

Consistency vs Blowcount/Foot
- Very Loose: 0-4
- Very Soft: 2
- Soft: 2-4
- Medium Soft: 4-6
- Dense: 30-50
- Very Dense: >50

Modified Burmester Classification
- Very Loose: 0-4
- Very Soft: 2
- Soft: 2-4
- Medium Soft: 4-6
- Dense: 30-50
- Very Dense: >50
- Moisture, density, color

Reviewed by: Date: Boring Number: CDM-21
**Boring Number:**
**CDM-22**

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul  
**Pre-Drill Method:**
**Drilling Method/Casing:** Geoprobe / 5' Macro Sleeve

**Hammer Weight/Drop Height/ Spoon Size:** lb / in / in O.D.
**Surface Elevation (ft.):** 487
**Total Depth (ft.):** 15

**Ground Water:**
**Depth (ft) Date:** 10.4 / 1-31
**Abandonment Method:** Backfill with cuttings
**Logged By:** Laurel Gionet
**Drilling Date:** Start: 1/31/2006 End: 1/31/2006

<table>
<thead>
<tr>
<th>Elev. Depth (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Length (in)</th>
<th>Recovery (in)</th>
<th>Blows per 6 inches</th>
<th>In-Situ Testing (ft)</th>
<th>Graphic Log</th>
<th>Streta</th>
<th>Material Description</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>467.0</td>
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<td>16&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
<td></td>
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<tr>
<td>462.0</td>
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<td>Moist, brown, clayey SILT, some gravel, trace ash, trace brick</td>
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<tr>
<td>472.0</td>
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<td>Sand and Gravel</td>
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<td></td>
<td></td>
<td></td>
<td>Wet, brown, fine to coarse SAND and GRAVEL, trace silt</td>
<td></td>
</tr>
</tbody>
</table>

**Sample Types**:  
AS August/Grab Sample  
CS California Sampler  
BX 1.5 Rock Core  
NX 2.1 Rock Core  
GP Geoprobe  
HP Hydro Punch  
SS Split Spoon  
ST Shelby Tube  
WS Wash Sample

**Drilling Method**:  
HSA Hollow Stem Augers RC  
SSA Solid Stem Augers CT  
HA Hand Augers JET  
AR Air Rotary D Driving  
DT DTC Drill Through Casing

**Consistency vs Blowcount/Foot**:  
- **Granular (Sand):**
  - Very Loose: 0-4
  - Loose: 4-10
  - Medium Dense: 10-30
  - Dense: 30-50
  - Very Dense: >50
- **Fine Grained (Clay):**
  - Very Soft: 2
  - Soft: 2-4
  - Medium Stiff: 4-6
  - Stiff: 6-15
  - Very Stiff: 15-30
  - Hard: >30

**Modified Bumper Classification**:  
- and 35-50%
- some 20-35%
- little 10-20%
- trace <10%

**Reviewed by:**  
**Date:**  
**Boring Number:** CDM-22
Boring Number: CDM-23

Client: City of Worcester
Project Location: Worcester, Massachusetts
Project Name: Foley Field
Project Number:

<table>
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<tr>
<th>Elevation (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Blows (perc. 6 inches)</th>
<th>In-Situ Testing (ft)</th>
<th>Graphic Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>467.0</td>
<td>S-1</td>
<td>60</td>
<td>23</td>
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<td></td>
<td></td>
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<tr>
<td>467.0</td>
<td>S-2</td>
<td>60</td>
<td>30</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>467.0</td>
<td>S-3</td>
<td>60</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Material Description:
- Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots
  - Dry, black, coal ASH, trace brick
  - Wet, brown, fine to coarse SAND, little silt, little gravel

Remarks:
- BOE at 15 feet.

Sample Types:
- AS: Auger/Grab Sample
- BS: California Sampler
- DX: 1.5 Rock Core
- NX: 2.1 Rock Core
- GP: Geoprobe
- HP: Hydro Punch
- SS: Split Spoon
- ST: Shelby Tube
- WS: Wash Sample

Drilling Method:
- HSA: Hollow Stem Augers
- RC: Reverse Circulation
- SSA: Solid Stem Augers
- CT: Cable Tool
- HA: Hand Augers
- JET: Jetting
- AR: Air Rotary
- D: Drilling
- DTR: Dual Tube
- DTC: Drill Through Casing
- FR: Foam Rotary
- MR: Mud Rotary

Consistency vs Blowcount/Foot:
- Granular (Sand):
- Fine Grained (Clay):
- Very Loose: 0-4
- Very Soft: 5-7
- Loose: 4-10
- Soft: 11-15
- Medium Dense: 10-30
- Medium Stiff: 16-20
- Dense: 30-50
- Very Dense: >50
- Very Stiff: >60
- Hard: >30

Modified Burmister Classification:
- and 35-50%
- some 20-35%
- little 10-20%
- trace <10%
- moisture, density, color

Reviewed by: Date: Boring Number: CDM-23

Pre-Drill Method:
- Ground Water:
- Depth (ft) Date
- 10.8 1-31
- Abandonment Method: Backfill with cuttings
- Logged By: Laurel Gionet
- Drilling Date: Start: 1/31/2006 End: 1/31/2006
# Boring Number: CDM-24

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts  
**Project Name:** Foley Field  
**Project Number:**

<table>
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<th>Elev. Depth (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Sample in</th>
<th>Blows per 6 inches</th>
<th>In-Situ Testing (ft)</th>
<th>Graphic Log</th>
<th>Material Description</th>
<th>Remarks</th>
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<td>Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace brick</td>
<td>Moist, gray to black, coal ASH, little sand, little gravel, trace brick</td>
</tr>
<tr>
<td>0</td>
<td>S-1</td>
<td>60</td>
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<td>467.0</td>
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<td>12&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace brick</td>
<td>Moist, gray to black, coal ASH, little sand, little gravel, trace brick</td>
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<tr>
<td>467.0</td>
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<td>12&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace brick</td>
<td>Moist, gray to black, coal ASH, little sand, little gravel, trace brick</td>
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<td>Moist, gray to black, coal ASH, little sand, little gravel, trace brick</td>
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<td>12&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace brick</td>
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<td>12&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace brick</td>
<td>Moist, gray to black, coal ASH, little sand, little gravel, trace brick</td>
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<td>467.0</td>
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<td>12&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace brick</td>
<td>Moist, gray to black, coal ASH, little sand, little gravel, trace brick</td>
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<td>12&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace brick</td>
<td>Moist, gray to black, coal ASH, little sand, little gravel, trace brick</td>
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<td>467.0</td>
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<td>467.0</td>
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<td>12&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace brick</td>
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<td>467.0</td>
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<td>Moist, gray to black, coal ASH, little sand, little gravel, trace brick</td>
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<td>467.0</td>
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<td>467.0</td>
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<td>Moist, gray to black, coal ASH, little sand, little gravel, trace brick</td>
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<td>467.0</td>
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<td>Moist, gray to black, coal ASH, little sand, little gravel, trace brick</td>
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<td>467.0</td>
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<td>Moist, gray to black, coal ASH, little sand, little gravel, trace brick</td>
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<td>467.0</td>
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<td>Moist, gray to black, coal ASH, little sand, little gravel, trace brick</td>
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<tr>
<td>467.0</td>
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<td>12&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace brick</td>
<td>Moist, gray to black, coal ASH, little sand, little gravel, trace brick</td>
</tr>
</tbody>
</table>

**Sample Types:**
- AS: Auger/Grab Sample
- BS: California Sampler
- BX: 1.5" Rock Core
- NX: 2.0" Rock Core
- GP: Geoprobe
- HP: Hydro Punch
- SS: Split Spoon
- ST: Shelby Tube
- WS: Wash Sample

**Drilling Method:**
- HSA: Hollow Stem Augers
- SDA: Solid Stem Augers
- HA: Hand Augers
- AR: Air Rotary
- DTR: Dual Tube
- FR: Foam Rotary
- MR: Mud Rotary

**Consistency vs Blowcount/Foot:**
- Very Loose: 0-4
- Loose: 4-10
- Medium Dense: 10-30
- Dense: 30-50
- Very Dense: >50
- Very Soft: 2
- Soft: 2-4
- Medium Stiff: 4-8
- Stiff: 0-15
- Very Stiff: 15-30
- Hard: >30

**Modified Bormister Classification:**
- and <5%
- some 20-35%
- little 10-20%
- trace <10%

**Reviewed by:**

**Date:**

**Boring Number:** CDM-24
**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts  
**Project Name:** Foley Field  
**Project Number:**

**Drilling Contractor/Driller:** New Hampshire Boring, Inc. / Paul  
**Pre-Drill Method:**  
**Drilling Method/Casing:** Geoprobe / 5' Macro Sleeve  
**Hammer Weight/Drop Height/ Spoon Size:** lb / in / in O.D.  
**Surface Elevation (ft.):** 487  
**Total Depth (ft.):** 10  
**Ground Water:**  
**Depth (ft) Date**  
NR  
**Abandonment Method:** Backfill with cuttings  
**Logged By:** Laurel Gionet  
**Drilling Date:** Start: 1/31/2006  
**End:** 1/31/2006

<table>
<thead>
<tr>
<th>Elev. Depth (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Sample Sampling (in)</th>
<th>Rep. Sample Size 6 inches</th>
<th>In-Situ Testing (in)</th>
<th>Graphic Log</th>
<th>Strata</th>
<th>Material Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>487.0</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>18” Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
<td></td>
</tr>
<tr>
<td>482.0</td>
<td>S-1</td>
<td>60</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td>Topsoil</td>
<td></td>
<td>Dry, black to gray, coal ASH, little silt, little sand, trace brick</td>
<td></td>
</tr>
<tr>
<td>477.0</td>
<td>S-2</td>
<td>60</td>
<td>38</td>
<td></td>
<td></td>
<td></td>
<td>Fill</td>
<td></td>
<td>Dry, black to gray, coal ASH, little silt, little sand, trace brick</td>
<td></td>
</tr>
<tr>
<td>472.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Wet, dark gray to black, organic SILT and PEAT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>467.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Wet, gray and brown yellow, mottled, silty CLAY, trace sand, trace gravel</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

BOE at 10.5 feet

**Sample Types:**
- AS Auger/Grab Sample
- CS California Sampler
- BK 1.5” Rock Core
- NX 2.1” Rock Core
- GP Geoprobe
- HP Hydro Punch
- SS Split Spoon
- ST Shelby Tube
- WS Wash Sample

**Drilling Method:**
- HSA Hollow Stem Augers
- RC Reverse Circulation
- SSA Solid Stem Augers
- CT Cable Tool
- HA Hand Augers
- JET Jetting
- AR Air Rotary
- D Driving
- DTR Dual Tube
- DTC Drill Through Casing

**Consistency vs Blowcount/Foot:**
- Granular (Sand):
  - Very Loose: 0-4
  - Loose: 4-10
  - Medium Loose: 10-30
  - Dense: 30-50
  - Very Dense: >50

- Fine Grained (Clay):
  - Very Soft: 2
  - Soft: 2-4
  - Medium Stiff: 4-8
  - Stiff: 8-16
  - Very Stiff: 15-30
  - Hard: >30

**Modified Burmister Classification:**
- and 35-50%
- some 20-35%
- little 10-25%
- trace <10%
- moisture, density, color

**Reviewed by:**

**Date:**

**Boring Number:** CDM-25
**Boring Number:** CDM-26

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts

**Project Name:** Foley Field  
**Project Number:**

**Ground Water:**
- Depth (ft) Date: NE
- Abandonment Method: Backfill with cuttings
- Logged By: Laurel Gionet
- Drilling Date: Start: 1/30/2006  End: 1/30/2006

<table>
<thead>
<tr>
<th>Elev. Depth (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Precast Casing (in)</th>
<th>In-Situ Testing (in)</th>
<th>Graphic Log</th>
<th>Strata</th>
<th>Material Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td>S-1</td>
<td>60</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td>14&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
<td>BOE at 5 feet</td>
</tr>
</tbody>
</table>

**Sample Types:**
- AS Auger/Grab Sample
- BS California Sampler
- BX 1.5" Rock Core
- NX 2.1" Rock Core
- GP Geoprobe
- HP Hydro Punch
- SS Split Spoon
- ST Shelby Tube
- WS Wash Sample

**Drilling Method:**
- HSA Hollow Stem Augers
- SSA Solid Stem Augers
- CT Cable Tool
- JET Jetting
- DTR Dual Tube
- DTC Drill Through Casing

**Consistency vs Blowcount/Foot:**
- Granular (Sand):
  - Very Loose: 0-4
  - Loose: 4-10
  - Medium Dense: 10-30
  - Dense: 30-50
  - Very Dense: >50

- Fine Grained (Clay):
  - Very Soft: 2
  - Soft: 3-4
  - Medium Soft: 4-8
  - Stiff: 8-15
  - Very Stiff: >15

**Modified Burnister Classification:***
- and 35-50%
- some 20-35%
- little 10-20%
- trace <10%
- moisture, density, color

Reviewed by:  
Date:  
Boring Number: CDM-26
**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts  
**Project Name:** Foley Field  
**Project Number:** CDM-27

**Ground Water:** Depth (ft) Date  
**Abandonment Method:** Backfill with cuttings  
**Logged By:** Laurel Gionet  
**Drilling Date:** Start: 1/30/2006 End: 1/30/2006

<table>
<thead>
<tr>
<th>Elev. Depth (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Blows per ft in 6 inches</th>
<th>In-Situ Testing (ft)</th>
<th>Material Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>487.0</td>
<td>S-1</td>
<td>60</td>
<td>30</td>
<td></td>
<td>5</td>
<td>12&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots Dry, black to gray, coal ASH, trace brick</td>
<td>BOE at 5 feet</td>
</tr>
</tbody>
</table>

**Sample Types:**  
AS Auger/Grab Sample  
CS California Sampler  
BX 1.5" Rock Core  
NX 2.1" Rock Core  
GP Geoprobe  
HP Hydro Punch  
SS Split Spoon  
ST Shelby Tube  
WS Wet Sample

**Drilling Method:**  
HSA Hollow Stem Augers RC Reverse Circulation  
SSA Solid Stem Augers CT Cable Tool  
RA Hand Augers JET Jetting  
AR Air Rotary D Driving  
DTR Dual Tube DTC Drill Through Casing

**Consistency vs Blowcount/Foot:**  
Granular (Sand): 
Loose: 0-4  
Very Loose: 0-4  
Very Soft: 2  
Soft: 2-4  
Medium Dense: 4-10  
Dense: 10-30  
Very Dense: >50

Fine Grained (Clay):  
and 35-50%  
some 20-35%  
trace <10%  
little 10-20%  
mold, moisture, density, color

**Modified Bernoulli Classification:**

Reviewed by:  
Date:  
**Boring Number:** CDM-27
# CDM

**Boring Number:** CDM-28

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts  
**Project Name:** Foley Field  
**Project Number:**

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul  
**Pre-Drill Method:**  
**Drilling Method/Casing:** Geoprobe / 5' Macro Sleeve  
**Hammer Weight/Drop Height/Spoon Size:** lb / in / in O.D.  
**Surface Elevation (ft.):** 487  
**Total Depth (ft.):** 5

<table>
<thead>
<tr>
<th>Elevation (ft)</th>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Length (in)</th>
<th>Sample Recovery</th>
<th>Blows Per 6 Inches</th>
<th>In-Situ Testing</th>
<th>Graphic Log</th>
<th>Strata</th>
<th>Material Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>487.0</td>
<td>S-1</td>
<td>60</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Topsoil</td>
<td>Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
<td>8&quot; Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots Dry, brown, fine to coarse SAND, some gravel, some silt 2&quot; layer of asphalt pavement</td>
</tr>
<tr>
<td>482.0</td>
<td>5</td>
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<td></td>
<td>Fill</td>
<td>BOE at 5 feet</td>
<td></td>
</tr>
</tbody>
</table>

**Material Description:**
- 8" Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots
- Dry, brown, fine to coarse SAND, some gravel, some silt
- 2" layer of asphalt pavement

**BOE at 5 feet**

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**Sample Types**
- AS: Auger/Grab Sample  
- CS: California Sampler  
- BK: 1-5" Rock Core  
- NX: 2-4" Rock Core  
- GP: Geoprobe  
- HP: Hydro Punch  
- SS: Split Spoon  
- ST: Shallow Tube  
- WS: Wash Sample

**Drilling Method**
- HSA: Hollow Stem Augers  
- SSA: Solid Stem Augers  
- HA: Hand Augers  
- AR: Air Rotary  
- DTR: Dual Tube  
- FR: Foem Rotary  
- MR: Mud Rotary  
- RC: Reverse Circulation  
- CT: Cable Tool  
- JET: Jetting  
- DTC: Drill Through Casing

**Consistency vs Blowcount/Foot**

<table>
<thead>
<tr>
<th>Granular (Sand):</th>
<th>Fine Grained (Clay):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Loose: 0-4</td>
<td>Very Soft: 2</td>
</tr>
<tr>
<td>Loose: 4-10</td>
<td>Soft: 2-4</td>
</tr>
<tr>
<td>Medium Dense: 10-30</td>
<td>Medium Stiff: 4-8</td>
</tr>
<tr>
<td>Dense: 30-50</td>
<td>Stiff: 6-15</td>
</tr>
<tr>
<td>Very Dense: &gt;50</td>
<td>Very Stiff: 15-30</td>
</tr>
</tbody>
</table>

**Modified Burmister Classification**

<table>
<thead>
<tr>
<th>and 35-50%</th>
<th>some 20-25%</th>
<th>little 10-20%</th>
<th>trace &lt;10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>moisture, density, color</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Reviewed by:**

**Date:**

**Boring Number:** CDM-28
**Boring Number:** CDM-29

**Client:** City of Worcester  
**Project Location:** Worcester, Massachusetts

**Drilling Contractor/Driller:** New Hampshire Boring, Inc / Paul
**Pre-Drill Method:**  
**Drilling Method/Casing:** Geoprobe / 5' Macro Sleeve  
**Hammer Weight/Drop Height/ Spoon Size:** lb / in / in O.D.

**Surface Elevation (ft):** 487  
**Total Depth (ft):** 10

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<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Sample Number</th>
<th>Sample Length (in)</th>
<th>Sample Recovery (in)</th>
<th>In-Situ Testing (ft)</th>
<th>Graphic Log</th>
<th>Material Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topsoil</td>
<td>S-1</td>
<td>60</td>
<td>40</td>
<td></td>
<td></td>
<td>8' Topsoil: Frozen to moist, dark brown, SILT, little fine sand, trace gravel, trace roots</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dry, light brown, fine to coarse SAND and GRAVEL, trace silt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S-2</td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td>Moist to wet, brown, fine to coarse SAND and GRAVEL, trace silt</td>
<td></td>
</tr>
</tbody>
</table>

**BOE at 10 feet**

---

**Sample Types**
- AS: Auger/Grab Sample
- BX: Hollow Stem Augers
- BS: Rock Core
- CS: Split Spoon
- DK: Shelby Tube
- GP: DTR Dual Tube
- HP: Hydro Punch
- SS: Wash Sample

**Drilling Method**
- HSA: Hollow Stem Augers RC
- SSA: Solid Stem Augers CT
- HA: Hand Augers
- AR: Air Rotary
- DTR: DTC Drill Through Casing
- FR: Foam Rotary
- MR: Mud Rotary

**Consistency vs Blowcount/Foot**
- Granular (Sand):
  - Very Loose: 0-4
  - Loose: 4-10
  - Medium Dense: 10-30
  - Dense: 30-50
  - Very Dense: >50
- Fine Grained (Clay):
  - Very Soft: 2
  - Soft: 2-4
  - Medium Stiff: 4-8
  - Stiff: 8-15
  - Hard: >15

**Modified Burmister Classification**
- and: 35-50%
- some: 20-35%
- little: 10-20%
- trace: <10%
- moisture, density, color

**Reviewed by:**  
**Date:**  
**Boring Number:** CDM-29
3.1.4 EVALUATION OF EXISTING CONDITIONS

H. Phase 1 Environmental Site Assessment
   1. Narrative
   2. Phase 1 Environmental Site Assessment
PHASE I ENVIRONMENTAL SITE ASSESSMENT

Doherty Memorial High School
299 Highland Street
Worcester, Massachusetts

Prepared for:
Universal Environmental Consultants
12 Brewster Street
Framingham, MA 01702

Prepared by:
Lord Associates, Inc.
1506 Providence Highway, Suite 30
Norwood, Massachusetts 02062

Project # 2817

August 21, 2019
August 21, 2019

Mr. Ammar Dieb
Universal Environmental Consultants
12 Brewster Street
Framingham, MA 01702

RE: Phase I Environmental Site Assessment
Doherty Memorial High School
299 Highland Street
Worcester, Massachusetts

Dear Mr. Dieb:

Lord Associates, Inc. has completed a Phase I Environmental Site Assessment of the referenced property (the “Site”). Environmental investigations were completed in general conformance to standard industry practice, the ASTM E-1527 site assessment standard entitled “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process”, applicable regulations as defined by Chapter 21E of the Massachusetts General Laws, and the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000). The purpose of this assessment was to identify “Recognized Environmental Conditions” as defined in ASTM E-1527-13, and to determine if additional investigation is warranted.

This assessment has not identified any Recognized Environmental Conditions (RECs) in connection with the property, 299 Highland Street, in Worcester, Massachusetts. However, we recommend the removal of the abandoned 275-gallon fuel oil AST as discussed further in the accompanying report.

Please refer to the attached report for specific details and findings of our assessment. We appreciate the opportunity to have provided our professional environmental consulting and analytical services.

Sincerely,

LORD ASSOCIATES, INC.

[Signatures]

Jonathon D. Puliafico, CPG
Senior Project Manager

Ralph J. Tella, CHMM, LSP
President

Enc.: Phase I ESA
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1.0 INTRODUCTION

1.1 Purpose

Lord Associates, Inc. (LAI) has completed a Phase I Environmental Site Assessment for the Doherty Memorial High School located at 299 Highland Street in Worcester, Massachusetts (the “Site”). The purpose of this assessment was to identify “Recognized Environmental Conditions” as defined in ASTM standard E1527-13 (the Standard), and to determine if additional investigation is warranted.

Recognized Environmental Conditions are defined as the presence or likely presence of any hazardous substances or petroleum products on the property under conditions that indicate an existing release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term Recognized Environmental Conditions is not intended to include de minimis conditions which generally do not present a material risk of harm to public health or the environment, and that generally would not be the subject of a notification and/or enforcement action if brought to the attention of appropriate governmental agencies.

The Phase I consisted of a Site reconnaissance and an assessment of the Site and surrounding properties for visual and/or olfactory evidence of the use, storage, and/or release of oil and/or hazardous material. The Phase I also included a review of federal, state, and local agency files regarding the history of the Site and surrounding area relative to the use, storage and/or release of oil and/or hazardous material.

Please note that an investigation for the presence of mold, asbestos and PCBs in building materials, lead-based paint, indoor air quality, or regulatory compliance is beyond the scope of work described by ASTM E 1527-13, therefore LAI did not explore those conditions.

1.2 Significant Assumptions

Factual information regarding operations, conditions, and other data provided by the Client, site contacts, third parties, and governmental agencies are assumed to be correct and complete.

1.3 Special Terms and Conditions

The Phase I ESA was conducted by LAI on behalf of Universal Environmental Consultants (UEC) consistent with the agreed upon Scope of Work and LAI Standard Terms and Conditions. No other special terms and conditions were established in connection with these services.
2.0 SCOPE OF SERVICES

This assessment was performed following standard industry practice and with consideration to the ASTM E 1527-13 site assessment standard entitled “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. The investigation included completion of the following tasks:

1. A field investigation was performed including a visual surficial inspection of the Site and abutting properties; and

2. The following agencies were contacted to inquire of past ownership, complaints, or violations concerning environmental issues at the Site and vicinity.
   - The Massachusetts Department of Environmental Protection (MADEP)
   - The Worcester Tax Assessor’s Office
   - The Worcester Town Clerk’s Office
   - The Worcester Health Department
   - The Worcester Inspection Services Department
   - The Worcester Conservation Commission
   - The Worcester Fire Prevention Office
   - Environmental Data Resources Inc.
   - Sanborn Fire Insurance Maps

3. The following agencies were contacted to determine the physical characteristics of the Site and vicinity:
   - USGS Topographical Maps
   - MADEP Priority Resource Maps
   - US Fish & Wildlife Service Wetlands Inventory
   - FEMA Flood Zone Maps
   - USDA Soil Survey Maps
   - Google Earth Pro

3.0 SITE DESCRIPTION

3.1 Site Location and Parcel Legal Description

Information provided indicates that the Site consists of one lot totaling approximately 20 acres of land located on the south side of Highland Street, approximately 450 feet east of the intersection of Highland Street and Pleasant Street in Worcester, Massachusetts. A Site Location Map is included as Figure 1. The Site is designated as Map ID# 11-INX-00001 by the Worcester Tax Assessor’s Office. An Assessor’s Map is included as Figure 2 and a Site Plan depicting pertinent Site features is included as Figure 3.
Information provided indicates the Site entrance longitude and latitude are approximately -71.820280° west and 42.268991° north, respectively. Universal Transverse Mercatur (UTM) coordinates are approximately 4,683,280 meters north by 267,400 meters east.

3.2 Site and Vicinity General Characteristics

The Site is approximately 20 acres of land located in a recreational, residential and commercial area of Worcester, Massachusetts. Elm Park, abutting the south, east and west side of the Site, and the field in the eastern portion of the Site, are designated Open Space areas for recreational purposes. Properties to the north, beyond Highland Street, are developed as residential.

3.3 Current Property Use

The Site is occupied by the Doherty Memorial High School.

3.4 Description of Improvements

The Site is improved with two interconnected brick buildings on concrete slabs with a total footprint of approximately 84,000 square feet. Municipal records specify that the school was constructed circa 1960. The buildings are located in the northern portion of the Site, with paved asphalt parking lots to the east. Landscaped areas are located in the areas of the buildings and athletic fields are located on the eastern portion of the Site.

The Site is connected to municipal water and sewer systems and heated with natural gas. A detailed Site description is presented in Section 4.0.

3.4.1 Wastewater

Wastewater generated on-Site is discharged to the municipal sewer system. Floor drains and storm water catch basins, reportedly connected to the municipal drain system, were observed on the Site.

3.4.2 Water Supply

Water is supplied by the City of Worcester.

3.4.3 Wells

No injection, monitoring, or dry wells were observed or identified from the interviews or records reviewed.
3.4.4 Heating/Cooling System

Heat in the building is provided by natural-gas powered furnaces located in the boiler room of the northern building.

3.4.5 Solid Waste Disposal

A dumpster with a hydraulic compressor is located on the west side of the school. Hydraulic lines extend from the dumpster to the reservoir located on the building. No significant staining of the dumpster or the area of hydraulic lines was observed during the Site visit.

There were no areas of solid waste disposal, mounds or depressions, or areas apparently filled or graded by non-natural causes suggesting solid waste disposal observed.

3.4.6 Storage Tanks

No evidence or records of current underground storage tanks (UST) were observed during the inspection or through records reviews. One 275-gallon fuel oil AST is located in the boiler room. According to the oil level indicator on the AST, the tank was more than half full. According to maintenance personnel, the fuel oil was used for the backup generator also located in the boiler room but the use of the generator and therefore the fuel oil, has been discontinued.

Records on file with the MADEP include a release of petroleum from two USTs removed from the Site in 2007. See Section 5.5 for a summary of the two tanks and completed cleanup activities.

3.4.7 Transformers, Hydraulic Equipment and Other Potential Evidence of the Potential Use of Polychlorinated Biphenyls

Polychlorinated Biphenyls (PCBs) can be found in hydraulic-oil filled electrical equipment (such as motors and pumps), capacitors or transformers, and fluorescent light ballasts manufactured prior to July 2, 1979.

LAI observed former fluorescent light fixtures throughout the Site. Any light ballast manufactured after 1979 must be labeled “No PCB”. Note that electric light ballasts that contained PCBs had less than 1.5 ounces of PCB. The reportable quantity requiring notification to the Massachusetts Department of Environmental Protection of a release is one pound. Therefore the risk presented by PCB-containing ballasts is relatively low.

An electrical transformer was observed near the east side of the school. No indications of a release of transformer oil were observed.
3.5 Current Uses of Adjoining Properties

Use of abutting properties is as follows:

<table>
<thead>
<tr>
<th>Usage</th>
<th>Orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential beyond Highland Street</td>
<td>North</td>
</tr>
<tr>
<td>Elm Park</td>
<td>South</td>
</tr>
<tr>
<td>Elm Park</td>
<td>East</td>
</tr>
<tr>
<td>Elm Park</td>
<td>West</td>
</tr>
</tbody>
</table>
4.0 USER PROVIDED INFORMATION

A summary of user provided information is provided below.

4.1 User Questionnaire

A User Questionnaire was provided to Mr. James Bedard, City of Worcester Director of Environmental Management & Capital Projects, to assist the user and LAI in gathering information that may be material to identifying RECs. A copy of the completed questionnaire is attached in Appendix C.

<table>
<thead>
<tr>
<th>Inquiry</th>
<th>Response</th>
</tr>
</thead>
</table>
| Name and title                                                         | James Bedard  
Director EM&CP                                                   |
| Tenure with Site                                                       | 15 years                                                               |
| Are you aware of any environmental cleanup liens against the property  | NO                                                                     |
| that are filed or recorded under federal, tribal, state or local law?  |                                                                 |
| Are you aware of any Activity and Use Limitations, such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law? | NO                                                                     |
| As the user of this ESA do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business? | This property has housed the Doherty High School since its construction. The chemicals and processes used are typical to the high school curriculum. |
| Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property? | N/A                                                                     |
| Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as user: |                                                                                   |
| ▪ Do you know the past uses of the property?                            | The property was park land prior to the school construction             |
| ▪ Do you know of specific chemicals that are present or once were present at the property? | Chemicals used in the operation of a high school. (Science Labs, Custodial, etc.) |
| ▪ Do you know of spills or other chemical releases that have taken place at the property? | No, I am not aware of any spills or chemical releases.                  |
| ▪ Do you know of any environmental cleanups that have taken place at the property? | No, I am not aware of any environmental cleanups that have taken place |
| As the user of this ESA, based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination at the property? | No                                                                     |
4.2 Title Records

LAI did not review the property title. However, based on the Assessor’s information, the Site is owned by the City of Worcester School Department.

4.3 Environmental Liens, Activity and Use Limitations

The owner has no knowledge of environmental liens, and the agency check revealed no listing for an Activity and Use Limitation in connection with the Site.

4.4 Specialized Knowledge

No specialized knowledge of Recognized Environmental Conditions was provided to LAI by the owner or client.

4.5 Commonly Known or Reasonably Ascertainable Information

No commonly known or reasonably ascertainable information regarding Recognized Environmental Conditions was provided to LAI by the owner or client.

4.6 Valuation Reduction for Environmental Issues

No information regarding the sale price of the Site in comparison to the expected value of the property was provided to LAI by the owner or client.

4.7 Owner, Property Manager, and Occupant Information

According to the Worcester Assessor’s Department, the current owner of the Site is:

City of Worcester School Department
20 Irving Street
Worcester, MA 01609

LAI conducted interviews with Mr. Joseph Santos and Mr. James Bedard, both of the Worcester School Department, regarding the use and history of the property.

4.8 Reason for Performing Phase I Study

This Phase I ESA was completed at the request of the City of Worcester.
5.0 RECORDS REVIEWS

A review of federal, state and local regulatory agency files was conducted in accordance with ASTM E 1527-13 standards to identify the use, generation, storage, treatment, disposal and/or release of oil and/or hazardous materials that may potentially impact the Site.

5.1 Municipal Offices

5.1.1 Assessor’s Office

Lord Associates, Inc. visited the municipal Assessor’s Office to review historical ownership information for the Site. This data was reviewed for the purposes of land use determination and should not be relied upon as a complete chain-of-title. Table 3 is a summary of ownership information obtained at the Assessor’s office for the Site.

<table>
<thead>
<tr>
<th>Grantee</th>
<th>Date of Acquisition</th>
<th>Book/Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Worcester School Department</td>
<td>01/01/1988</td>
<td>000/000</td>
</tr>
</tbody>
</table>

The Assessors’ Property Information Sheet, attached in Appendix C, references the construction date for the school of 1960.

5.1.2 Health Department

A review of files was requested at the municipal Board of Health regarding environmental issues. No pertinent documents were on-file with their office.

5.1.3 Building Department / Inspectional Services

A request for information regarding the Site was submitted to the Inspection Services office of Air, Water Quality, Weights and Measures. Monica Gheorghe, of the Inspection Services Department provided documents referencing the remediation of a petroleum oil release from two USTs removed from the Site in 2007, several documents for the planning and completion of asbestos abatement projects and an Indoor Air Assessment Report completed in April 2017. Documents provided are attached in Appendix C. The reports referencing the fuel oil release were the only files provided by Inspectional Services that are pertinent to the scope of work for this Phase I ESA. A summary of assessment and remedial activities for the release of fuel oil from the former USTs is included in Section 5.5 of this report.

A representative of the Building Department provided a printout of listed permits issued for the site. No permits listed included information on the release of oil or other hazardous materials. A copy of the permits list is attached in Appendix C.
5.1.4 Conservation Commission

A review of files was requested at the municipal Conservation Commission regarding environmental issues at the Site. No pertinent documents were on file.

5.1.5 Clerk’s Office

A review of files was requested at the municipal Clerk’s Office regarding environmental permits or issues. No pertinent documents were on-file with their office.

5.1.6 Fire Prevention

LAI requested a review of information regarding the storage, use or releases of oil or other hazardous materials at the Site from the municipal Fire Prevention Office. No such documents were on file with the Fire Department.

5.2 Sanborn/Historical Map Review

Sanborn Fire Insurance Maps were reviewed for the Site and vicinity. Sanborn Maps usually show property use and underground commercial fuel storage for the purposes of insurance companies. Although Sanborn Maps were provided for the years 1910, 1936, 1950 and 1978, all four maps depict the Site as being in an area of “No Exposure”. Abutting properties to the north are depicted as residential. The Sanborn Map Report is attached in Appendix B.

5.3 Historic Aerial Photograph Review

Aerial photographs were reviewed through the Historic Aerials website (www.historicaerials.com) and a current 2019 aerial photograph was reviewed from Google Earth.

The current school is depicted in the aerial photographs from 1966 to the present. Aerial photographs from 1960 and 1939 show the Site to be undeveloped woods.
5.4 Radius Search for Properties of Environmental Concern

A radius search was conducted of federal and state-listed sites of potential environmental concern as outlined in ASTM E 1527 guidelines. The search was performed using software developed by Environmental Data Resources Inc. (EDR). Sites identified within the designated ASTM search radii are summarized in the following table. The EDR report is included in Appendix B.

<table>
<thead>
<tr>
<th>NPL (1 mi.)</th>
<th>RCRIS (1 mi.)</th>
<th>TSDF (0.5 mi.)</th>
<th>CERCLIS (0.5 mi.)</th>
<th>Landfill (0.5 mi.)</th>
<th>STATE SITES (0.5 mi.)</th>
<th>LUST, LAST &amp; SPILLS (0.25 mi.)</th>
<th>ERNS (Site/Abutters)</th>
<th>RCRIS (Site/Abutter)</th>
<th>UST (Site/Abutter)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
<td>Vehicle Accident</td>
<td>Doherty High School</td>
<td>255 Highland St</td>
<td>NI</td>
<td>NI</td>
<td>NI</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>255 Highland St</td>
<td>229 Highland St</td>
<td>460’ E</td>
<td>Subject Site</td>
<td>2-16770/A2 RAO</td>
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<td>E elev. diff. -56</td>
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<td>Shell Oil Co.</td>
<td>Parkview Office Tower</td>
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<td>266 Park Ave</td>
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<td>1300’ S</td>
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<td>2-13318/A2 RAO</td>
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<td>12 additional sites to 0.5 mile</td>
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</tbody>
</table>

Notes:
- Elev. Diff = Difference in elevation from Site
- N=north, S=south, W=west, E=east
- NPL = National Priorities List
- TSDF = Treatment Storage & Disposal Facilities
- ERNS = Environmental Response Notification System
- NI = None Identified
- NFA – LSP Opinion of No Further Action
- PSNC = Permanent Solution with No Conditions
- UST = Underground Storage Tank
- F = Final
- RAO = Closed in accordance with MADEP Regulations
- RCRIS = Resource Conservation and Recovery Information System
- TierII = Listed with MADEP due to oil or hazardous material in soil/groundwater (not closed)
- DPS = Downgradient Property Status (contamination is from an upgradient source)
5.5 Massachusetts Department of Environmental Protection Review

The subject Site is listed in the State database due to the assessment and remediation of a reported release of petroleum detected in 2007. According to a Response Action Outcome Statement (RAO) completed in 2008 by Corporate Environmental Advisors (CEA) attached in Appendix D, a release of petroleum was detected during the removal of two petroleum underground storage tanks on the Site in July 2007. The USTs consisted of one 1,000-gallon diesel UST and one 10,000-gallon fuel oil UST. Both tanks were located outside the boiler room. Field screening of soil samples with a photoionization detector (PID) detected total organic vapors (TOV) at concentrations of up to 200 parts per million by volume (ppmv), exceeding the 100 ppmv trigger for a MADEP 72-hour release notification condition.

Subsequent to excavation of contaminated soil, six confirmatory soil samples collected from the sidewalls and base of the excavation area in July 2007 were submitted for analysis of extractable petroleum hydrocarbons (EPH) with polycyclic aromatic hydrocarbons (PAH) and volatile petroleum hydrocarbons (VPH) with BTEX compounds via MADEP methodologies. Several petroleum fractions and compounds were detected in one of two base samples designated Bottom-1. No petroleum fractions or compounds were detected in the other five confirmatory soil samples. Exposure point concentrations, calculated by averaging, were all below the applicable MADEP Risk Characterization standards.

Two groundwater monitoring wells were installed in the area of the release. Groundwater samples from both wells were analyzed for EPH/PAH and VPH/BTEX via MADEP methodologies. No petroleum fractions or compounds were detected above the laboratory instrument detection limits in either groundwater sample.

Soil vapor was assessed with the screening of two soil vapor points within the building and the laboratory analysis of soil samples closest to the building. TOV concentrations in the vapor points ranged from 1.3 ppmv to 5.2 ppmv. No VPH fractions or compounds were detected in the soil sample collected closest to the building. Based on field screening and lab analysis results, CEA concluded that impact to indoor air was unlikely.

Site-specific files for the other releases included in the database were not reviewed at the MADEP since those sites identified in the regulatory database report have been closed-out by the MADEP or the identified properties are located topographically and/or hydraulically downgradient from the Site. Therefore, the identified properties are not likely to have current or former releases of hazardous substances and/or petroleum products with the potential to migrate to the Site that would result in a material threat to public health or the environment. Migration refers to the movement of hazardous substances or petroleum products in any form, including solid and liquid at the surface or subsurface and vapor in the subsurface.
5.6 Previous Reports

No previously completed Phase I Environmental Site Assessment reports were made available during the course of this assessment. Summaries of the previously completed UST Closure Report and Response Action Outcome statement for the closure of the USTs and associated petroleum release in 2007 and 2008 are included in Section 5.5 of this report.

5.7 Physical Setting Sources

LAI reviewed information provided by the United States Geological Survey (USGS) in connection with physiographic conditions, soil and bedrock types. LAI also reviewed the MassGIS Resource Map for the area, and located natural resources during the Site Reconnaissance. According to the USGS Worcester Quadrangle Topographical Map, the elevation of the Site varies from approximately 600 feet in the southeast corner of the Site to 530 feet on the northern portion of the Site.

Review of the MassGIS Bureau of Waste Site Cleanup Priority Resources Map (Figure 5) published by the MADEP, indicated the Site is not located in a potential aquifer area.

No water bodies are located on the Site. Review of the Flood Insurance Rate Map, attached as Figure 6, published by the Federal Emergency Management Agency (FEMA) indicated the Site is located in an area of minimal flooding.

Review of the National Wetlands Inventory from the U.S Fish and Wildlife Service, indicated that no wetlands are located on the Site or adjacent properties.

5.8 Historical Use Information

Research regarding historical land usage of the Site and surrounding properties was conducted using data obtained from historical maps, parties familiar with the Site, and municipal officials. No information regarding the development of Site prior to construction of the school in the 1960’s was made available during the course of this assessment. Aerial photos from 1939 and 1960 show the Site to be undeveloped woods.
6.0 SITE RECONNAISSANCE

6.1 Methodology and Limiting Conditions

On August 8, 2019, LAI personnel conducted on-Site inspections, which consisted of a visual examination of the Site and portions of adjacent properties and interviews with Site personnel. Areas were examined for surficial indications of releases of oil and/or hazardous materials (OHM).

6.2 Interior Inspection

The school is comprised of two brick interconnected buildings with a total footprint of approximate 84,000 square feet. Subdivisions within the buildings include offices, classrooms, maintenance closets, a utility/mechanical/boiler room, gymnasium and cafeteria.

Storage of oil or other hazardous materials consisted of standard maintenance supplies and one 275-gallon fuel oil AST located in the boiler room. The fuel oil was stored for powering a backup electrical generator located in the boiler room. According to Mr. Santos, the generator and AST are no longer used. Several floor drains were observed in the school. Mr. Santos stated that he believes they are connected to the municipal sewer system.

No evidence of a release of OHM was observed through the course of our inspection. LAI did not inspect the roof.

6.3 Exterior Inspection

The balance of the Site consists of paved asphalt driveways and parking lots, landscaped areas and athletic fields. Storm water drains were observed connecting to the municipal storm water system. One electrical transformer was observed near the eastern end of the building; no evidence of a release was observed.

No evidence of current or former USTs or ASTs was observed on exterior portions of the Site. No evidence of releases or dumping of OHM was observed on the Site through the course of our inspection. LAI did not observe any odors, pools of liquid, ponds, lagoons, stressed vegetation, suspicious containers or tanks, or solid waste during the reconnaissance.

7.0 INTERVIEWS

LAI interviewed Mr. Joe Santos, Property Maintenance, and Mr. James Bedard, City of Worcester Director of Environmental Management & Capital Projects in connection with property conditions and the potential for Recognized Environmental Conditions.
8.0 SUMMARY OF FINDINGS AND CONCLUSION

8.1 Findings

Lord Associates, Inc. has completed a Phase I Environmental Site Assessment of the Site. This assessment was performed in conformance with standard industry practice and the ASTM E 1527-13 site assessment standard entitled “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process”. Our findings are presented below:

1. Information provided indicates that the Site consists of one lot totaling approximately 20 acres of land located on the south side of Highland Street, approximately 450 feet east of the intersection of Highland Street and Pleasant Street in Worcester, Massachusetts. The Site, occupied by the Doherty Memorial High School, is designated as Map ID# 11-INX-00001 by the Worcester Tax Assessor’s Office.

2. The Site is located in a recreational, residential and commercial area of Worcester, Massachusetts. Elm Park, abutting the south, east and west side of the Site, and the field in the eastern portion of the Site, are designated Open Space areas for recreational purposes. Properties to the north, beyond highland Street, are developed as residential.

3. Development of the Site includes two interconnected brick buildings on concrete slabs with a total footprint of approximately 84,000 square feet. Municipal records specify that the school was constructed circa 1960. The buildings are located in the northern portion of the Site, with paved asphalt parking lots to the east. Landscaped areas are located in the areas of the buildings and athletic fields are located on the eastern portion of the Site.

4. One 275-gallon fuel oil AST is located in the boiler room. According to the oil level indicator on the AST, the tank is more than half full. According to maintenance personnel, the fuel oil was used for the backup generator also located in the boiler room but the use of the generator and therefore the fuel oil, has been discontinued. No evidence or records of current underground storage tanks (UST) were observed during the inspection or through records reviews.

5. The subject Site is listed in the State database as having had a release of petroleum detected in 2007. A release of petroleum was detected during the removal of two petroleum underground storage tanks on the Site in July 2007. The USTs consisted of one 1,000-gallon diesel UST and one 10,000-gallon fuel oil UST. Both tanks were located outside the boiler room. Subsequent to the excavation and disposal of contaminated soil, assessment activities including soil, groundwater and soil vapor testing, CEA concluded that remedial activities were successful in cleaning the release according to MADEP regulations and submitted a Class A-2 RAO report in May 2008.
6. Several other state-listed properties were identified within the ASTM-specified radii as having had a reported release of oil or other hazardous materials in the vicinity. Based on the information in the database, the location, distance, regulatory status and/or cleanup activities, it is our opinion that the properties listed are not likely to have current or former releases of hazardous substances and/or petroleum products with the potential to migrate to the Site that would result in a material threat to public health or the environment. Migration refers to the movement of hazardous substances or petroleum products in any form, including solid and liquid at the surface or subsurface and vapor in the subsurface.

7. Lord Associates, Inc. conducted an inspection of the Site consisting of a visual examination of the Site, immediate surrounding features, and abutting properties. The building is connected to municipal water and sewer systems and heat is fueled by natural gas. No evidence of releases or dumping of OHM was observed on the Site through the course of our inspection.

8. Research regarding historical land usage of the Site and surrounding properties was conducted using data obtained from historical maps, parties familiar with the Site, and municipal officials. No information regarding the development of Site prior to construction of the school in the 1960’s was made available during the course of this assessment. Aerial photos from 1939 and 1960 show the Site to be undeveloped woods.

9. Municipal reviews were performed including the Fire Prevention Office. No record of current or former fuel storage or releases of OHM was discovered in municipal file reviews.

8.2 Conclusions

This assessment has not identified any current Recognized Environmental Conditions (RECs) in connection with the property, 299 Highland Street in Worcester, Massachusetts.

The historic release and cleanup of fuel oil from two USTs at the Site are considered a Historic Recognized Environmental Condition (HREC) that has been addressed according to MADEP regulations.

Although not a REC, it is recommended that the abandoned fuel oil AST be emptied and cleaned with the contents and the tank disposed at licensed facilities.

Any exceptions to, or deletions from, ASTM Practice E 1527 are described in Section 9 of this report. Please note that an investigation for the presence of mold, asbestos and PCBs in building materials, lead-based paint, indoor air quality, or regulatory compliance
is beyond the scope of work described by ASTM E 1527-13, therefore LAI did not explore those conditions.

9.0 RESTRICTIVE CONDITIONS

9.1 Limitations & Deviations

LAI recognizes the following limitations and/or deviations from the Standard with respect to this Phase I Environmental Site Assessment Update:

- LAI did not interview past owners of the Site;
- LAI did not interview owners of neighboring property;
- LAI did not review Title Records for the Site; and
- LAI did not conduct an evaluation of the purchase price of the Site compared to the fair market value.

9.2 Significance of Data Gaps

As described above, the deviations from the Standard constitute data gaps. However, it is our opinion that these data gaps do not raise reasonable concerns that would affect the ability to identify conditions indicative of a release or threatened release or Recognized Environmental Conditions (RECs) based upon other information collected during the course of the Phase I Environmental Site Assessment Update.

- Although the past owner and owners of neighboring property were not interviewed, site and surrounding area history does not indicate prior use involving oil and/or hazardous materials.
- In Massachusetts, all environmental liens and Activity and Use Limitations are identified on the MADEP sites database, which has been searched.
- Based on Site History, there is no reasonable indication that property value has been affected due to environmental concerns.

10.0 LIMITATIONS

No warranty, whether expressed or implied, is given with respect to this report or any opinions expressed herein. It is expressly understood that this report and the opinions expressed herein are based upon Site conditions, as they existed only at the time of assessment. Nothing in this report constitutes a legal opinion or legal service, and should not be relied upon as such.

The data reported and the findings, observations, and opinions expressed in the report are limited by the Scope of Work. The Scope of Work was performed based on budgetary, time, and other constraints imposed by the Client, and the agencies and persons reviewed.
In preparing this report, Lord Associates, Inc. has relied upon and presumed accurate certain information about the Site and adjacent properties provided by governmental agencies, the client and others identified in the report. Except as otherwise stated in the report, Lord Associates, Inc. has not attempted to verify the accuracy or completeness of any such information.

This report has been prepared on behalf of and for the exclusive use of the client, and those immediate entities involved with the proximate financing of this project, solely for use in the environmental evaluation of the Site. Any reuse or reliance on this report by any other third party shall be done only with the written consent of LAI.

11.0 SIGNATURES AND ENVIRONMENTAL PROFESSIONAL STATEMENT

LAI declares that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. LAI has the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. LAI has developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

This report is dated this August 21, 2019 and is signed by individuals who are duly authorized to do so.

Jonathon D. Puliafico, CPG
Senior Project Manager

Ralph J. Tella, CHMM, LSP
President
APPENDIX A
FIGURE 1: SITE LOCATION MAP

299 HIGHLAND STREET
WORCESTER, MASSACHUSETTS
FIGURE 3: SITE PLAN

299 HIGHLAND STREET
WORCESTER, MASSACHUSETTS

Gymnasium
Boiler Room w/ AST
Athletic Fields
FIGURE 4: PRIORITY RESOURCES MAP

299 HIGHLAND STREET
WORCESTER, MASSACHUSETTS
FIGURE 5: FEMA Flood Zones

REFERENCES:
MASS GIS: FEMA National Flood Map
https://msc.fema.gov/portal/

LORD ASSOCIATES, INC.
1506 Providence Highway, Suite 30
Norwood, MA 02062-4647
(781) 255-5554
FIGURE 6: Wetlands Map

REFERENCE:
National Wetlands Inventory from the U.S Fish and Wildlife Service
Photo #1: Main entrance to the high school

Photo #2: Electric and water service to the building

Photo #3: Transformer located east of the building

Photo #4: Northern portion of the school building
Photo #5: Typical hallway

Photo #6: Maintenance closet

Photo #7: Portion of the boiler room

Photo #8: 275-gallon fuel oil AST
Table of Contents

This report includes a search of reasonably available environmental records to assist the professional in compliance with Section 8.2.1 Standard Federal, State, and Tribal Environmental Record Source of ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (E1527-13). Additional environmental records sources may be available for your property.

Target Site: 299 HIGHLAND STREET
WORCESTER, MA 01602

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**Search Summary**

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WORCESTER, MA 01602

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WORCESTER, MA 01602

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# Sites Sorted by Distance

**TARGET PROPERTY ADDRESS:**
299 HIGHLAND STREET  
WORCESTER, MA  01602

Click on Map ID to see full detail.

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<tr>
<th>MAP ID</th>
<th>SITE NAME</th>
<th>ADDRESS</th>
<th>DATABASE ACRONYMS</th>
<th>RELATIVE ELEVATION</th>
<th>DIST (ft, mi.) DIRECTION</th>
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## Sites Sorted by Distance

**TARGET PROPERTY ADDRESS:**  
299 HIGHLAND STREET  
Worcester, MA 01602

Click on Map ID to see full detail.

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<th>DATABASE ACRONYMS</th>
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</table>
# Sites Sorted by Distance

**TARGET PROPERTY ADDRESS:**
299 HIGHLAND STREET  
WORCESTER, MA  01602

Click on Map ID to see full detail.

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<thead>
<tr>
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<tbody>
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## Sites Sorted by Distance

**TARGET PROPERTY ADDRESS:**
299 HIGHLAND STREET  
WORCESTER, MA  01602

Click on Map ID to see full detail.

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<th>MAP ID</th>
<th>SITE NAME</th>
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<th>DATABASE ACRONYMS</th>
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# Sites Sorted by Distance

**TARGET PROPERTY ADDRESS:**
299 HIGHLAND STREET
WORCESTER, MA  01602

Click on Map ID to see full detail.

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<thead>
<tr>
<th>MAP ID</th>
<th>SITE NAME</th>
<th>ADDRESS</th>
<th>DATABASE ACRONYMS</th>
<th>RELATIVE ELEVATION</th>
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TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 1 of the attached EDR Radius Map report:

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<th>Database(s)</th>
<th>EPA ID</th>
<th>Release Tracking Number / Current Status</th>
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SURROUNDING SITES: SEARCH RESULTS

Federal RCRA generators list

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generator

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<th>Direction / Distance</th>
<th>Map ID</th>
<th>Page</th>
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<tbody>
<tr>
<td>ELM PARK COLLISION L</td>
<td>234 PARK AVE</td>
<td>S (0.130 mi. / 688 ft.)</td>
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<td>AUTOZONE 5013</td>
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<td>122 ELM</td>
<td>SE (0.205 mi. / 1084 ft.)</td>
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<td>S (0.214 mi. / 1132 ft.)</td>
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<td>AUTO TECH BODY WORKS</td>
<td>254 PARK AVE</td>
<td>S (0.214 mi. / 1132 ft.)</td>
<td>C15</td>
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State- and tribal - equivalent CERCLIS

SHWS: Reportable Releases Database

<table>
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<tr>
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Compliance Status: Response Action Outcome

Formal Release Tracking Number: 2-0000626
Compliance Status: Response Action Outcome

Formal Release Tracking Number: 2-0014738
Compliance Status: Response Action Outcome

Formal Release Tracking Number: 2-0017098
Compliance Status: Response Action Outcome

Formal Release Tracking Number: 2-0014714
Compliance Status: Response Action Outcome

Formal Release Tracking Number: 2-0015173
Compliance Status: Response Action Outcome Not Required

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Compliance Status: Response Action Outcome Not Required

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Formal Release Tracking Number: 2-0015980
Compliance Status: Response Action Outcome

Formal Release Tracking Number: 2-0013932
Compliance Status: Remedy Operation Status

Formal Release Tracking Number: 2-0015160
Compliance Status: Response Action Outcome

Formal Release Tracking Number: 2-0020707
Compliance Status: Response Action Outcome

Compliance Status: Tier II, A site/release receiving a total NRS score of less than 350, unless the site meets any of the Tier 1 Inclusionary Criteria (see above). Permits are not required at Tier 2 sites/releases and response actions may be performed under the supervision of an LSP without prior DEP approval. All pre-1993 transition sites that have accepted waivers are categorically Tier 2 sites.
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*Additional key fields are available in the Map Findings section*

Compliance Status: Tier II, A site/release receiving a total NRS score of less than 350, unless the site meets any of the Tier 1 Inclusionary Criteria (see above). Permits are not required at Tier 2 sites/releases and response actions may be performed under the supervision of an LSP without prior DEP approval. All pre-1993 transition sites that have accepted waivers are categorically Tier 2 sites.
## Sites Sorted by Database

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Compliance Status: Tier 1D, a release where the responsible party fails to provide a required submittal to DEP by a specified deadline.

Compliance Status: Tier II, A site/release receiving a total NRS score of less than 350, unless the site meets any of the Tier 1 Inclusionary Criteria (see above). Permits are not required at Tier 2 sites/releases and response actions may be performed under the supervision of an LSP without prior DEP approval. All pre-1993 transition sites that have accepted waivers are categorically Tier 2 sites.
# Sites Sorted by Database

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## State and tribal leaking storage tank lists

### LAST: Leaking Aboveground Storage Tank Sites

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<td>70 ELM STREET</td>
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### LUST: Leaking Underground Storage Tank Listing

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<td>AMOCO STATION FMR</td>
<td>281 PARK AVE</td>
<td>S (0.316 mi. / 1668 ft.)</td>
<td>G35</td>
<td>19</td>
</tr>
<tr>
<td>UST RELEASE</td>
<td>38 COOLIDGE RD</td>
<td>SSW (0.316 mi. / 1669 ft.)</td>
<td>36</td>
<td>20</td>
</tr>
<tr>
<td>RESIDENTIAL</td>
<td>12 BEECHMONT ST</td>
<td>N (0.317 mi. / 1676 ft.)</td>
<td>F38</td>
<td>21</td>
</tr>
<tr>
<td>Not reported</td>
<td>11 SEVER ST</td>
<td>ESE (0.327 mi. / 1729 ft.)</td>
<td>H40</td>
<td>22</td>
</tr>
<tr>
<td>CUMBERLAND FARMS #20</td>
<td>342 PLEASANT ST</td>
<td>SE (0.340 mi. / 1793 ft.)</td>
<td>I41</td>
<td>23</td>
</tr>
<tr>
<td>HISTORIC PETROLEUM R</td>
<td>6-12 SEVER STREET</td>
<td>ESE (0.354 mi. / 1868 ft.)</td>
<td>H44</td>
<td>24</td>
</tr>
<tr>
<td>WORCESTER PUBLIC SCH</td>
<td>305 CHANDLER ST</td>
<td>SSW (0.406 mi. / 2145 ft.)</td>
<td>48</td>
<td>26</td>
</tr>
<tr>
<td>GIBBS SERVICE STATIO</td>
<td>321 PARK AVE</td>
<td>S (0.453 mi. / 2392 ft.)</td>
<td>53</td>
<td>28</td>
</tr>
<tr>
<td>ESTATE OF DOROTHY PA</td>
<td>88 JUNE ST</td>
<td>WSW (0.469 mi. / 2476 ft.)</td>
<td>56</td>
<td>30</td>
</tr>
<tr>
<td>WHITE CLEANERS</td>
<td>199 CHANDLER ST</td>
<td>S (0.486 mi. / 2555 ft.)</td>
<td>K60</td>
<td>32</td>
</tr>
</tbody>
</table>

### State and tribal registered storage tank lists

UST: Summary Listing of all the Tanks Registered in the State of Massachusetts

<table>
<thead>
<tr>
<th>Site</th>
<th>Address</th>
<th>Direction / Distance</th>
<th>Map ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHELL SERVICE STATIO</td>
<td>229 PARK AVE</td>
<td>S (0.118 mi. / 625 ft.)</td>
<td>A3</td>
</tr>
<tr>
<td>Facility Id: 18359</td>
<td>Tank Status: Tank Removed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JOHN TSRAMANES &amp; ISA</td>
<td>234 PARK AVE</td>
<td>S (0.130 mi. / 688 ft.)</td>
<td>A6</td>
</tr>
<tr>
<td>Facility Id: 18326</td>
<td>Tank Status: Tank Removed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## State and tribal institutional control / engineering control registries

**INST CONTROL: Sites With Activity and Use Limitation**

<table>
<thead>
<tr>
<th>Site</th>
<th>Address</th>
<th>Direction / Distance</th>
<th>Map ID</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MARMON PLACE PROPERT</strong></td>
<td>MARMON PL</td>
<td>S (0.189 mi. / 996 ft.)</td>
<td>B10</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Release Tracking Number: 2-0000185</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WEBSTER FIVE PROPERT</strong></td>
<td>266 CHANDLER STREET</td>
<td>S (0.434 mi. / 2290 ft.)</td>
<td>51</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>Release Tracking Number: 2-0018143</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WHITE CLEANERS</strong></td>
<td>199 CHANDLER ST</td>
<td>S (0.486 mi. / 2565 ft.)</td>
<td>K60</td>
<td>32</td>
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<tr>
<td></td>
<td>Release Tracking Number: 2-0000584</td>
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</tbody>
</table>

## State and tribal Brownfields sites

**BROWNFIELDS: Completed Brownfields Covenants Listing**

<table>
<thead>
<tr>
<th>Site</th>
<th>Address</th>
<th>Direction / Distance</th>
<th>Map ID</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PARK AVE AMOCO</strong></td>
<td>510 PLEASANT ST</td>
<td>S (0.293 mi. / 1545 ft.)</td>
<td>D25</td>
<td>14</td>
</tr>
<tr>
<td>MCP Status: TIER1D</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>RTN: 2-0013555</td>
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</tr>
<tr>
<td><strong>WEBSTER FIVE PROPERT</strong></td>
<td>266 CHANDLER STREET</td>
<td>S (0.434 mi. / 2290 ft.)</td>
<td>51</td>
<td>27</td>
</tr>
<tr>
<td>MCP Status: RAO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTN: 2-0018143</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WHITE CLEANERS</strong></td>
<td>199 CHANDLER ST</td>
<td>S (0.486 mi. / 2565 ft.)</td>
<td>K60</td>
<td>32</td>
</tr>
<tr>
<td>MCP Status: RAO</td>
<td></td>
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<tr>
<td>RTN: 2-0000584</td>
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</tr>
</tbody>
</table>
0.250 Mile Map

299 HIGHLAND STREET WORCESTER, MA 01602

Black Rings Represent Qtr. Mile Radius
★ Target Property (Latitude: 42.268991 Longitude: 71.82028)
▲ High or Equal Elevation Sites
◆ Low Elevation Sites
 SEAL National Priority List Sites

EDR First Report
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

## LUST

<table>
<thead>
<tr>
<th>EDR ID</th>
<th>DIST/DIR</th>
<th>ELEVATION</th>
<th>MAP ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>S108858844</td>
<td>0.000</td>
<td>557</td>
<td>1</td>
</tr>
</tbody>
</table>

**NAME:** DOHERTY HIGH SCHOOL  
**ADDRESS:** 299 HIGHLAND ST  
WORCESTER, MA 01610

[Click here for full text details](#)

**LUST**  
Release Tracking Number / Current Status: 2-0016770 / RAO  
Click here to access the MA DEP site for this facility

## SHWS

<table>
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<tr>
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<th>ELEVATION</th>
<th>MAP ID</th>
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<tbody>
<tr>
<td>S109613080</td>
<td>0.087 East</td>
<td>501</td>
<td>2</td>
</tr>
</tbody>
</table>

**NAME:** VEHICLE ACCIDENT  
**ADDRESS:** 255 HIGHLAND ST  
WORCESTER, MA

[Click here for full text details](#)

**SHWS**  
Release Tracking Number: 2-0017518  
Current Status: Response Action Outcome

## UST

<table>
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<th>MAP ID</th>
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</thead>
<tbody>
<tr>
<td>U001008197</td>
<td>0.118 South</td>
<td>501</td>
<td>A3</td>
</tr>
</tbody>
</table>

**NAME:** SHELL SERVICE STATIO  
**ADDRESS:** 229 PARK AVE  
WORCESTER, MA 01606

[Click here for full text details](#)
### UST

<table>
<thead>
<tr>
<th>EDR ID</th>
<th>DIST/DIR</th>
<th>ELEVATION</th>
<th>MAP ID</th>
</tr>
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<tbody>
<tr>
<td>U001008197</td>
<td>0.118 South</td>
<td>501</td>
<td>A3</td>
</tr>
</tbody>
</table>

**NAME:** SHELL SERVICE STATION  
**ADDRESS:** 229 PARK AVE  
WORCESTER, MA 01606

**UST**  
Facility Id: 18359  
Tank Status: Tank Removed

### SHWS

<table>
<thead>
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<th>ELEVATION</th>
<th>MAP ID</th>
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<tbody>
<tr>
<td>S100363292</td>
<td>0.118 South</td>
<td>501</td>
<td>A4</td>
</tr>
</tbody>
</table>

**NAME:** SHELL OIL CO  
**ADDRESS:** 229 PARK AVE  
WORCESTER, MA 01600

**Click here for full text details**  
**SHWS**  
Release Tracking Number: 2-0000269  
Current Status: Response Action Outcome

### RCRA-CESQG

<table>
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<th>MAP ID</th>
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<tbody>
<tr>
<td>1000127363</td>
<td>0.130 South</td>
<td>501</td>
<td>A5</td>
</tr>
</tbody>
</table>

**NAME:** ELM PARK COLLISION L  
**ADDRESS:** 234 PARK AVE  
WORCESTER, MA 01609  
WORCESTER

**Click here for full text details**  
**RCRA-CESQG**

- Continued on next page -
Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

RCRA-CESQG

<table>
<thead>
<tr>
<th>EDR ID</th>
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<th>MAP ID</th>
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<tbody>
<tr>
<td>1000127363</td>
<td>0.130 South</td>
<td>501</td>
<td>A5</td>
</tr>
</tbody>
</table>

NAME: ELM PARK COLLISION L
ADDRESS: 234 PARK AVE
          WORCESTER, MA 01609
          WORCESTER

EPA Id: MAD001578830

UST

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<tbody>
<tr>
<td>U001008176</td>
<td>0.130 South</td>
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</tbody>
</table>

NAME: JOHN TSRAMANES & ISA
ADDRESS: 234 PARK AVE
          WORCESTER, MA 01609

Click here for full text details

UST
Facility Id: 18326
Tank Status: Tank Removed

LUST

<table>
<thead>
<tr>
<th>EDR ID</th>
<th>DIST/DIR:</th>
<th>ELEVATION</th>
<th>MAP ID</th>
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</thead>
<tbody>
<tr>
<td>S101504948</td>
<td>0.179 South</td>
<td>498</td>
<td>B7</td>
</tr>
</tbody>
</table>

NAME: PARKVIEW OFFICE TOWE
ADDRESS: 255 PARK AVE
          WORCESTER, MA 01600

Click here for full text details

LUST
Release Tracking Number / Current Status: 2-0000742 / RAO

- Continued on next page -
## Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

### LUST

<table>
<thead>
<tr>
<th>EDR ID</th>
<th>DIST/DIR</th>
<th>ELEVATION</th>
<th>MAP ID</th>
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<tbody>
<tr>
<td>S101504948</td>
<td>0.179 South</td>
<td>498</td>
<td>B7</td>
</tr>
</tbody>
</table>

**NAME:** PARKVIEW OFFICE TOWE  
**ADDRESS:** 255 PARK AVE  
WORCESTER, MA 01600

Click here to access the MA DEP site for this facility

### RCRA-CESQG

<table>
<thead>
<tr>
<th>EDR ID</th>
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<th>ELEVATION</th>
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<tbody>
<tr>
<td>1000358440</td>
<td>0.184 South</td>
<td>498</td>
<td>B8</td>
</tr>
</tbody>
</table>

**NAME:** AUTOZONE 5013  
**ADDRESS:** 248 PARK AVE  
WORCESTER, MA 01609  
WORCESTER

Click here for full text details  
**RCRA-CESQG**  
EPA Id: MAD985272251

### LUST

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<th>ELEVATION</th>
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<tbody>
<tr>
<td>S106954452</td>
<td>0.185 East</td>
<td>498</td>
<td>9</td>
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</tbody>
</table>

**NAME:** RESIDENCE  
**ADDRESS:** 96 WILLIAM ST  
WORCESTER, MA

Click here for full text details  
**LUST**  
Release Tracking Number / Current Status: 2-0015793 / RAO

- Continued on next page -
## Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
WORCESTER, MA  01602

### LUST

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<tr>
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<th>DIST/DIR:</th>
<th>ELEVATION</th>
<th>MAP ID</th>
<th>NAME</th>
<th>ADDRESS</th>
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<tbody>
<tr>
<td>S106954452</td>
<td>0.185 East</td>
<td>498</td>
<td>9</td>
<td>RESIDENCE</td>
<td>96 WILLIAM ST</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td>WORCESTER, MA</td>
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Click here to access the MA DEP site for this facility

### SHWS, INST CONTROL

<table>
<thead>
<tr>
<th>EDR ID</th>
<th>DIST/DIR:</th>
<th>ELEVATION</th>
<th>MAP ID</th>
<th>NAME</th>
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</thead>
<tbody>
<tr>
<td>S105198969</td>
<td>0.189 South</td>
<td>498</td>
<td>B10</td>
<td>MARMON PLACE PROPERT</td>
<td>MARMON PL 01600</td>
</tr>
</tbody>
</table>

Click here for full text details

**SHWS**  
Release Tracking Number: 2-0000185  
Current Status: Response Action Outcome  
**INST CONTROL**  
Release Tracking Number: 2-0000185

### LUST

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<tr>
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<th>ELEVATION</th>
<th>MAP ID</th>
<th>NAME</th>
<th>ADDRESS</th>
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</thead>
<tbody>
<tr>
<td>S108640568</td>
<td>0.191 WNW</td>
<td>524</td>
<td>11</td>
<td>MIDLAND STREET SCHOO</td>
<td>18 MIDLAND ST</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>WORCESTER, MA</td>
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Click here for full text details

- Continued on next page -
Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

LUST

<table>
<thead>
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<th>MAP ID:</th>
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<tbody>
<tr>
<td>S108640568</td>
<td>0.191 WNW</td>
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<td>11</td>
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NAME: MIDLAND STREET SCHOOL
ADDRESS: 18 MIDLAND ST
WORCESTER, MA

LUST
Release Tracking Number / Current Status: 2-0016747 / RAO

Click here to access the MA DEP site for this facility

SHWS

<table>
<thead>
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<tr>
<td>S106775951</td>
<td>0.191 North</td>
<td>580</td>
<td>12</td>
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NAME: FRANCIS POTTER
ADDRESS: 27 GERMAIN ST
WORCESTER, MA 01609

Click here for full text details

SHWS
Release Tracking Number: 2-0015555
Current Status: Response Action Outcome

RCRA-CESQG

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<th>MAP ID:</th>
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<tbody>
<tr>
<td>1024882680</td>
<td>0.205 SE</td>
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</table>

NAME: STEFOS AND ASSOCIATE
ADDRESS: 122 ELM
WORCESTER, MA 01609
WORCESTER

Click here for full text details

- Continued on next page -
### Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
**WORCESTER, MA 01602**

<table>
<thead>
<tr>
<th>EDR ID</th>
<th>DIST/DIR</th>
<th>ELEVATION</th>
<th>MAP ID</th>
</tr>
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<tbody>
<tr>
<td>1024882680</td>
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</tr>
<tr>
<td>STEFOS AND ASSOCIATE</td>
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| ADDRESS: 122 ELM  
WORCESTER, MA 01609  
WORCESTER |

RCRA-CESQG  
EPA Id: MAR000530956

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<tbody>
<tr>
<td>1000151070</td>
<td>0.214 South</td>
<td>498</td>
<td>C14</td>
</tr>
<tr>
<td>ADVANCED AUTO BODY I</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
| ADDRESS: 254 PARK AVE  
WORCESTER, MA 01609  
WORCESTER |

Click here for full text details  
RCRA-CESQG  
EPA Id: MAD981069602

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<th>MAP ID</th>
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<tbody>
<tr>
<td>1000327066</td>
<td>0.214 South</td>
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<td>C15</td>
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<tr>
<td>AUTO TECH BODY WORKS</td>
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</table>
| ADDRESS: 254 PARK AVE  
WORCESTER, MA 01609  
WORCESTER |

Click here for full text details  
RCRA-CESQG  
EPA Id: MAD981065865
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

## SHWS

<table>
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<tbody>
<tr>
<td>S102403605</td>
<td>0.216 South</td>
<td>498</td>
<td>C16</td>
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<tr>
<td>NAME:</td>
<td>CITY OF WORCESTER DP</td>
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<tr>
<td>ADDRESS:</td>
<td>248 256 PARK AVE</td>
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**Click here for full text details**

SHWS

Release Tracking Number: 2-0011329
Current Status: Response Action Outcome

## LAST

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<tbody>
<tr>
<td>S103383237</td>
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<td>517</td>
<td>17</td>
</tr>
<tr>
<td>NAME:</td>
<td>RESIDENCE</td>
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<tr>
<td>ADDRESS:</td>
<td>15 MONROE AVE</td>
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**Click here for full text details**

LAST

Release Tracking Number / Current Status: 2-0012403 / RAO

## SHWS

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<tbody>
<tr>
<td>S104562388</td>
<td>0.246 South</td>
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<td>C18</td>
</tr>
<tr>
<td>NAME:</td>
<td>BLUE JEANS PIZZA</td>
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</tr>
<tr>
<td>ADDRESS:</td>
<td>266-270 PARK AVE</td>
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**Click here for full text details**

SHWS

Release Tracking Number: 2-0013318

- Continued on next page -
### Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

<table>
<thead>
<tr>
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<tbody>
<tr>
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<tr>
<td>NAME:</td>
<td>BLUE JEANS PIZZA</td>
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<td>ADDRESS:</td>
<td>266-270 PARK AVE</td>
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<td></td>
<td>WORCESTER, MA 01602</td>
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Current Status: Response Action Outcome

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<tr>
<td>EDR ID:</td>
<td>1000521272</td>
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<tr>
<td>NAME:</td>
<td>PLEASANT ST GULF</td>
</tr>
<tr>
<td>ADDRESS:</td>
<td>528 PLEASANT ST</td>
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<tr>
<td></td>
<td>WORCESTER, MA 1602</td>
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Click here for full text details

**SHWS**
Release Tracking Number: 2-0013403
Current Status: Response Action Outcome

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<tr>
<td>EDR ID:</td>
<td>S118337224</td>
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<tr>
<td>NAME:</td>
<td>ROADWAY RELEASE</td>
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<tr>
<td>ADDRESS:</td>
<td>530-541 PLEASANT STR</td>
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<td>WORCESTER, MA</td>
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Click here for full text details

**SHWS**
Release Tracking Number: 2-0019571
Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

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<tbody>
<tr>
<td>S108117193</td>
<td>0.281 South</td>
<td>498</td>
<td>D21</td>
</tr>
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</table>

NAME: BLUE JEANS PIZZA
ADDRESS: 270 PARK AVE
WORCESTER, MA 01609

Click here for full text details

<table>
<thead>
<tr>
<th>EDR ID</th>
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<tbody>
<tr>
<td>S110055577</td>
<td>0.282 WNW</td>
<td>519</td>
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NAME: RESIDENTIAL PROPERTY
ADDRESS: 43 MIDLAND ST
WORCESTER, MA 01602

Click here for full text details

<table>
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<tr>
<td>S100043200</td>
<td>0.284 South</td>
<td>499</td>
<td>D23</td>
</tr>
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</table>

NAME: GALLO REALTY CORPORA
ADDRESS: 276 PARK AVE
WORCESTER, MA 01600

Click here for full text details

LUST
- Release Tracking Number: 2-0016431 / RAO
Click here to access the MA DEP site for this facility

SHWS
- Release Tracking Number: 2-0017705
Current Status: Response Action Outcome

SHWS
- Release Tracking Number: 2-0017705
Current Status: Response Action Outcome

- Continued on next page -
## Mapped Sites Summary

### Target Property:
299 HIGHLAND STREET  
WORCESTER, MA 01602

### SHWS

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<tr>
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### LUST

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<tr>
<td>NAME: BECKER COLLEGE</td>
<td>ADDRESS: 30 ROXBURY ST</td>
<td></td>
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<tr>
<td>ADDRESS: 30 ROXBURY ST</td>
<td>WORCESTER, MA</td>
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Click here for full text details

### LUST

Release Tracking Number / Current Status: 2-0016778 / RAO

Click here to access the MA DEP site for this facility

### SHWS, BROWNFIELDS

<table>
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<tr>
<th>EDR ID: U002007336</th>
<th>DIST/DIR: 0.293 South</th>
<th>ELEVATION: 497</th>
<th>MAP ID: D25</th>
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</thead>
<tbody>
<tr>
<td>NAME: PARK AVE AMOCO</td>
<td>ADDRESS: 510 PLEASANT ST</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADDRESS: 510 PLEASANT ST</td>
<td>WORCESTER, MA 01609</td>
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Click here for full text details

- Continued on next page -
# Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
WORCESTER, MA 01602

### SHWS, BROWNFIELDS

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<th>MAP ID</th>
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<tr>
<td>U002007336</td>
<td>0.293 South</td>
<td>497</td>
<td>D25</td>
</tr>
</tbody>
</table>

**NAME:** PARK AVE AMOCO  
**ADDRESS:** 510 PLEASANT ST  
WORCESTER, MA 01609

---

**SHWS**  
Release Tracking Number: 2-0013555  
Current Status: Tier 1D, a release where the responsible party fails to provide a required submittal to DEP by a specified deadline.

**BROWNFIELDS**  
MCP Status: TIER1D  
RTN: 2-0013555

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### SHWS

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<tr>
<td>S117405606</td>
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<td>E26</td>
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</table>

**NAME:** MOBIL BRANDED GASOLI  
**ADDRESS:** 185 PARK AVE  
WORCESTER, MA

---

Click here for full text details

**SHWS**  
Release Tracking Number: 2-0019343  
Current Status: Tier II, A site/release receiving a total NRS score of less than 350, unless the site meets any of the Tier 1 Inclusionary Criteria (see below).
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

## SHWS, LUST

<table>
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<tbody>
<tr>
<td>S105736225</td>
<td>0.294 NE</td>
<td>518</td>
<td>E27</td>
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<tr>
<td>NAME:</td>
<td>MOBIL STATION</td>
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<tr>
<td>ADDRESS:</td>
<td>185 PARK AVE</td>
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<td></td>
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Click here for full text details

**SHWS**
- Release Tracking Number: 2-0016538
- Current Status: Tier II, A site/release receiving a total NRS score of less than 350, unless the site meets any of the Tier 1 Inclusionary Criteria (see description of Tier 1 criteria)

**LUST**
- Release Tracking Number / Current Status: 2-0014620 / RAONR

Click here to access the MA DEP site for this facility

## LUST

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<tr>
<td>S112146168</td>
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<tr>
<td>NAME:</td>
<td>MOBIL STA 1487</td>
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<tr>
<td>ADDRESS:</td>
<td>185 PARK AVE</td>
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<td></td>
<td>WORCESTER, MA 01609</td>
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Click here for full text details

**LUST**
- Release Tracking Number / Current Status: 2-0018670 / RAONR

Click here to access the MA DEP site for this facility
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

## SHWS, LUST

<table>
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<tr>
<td>S105199024</td>
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<tr>
<td>NAME:</td>
<td>MOBIL STATION 01-EL5</td>
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<tr>
<td>ADDRESS:</td>
<td>185 PARK AVE</td>
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<td>WORCESTER, MA 01600</td>
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[Click here for full text details]

**SHWS**
- Release Tracking Number: 2-0000818
- Release Tracking Number: 2-0020021
- Current Status: Tier II, A site/release receiving a total NRS score of less than 350, unless the site meets any of the Tier 1 Inclusionary Criteria (see Release Tracking Number / Current Status: 2-0000818 / TIERII)

[Click here to access the MA DEP site for this facility]

## SHWS

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<tbody>
<tr>
<td>S116357992</td>
<td>0.295 South</td>
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<td>30</td>
</tr>
<tr>
<td>NAME:</td>
<td>PROPERTY</td>
<td></td>
<td></td>
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<tr>
<td>ADDRESS:</td>
<td>455 PLEASANT STREET</td>
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<tr>
<td></td>
<td>WORCESTER, MA 01609</td>
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[Click here for full text details]

**SHWS**
- Release Tracking Number: 2-0019145

Click here for full text details
## Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
**WORCESTER, MA 01602**

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<tbody>
<tr>
<td>S108859065</td>
<td>0.296 South</td>
<td>497</td>
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</tr>
<tr>
<td>NAME</td>
<td>RAHEB PROPERTY</td>
<td></td>
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</tr>
</tbody>
</table>
| ADDRESS      | 508-510 PLEASANT ST  
**WORCESTER, MA** |

**Click here for full text details**

**SHWS**

Release Tracking Number: 2-0016728  
Current Status: Tier 1D, a release where the responsible party fails to provide a required submittal to DEP by a specified deadline.

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<tbody>
<tr>
<td>S103545512</td>
<td>0.299 ESE</td>
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<tr>
<td>NAME</td>
<td>NAJEMI PROPERTY</td>
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</tr>
</tbody>
</table>
| ADDRESS      | 53 CEDAR ST  
**WORCESTER, MA 01609** |

**Click here for full text details**

**SHWS**

Release Tracking Number: 2-0012380  
Current Status: Response Action Outcome

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<tbody>
<tr>
<td>S110822130</td>
<td>0.311 North</td>
<td>637</td>
<td>F33</td>
</tr>
<tr>
<td>NAME</td>
<td>SISTERS OF THE ASSUM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| ADDRESS      | 11 BEECHMONT ST.  
**WORCESTER, MA** |

**Click here for full text details**

**LUST**

- Continued on next page -
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA  01602

## LUST

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<th>EDR ID</th>
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<th>MAP ID</th>
<th>NAME</th>
<th>ADDRESS</th>
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</thead>
<tbody>
<tr>
<td>S110822130</td>
<td>0.316 North</td>
<td>637</td>
<td>F33</td>
<td>SISTERS OF THE ASSUM</td>
<td>11 BEECHMONT ST. WORCESTER, MA</td>
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</table>

Release Tracking Number / Current Status: 2-0018079 / RAO  
Click here to access the MA DEP site for this facility

## SHWS

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<th>NAME</th>
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<tbody>
<tr>
<td>S105735873</td>
<td>0.316 South</td>
<td>497</td>
<td>G34</td>
<td>CK SMITH CO INC</td>
<td>281 PARK AVE WORCESTER, MA 01609</td>
</tr>
</tbody>
</table>

Click here for full text details

### SHWS
Release Tracking Number: 2-0014532  
Current Status: Response Action Outcome

## SHWS, LUST

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<th>NAME</th>
<th>ADDRESS</th>
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</thead>
<tbody>
<tr>
<td>S104774073</td>
<td>0.316 South</td>
<td>497</td>
<td>G35</td>
<td>AMOCO STATION FMR</td>
<td>281 PARK AVE WORCESTER, MA 01609</td>
</tr>
</tbody>
</table>

Click here for full text details

SHWS

- Continued on next page -
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

## SHWS, LUST

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<tr>
<td>S104774073</td>
<td>0.316 South</td>
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<td>G35</td>
</tr>
</tbody>
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**NAME:** AMOCO STATION FMR  
**ADDRESS:** 281 PARK AVE  
WORCESTER, MA 01609

Release Tracking Number: 2-0013440  
Release Tracking Number: 2-0014744  
Current Status: Downgradient Property Status  
LUST  
Release Tracking Number / Current Status: 2-0000252 / PSNC

[Click here to access the MA DEP site for this facility](#)

## LUST

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<td>S109613076</td>
<td>0.316 SSW</td>
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**NAME:** UST RELEASE  
**ADDRESS:** 38 COOLIDGE RD  
WORCESTER, MA 01602

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LUST  
Release Tracking Number / Current Status: 2-0017506 / RAO

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Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

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<td>NAME: VEHICLE ACCIDENT</td>
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Click here for full text details

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<td>EDR ID: S109489786</td>
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<td>NAME: RESIDENTIAL</td>
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Click here for full text details

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<tbody>
<tr>
<td>EDR ID: U003655539</td>
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<td>NAME: DEMERS BROTHERS INC</td>
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Click here for full text details

- Continued on next page -
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

## SHWS

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<tr>
<td>U003655539</td>
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<td>I39</td>
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**NAME**: DEMERS BROTHERS INC  
**ADDRESS**: 333 PLEASANT ST  
WORCESTER, MA 01604

- **SHWS**  
  - Release Tracking Number: 2-0010703  
  - Current Status: Response Action Outcome

## SHWS, LUST

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<tr>
<td>S107273711</td>
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<td>H40</td>
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**NAME**: DEMERS BROTHERS INC  
**ADDRESS**: 333 PLEASANT ST  
WORCESTER, MA 01604

- **SHWS**  
  - Release Tracking Number: 2-0020615  
  - Release Tracking Number: 2-0020615 / PSNC  
  - Click here to access the MA DEP site for this facility
# Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
WORCESTER, MA 01602

## LUST

<table>
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<tr>
<td>U002007476</td>
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<td>41</td>
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</table>

**NAME:** CUMBERLAND FARMS #20  
**ADDRESS:** 342 PLEASANT ST  
WORCESTER, MA 01603

[Click here for full text details](#)  
**LUST**  
Release Tracking Number / Current Status: 2-0000959 / RAO  
Click here to access the MA DEP site for this facility

## SHWS

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<th>MAP ID</th>
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<tr>
<td>S108117179</td>
<td>0.343 SE</td>
<td>492</td>
<td>42</td>
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</table>

**NAME:** BAHNAN INC  
**ADDRESS:** 332-334 PLEASANT ST  
WORCESTER, MA 01609

[Click here for full text details](#)  
**SHWS**  
Release Tracking Number: 2-0016358  
Release Tracking Number: 2-0016556  
Current Status: Response Action Outcome  
Current Status: Response Action Outcome Not Required
## Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

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<tr>
<td><strong>NAME:</strong></td>
<td>FRUIT SEVER APARTMEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ADDRESS:</strong></td>
<td>6-12 SEVER STREET</td>
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<tr>
<td><strong>NAME:</strong></td>
<td>HISTORIC PETROLEUM R</td>
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<tr>
<td><strong>ADDRESS:</strong></td>
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<th>MAP ID</th>
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Click here to access the MA DEP site for this facility
## Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

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<tr>
<td>S104000341</td>
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<td>45</td>
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**NAME:** POLE 3  
**ADDRESS:** 83 ELM ST  
WORCESTER, MA

[Click here for full text details]

**SHWS**  
Release Tracking Number: 2-0012857  
Current Status: Response Action Outcome

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<tr>
<td>S105735890</td>
<td>0.399 SSE</td>
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<td>J46</td>
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</table>

**NAME:** FRIENDLY HOUSE INC  
**ADDRESS:** 32 MERRICK ST  
WORCESTER, MA 01604

[Click here for full text details]

**SHWS**  
Release Tracking Number: 2-0014621  
Current Status: Response Action Outcome

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<tr>
<td>S108117368</td>
<td>0.405 WNW</td>
<td>553</td>
<td>47</td>
</tr>
</tbody>
</table>

**NAME:** MASS ELECTRIC CO  
**ADDRESS:** 10 HADWEN LN  
WORCESTER, MA 01604

[Click here for full text details]

**SHWS**  
Release Tracking Number: -  
Current Status: -

- Continued on next page -
## Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA  01602

### SHWS

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<tbody>
<tr>
<td>S108117368</td>
<td>0.406 WNW</td>
<td>553</td>
<td>47</td>
<td>MASS ELECTRIC CO</td>
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<td></td>
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<td>ADDRESS: 10 HADWEN LN</td>
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<td>WORCESTER, MA 01604</td>
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Release Tracking Number: 2-0016320  
Current Status: Response Action Outcome

### SHWS, LUST

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<tbody>
<tr>
<td>S108640566</td>
<td>0.406 SSW</td>
<td>481</td>
<td>48</td>
<td>WORCESTER PUB</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>L SCH</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>ADDRESS: 305 CHANDLER ST</td>
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<tr>
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<td>WORCESTER, MA 01602</td>
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</table>

Release Tracking Number: 2-0016743 / Current Status: RAO

Click here for full text details

Click here to access the MA DEP site for this facility
## Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
**WORCESTER, MA 01602**

### SHWS

<table>
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<tr>
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<th>ADDRESS</th>
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<tr>
<td>S117692191</td>
<td>0.409 SW</td>
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<td>2 CALMIA STREET</td>
<td>2 CALMIA STREET</td>
<td>2-0019451</td>
<td>Response Action Outcome Not Required</td>
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<tr>
<td>S107319738</td>
<td>0.429 SSE</td>
<td>495</td>
<td>J50</td>
<td>24 MERRICK ST</td>
<td>24 MERRICK ST</td>
<td>2-0019939</td>
<td>Response Action Outcome Not Required</td>
</tr>
<tr>
<td>S110822167</td>
<td>0.434 South</td>
<td>491</td>
<td>51</td>
<td>WEBSTER FIVE PROPERT</td>
<td>266 CHANDLER STREET</td>
<td>2-0018143</td>
<td>- Continued on next page</td>
</tr>
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</table>

- Click here for full text details
- SHWS

**SHWS, INST CONTROL, BROWNFIELDS**
# Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
WORCESTER, MA 01602

## SHWS, INST CONTROL, BROWNFIELDS

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<tr>
<td>S110822167</td>
<td>0.434 South</td>
<td>491</td>
<td>51</td>
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</tbody>
</table>

**NAME:** WEBSTER FIVE PROPERT  
**ADDRESS:** 266 CHANDLER STREET  
WORCESTER, MA 01609

**Current Status:** Response Action Outcome

**INST CONTROL**  
Release Tracking Number: 2-0018143

**BROWNFIELDS**  
MCP Status: RAO  
RTN: 2-0018143

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## SHWS

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<td>S118947358</td>
<td>0.439 SSE</td>
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<td>J52</td>
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**NAME:** WORCESTER COMMON GRO  
**ADDRESS:** 20 MERRICK ST  
WORCESTER, MA

[Click here for full text details]

**SHWS**  
Release Tracking Number: 2-0019938

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## LUST

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<tr>
<td>S100831719</td>
<td>0.453 South</td>
<td>493</td>
<td>53</td>
</tr>
</tbody>
</table>

**NAME:** GIBBS SERVICE STATIO  
**ADDRESS:** 321 PARK AVE  
WORCESTER, MA 01600

[Click here for full text details]

- Continued on next page -
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

## LUST

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<th>MAP ID:</th>
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<tr>
<td>S100831719</td>
<td>0.453 South</td>
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<td>53</td>
</tr>
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</table>

NAME: GIBBS SERVICE STATIO  
ADDRESS: 321 PARK AVE  
WORCESTER, MA 01600

Release Tracking Number / Current Status: 2-0000350 / RAO

Click here to access the MA DEP site for this facility

## SHWS, LAST

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<td>S116357965</td>
<td>0.455 ESE</td>
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NAME: 70 ELM STREET  
ADDRESS: 70 ELM STREET  
WORCESTER, MA 01609

Release Tracking Number / Current Status: 2-0019088 / RAO

Click here for full text details
## Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
WORCESTER, MA 01602

### SHWS

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<tr>
<td>S105199009</td>
<td>0.464 South</td>
<td>490</td>
<td>K55</td>
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</table>

**NAME:** MUIRS BUILDING & PRO  
**ADDRESS:** 205 CHANDLER ST  
WORCESTER, MA 01600

[Click here for full text details](#)

**SHWS**  
Release Tracking Number: 2-0000731  
Current Status: LSP No Further Action

### LUST

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<tr>
<td>S110303435</td>
<td>0.469 WSW</td>
<td>532</td>
<td>56</td>
</tr>
</tbody>
</table>

**NAME:** ESTATE OF DOROTHY PA  
**ADDRESS:** 88 JUNE ST  
WORCESTER, MA

[Click here for full text details](#)

**LUST**  
Release Tracking Number / Current Status: 2-0017847 / RAO

Click here to access the MA DEP site for this facility

### SHWS

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<tbody>
<tr>
<td>S10803466</td>
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<td>57</td>
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**NAME:** PARKWAY TRANSMISSION  
**ADDRESS:** 21 INTERVALE RD  
WORCESTER, MA 01602

[Click here for full text details](#)
### Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
WORCESTER, MA 01602

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<tr>
<td>S108034466</td>
<td>0.471 NW</td>
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<td>57</td>
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**NAME:** PARKWAY TRANSMISSION  
**ADDRESS:** 21 INTERVALE RD  
WORCESTER, MA 01602

SHWS  
Release Tracking Number: 2-0016316  
Current Status: Response Action Outcome

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<td>S111411758</td>
<td>0.474 ENE</td>
<td>510</td>
<td>L58</td>
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**NAME:** RESIDENCE  
**ADDRESS:** 12 SCHUSSLER RD.  
WORCESTER, MA 01609

LAST  
Release Tracking Number / Current Status: 2-0018379 / RAO

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<tr>
<td>S110479598</td>
<td>0.475 East</td>
<td>508</td>
<td>L59</td>
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**NAME:** PAD MOUNTED TRANSFOR  
**ADDRESS:** 146 HIGHLAND ST  
WORCESTER, MA 01609

SHWS  
Release Tracking Number: 2-0017966

- Continued on next page -
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

### SHWS

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<tr>
<td>S110479598</td>
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<td>L59</td>
<td>PAD MOUNTED TRANSFOR</td>
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ADDRESS: 146 HIGHLAND ST
WORCESTER, MA 01609

Current Status: Response Action Outcome

### SHWS, LUST, INST CONTROL, BROWNFIELDS

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<th>NAME</th>
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<tbody>
<tr>
<td>S101016434</td>
<td>0.486 South</td>
<td>503</td>
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<td>WHITE CLEANERS</td>
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ADDRESS: 199 CHANDLER ST
WORCESTER, MA 01600

Click here for full text details

**SHWS**
- Release Tracking Number: 2-0015117
- Current Status: Response Action Outcome

**LUST**
- Release Tracking Number / Current Status: 2-0000584 / RAO
  
  Click here to access the MA DEP site for this facility

**INST CONTROL**
- Release Tracking Number: 2-0000584

**BROWNFIELDS**
- MCP Status: RAO
- RTN: 2-0000584
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

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<tr>
<td>S103383227</td>
<td>0.486 North</td>
<td>630</td>
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<td>S107405680</td>
<td>0.493 South</td>
<td>491</td>
<td>K62</td>
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<tr>
<td>S111277205</td>
<td>0.501 SSW</td>
<td>483</td>
<td>63</td>
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**Last**

- **NAME:** RESIDENCE
- **ADDRESS:** 33 BEACHMONT ST
  WORCESTER, MA

**Click here for full text details**

- **Release Tracking Number / Current Status:** 2-0012379 / RAO

**SHWS**

- **NAME:** TONYS AUTOMOTIVE
- **ADDRESS:** 208 CHANDLER ST
  WORCESTER, MA 01609

**Click here for full text details**

- **Release Tracking Number:** 2-0015887
  **Current Status:** Response Action Outcome

**SHWS**

- **NAME:** BEAVER BROOK PARK PO
- **ADDRESS:** 9 MANN STREET
  WORCESTER, MA 01602

**Click here for full text details**

- **Release Tracking Number:** 2-0018274

- Continued on next page -
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

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<td><strong>NAME:</strong> BEAVER BROOK PARK PO</td>
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</table>
| **ADDRESS:** 9 MANN STREET  
WORCESTER, MA 01602 |

Current Status: Response Action Outcome

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<td><strong>EDR ID:</strong> S123541162</td>
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<tr>
<td><strong>NAME:</strong> FUEL OIL TRUCK</td>
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</table>
| **ADDRESS:** 50 MORNINGSIDE RD  
WORCESTER, MA |

[Click here for full text details]

SHWS  
Release Tracking Number: 2-0020760  
Current Status: Unclassified

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<tr>
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<tr>
<td><strong>NAME:</strong> ABANDONED PROPERTY</td>
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</table>
| **ADDRESS:** 29 NEWBURY ST  
WORCESTER, MA |

[Click here for full text details]

SHWS  
Release Tracking Number: 2-0018367  
Current Status: Response Action Outcome
### Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

#### SHWS

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<tr>
<td>S118337222</td>
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<tr>
<td>S107678435</td>
<td>0.531 SW</td>
<td>505</td>
<td>67</td>
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<tr>
<td>S101041874</td>
<td>0.532 SSW</td>
<td>489</td>
<td>M68</td>
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</table>

**NAME:** MOROCCO RESIDENCE  
**ADDRESS:** 34 MORNINGSIDE RD  
WORCESTER, MA

**NAME:** US POST OFFICE  
**ADDRESS:** 381 CHANDLER ST  
WORCESTER, MA 01602

**NAME:** SUPERLAND ASSOCIATES  
**ADDRESS:** 344 PARK AVE  
WORCESTER, MA 01609

---

**Click here for full text details**

SHWS  
Release Tracking Number: 2-0010182

SHWS  
Release Tracking Number: 2-0016079  
Current Status: Response Action Outcome

SHWS  
Release Tracking Number: 2-0019565

- Continued on next page -
## Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

### Site 1

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<tr>
<td>NAME</td>
<td>SUPERLAND ASSOCIATES</td>
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| ADDRESS    | 344 PARK AVE
WORCESTER, MA 01609 |

Current Status: Response Action Outcome

### Site 2

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<tr>
<td>S119838184</td>
<td>0.533 ESE</td>
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<tr>
<td>NAME</td>
<td>ROAD SPILL</td>
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</table>
| ADDRESS    | 57 ELM STREET
WORCESTER, MA 01608 |

Click here for full text details

SHWS

Release Tracking Number: 2-0020300
Current Status: Tier 1D, a release where the responsible party fails to provide a required submittal to DEP by a specified deadline.

### Site 3

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<tr>
<td>NAME</td>
<td>MUIRS INC</td>
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</tr>
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</table>
| ADDRESS    | 39 MASON ST
WORCESTER, MA 01610 |

Click here for full text details

SHWS

Release Tracking Number: 2-0014533
Current Status: Response Action Outcome
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

<table>
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<tbody>
<tr>
<td>S103811199</td>
<td>0.553 East</td>
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<td>N71</td>
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**NAME:** ELM PARK COMMUNITY E  
**ADDRESS:** 23 NORTH ASHLAND ST  
WORCESTER, MA 01609

*Click here for full text details*

**SHWS**  
Release Tracking Number: 2-0011627  
Current Status: Response Action Outcome

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<tbody>
<tr>
<td>S106132398</td>
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<td>O72</td>
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</table>

**NAME:** FORMER EASTERN AUTO  
**ADDRESS:** 29 WINFIELD ST  
WORCESTER, MA 01610

*Click here for full text details*

**SHWS**  
Release Tracking Number: 2-0015051  
Release Tracking Number: 2-0015052  
Release Tracking Number: 2-0015053  
Release Tracking Number: 2-0016659  
Current Status: Downgradient Property Status  
Current Status: Response Action Outcome Not Required
# Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
WORCESTER, MA 01602

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<tr>
<td>S109489427</td>
<td>0.557 North</td>
<td>591</td>
<td>73</td>
</tr>
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</table>
| NAME: HEALY RESIDENCE  
ADDRESS: 108 NEWTON AVE N  
WORCESTER, MA 01609 |
| S102084117      | 0.557 South  | 490      | 074    |
| NAME: PARK AVE  
ADDRESS: WINFIELD ST  
WORCESTER, MA |
| S108034317      | 0.566 East  | 545      | 75     |
| NAME: CHILDRENS FRIENDS IN  
ADDRESS: 21 CEDAR ST  
WORCESTER, MA 01609 |

[Click here for full text details]

SHWS  
Release Tracking Number: 2-0017322  
Current Status: Response Action Outcome
## Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET
WORCESTER, MA 01602

### SHWS

<table>
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<td>486</td>
<td>M77</td>
</tr>
</tbody>
</table>

#### NAME
- CHILDRENS FRIENDS IN
- WPI
- DCJ COMPANY

#### ADDRESS
- 21 CEDAR ST
- 49 INSTITUTE RD
- 360 PARK AVE

Release Tracking Number: 2-0016234
- Current Status: Response Action Outcome

Release Tracking Number: 2-0015556
- Current Status: Response Action Outcome

Release Tracking Number: 2-0000626
- Current Status: Response Action Outcome

[Click here for full text details](#)

- Continued on next page -
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<tr>
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<td>M77</td>
<td>DCJ COMPANY</td>
<td>360 PARK AVE</td>
<td>Response Action Outcome</td>
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<tr>
<td>S102084102</td>
<td>0.579 South</td>
<td>489</td>
<td>P78</td>
<td>PHO HIEN MEDITATION</td>
<td>96 DEWEY ST</td>
<td>Response Action Outcome</td>
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<tr>
<td>S109146444</td>
<td>0.581 East</td>
<td>520</td>
<td>N79</td>
<td>MASS ELECTRIC CO</td>
<td>21 HOME ST</td>
<td>Response Action Outcome</td>
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Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

Click here for full text details

SHWS
Release Tracking Number: 2-0014738
Current Status: Response Action Outcome

Click here for full text details

SHWS
Release Tracking Number: 2-0014738
Current Status: Response Action Outcome
Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

SHWS

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<td>S105810938</td>
<td>0.587 South</td>
<td>488</td>
<td>P80</td>
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NAME: MADIGAN PROPERTY
ADDRESS: 99 DEWEY ST
WORCESTER, MA 01602

Click here for full text details

SHWS

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<td>S109146407</td>
<td>0.594 South</td>
<td>495</td>
<td>Q81</td>
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NAME: FORMER MUIRS SERVICE
ADDRESS: 29 BLUFF ST
WORCESTER, MA

Click here for full text details

SHWS

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<tbody>
<tr>
<td>S105522132</td>
<td>0.600 East</td>
<td>505</td>
<td>82</td>
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NAME: HIGHLAND ASHLAND
ADDRESS: 101 HIGHLAND ST
WORCESTER, MA 01609

Click here for full text details

- Continued on next page -
## Mapped Sites Summary

### Target Property: 299 HIGHLAND STREET

**WORCESTER, MA 01602**

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<tr>
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<td>S107405545</td>
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<td>1000169136</td>
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### Site 1

**Name:** HIGHLAND ASHLAND  
**Address:** 101 HIGHLAND ST  
**Address:** WORCESTER, MA 01609

- SHWS  
  - Release Tracking Number: 2-0013748  
  - Release Tracking Number: 2-0013781  
  - Current Status: Response Action Outcome Not Required

### Site 2

**Name:** MA ELECTRIC CO CONST  
**Address:** QUEENS STREET AND JA  
**Address:** WORCESTER, MA 01610

- Click here for full text details  
  - SHWS  
    - Release Tracking Number: 2-0015905  
    - Current Status: Response Action Outcome

### Site 3

**Name:** UMASS MEMORIAL REALT  
**Address:** 26 QUEEN ST  
**Address:** WORCESTER, MA 01610

- Click here for full text details  
  - SHWS  
    - Release Tracking Number: 2-0013748  
    - Release Tracking Number: 2-0013781  
    - Current Status: Response Action Outcome Not Required

- Continued on next page -
### Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

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<th>MAP ID</th>
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<tbody>
<tr>
<td>S122905964</td>
<td>0.636 ENE</td>
<td>531</td>
<td>86</td>
</tr>
<tr>
<td>S106344170</td>
<td>0.617 WSW</td>
<td>521</td>
<td>85</td>
</tr>
</tbody>
</table>

- **NAME:** UMASS MEMORIAL REALT
- **ADDRESS:** 26 QUEEN ST
  WORCESTER, MA 01610

- **NAME:** CHANDLER ST SUBSTATION
- **ADDRESS:** 402 CHANDLER ST
  WORCESTER, MA 01602

- **NAME:** WPI
- **ADDRESS:** 100 INSTITUTE RD
  WORCESTER, MA

Click here for full text details

Click here for full text details

- Continued on next page -
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

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<th>MAP ID</th>
<th>NAME</th>
<th>ADDRESS</th>
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</table>
| S122905964 | 0.636 ENE | 531       | 86     | WPI                   | 100 INSTITUTE RD  
WORCESTER, MA                                      |

**SHWS**  
Release Tracking Number: 2-0020707

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<th>ADDRESS</th>
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| U001008186 | 0.638 WSW | 529       | 87     | DAIRY MART INC        | 414 CHANDLER ST  
WORCESTER, MA 01602                           |

**Click here for full text details**

**SHWS**  
Release Tracking Number: 2-0012849  
Current Status: Response Action Outcome

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<th>ADDRESS</th>
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</table>
| S109489307 | 0.640 South | 483      | 88     | BIG Y FOODS INC AND   | 100 MAYFIELD ST  
WORCESTER, MA 01604                           |

**Click here for full text details**

**SHWS**  
Release Tracking Number: 2-0017244

- Continued on next page -
## Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

### SHWS

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<tr>
<td>S109489307</td>
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<tr>
<td>NAME:</td>
<td>BIG Y FOODS INC AND</td>
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</table>
| ADDRESS:         | 100 MAYFIELD ST  
WORCESTER, MA 01604 |
| Current Status:  | Response Action Outcome |

Click here for full text details

### SHWS

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<td>NAME:</td>
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| ADDRESS:         | 46A-48 MASON ST  
WORCESTER, MA 01600 |

Current Status: Response Action Outcome

### SHWS

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<td>S109160782</td>
<td>0.647 NE</td>
<td>537</td>
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<td>NAME:</td>
<td>RESIDENCE</td>
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</table>
| ADDRESS:         | 4 REGENT ST  
WORCESTER, MA 01609 |

Click here for full text details

SHWS  
Release Tracking Number: 2-0019893

Current Status: Response Action Outcome
## Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

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<tr>
<td><strong>EDR ID:</strong> S106030254</td>
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<tr>
<td><strong>NAME:</strong> WHITTIER TERRACE ASS</td>
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<td><strong>ADDRESS:</strong> 86 AUSTIN ST</td>
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SHWS

- Release Tracking Number: 2-0014834
- Release Tracking Number: 2-0014835
- Current Status: Response Action Outcome

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<td><strong>NAME:</strong> LEHIGH GAS CORP MA00</td>
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<td><strong>ADDRESS:</strong> 77 HIGHLAND ST</td>
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SHWS

- Release Tracking Number: 2-0019125

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<tr>
<td><strong>NAME:</strong> IN FRONT OF WORCESTE</td>
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<tr>
<td><strong>ADDRESS:</strong> 50 KINGSBURY ST</td>
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SHWS

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<td>50 KINGSBURY ST</td>
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Current Status: Response Action Outcome

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<td>S106953853</td>
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<td>CANLAND ENTERPRISE I</td>
<td>32 OXFORD ST</td>
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<tr>
<td>S108476605</td>
<td>0.666 South</td>
<td>491</td>
<td>95</td>
<td>PARKER &amp; HARPER MFG</td>
<td>119 DEWEY ST</td>
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Release Tracking Number: 2-0016569  
Current Status: Response Action Outcome

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# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

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<tr>
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<td>95</td>
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<td>S110055579</td>
<td>0.695 WSW</td>
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<tr>
<td>S109489265</td>
<td>0.700 ESE</td>
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<td>97</td>
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**NAME:** PARKER & HARPER MFG
**ADDRESS:** 119 DEWEY ST
WORCESTER, MA 01610

**NAME:** HOELSCH RESIDENCE
**ADDRESS:** 10 PERROT ST
WORCESTER, MA 01602

**NAME:** 79-87 PLEASANT STREE
**ADDRESS:** 87 PLEASANT ST
WORCESTER, MA 01609

Current Status: Tier II, A site/release receiving a total NRS score of less than 350, unless the site meets any of the Tier I Inclusion Criteria.

**Click here for full text details**

SHWS
Release Tracking Number: 2-0017226
Current Status: Response Action Outcome

SHWS
Release Tracking Number: 2-0017704
Current Status: Response Action Outcome

SHWS
Release Tracking Number: 2-0017226
Current Status: Response Action Outcome
## Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
**WORCESTER, MA 01602**

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<td>0.705 ESE</td>
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<td>R98</td>
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**NAME:** VERIZON OFFICE  
**ADDRESS:** 15 CHESTNUT ST  
WORCESTER, MA

- **Click here for full text details**

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**NAME:** VERIZON MASSACHUSETT  
**ADDRESS:** 15 CHESTNUT ST  
WORCESTER, MA 01605

- **Click here for full text details**

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<td>S100830163</td>
<td>0.724 South</td>
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**NAME:** WHITAKER REED CO  
**ADDRESS:** 90 MAY ST  
WORCESTER, MA 01600

- **Click here for full text details**

- Continued on next page -
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

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| NAME: WHITAKER REED CO | ADDRESS: 90 MAY ST  
WORCESTER, MA 01600 |

Release Tracking Number: 2-0000746  
Current Status: Response Action Outcome

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| NAME: PROPERTY | ADDRESS: 64 CHANDLER STREET  
WORCESTER, MA 01609 |

Click here for full text details

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<tr>
<td><strong>EDR ID:</strong> S102555424</td>
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</table>
| NAME: MARANE OIL HEAT INC | ADDRESS: 27 WESTBROOK AVE  
WORCESTER, MA 01609 |

Click here for full text details

SHWS  
Release Tracking Number: 2-0011585  
Current Status: Response Action Outcome
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

## SHWS

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**NAME:** UNUM PROVIDENT  
**ADDRESS:** 18 CHESTNUT ST  
WORCESTER, MA 01608

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## SHWS

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**NAME:** WORCESTER POLYTECHNI  
**ADDRESS:** 35-43 DEAN ST AND 26  
WORCESTER, MA 01609

[Click here for full text details](#)

## SHWS

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<tr>
<td>S117405602</td>
<td>0.737 WNW</td>
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**NAME:** RESIDENTIAL UST RELE  
**ADDRESS:** 18 KENSINGTON RD  
WORCESTER, MA 01602

[Click here for full text details](#)

- Continued on next page -
### Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
WORCESTER, MA  01602

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<tr>
<td>S108117253</td>
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**SHWS**

**NAME:** RESIDENTIAL UST RELE  
**ADDRESS:** 18 KENSINGTON RD  
WORCESTER, MA 01602

Release Tracking Number: 2-0019332

**Click here for full text details**

**SHWS**

**NAME:** TRANSFORMER RELEASE  
**ADDRESS:** 49 AUSTIN ST.  
WORCESTER, MA

**Click here for full text details**

**SHWS**

**NAME:** EXXON MOBIL CORP  
**ADDRESS:** 409 PARK AVE  
WORCESTER, MA 01610

**Click here for full text details**

**SHWS**

**Release Tracking Number:** 2-0018302  
**Current Status:** Response Action Outcome

**SHWS**

**Release Tracking Number:** 2-0016353  
**Current Status:** Response Action Outcome Not Required
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

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<tr>
<td>S110822159</td>
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<td>U110</td>
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**SHWS**

**EXXON STATION 01-PFC**
ADDRESS: 409 PARK AVE
WORCESTER, MA

**MOBIL SERVICE STA 10**
ADDRESS: 409 PARK AVE
WORCESTER, MA 01610

**DENHOLM BUILDING**
ADDRESS: 484 MAIN ST
WORCESTER, MA 01608

Release Tracking Number: 2-0016047
Current Status: Response Action Outcome Not Required

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### Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
WORCESTER, MA 01602

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<tr>
<td><strong>NAME:</strong> DENHOLM BUILDING</td>
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| **ADDRESS:** 484 MAIN ST  
WORCESTER, MA 01608 |

Release Tracking Number: 2-0018124  
Current Status: Response Action Outcome

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<td><strong>EDR ID:</strong> S114004781</td>
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<tr>
<td><strong>NAME:</strong> MCPH RESIDENTIAL PRO</td>
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| **ADDRESS:** 15 LANCASTER STREET  
WORCESTER, MA |

**Click here for full text details**

SHWS  
Release Tracking Number: 2-0019012  
Current Status: Response Action Outcome Not Required

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<tr>
<td><strong>EDR ID:</strong> S113882663</td>
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<tr>
<td><strong>NAME:</strong> MCPH HOUSING UNIT</td>
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</table>
| **ADDRESS:** 15 LANCASTER STREET  
WORCESTER, MA |

**Click here for full text details**

SHWS  
Release Tracking Number: 2-0019312

- Continued on next page -
Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

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### SHWS

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<td>S113882663</td>
<td>0.750 East</td>
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<td>V112</td>
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**NAME:** MCPH HOUSING UNIT

**ADDRESS:** 15 LANCASTER STREET
WORCESTER, MA

---

Release Tracking Number: 2-0018967
Current Status: Response Action Outcome Not Required

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### SHWS

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<tr>
<td>S105199053</td>
<td>0.751 SE</td>
<td>478</td>
<td>S113</td>
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**NAME:** WORCESTER GENERAL RE

**ADDRESS:** 43 CHANDLER ST
WORCESTER, MA 01609

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Click here for full text details

### SHWS

Release Tracking Number: 2-0013731
Release Tracking Number: 2-0013933
Release Tracking Number: 2-0014168
Current Status: Downgradient Property Status
Current Status: Response Action Outcome

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### SHWS

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<td>1000319870</td>
<td>0.759 South</td>
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<td>114</td>
</tr>
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</table>

**NAME:** BRAVO AUTO SALES AND

**ADDRESS:** 79 MAY ST
WORCESTER, MA 01602
WORCESTER

---

Click here for full text details

- Continued on next page -
Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

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<tr>
<td>S103811379</td>
<td>0.762 NNW</td>
<td>544</td>
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<tr>
<td>S106510341</td>
<td>0.766 SE</td>
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<td>116</td>
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NAME: BRAVO AUTO SALES AND
ADDRESS: 79 MAY ST
         WORCESTER, MA 01602
         WORCESTER

NAME: COFFEY RESIDENCE
ADDRESS: 2 WESTBROOK CIR
         WORCESTER, MA 01602

NAME: MASS ELECTRIC
ADDRESS: 30 WELLINGTON ST
         WORCESTER, MA 01610

Click here for full text details

SHWS
Release Tracking Number: 2-0000378
Current Status: Response Action Outcome

SHWS
Release Tracking Number: 2-0012749
Current Status: Response Action Outcome

Click here for full text details

- Continued on next page -
## Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

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| **NAME:** MASS ELECTRIC | **ADDRESS:** 30 WELLINGTON ST  
WORCESTER, MA 01610 |

Release Tracking Number: 2-0015272  
Current Status: Response Action Outcome

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</table>
| **NAME:** #2 FUEL OIL RELEASE | **ADDRESS:** 31 HARVARD STREET  
WORCESTER, MA |

Click here for full text details

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<td><strong>EDR ID:</strong> S102084540</td>
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</table>
| **NAME:** ST PAULS CATHEDRAL | **ADDRESS:** 38 HIGH ST  
WORCESTER, MA 01609 |

Click here for full text details

SHWS  
Release Tracking Number: 2-0011511  
Current Status: Tier II, A site/release receiving a total NRS score of less than 350, unless the site meets any of the Tier 1 Inclusionary Criteria (see next page)
## Mapped Sites Summary

### Target Property: 299 Highland Street

**Address:**

Worcester, MA 01602

---

### SHWS

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<td>S1020845400</td>
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<td>W118</td>
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**NAME:** ST Pauls Cathedral  
**ADDRESS:**

38 High St  
Worcester, MA 01609

**Current Status:** Response Action Outcome

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<td>W119</td>
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**NAME:** Mass Electric Roadways  
**ADDRESS:**

12 High St  
Worcester, MA

Click here for full text details

**SHWS**

Release Tracking Number: 2-0012507  
Current Status: Response Action Outcome

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<td>S102687243</td>
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**NAME:** ST Josephs Home Forbes  
**ADDRESS:**

52 High St  
Worcester, MA 01609

Click here for full text details

**SHWS**

Release Tracking Number: 2-0011901  
Current Status: Response Action Outcome Not Required
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<tr>
<td>Name</td>
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<tr>
<td>Address</td>
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<td>Name</td>
<td>Federal Plaza Garage</td>
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<tr>
<td>Address</td>
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<tr>
<td>1004516493</td>
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<td>X123</td>
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<tr>
<td>Name</td>
<td>Slater Building</td>
<td></td>
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<tr>
<td>Address</td>
<td>390 Main St</td>
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<td>Worcester, MA 01608</td>
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## Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA  01602

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<tr>
<td>1004516493</td>
<td>0.837 ESE</td>
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<td>X123</td>
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</table>

**NAME:** SLATER BUILDING  
**ADDRESS:** 390 MAIN ST  
WORCESTER, MA 01608  
WORCESTER

Release Tracking Number: 2-0014325  
Current Status: Response Action Outcome

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<td>S104847390</td>
<td>0.841 ESE</td>
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**NAME:** SOVEREIGN BANK  
**ADDRESS:** 446 MAIN ST  
WORCESTER, MA 01608

Click here for full text details

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<th>MAP ID</th>
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<tbody>
<tr>
<td>S109146581</td>
<td>0.845 North</td>
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<td>125</td>
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**NAME:** RESIDENTIAL PROPERTY  
**ADDRESS:** 11 ELLIS DR  
WORCESTER, MA

Click here for full text details

SHWS  
Release Tracking Number: 2-0017088  
Current Status: Response Action Outcome

- Continued on next page -
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<tr>
<td>S109146581</td>
<td>0.845 North</td>
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<td>125</td>
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<tr>
<td>S110526319</td>
<td>0.847 SE</td>
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<tr>
<td>S111022473</td>
<td>0.852 ESE</td>
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**NAME:**

- **RESIDENTIAL PROPERTY**
- **ROADWAY RELEASE**
- **PROPOSED WRTA DEVELO**

**ADDRESS:**

- **11 ELLIS DR, WORCESTER, MA**
- **640 MAIN STREET, WORCESTER, MA 01608**
- **11 ELLIS DR, WORCESTER, MA**

**Current Status:** Response Action Outcome

**Click here for full text details**

**SHWS**

- Release Tracking Number: 2-0017978
- Current Status: Response Action Outcome

- Release Tracking Number: 2-0018160
- Current Status: Response Action Outcome
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

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<td><strong>NAME:</strong> WORCESTER ART MUSEUM</td>
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</table>
| **ADDRESS:** 55 SALISBURY ST  
WORCESTER, MA 01609  
WORCESTER |

Click here for full text details

- SHWS  
  Release Tracking Number: 2-0014632  
  Current Status: Response Action Outcome

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<tr>
<td><strong>NAME:</strong> CORNER OF CHANDLER</td>
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| **ADDRESS:** 280 MAY ST  
WORCESTER, MA 01602 |

Click here for full text details

- SHWS  
  Release Tracking Number: 2-0010675  
  Current Status: Response Action Outcome

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<td><strong>NAME:</strong> MCCULLOUGH RESIDENCE</td>
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</table>
| **ADDRESS:** 2 FRONTENAC RD  
WORCESTER, MA 01602 |

Click here for full text details

- SHWS  
  Release Tracking Number: 2-0010675  
  Current Status: Response Action Outcome

- Continued on next page -
Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

SHWS

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<tr>
<td>S107678176</td>
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NAME: MCCULLOUGH RESIDENCE
ADDRESS: 2 FRONTENAC RD
WORCESTER, MA 01602

Release Tracking Number: 2-0016082
Current Status: Response Action Outcome

Click here for full text details

SHWS

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<tr>
<td>S105596685</td>
<td>0.877 East</td>
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NAME: NEW WORCESTER TRAIL
ADDRESS: 211-215 MAIN ST
WORCESTER, MA 01608

SHWS

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<td>S104774098</td>
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NAME: MASSACHUSETTS ELECTR
ADDRESS: 6 FARADAY ST
WORCESTER, MA 01608

Click here for full text details

SHWS

Release Tracking Number: 2-0013479
Current Status: Response Action Outcome

- Continued on next page -
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

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| **ADDRESS:** 6 FARADAY ST  
WORCESTER, MA 01608 |  |

Current Status: Response Action Outcome

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<td><strong>EDR ID:</strong> S117964685</td>
<td><strong>DIST/DIR:</strong> 0.885 South</td>
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<tr>
<td><strong>NAME:</strong> CLARK UNIVERSITY</td>
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</tbody>
</table>
| **ADDRESS:** 18 CLAREMONT STREET  
WORCESTER, MA |  |

[Click here for full text details](#)

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<tbody>
<tr>
<td><strong>EDR ID:</strong> S121394237</td>
<td><strong>DIST/DIR:</strong> 0.892 SSE</td>
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<tr>
<td><strong>NAME:</strong> NUMBER 2 FUEL OIL RE</td>
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| **ADDRESS:** 838 MAIN STREET  
WORCESTER, MA |  |

[Click here for full text details](#)

SHWS  
Release Tracking Number: 2-0019471

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| **ADDRESS:** 18 CLAREMONT STREET  
WORCESTER, MA |  |

[Click here for full text details](#)

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</table>
| **ADDRESS:** 838 MAIN STREET  
WORCESTER, MA |  |

[Click here for full text details](#)

SHWS  
Release Tracking Number: 2-0020351
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

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<tr>
<td>S107405477</td>
<td>0.901 West</td>
<td>574</td>
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**NAME:** BEAVER BROOK CULVERT  
**ADDRESS:** CHANDLER STREET AND  
WORCESTER, MA 01602

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<th>ELEVATION</th>
<th>MAP ID</th>
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<td>0.904 SE</td>
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**NAME:** BEACON PLACE LLC  
**ADDRESS:** 5 MADISON ST  
WORCESTER, MA 01610

Click here for full text details

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<th>MAP ID</th>
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<td>S101418665</td>
<td>0.905 ESE</td>
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<td>Z137</td>
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**NAME:** WORCESTER T&G  
**ADDRESS:** ALLEN COURT DR  
WORCESTER, MA

Click here for full text details

- Continued on next page -
# Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
WORCESTER, MA  01602

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<td>S101418665</td>
<td>0.905 ESE</td>
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<td>Z137</td>
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</table>

**NAME:** WORCESTER T&G  
**ADDRESS:** ALLEN COURT DR  
WORCESTER, MA

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**SHWS**  
Release Tracking Number: 2-0010435  
Current Status: Response Action Outcome

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<td>S105198993</td>
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**NAME:** REALTY TRUST FMR  
**ADDRESS:** SOUTHBRIDGE ST  
WORCESTER, MA 01600

---

**Click here for full text details**  
**SHWS**  
Release Tracking Number: 2-0000445  
Current Status: Response Action Outcome

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<td>S112550795</td>
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<td>Z139</td>
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**NAME:** 20 FRANKLIN ST  
**ADDRESS:** 20 FRANKLIN ST  
WORCESTER, MA 01608

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**Click here for full text details**  
**SHWS**  
- Continued on next page -
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

## EDR ID: S112550795
- **DIST/DIR:** 0.909 ESE
- **ELEVATION:** 479
- **MAP ID:** Z139

**NAME:** 20 FRANKLIN ST
**ADDRESS:** 20 FRANKLIN ST
WORCESTER, MA 01608

Release Tracking Number: 2-0018861
Current Status: Response Action Outcome

## EDR ID: S104562342
- **DIST/DIR:** 0.910 ESE
- **ELEVATION:** 478
- **MAP ID:** 140

**NAME:** M A COLLEGE OF PHARM
**ADDRESS:** 9 NORWICH ST
WORCESTER, MA 01608

Click here for full text details

## EDR ID: S111988517
- **DIST/DIR:** 0.914 East
- **ELEVATION:** 485
- **MAP ID:** 141

**NAME:** FORMER WORCESTER COU
**ADDRESS:** 2 MAIN STREET
WORCESTER, MA 01608

Click here for full text details

SHWS

Release Tracking Number: 2-0013232
Current Status: Response Action Outcome

- Continued on next page -
### Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
**WORCESTER, MA 01602**

<table>
<thead>
<tr>
<th>EDR ID</th>
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<th>MAP ID</th>
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<tbody>
<tr>
<td>S111988517</td>
<td>0.914 East</td>
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<td>141</td>
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<tr>
<td><strong>NAME:</strong></td>
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<tr>
<td><strong>ADDRESS:</strong></td>
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Release Tracking Number: 2-0019711

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<tr>
<td>S102403636</td>
<td>0.919 WSW</td>
<td>546</td>
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<tr>
<td><strong>NAME:</strong></td>
<td>BUS ACCIDENT</td>
<td></td>
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<tr>
<td><strong>ADDRESS:</strong></td>
<td>185 JUNE ST</td>
<td></td>
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Click here for full text details

**SHWS**  
Release Tracking Number: 2-0011411  
Current Status: Response Action Outcome

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<tr>
<td>S105735878</td>
<td>0.920 North</td>
<td>586</td>
<td>143</td>
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<tr>
<td><strong>NAME:</strong></td>
<td>NORTH HIGH GARDENS</td>
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<tr>
<td><strong>ADDRESS:</strong></td>
<td>60 SALISBURY</td>
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Click here for full text details

**SHWS**  
Release Tracking Number: 2-0014558  
Current Status: Response Action Outcome
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

## SHWS

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| U000225953 | 0.925 East | 468       | 144    | AT&T COMMUNICATIONS   | 175 MAIN ST
|           |          |           |        |                       | WORCESTER, MA 01608    |

Click here for full text details

SHWS

Release Tracking Number: 2-0010704
Current Status: Response Action Outcome

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<tr>
<td>S107405547</td>
<td>0.927 ENE</td>
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<td>AA145</td>
<td>MA ELECTRIC SUBSTATI</td>
<td>3 FARADAY ST</td>
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Click here for full text details

SHWS

Release Tracking Number: 2-0015925
Current Status: Response Action Outcome

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<tbody>
<tr>
<td>U0000225953</td>
<td>0.928 NE</td>
<td>498</td>
<td>146</td>
<td>CITY OF WORCESTER FI</td>
<td>141 GROVE ST</td>
</tr>
<tr>
<td></td>
<td></td>
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Click here for full text details

SHWS

- Continued on next page -
# Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
WORCESTER, MA 01602

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<tr>
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<td>146</td>
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</table>

**NAME:** CITY OF WORCESTER FI  
**ADDRESS:** 141 GROVE ST  
WORCESTER, MA 01605

Release Tracking Number: 2-0016258  
Current Status: Response Action Outcome

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<tr>
<td>S111739399</td>
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<td>147</td>
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**NAME:** FORMER T&G PARKING L  
**ADDRESS:** 30 FEDERAL STREET  
WORCESTER, MA 01608

Click here for full text details

<table>
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<th>MAP ID</th>
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<tr>
<td>S103811267</td>
<td>0.930 SE</td>
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<td>AB148</td>
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**NAME:** HERMON STREET PROPER  
**ADDRESS:** 35 HERMON STREET  
WORCESTER, MA 01610

Click here for full text details

SHWS  
Release Tracking Number: 2-0018543  
Current Status: Response Action Outcome

- Continued on next page -
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

| SHWS |
|---|---|---|---|---|
| **EDR ID:** | S103811267 | **DIST/DIR:** | 0.930 SE | **ELEVATION:** | 477 |
| **NAME:** | HERMON STREET PROPER | **MAP ID:** | AB148 |
| **ADDRESS:** | 35 HERMON STREET  
WORCESTER, MA 01610 |

Current Status: Tier II, A site/release receiving a total NRS score of less than 350, unless the site meets any of the Tier 1 Inclusionary Criteria.

| SHWS |
|---|---|---|---|---|
| **EDR ID:** | S101016901 | **DIST/DIR:** | 0.934 West | **ELEVATION:** | 584 |
| **NAME:** | WORCESTER STATE UNIV | **MAP ID:** | 149 |
| **ADDRESS:** | 486 CHANDLER ST  
WORCESTER, MA 01602 |

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- **SHWS**
  - Release Tracking Number: 2-0016314
  - Release Tracking Number: 2-0018194
  - Release Tracking Number: 2-0015034
  - Release Tracking Number: 2-0014672
  - Release Tracking Number: 2-0015506
  - Release Tracking Number: 2-0013145
  - Current Status: Response Action Outcome
  - Current Status: Tier II, A site/release receiving a total NRS score of less than 350, unless the site meets any of the Tier 1 Inclusionary Criteria (s).
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

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<td>S102084279</td>
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**NAME:** SW CORNER OF PORTLAN  
**ADDRESS:** 50 FRANKLIN ST  
WORCESTER, MA 01612

[Click here for full text details](#)

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<tr>
<td>S106863443</td>
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<td>AC151</td>
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**NAME:** CITY OF WORCESTER  
**ADDRESS:** 54-56 GROVE ST  
WORCESTER, MA

[Click here for full text details](#)

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<td>S104774099</td>
<td>0.951 ENE</td>
<td>494</td>
<td>AA152</td>
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</table>

**NAME:** GATEWAY PARK PROPERT  
**ADDRESS:** 75 GROVE ST  
WORCESTER, MA 01605

[Click here for full text details](#)

- Continued on next page -
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET  
WORCESTER, MA 01602

## SHWS

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<tbody>
<tr>
<td>S104774099</td>
<td>0.951 ENE</td>
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<tr>
<td><strong>NAME:</strong></td>
<td>GATEWAY PARK PROPERT</td>
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Release Tracking Number: 2-0012055  
Release Tracking Number: 2-0013480  
Current Status: Response Action Outcome

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<tr>
<td><strong>NAME:</strong></td>
<td>TREISTER RESIDENCE</td>
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<tr>
<td><strong>ADDRESS:</strong></td>
<td>10 SAINT PAUL DR</td>
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Click here for full text details

SHWS  
Release Tracking Number: 2-0016313  
Current Status: Response Action Outcome

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<td>S105199155</td>
<td>0.951 South</td>
<td>502</td>
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<tr>
<td><strong>NAME:</strong></td>
<td>PEPPERCORNS</td>
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<tr>
<td><strong>ADDRESS:</strong></td>
<td>455 PARK AVE</td>
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<td>S113805024</td>
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<td>112 GROVE STREET</td>
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<td>S105596698</td>
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<td>79 BEACON ST</td>
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## Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

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<tr>
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<td>NAME:</td>
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<tr>
<td>ADDRESS:</td>
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## Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
**WORCESTER, MA 01602**

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<tr>
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<td>S10575887</td>
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<td>53 HERMON ST WORCESTER, MA 01604</td>
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SHWS Release Tracking Number: 2-0000179

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**Mapped Sites Summary**

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602
## Mapped Sites Summary

### Target Property:
299 HIGHLAND STREET  
WORCESTER, MA  01602

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<td>S111739388</td>
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<td>166</td>
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</tbody>
</table>

**SHWS**

**NAME:** DIESEL FUEL RELEASE  
**ADDRESS:** 9-11 LINCOLN SQUARE  
WORCESTER, MA

Click here for full text details

**SHWS**  
Release Tracking Number: 2-0020677

**SHWS**

**NAME:** L&J OF NEW ENGLAND  
**ADDRESS:** 15 SAGAMORE RD  
WORCESTER, MA 01605

Click here for full text details

**SHWS**  
Release Tracking Number: 2-0020213  
Current Status: Tier II, A site/release receiving a total NRS score of less than 350, unless the site meets any of the Tier 1 Inclusionary Criteria (see

**SHWS**

**NAME:** PROPERTY  
**ADDRESS:** 90 GROVE STREET  
WORCESTER, MA 01605

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**SHWS**  
Release Tracking Number: 2-0018513

- Continued on next page -
### Mapped Sites Summary

**Target Property:** 299 HIGHLAND STREET  
WORCESTER, MA 01602

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| **ADDRESS:** | 90 GROVE STREET  
WORCESTER, MA 01605 |

Current Status: Response Action Outcome

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<td>NOURIA #04415</td>
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| **ADDRESS:** | 48 MADISON ST  
WORCESTER, MA 01608 |

Click here for full text details

**SHWS**  
Release Tracking Number: 2-0017265  
Current Status: Response Action Outcome

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<td><strong>MAP ID:</strong></td>
<td>AF168</td>
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<tr>
<td><strong>NAME:</strong></td>
<td>MARRIOTT</td>
</tr>
</tbody>
</table>
| **ADDRESS:** | 10 LINCOLN ST  
WORCESTER, MA 01613 |

Click here for full text details

**SHWS**  
Release Tracking Number: 2-0010561  
Current Status: Response Action Outcome
# Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

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Release Tracking Number: 2-0000822
Current Status: Waiver Completion Statement Permanent

Click here for full text details

SHWS

- Continued on next page -
Mapped Sites Summary

Target Property: 299 HIGHLAND STREET
WORCESTER, MA 01602

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NAME: PROPERTY, LOT 2, FMR
ADDRESS: 42 JACKSON ST
         WORCESTER, MA 01608

Release Tracking Number: 2-0019126
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### Certified Sanborn Results:

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### Maps Provided:

- 1978
- 1950
- 1936
- 1910

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1978 Source Sheets

Volume 2, Sheet 254
1978

Volume 2, Sheet 267
1978

1950 Source Sheets

Volume 2, Sheet 254
1950

1936 Source Sheets

Volume 2, Sheet 254
1936

1910 Source Sheets

Volume 1, Sheet 19
1910
This Certified Sanborn Map combines the following sheets. Outline areas indicate map sheets within the collection.
X3. USER QUESTIONNAIRE

INTRODUCTION

In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001, the User must provide the following information (if available) to the Environmental Professional. Failure to provide this information could result in a determination that “all appropriate inquiry” is not complete.

1. Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25).
   Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law?
   No

2. Activity and Use Limitations that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26).
   Are you aware of any AULs, such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, state, tribal or local law?
   No

3. Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28).
   As the User of this ESA, do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

   This property has housed the Doherty High School since its construction. The chemicals and processes used are typical to the high school curriculum.

4. Relationship of the purchase price to the fair market value of the property if it were not contaminated (40 CFR 312.29).
   Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower price is because contamination is known or believed to be present at the property?

   N/A
5. Commonly known or reasonably ascertainable information about the property (40 CFR 312.30). Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as User,

a.) Do you know the past uses of the property? The property was park land prior to the school construction.

b.) Do you know of specific chemicals that are present or once present at the property? Chemicals used in the operation of a high school. (Science Labs, Custodial, etc.)

c.) Do you know of spills or other chemical releases that have taken place at the property? No - I am not aware of any spills or chemical releases.

d.) Do you know of any environmental cleanups that have taken place at the property? No - I am not aware of any environmental cleanups that have take place

6. The degree of obviousness of the presence of contamination at the property and the ability to detect the contamination by appropriate investigation (40 CFR 312.31). As the User of this ESA, based on your knowledge and experience related to the property, are there any obvious indicators that point to the presence of contamination at the property?

No

Site Address: 299 Highland Street
Worcester MA 01602

Person Completing Questionnaire: James Bedard

Relationship to Site: Director of Environmental Management & Capital Projects

Years associated with site: 15

Date: 8/21/2019

Signature: James Bedard
# 0299 Highland St

**Location**: 0299 Highland St  
**Acct#**: 11-INX-00001  
**Owner**: CITY OF WORCESTER SCHOOL DEPT  
**Assessment**: $23,401,000  
**PID**: 54068  
**Building Count**: 1

## Current Value

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## Owner of Record

**Owner**: CITY OF WORCESTER SCHOOL DEPT  
**Co-Owner**:  
**Address**: 20 Irving St  
Worcester, MA 01609  
**Sale Price**: $0  
**Certificate**:  
**Book & Page**: 00000/  
**Sale Date**: 01/01/1988

## Ownership History

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## Building Information

**Building 1: Section 1**

**Year Built**: 1960  
**Living Area**: 188,980  
**Replacement Cost**: $25,261,427  
**Building Percent**: 60  
**Good**:  
**Replacement Cost Less Depreciation**: $15,156,900

## Building Attributes

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### Building Photo

![Building Photo](http://images.vgsi.com/photos2/WorcesterMAPhotos/700/07_18)

### Building Layout

![Building Layout](http://images.vgsi.com/photos2/WorcesterMAPhotos/Sketches/)

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<td>$15,435,000</td>
<td>$8,244,100</td>
<td>$23,679,100</td>
</tr>
<tr>
<td>2017</td>
<td>$15,435,000</td>
<td>$8,244,100</td>
<td>$23,679,100</td>
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<tr>
<td>2016</td>
<td>$10,594,200</td>
<td>$7,252,700</td>
<td>$17,846,900</td>
</tr>
</tbody>
</table>

(c) 2019 Vision Government Solutions, Inc. All rights reserved.
**Current Owner**
- **Topo:** U High
- **Utilities:** A All Utilities
- **Strt/Road:** P Paved Drive
- **Location:** P Paved Street

**Supplemental Data**
- **Other Id:** 11INX0001
- **Num_Kitch:**
- **Owner Reclad:**
- **Bld Dist:**

**GIS ID:** F_569479_2923211

**Assoc PID #:**

**Vision**

**Record of Ownership**

<table>
<thead>
<tr>
<th>City of Worcester School Dept</th>
<th>BK-Volume/Page</th>
<th>Sale Date</th>
<th>Yr</th>
<th>Code</th>
<th>Assessed Value</th>
<th>V.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CITY OF WORCESTER SCHOOL DEPT</td>
<td>00000/00000</td>
<td>01/01/1988</td>
<td>U</td>
<td>1</td>
<td>15,156,900</td>
<td>8,244,100</td>
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</table>

**Previous Assessments (History)**

<table>
<thead>
<tr>
<th>Yr</th>
<th>Code</th>
<th>Assessed Value</th>
<th>V.C.</th>
</tr>
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<tbody>
<tr>
<td>2019</td>
<td>9340</td>
<td>15,156,900</td>
<td>8,244,100</td>
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<tr>
<td>2019</td>
<td>9340</td>
<td>15,435,000</td>
<td>8,244,100</td>
</tr>
</tbody>
</table>

**Exemptions**

**Other Assessments**

**Notes**

**Appraised Value Summary**
- Appraised Bldg. Value (Card): 15,156,900
- Appraised XF (B) Value (Bldg): 0
- Appraised OB (L) Value (Bldg): 0
- Appraised Land Value (Bldg): 8,244,100
- Special Land Value: 0
- Total Appraised Parcel Value: 23,401,000
- Valuation Method: C
- Adjustment: 0
- Net Total Appraised Parcel Value: 23,401,000

**Building Permit Record**

**Visit/Change History**

**Land Line Valuation Section**

<table>
<thead>
<tr>
<th>B #</th>
<th>Code</th>
<th>Description</th>
<th>Zone</th>
<th>D</th>
<th>Front Depth</th>
<th>Units</th>
<th>Unit Price</th>
<th>I Factor</th>
<th>S.A.</th>
<th>C. Factor</th>
<th>Adj.</th>
<th>Notes-Adj</th>
<th>Special Pricing</th>
<th>S Adj Fact</th>
<th>Adj. Unit Price</th>
<th>Land Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9340</td>
<td>CHARTER SCHL</td>
<td>RL-7</td>
<td>43,560</td>
<td>SF</td>
<td>7.75</td>
<td>3.0000</td>
<td>G</td>
<td>1.00</td>
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<td>1.10</td>
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<td>1.114,000</td>
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<tr>
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<td>9340</td>
<td>CHARTER SCHL</td>
<td>RL-7</td>
<td>5,000</td>
<td>AC</td>
<td>337,600.00</td>
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<td>1.00</td>
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<td>1.10</td>
<td>1.00</td>
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<td>5,570,400</td>
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<td>9340</td>
<td>CHARTER SCHL</td>
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<td>337,600.00</td>
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<td>1.00</td>
<td>1.10</td>
<td>1,559,700</td>
<td>1.00</td>
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</table>

Total Card Land Units: 20.00 AC
Parcel Total Land Area: 20 AC

Total Land Value: 8,244,100
<table>
<thead>
<tr>
<th>NUMBER OF STORIES</th>
<th>BASE AREA</th>
<th>GROSS AREA</th>
<th>YEAR BUILT</th>
<th>SPRINKLERS</th>
<th>PLUMBING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>87,200</td>
<td>168,126</td>
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</table>

<table>
<thead>
<tr>
<th>USE CODE</th>
<th>BASEMENT %</th>
<th>YEAR REMODELED</th>
<th>ELEVATOR</th>
<th>MEZZANINE FINISH %</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPL - ED</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
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<table>
<thead>
<tr>
<th>CONSTRUCTION CLASS</th>
<th>BASEMENT FINISH %</th>
<th>EFFECTIVE AGE</th>
<th>KITCHENS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fireproof Structural Steel Frame</td>
<td>N/A</td>
<td>1980</td>
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</table>

<table>
<thead>
<tr>
<th>EXTERIOR QUALITY</th>
<th>INTERIOR QUALITY</th>
<th>OVERALL CONDITION</th>
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</thead>
<tbody>
<tr>
<td>10  20  30  40  50  60  70</td>
<td>10  20  30  40  50  60  70</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>ROOF SHAPE</th>
<th>INTERIOR FINISH</th>
<th>FLOOR STRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 Gable</td>
<td>01 None</td>
<td>01 Wood Deck/Wood Joist</td>
</tr>
<tr>
<td>02 Hip</td>
<td>02 Plaster</td>
<td>02 Concrete Slab</td>
</tr>
<tr>
<td>03 Gambrel</td>
<td>03 Drywall</td>
<td>03</td>
</tr>
<tr>
<td>04 Flat/Skirt</td>
<td>04 Wood Panel</td>
<td>04 Reinforced Concrete Slab</td>
</tr>
<tr>
<td>05 Mansard</td>
<td>05 Wallboard/Bluaboard</td>
<td>05 Steel Deck/Concrete</td>
</tr>
<tr>
<td>06 Arched</td>
<td>06 Matched Bead</td>
<td>06 Steel Deck/Precast Panel</td>
</tr>
<tr>
<td>07 Sawtooth</td>
<td>07 Ceramic/Quarry Tile</td>
<td>07 Panel/Waffle Concrete</td>
</tr>
<tr>
<td>08 Other:</td>
<td>08 Other:</td>
<td>08 PreCast Slab and Joint</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ROOF COVER</th>
<th>ROOF STRUCTURE</th>
<th>FLOOR COVER</th>
<th>INSPECTION RECORD</th>
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<tbody>
<tr>
<td>01 Asphalt Shingles</td>
<td>01 Wood Deck/Wood Rafter</td>
<td>01 None/Painted</td>
<td>3/10/99 RES Y D.C.</td>
</tr>
<tr>
<td>02 Wood Shingles</td>
<td>02 Wood Deck/Wood Truss</td>
<td>02 Hardwood</td>
<td>03 Softwood</td>
</tr>
<tr>
<td>03 Asbestos Shingles</td>
<td>03 Metal Deck/Rafter</td>
<td>03 Wall to Wall</td>
<td></td>
</tr>
<tr>
<td>04 Built-up Tar &amp; Gravel</td>
<td>04</td>
<td>05 Asphalt Tile</td>
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<tr>
<td>05 Slate</td>
<td>05 Steel Deck/Steel Joist</td>
<td>06 Vinyl Tile/Sheet</td>
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</tr>
<tr>
<td>06 Rubber Membrane</td>
<td>06 Steel Deck/Steel Truss</td>
<td>07 Ceramic/Terrazzo</td>
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<tr>
<td>07 Roll Composition</td>
<td>07 Concrete Plank</td>
<td>08 Mill Flooring</td>
<td>08</td>
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<tr>
<td>08 Other:</td>
<td>08 Other:</td>
<td>08 PreCast Slab and Joint</td>
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</tr>
<tr>
<td>09 Reinforced Concrete</td>
<td>09 Reinforced Concrete</td>
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| Notes: | | | |

VERIFICATION OF INSPECTION
Printed Name: Date: Signature:
<table>
<thead>
<tr>
<th>PID/E</th>
<th>SIZE</th>
<th>SPACIUM/IFF</th>
<th>OTHER ADJ.</th>
<th>ADJ. REASON</th>
<th>TOPOGRAPHY</th>
<th>UTILITIES</th>
<th>UTILITIES</th>
<th>ACCESS</th>
<th>ACCESS</th>
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<tbody>
<tr>
<td>D</td>
<td>153,000 SF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ALL UTILITIES</td>
<td>WELL</td>
<td>PAVED-PUBLIC</td>
<td>EASEMENT ENCUMB</td>
</tr>
<tr>
<td>E</td>
<td>719,200 SF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SEWER</td>
<td>ARTESIAN</td>
<td>PAVED PRIVATE</td>
<td>EASEMENT BEFICRY</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SEPTIC</td>
<td>CABLE</td>
<td>DIRT</td>
<td>ROW ENCUMB</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>WATER</td>
<td>WINDO</td>
<td>ONE WAY STREET</td>
<td>ROW BENEFICIARY</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>GAS</td>
<td>SOLAR</td>
<td>ACCESSING DRIVE</td>
<td>WATERFRONT</td>
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<td></td>
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<td>ELECTRIC</td>
<td>NO UTILITIES</td>
<td>LANDEDLOCKED</td>
<td>DEAD END</td>
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<table>
<thead>
<tr>
<th>LN</th>
<th>USE CODE</th>
<th>DESCRIPTION</th>
<th>SIZE</th>
<th>QUALITY</th>
<th>% GOOD</th>
<th>OTHER ADJ.</th>
<th>REASON</th>
<th>ADD TO INC VAL? (%)</th>
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<tbody>
<tr>
<td>A</td>
<td>PV-ASP</td>
<td>Ground</td>
<td>94,382 G</td>
<td>80%</td>
<td>G</td>
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<tr>
<td>D</td>
<td>POL-FL</td>
<td>2nd Floor</td>
<td>800 G</td>
<td>80%</td>
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<tr>
<th>LN</th>
<th>USE CODE</th>
<th>FLOOR</th>
<th>UNITS</th>
<th>ECLOC</th>
<th>PHYFUN</th>
<th>SIZE</th>
<th>VACANCY</th>
<th>EXPENSE TYPE</th>
<th>SUBSCHEDULE?</th>
<th>CAP OVERRIDE? (%)</th>
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<tbody>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Commonwealth of Massachusetts
Asbestos Notification Form ANF-001

A. Asbestos Abatement Description
1. a. Is this facility fee exempt - city, town, district, municipal housing authority, owner-occupied residence of four units or less? ☑ Yes ☐ No
   b. Provide blanket decal number if applicable:
      Blanket Decal Number

2. Facility Location:
   DOHERTY HIGH SCHOOL
   a. Name of Facility: MA
   b. City/Town: Worcester
   c. State: MA

3. Worksite Location:
   EXTERIOR
   a. Building Name/Building Location: Exterior
   b. Building #: Exterior
   c. Wing: Exterior
   d. Floor: Exterior
   e. Room: Exterior

4. Is the facility occupied? ☑ Yes ☐ No

5. Asbestos Contractor:
   NEW ENGLAND SURFACE MAINTENANCE
   a. Name: WEMOUTH
   b. Address: 02189
   c. City/Town: MA
   d. Zip Code: 02189
   e. Telephone Number: 7813372117
   f. Contract Type: ☐ Written ☑ Verbal
   g. Contact Person: Paul W Brown
      a. Name on Site Supervisor/Foreman: WEMOUTH
      b. Project Monitor: N/A
      c. Asbestos Lab: N/A
      d. End Date (mm/dd/yyyy): 06/14/2010

10. a. What type of project is this?
    ☑ Demolition ☐ Renovation
    ☑ Repair ☐ Other, please specify:

11. a. Check abatement procedures:
    ☑ Glove bag ☑ Enclosure ☑ Disposal only
    ☑ Cleanup ☑ Other, specify:
    ☑ Full containment
    ☑ Exterior WINDOWS
    b. Describe

12. Is the job being conducted? ☐ Indoors? ☑ Outdoors?

Go To Top
A. Asbestos Abatement Description (cont.)

13. Total amount of each type of Asbestos Containing Materials (ACM) to be removed, enclosed, or encapsulated:

<table>
<thead>
<tr>
<th>Type of ACM</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Total pipes or ducts (linear ft)</td>
<td>30</td>
</tr>
<tr>
<td>b. Total other surfaces (square ft)</td>
<td>0</td>
</tr>
<tr>
<td>c. Boiler, breeching, duct, tank surface coatings</td>
<td>Lin. ft.</td>
</tr>
<tr>
<td>d. Insulating cement</td>
<td>Lin. ft.</td>
</tr>
<tr>
<td>e. Corrugated or layered paper pipe insulation</td>
<td>Lin. ft.</td>
</tr>
<tr>
<td>f. Trowel/Sprayer coatings</td>
<td>Lin. ft.</td>
</tr>
<tr>
<td>g. Spray-on fireproofing</td>
<td>Lin. ft.</td>
</tr>
<tr>
<td>h. Transite board, wall board</td>
<td>Lin. ft.</td>
</tr>
<tr>
<td>i. Cloths, woven fabrics</td>
<td>Lin. ft.</td>
</tr>
<tr>
<td>j. Other, please specify:</td>
<td>Lin. ft.</td>
</tr>
<tr>
<td>k. Thermal, solid core pipe insulation</td>
<td>Lin. ft.</td>
</tr>
<tr>
<td>l. Specify</td>
<td></td>
</tr>
</tbody>
</table>

14. Describe the decontamination system(s) to be used:

AS REQUIRED

15. Describe the containerization/disposal methods to comply with 310 CMR 7.15 and 453 CMR 6.14(2) (g):

AS REQUIRED

16. For Emergency Asbestos Operations, the DEP and DOS officials who evaluated the emergency:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREG LEVINS</td>
<td>INSPECTOR</td>
</tr>
<tr>
<td>06/10/2010</td>
<td>CAB10003</td>
</tr>
<tr>
<td>GARY GASPAR</td>
<td>INSPECTOR</td>
</tr>
<tr>
<td>06/10/2010</td>
<td>10287NB</td>
</tr>
</tbody>
</table>

17. Do prevailing wage rates as per M.G.L. c. 149, § 26, 27 or 27A–F apply to this project? Yes ☑ No

B. Facility Description

1. Current or prior use of facility: SCHOOL

2. Is the facility owner-occupied residential with 4 units or less? Yes ☑ No

3. CITY OF WORCESTER

<table>
<thead>
<tr>
<th>Facility Owner Name</th>
<th>Address</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>City/Town</th>
<th>Zip Code</th>
</tr>
</thead>
</table>

4. a. Name of Facility Owner's On-Site Manager |

<table>
<thead>
<tr>
<th>City/Town</th>
<th>Zip Code</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>On-Site Manager Address</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Telephone Number</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Telephone Number (area code and extension)</th>
</tr>
</thead>
</table>
**Commonwealth of Massachusetts**

**Asbestos Notification Form ANF-001**

### B. Facility Description (cont.)

5. **a. Name of General Contractor**
   
   **b. Address**
   
   **c. City/Town**
   
   **d. Zip Code**
   
   **e. Telephone Number**
   
   **f. Contractor's Worker's Comp. Insurer**
   
   **g. Policy Number**
   
   **h. Exp. Date (mm/dd/yyyy)**

6. **What is the size of this facility?**
   
   **a. Square Feet**
   
   **b. Number of floors**

### C. Asbestos Transportation and Disposal

1. **Transporter of asbestos-containing material from site to temporary storage site (if necessary):**
   
   **NESM LLP**
   
   **a. Name of Transporter**
   
   **b. Address**
   
   **c. City/Town**
   
   **d. Zip Code**
   
   **e. Telephone Number**

2. **Transporter of asbestos-containing waste material from removal/temporary site to final disposal site:**
   
   **RED TECHNOLOGIES**
   
   **a. Name of Transporter**
   
   **b. Address**
   
   **c. City/Town**
   
   **d. Zip Code**
   
   **e. Telephone Number**

3. **a. Refuse Transfer Station and Owner**
   
   **b. Address**
   
   **c. City/Town**
   
   **d. Zip Code**
   
   **e. Telephone Number**

4. **MINERVA ENTERPRISES INC**
   
   **a. Final Disposal Site Location Name**
   
   **b. Final Disposal Site Location Owner's Name**
   
   **9000 MINERVA ROAD**
   
   **c. Final Disposal Site Address**
   
   **OH**
   
   **d. City/Town**
   
   **e. State**
   
   **f. Zip Code**
   
   **g. Telephone Number**

### D. Certification

The undersigned hereby states, under the penalties of perjury, that he/she has read the Commonwealth of Massachusetts regulations for the Removal, Containment or Encapsulation of Asbestos, 453 CMR 6.00 and 310 CMR 7.15, and that the information contained in this notification is true and correct to the best of his/her knowledge and belief.

**KEN FURTNEY**

**a. Name**

**b. Authorized Signature**

**6/10/2010**

**c. Position/Title**

**d. Date (mm/dd/yyyy)**

**e. Telephone Number**

**f. Representing**

**g. Address**

**h. City/Town**

**i. Zip Code**
# Asbestos Notification Form ANF-001

## A. Asbestos Abatement Description

1. a. Is this facility fee exempt - city, town, district, municipal housing authority, owner-occupied residence of four units or less? □ Yes □ No

   b. Provide blanket decal number if applicable: 

   Blanket Decal Number

2. Facility Location:

   **DOHERTY HIGH SCHOOL**
   a. Name of Facility: Worcester, MA

   **299 HIGHLAND STREET**
   b. Street Address: 01615

3. Worksite Location:

   **CAFE/200 WING/310**
   a. Building Name/Building Location: 

4. Is the facility occupied? □ Yes □ No

5. Asbestos Contractor:

   **NEW ENGLAND SURFACE MAINTENANCE**
   a. Name: WEYMOUTH 02189

   **850 WASHINGTON STREET**
   b. Address: 7613372117

6. Facility Contact Person:

   **PAUL W. BROWN**
   a. Name of On-Site Supervisor/Foreman

   **STEVEN POWELL**
   b. Name of Project Monitor

   **ALG/PRO SCIENCE**
   a. Name of Asbestos Analytical Lab

   **08/24/2010**
   b. Project Start Date (mm/dd/yyyy)

   **8-4**
   c. Work hours Mon-Fri.

10. a. What type of project is this?

    □ Demolition □ Renovation

    ✓ Repair □ Other, please specify:

   b. Describe

11. a. Check abatement procedures:

    □ Glove bag □ Enclosure

    □ Encapsulation □ Disposal only

    ✓ Cleanup □ Other, specify: 

    **EXTERIOR**
    b. Describe

12. Is the job being conducted: □ Indoors? ✓ Outdoors?
A. Asbestos Abatement Description (cont.)

13. Total amount of each type of Asbestos Containing Materials (ACM) to be removed, enclosed, or encapsulated:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>a. Total pipes or ducts (linear ft)</td>
<td>0</td>
<td>b. Total other surfaces (square ft)</td>
</tr>
<tr>
<td></td>
<td>c. Boiler, breaching, duct, tank surface coatings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d. Insulating cement</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
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<td>g. Spray-on fireproofing</td>
<td></td>
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<td></td>
<td>h. Transite board, wall board</td>
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</tr>
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<td></td>
<td>i. Cloths, woven fabrics</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>j. Other, please specify: GLAZING</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>k. Thermal, solid core pipe insulation</td>
<td></td>
<td></td>
</tr>
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</table>

14. Describe the decontamination system(s) to be used:

AS REQUIRED

15. Describe the containerization/disposal methods to comply with 310 CMR 7.15 and 453 CMR 6.14(2) (g):

AS REQUIRED

16. For Emergency Asbestos Operations, the DEP and DOS officials who evaluated the emergency:

a. Name of DEP Official                                           b. Title
   c. Date (mm/dd/yyyy) of Authorization                           d. DEP Waiver #
   e. Name of DOS Official                                         f. DOS Official Title
   g. Date (mm/dd/yyyy) of Authorization                           h. DOS Waiver#

17. Do prevailing wage rates as per M.G.L. c. 149, § 26, 27 or 27A--F apply to this project? ☑ Yes  ☐ No

B. Facility Description

1. Current or prior use of facility: SCHOOL

2. Is the facility owner-occupied residential with 4 units or less? ☑ Yes  ☐ No

3. CITY OF WORCESTER
   a. Facility Owner Name  
   b. Address
   c. City/Town  
   d. Zip Code  

4. a. Name of Facility Owner's On-Site Manager
   b. On-Site Manager Address
   c. City/Town  
   d. Zip Code  
   e. Telephone Number (area code and extension)  

5. ONE NEW BOND ST
   b. Address
   e. Telephone Number (area code and extension)  

Asbestos Notification Form - Page 2 of 3
B. Facility Description (cont.)

5. a. Name of General Contractor
   b. Address
   c. City/Town
d. Zip Code
   e. Telephone Number (area code and extension)
   f. Contractor's Worker's Comp. Insurer
   g. Policy Number
   h. Exp. Date (mm/dd/yyyy)

6. What is the size of this facility?
   a. Square Feet
   b. Number of floors

C. Asbestos Transportation and Disposal

1. Transporter of asbestos-containing material from site to temporary storage site (if necessary):
   NESM, LLP
   a. Name of Transporter
   b. Address
c. City/Town
d. Zip Code
e. Telephone Number

2. Transporter of asbestos-containing waste material from removal/temporary site to final disposal site:
   RED TECHNOLOGIES
   a. Name of Transporter
   b. Address
c. City/Town
d. Zip Code
e. Telephone Number

3. Refuse Transfer Station and Owner
   a. Refuse Transfer Station and Owner
   b. Address
c. City/Town
d. Zip Code
e. Telephone Number

4. MINERVA ENTERPRISES INC
   a. Final Disposal Site Location Name
   b. Final Disposal Site Location Owner's Name
   9000 MINERVA ROAD
   c. Final Disposal Site Address
   d. City/Town
   e. State
   f. Zip Code
g. Telephone Number

D. Certification

The undersigned hereby states, under the penalties of perjury, that he/she has read the Commonwealth of Massachusetts regulations for the Removal, Containment or Encapsulation of Asbestos, 453 CMR 6.00 and 310 CMR 7.15, and that the information contained in this notification is true and correct to the best of his/her knowledge and belief.

JIM DOYLE
a. Name
b. Authorized Signature
8/11/2010
c. Position/Title
d. Date (mm/dd/yyyy)
e. Telephone Number
f. Representing

h. City/Town
i. Zip Code
Asbestos Abatement Description

1. Facility Location:
   Doherty High School
   Worcester, MA
   02115

2. Is the facility occupied? [X] Yes [ ] No

3. Asbestos Contractor:
   New England Surface Maintenance, LLP
   850 Washington Street
   Weymouth, MA
   02189
   781-337-2117

4. On-Site Project Supervisor/Foreman:
   [Name]
   [Contact Info]

5. Project Monitor:
   [Name]
   [Contact Info]

6. Asbestos Analytical Lab:
   [Name]
   [Contact Info]

7. Project start date [ ] 7/1 to 7/10, specific work hours (Mon.-Fri.) 7-4 (Sat.-Sun.)

8. What type of project is this? [ ] Abatement [ ] Decontamination

9. Describe the asbestos abatement procedures to be used (circle):
   - Removal
   - Encapsulation
   - [Other (please describe)]

10. Is the job being conducted [ ] indoors [ ] outdoors?

11. Total amount of each type of Asbestos Containing Materials (ACMs) to be handled on pipes or ducts (linear ft.) or other surfaces (square ft.) to be removed, encapsulated or decontaminated:
   [Linear Feet] [Square Feet]

12. Describe the decontamination system(s) to be used:
   - As required

13. Describe the containerization/disposal methods to comply with 310 CMR 7.15 and 435 CMR 6.14(16):
   Two layers/labelled bags

14. For Emergency Asbestos Abatement Operations, the DEP and DLI officials who evaluated the emergency:
   [Name of DEP Official]
   [Title]
   [Date of Authorization]
   [Signature]
   [Name of DLI Official]
   [Title]
   [Date of Authorization]
   [Signature]

15. Do prevailing wage rates apply as per M.G.L. c. 149, § 26, 27, or 27A to this project? [ ] Yes [ ] No
Facility Description

1. Current or prior use of facility: [ ] School

2. Is the facility owner-occupied residential with 4 units or less? [ ] Yes [ ] No

3. Facility Owner:
   - Name: Weymouth
   - Address: 850 Washington St
   - City/Town: Weymouth
   - Phone: 02189

4. Facility's Owner's On-Site Manager:
   - Name: 
   - Address: 
   - City/Town: 
   - Phone: 

5. General Contractor:
   - Name: 
   - Address: 
   - City/Town: 
   - Phone: 

6. What is the size of the facility? [ ] (sq ft) [ ] (# of floors)

Asbestos Transportation and Disposal

1. Transporter of asbestos-containing waste material from site to temporary storage site (if necessary) to final disposal site:
   - NESM LLP
   - Address: 850 Washington St
   - City/Town: Weymouth, MA
   - Phone: 02189
   - Phone: 781-337-2119

2. Transporter of asbestos-containing waste material from removal/containment to temporary storage site to final disposal site:
   - Red Technologies
   - Address: 10 Northwood Drive
   - City/Town: Bloomfield, CT
   - Phone: 01608
   - Phone: 860-218-2429

3. Refuse transfer station and owner (if applicable):
   - Name: 
   - Address: 
   - City/Town: 
   - Phone: 

4. Final Disposal Site:
   - Minerva Enterprises
   - Address: 900 Minerva Road
   - City/Town: Waynesburg, OH
   - Phone: 44686
   - Phone: 330-866-3435

Certification

The undersigned hereby states, under the penalties of perjury, that he/she has read the Commonwealth of Massachusetts Regulations for the Removal, Containment or Encapsulation of Asbestos, 453 CMR 8.00 and 310 CMR 7.15, and that the information contained in this notification is true and correct to the best of his/her knowledge and belief.

Jim Dale 12-7-10
Partner NESM LLP 781-337-2119
850 Washington St Weymouth MA 02189

Fee exempt (City, Town, district, municipal housing authority, owner-occupied residential of four units or less) [ ] Yes [ ] No

Sticker # from front of form: 773158
Commonwealth of Massachusetts

Asbestos Notification Form ANF-001

A. Asbestos Abatement Description

1. a. Is this facility fee exempt - city, town, district, municipal housing authority, owner-occupied residence of four units or less? ☑ Yes ☐ No

   b. Provide blanket decal number if applicable:

      Blanket Decal Number

2. Facility Location:

   DORHERTY HIGH SCHOOL
   a. Name of Facility
   Worcester
   c. City/Town
   d. State

   299 HIGHLAND ST.
   b. Street Address
   01615
   e. Zip Code
   f. Telephone Number

3. Worksite Location:

   EXTERIOR
   a. Building Name/Building Location
   ☑ Yes ☐ No
   b. Building #
   c. Wing
   d. Floor
   e. Room

4. Is the facility occupied? ☑ Yes ☐ No

5. Asbestos Contractor:

   NEW ENGLAND SURFACE MAINTENANCE
   a. Name
   WEYMOUTH
   c. City/Town
   02189
   d. Zip Code
   AC000196
   f. DOS License Number
   JOHN S BUTTS JR
   h. Facility Contact Person
   ☑ Written ☐ Verbal
   ☑ Contact Person's Title
   ☑ LMCT
   a. Name of On-Site Supervisor/Foreman
   S. POWELL
   b. Supervisor/Foreman DOS Certification Number
   ☑ Written ☐ Verbal
   ☑ Contact Person's Title
   ☑ LMCT
   a. Name of Project Monitor
   ALG
   b. Project Monitor DOS Certification Number
   ☑ Written ☐ Verbal
   ☑ Contact Person's Title
   ☑ LMCT
   a. Name of Asbestos Analytical Lab
   04/25/2011
   b. Project Start Date (mm/dd/yyyy)
   3-11
   c. Work hours Mon-Fri.

10. a. What type of project is this?
    ☑ Demolition ☐ Renovation
    ☑ Repair ☐ Other, please specify:

11. a. Check abatement procedures:
    ☑ Glove bag ☐ Encapsulation
    ☑ Enclosure ☐ Disposal only
    ☑ Cleanup ☑ Other, specify:
    ☑ Full containment
    ☑ Full containment

12. Is the job being conducted: ☐ Indoors? ☑ Outdoors?

Go To Top
A. Asbestos Abatement Description (cont.)

13. Total amount of each type of Asbestos Containing Materials (ACM) to be removed, enclosed, or encapsulated:

<table>
<thead>
<tr>
<th>Type</th>
<th>Lin. ft.</th>
<th>Sq. ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Total pipes or ducts (linear ft)</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>b. Total other surfaces (square ft)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>c. Boiler, breaching, duct, tank surface coatings</td>
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<td>j. Other, please specify: GLAZING</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>k. Thermal, solid core pipe Insulation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. Describe the decontamination system(s) to be used:

AS REQUIRED

15. Describe the containerization/disposal methods to comply with 310 CMR 7.15 and 453 CMR 6.14(2) (g):

AS REQUIRED

16. For Emergency Asbestos Operations, the DEP and DOS officials who evaluated the emergency:

<table>
<thead>
<tr>
<th>Official</th>
<th>Title</th>
<th>Authorization Date (mm/dd/yyyy)</th>
<th>Waiver #</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Name of DEP Official</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Title</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Date (mm/dd/yyyy) of Authorization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. DEP Waiver #</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Name of DOS Official</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. DOS Official Title</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Date (mm/dd/yyyy) of Authorization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. DOS Waiver #</td>
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<td></td>
</tr>
</tbody>
</table>

17. Do prevailing wage rates as per M.G.L. c. 149, § 26, 27 or 27A–F apply to this project? ☑ Yes ☐ No

B. Facility Description

1. Current or prior use of facility: SCHOOL

2. Is the facility owner-occupied residential with 4 units or less? ☐ Yes ☑ No

3. CITY OF WORCESTER

<table>
<thead>
<tr>
<th>Facility Owner Name</th>
<th>Address</th>
<th>Telephone Number (area code and extension)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Facility Owner Name</td>
<td></td>
<td>b. Address</td>
</tr>
<tr>
<td>c. City/Town</td>
<td>d. Zip Code</td>
<td>e. Telephone Number (area code and extension)</td>
</tr>
</tbody>
</table>

4. a. Name of Facility Owner's On-Site Manager | b. On-Site Manager Address | e. Telephone Number (area code and extension)

<table>
<thead>
<tr>
<th>Name of Facility Owner's On-Site Manager</th>
<th>On-Site Manager Address</th>
<th>Telephone Number (area code and extension)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Name</td>
<td>b. Address</td>
<td>e. Telephone Number (area code and extension)</td>
</tr>
<tr>
<td>c. City/Town</td>
<td>d. Zip Code</td>
<td>e. Telephone Number (area code and extension)</td>
</tr>
</tbody>
</table>
### B. Facility Description (cont.)

5. a. Name of General Contractor  
   b. Address  
   c. City/Town  
   d. Zip Code  
   e. Telephone Number (area code and extension)  
   f. Contractor's Worker's Comp. Insurer  
   g. Policy Number  
   h. Exp. Date (mm/dd/yyyy)

6. What is the size of this facility?  
   a. Square Feet  
   b. Number of floors

### C. Asbestos Transportation and Disposal

1. Transporter of asbestos-containing material from site to temporary storage site (if necessary):
   - **NESM LLP**  
     a. Name of Transporter  
     b. Address  
     c. City/Town  
     d. Zip Code  
     e. Telephone Number

2. Transporter of asbestos-containing waste material from removal/temporary site to final disposal site:
   - **RED TECHNOLOGIES**  
     a. Name of Transporter  
     b. Address  
     c. City/Town  
     d. Zip Code  
     e. Telephone Number

3. Refuse Transfer Station and Owner:
   - a. Name of Transporter  
   - b. Address  
   - c. City/Town  
   - d. Zip Code  
   - e. Telephone Number

4. **MINERVA ENTERPRISES INC**
   - a. Final Disposal Site Location Name  
   - b. Final Disposal Site Location Owner's Name  
   - c. Final Disposal Site Address  
   - OH  
   - 44688  
   - e. State  
   - f. Zip Code

### D. Certification

The undersigned hereby states, under the penalties of perjury, that he/she has read the Commonwealth of Massachusetts regulations for the Removal, Containment or Encapsulation of Asbestos, 453 CMR 6.00 and 310 CMR 7.15, and that the information contained in this notification is true and correct to the best of his/her knowledge and belief.

**KEN FURTNEY**

- a. Name  
- b. Authorized Signature  
- c. Position/Title  
- d. Date (mm/dd/yyyy)  
- e. Telephone Number  
- f. Representing  
- g. Address  
- h. City/Town  
- i. Zip Code
Commonwealth of Massachusetts

Asbestos Notification Form ANF-001

A. Asbestos Abatement Description

1. a. Is this facility fee exempt - city, town, district, municipal housing authority, owner-occupied residence of four units or less? ☑ Yes ☐ No

b. Provide blanket decal number if applicable:

   Blanket Decal Number

2. Facility Location:

   DOHERTY HIGH SCHOOL
   a. Name of Facility
   Worcester
   c. City/Town
   MA
   d. State

   299 HIGHLAND ST.
   b. Street Address
   01615
   e. Zip Code

   ☐ Telephone Number

3. Worksite Location:

   EXTERIOR
   a. Building Name/Building Location
   b. Building #
   c. Wing
   d. Floor
   e. Room

4. Is the facility occupied? ☑ Yes ☐ No

5. Asbestos Contractor:

   NEW ENGLAND SURFACE MAINTENANCE
   a. Name
   WEYMOUTH
   02189
   c. City/Town
   d. Zip Code
   AC000196
   f. DOS License Number

   JOHN S BUTTS JR
   a. Name of On-Site Supervisor/Foreman
   S. POWELL
   a. Name of Project Monitor
   ALG
   a. Name of Asbestos Analytical Lab

   06/20/2011
   a. Project Start Date (mm/dd/yyyy)
   3-11
   c. Work hours Mon-Fri.

   ☐ Demolition ☐ Renovation ☑ Repair ☐ Other, please specify:

10. a. What type of project is this?

11. a. Check abatement procedures:

   ☐ Glove bag ☐ Encapsulation
   ☐ Enclosure ☐ Disposal only
   ☐ Cleanup ☑ Other, specify:
   ☐ Full containment

   EXTERIOR GLAZING
   b. Describe

12. Is the job being conducted: ☐ Indoors? ☑ Outdoors?
A. Asbestos Abatement Description (cont.)

13. Total amount of each type of Asbestos Containing Materials (ACM) to be removed, enclosed, or encapsulated:

<p>| | |</p>
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<td>h. Transite board, wall board</td>
<td>Lin. ft.</td>
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<td>j. Other, please specify:</td>
<td>Lin. ft.</td>
</tr>
<tr>
<td>k. Specify</td>
<td>GLAZING</td>
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</table>

14. Describe the decontamination system(s) to be used:

AS REQUIRED

15. Describe the containerization/disposal methods to comply with 310 CMR 7.15 and 453 CMR 6.14(2) (g):

AS REQUIRED

16. For Emergency Asbestos Operations, the DEP and DOS officials who evaluated the emergency:

GREG LEVINS  
Name of DEP Official  
06/16/2011  
Date (mm/dd/yyyy) of Authorization

MICHELLE OLEARY  
Name of DOS Official  
06/16/2011  
Date (mm/dd/yyyy) of Authorization

INSPECTOR  
B. Facility Description  
CAB11001  
DEP Waiver #

INSPECTOR  
NWA11243  
DOS Waiver #

17. Do prevailing wage rates as per M.G.L. c. 149, § 26, 27 or 27A–F apply to this project?  
Yes  
No

B. Facility Description

1. Current or prior use of facility:  
SCHOOL

2. Is the facility owner-occupied residential with 4 units or less?  
No  
Yes

3. CITY OF WORCESTER  
a. Facility Owner Name

4. a. Name of Facility Owner's On-Site Manager

   b. On-Site Manager Address

   c. City/Town  
d. Zip Code

   e. Telephone Number (area code and extension)

   a. Name of Facility Owner

   b. Address

   c. City/Town  
d. Zip Code

   e. Telephone Number (area code and extension)
Commonwealth of Massachusetts

Asbestos Notification Form ANF-001

B. Facility Description (cont.)

5. a. Name of General Contractor [blank]
   b. Address [blank]
   c. City/Town [blank]
   d. Zip Code [blank]
   e. Telephone Number (area code and extension) [blank]
   f. Contractor’s Worker’s Comp. Insurer [blank]
   g. Policy Number [blank]
   h. Exp. Date (mm/dd/yyyy) [blank]

6. What is the size of this facility?
   a. Square Feet [blank]
   b. Number of floors [blank]

C. Asbestos Transportation and Disposal

1. Transporter of asbestos-containing material from site to temporary storage site (if necessary):
   NESM LLP
   a. Name of Transporter [blank]
   b. Address [blank]
   c. City/Town [blank]
   d. Zip Code [blank]
   e. Telephone Number [blank]

2. Transporter of asbestos-containing waste material from removal/temporary site to final disposal site:
   RED TECHNOLOGIES
   a. Name of Transporter [blank]
   b. Address [blank]
   c. City/Town [blank]
   d. Zip Code [blank]
   e. Telephone Number [blank]

3. a. Refuse Transfer Station and Owner [blank]
   b. Address [blank]
   c. City/Town [blank]
   d. Zip Code [blank]
   e. Telephone Number [blank]

4. MINERVA ENTERPRISES INC
   a. Final Disposal Site Location Name [blank]
   b. Final Disposal Site Location Owner’s Name [blank]
   c. Final Disposal Site Address [blank]
   d. City/Town [blank]
   e. State [blank]
   f. Zip Code [blank]
   g. Telephone Number [blank]

D. Certification

The undersigned hereby states, under the penalties of perjury, that he/she has read the Commonwealth of Massachusetts regulations for the Removal, Containment or Encapsulation of Asbestos, 453 CMR 6.00 and 310 CMR 7.15, and that the information contained in this notification is true and correct to the best of his/her knowledge and belief.

KEN FURTNEY
a. Name [blank]
   b. Authorized Signature 6/17/2011
   c. Position/Title [blank]
   d. Date (mm/dd/yyyy) [blank]
   e. Telephone Number [blank]
   f. Representing [blank]
   g. Address [blank]
   h. City/Town [blank]
   i. Zip Code [blank]
Commonwealth of Massachusetts
Asbestos Notification Form ANF-001

A. Asbestos Abatement Description

1. a. Is this facility fee exempt - city, town, district, municipal housing authority, owner-occupied residence of four units or less? ☑ Yes ☐ No
   b. Provide blanket decal number if applicable:

   Blanket Decal Number

2. Facility Location:
   DOHERTY HIGH SCHOOL
   a. Name of Facility
   Worcester
   b. Street Address
   299 HIGHLAND STREET
   c. City/Town
   MA
   d. State
   01609
   e. Zip Code
   f. Telephone Number

3. Worksite Location:
   EXTERIOR
   a. Building Name/Building Location
   b. Building #
   c. Wing
   d. Floor
   e. Room

4. Is the facility occupied? ☑ Yes ☐ No

5. Asbestos Contractor:
   NEW ENGLAND SURFACE MAINTENANCE
   a. Name
   WEYMOUTH
   b. Address
   850 WASHINGTON STREET
   c. City/Town
   02189
   d. Zip Code
   e. Telephone Number
   7813372117
   f. Contract Type: ☐ Written ☑ Verbal
   g. Contact Person’s Title
   h. Facility Contact Person
   PAUL W. BROWN
   i. Supervisor/Foreman DOS Certification Number
   STEVE POWELL
   j. Project Monitor DOS Certification Number
   ALG
   k. Name of Asbestos Analytical Lab
   08/10/2011
   l. End Date (mm/dd/yyyy)
   08/10/2011
   m. Work hours Mon-Fri.
   7-3
   n. Work hours Sat-Sun.

6. a. What type of project is this?
   ☑ Demolition ☐ Renovation ☐ Repair ☐ Other, please specify:

7. a. Check abatement procedures:
   ☑ Glove bag ☐ Encapsulation ☐ Disposal only
   ☑ Enclosure ☐ Cleanup ☑ Other, specify:
   ☑ Full containment

8. WINDOWS
   a. Describe

9. 12. Is the job being conducted: ☑ Indoors? ☐ Outdoors?
A. Asbestos Abatement Description (cont.)

13. Total amount of each type of Asbestos Containing Materials (ACM) to be removed, enclosed, or encapsulated:

<table>
<thead>
<tr>
<th></th>
<th>a. Total pipes or ducts (linear ft)</th>
<th>b. Total other surfaces (square ft)</th>
<th>c. Boiler, breaching, duct, tank surface coatings</th>
<th>d. Insulating cement</th>
<th>e. Corrugated or layered paper pipe insulation</th>
<th>f. Trowel/Sprayer coatings</th>
<th>g. Spray-on fireproofing</th>
<th>h. Transite board, wall board</th>
<th>i. Cloths, woven fabrics</th>
<th>j. Other, please specify:</th>
</tr>
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<tbody>
<tr>
<td>20</td>
<td>0</td>
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14. Describe the decontamination system(s) to be used:

**AS REQUIRED**

15. Describe the containerization/disposal methods to comply with 310 CMR 7.15 and 453 CMR 6.14(2) (g):

**AS REQUIRED**

16. For Emergency Asbestos Operations, the DEP and DOS officials who evaluated the emergency:

<table>
<thead>
<tr>
<th></th>
<th>a. Name of DEP Official</th>
<th>b. Title</th>
<th>c. Date (mm/dd/yyyy) of Authorization</th>
<th>d. DEP Waiver #</th>
<th>e. Name of DOS Official</th>
<th>f. DOS Official Title</th>
<th>g. Date (mm/dd/yyyy) of Authorization</th>
<th>h. DOS Waiver #</th>
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</table>

17. Do prevailing wage rates as per M.G.L. c. 149, § 26, 27 or 27A–F apply to this project? **Yes** **No**

B. Facility Description

1. Current or prior use of facility: **SCHOOL**

2. Is the facility owner-occupied residential with 4 units or less? **Yes** **No**

3. CITY OF WORCESTER

<table>
<thead>
<tr>
<th>a. Facility Owner Name</th>
<th>b. Address</th>
<th>c. City/Town</th>
<th>d. Zip Code</th>
<th>e. Telephone Number (area code and extension)</th>
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</table>

4. | a. Name of Facility Owner's On-Site Manager | b. On-Site Manager Address | c. City/Town | d. Zip Code | e. Telephone Number (area code and extension) |
<table>
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</tr>
</tbody>
</table>
Commonwealth of Massachusetts

Asbestos Notification Form ANF-001

B. Facility Description (cont.)

5. a. Name of General Contractor
   b. Address
   c. City/Town    d. Zip Code
   f. Contractor's Worker's Comp. Insurer
   e. Telephone Number (area code and extension)
   g. Policy Number
   h. Exp. Date (mm/dd/yyyy)

6. What is the size of this facility?
   a. Square Feet
   b. Number of floors

C. Asbestos Transportation and Disposal

1. Transporter of asbestos-containing material from site to temporary storage site (if necessary):
   NESM
   a. Name of Transporter
   b. Address
   c. City/Town    d. Zip Code
   e. Telephone Number

2. Transporter of asbestos-containing waste material from removal/temporary site to final disposal site:
   RED TECHNOLOGIES
   a. Name of Transporter
   b. Address
   c. City/Town    d. Zip Code
   e. Telephone Number

3. Refuse Transfer Station and Owner
   a. Name of Transporter
   b. Address
   c. City/Town    d. Zip Code
   e. Telephone Number

4. MINERVA ENTERPRISES INC
   a. Final Disposal Site Location Name
   b. Final Disposal Site Location Owner's Name
   9000 MINERVA ROAD
   c. Final Disposal Site Address
   d. City/Town
   e. State    f. Zip Code
   WAYNESBURG
   g. Telephone Number

D. Certification

The undersigned hereby states, under the penalties of perjury, that he/she has read the Commonwealth of Massachusetts regulations for the Removal, Containment or Encapsulation of Asbestos, 453 CMR 6.00 and 310 CMR 7.15, and that the information contained in this notification is true and correct to the best of his/her knowledge and belief.

JIM DOYLE
a. Name
b. Authorized Signature
7/15/2011
c. Position/Title
d. Date (mm/dd/yyyy)
NEMS
e. Telephone Number
f. Representing
g. Address
h. City/Town
i. Zip Code
## A. Asbestos Abatement Description

1. Is this facility fee exempt - city, town, district, municipal housing authority, owner-occupied residence of four units or less? **Yes** **No**

2. Facility Location:
   - **Doherty High School**
     - a. Name of Facility
     - Worcester
     - c. City/Town
   - **299 Highland Street**
     - b. Street Address
     - d. State
     - e. Zip Code

3. Worksite Location:
   - **Exterior**
     - a. Building Name/Building Location
     - b. Building #
     - c. Wing
     - d. Floor

4. Is the facility occupied? **Yes** **No**

5. Asbestos Contractor:
   - **New England Surface Maintenance**
     - a. Name
     - WEYMOUTH
     - c. City/Town
     - d. Zip Code
     - e. Telephone Number
     - g. Contract Type: **Written** **Verbal**
     - i. Contact Person's Title
     - JOHN S BUTTS JR
     - a. Name of On-Site Supervisor/Foreman
     - POWELL
     - a. Name of Project Monitor
     - ALG
     - a. Name of Asbestos Analytical Lab
     - 08/30/2011
     - 7-3

6. a. Project Start Date (mm/dd/yyyy)

7. b. Work hours Mon-Fri.
     - c. Work hours Sat-Sun.

10. a. What type of project is this?
    - Demolition
    - Repair
    - Other, please specify:

11. a. Check abatement procedures:
    - Glove bag
    - Encapsulation
    - Enclosure
    - Cleanup
    - Full containment
    - Other, specify:

12. Is the job being conducted: **Indoors?** **Outdoors?**

---

**Instructions:**

1. All sections of this form must be completed in order to comply with DEP notification requirements of 310 CMR 7.15 and the Division of Occupational Safety (DOS) notification requirements of 453 CMR 6.12.
A. Asbestos Abatement Description (cont.)

13. Total amount of each type of Asbestos Containing Materials (ACM) to be removed, enclosed, or encapsulated:

<table>
<thead>
<tr>
<th>Description</th>
<th>Lin. ft.</th>
<th>Sq. ft.</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
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<tr>
<td>i. Cloths, woven fabrics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j. Other, please specify: CAULKING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>k. Thermal, solid core pipe insulation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. Describe the decontamination system(s) to be used:

AS REQUIRED

15. Describe the containerization/disposal methods to comply with 310 CMR 7.15 and 453 CMR 6.14(2) (g):

AS REQUIRED

16. For Emergency Asbestos Operations, the DEP and DOS officials who evaluated the emergency:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Dep Waiver</th>
<th>OS Waiver</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREG LEVINS</td>
<td>DEP Official</td>
<td>Inspecting</td>
<td>Inspector</td>
</tr>
<tr>
<td>01/01/2011</td>
<td></td>
<td>CAB-11-001</td>
<td>1B12148BS</td>
</tr>
<tr>
<td>MELISSA BUTTS</td>
<td>DOS Official</td>
<td></td>
<td></td>
</tr>
<tr>
<td>08/23/2011</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>d. Zip Code</td>
<td></td>
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</tr>
</tbody>
</table>

4. a. Name of Facility Owner's On-Site Manager   |          |         |
| b. On-Site Manager Address                      |          |         |
| c. City/Town                                     |          |         |
| d. Zip Code                                      |          |         |
| e. Telephone Number (area code and extension)   |          |         |
### B. Facility Description (cont.)

5. a. Name of General Contractor

   b. Address

   c. City/Town

   d. Zip Code

   e. Telephone Number (area code and extension)

   f. Contractor's Worker's Comp. Insurer

   g. Policy Number

   h. Exp. Date (mm/dd/yyyy)

6. What is the size of this facility?

   a. Square Feet

   b. Number of floors

### C. Asbestos Transportation and Disposal

1. Transporter of asbestos-containing material from site to temporary storage site (if necessary):

<table>
<thead>
<tr>
<th>NESM</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Name of Transporter</td>
</tr>
<tr>
<td>b. Address</td>
</tr>
<tr>
<td>c. City/Town</td>
</tr>
<tr>
<td>d. Zip Code</td>
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<tr>
<td>e. Telephone Number</td>
</tr>
</tbody>
</table>

2. Transporter of asbestos-containing waste material from removal/temporary site to final disposal site:

<table>
<thead>
<tr>
<th>RED TECHNOLOGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Name of Transporter</td>
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<td>b. Address</td>
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<td>d. Zip Code</td>
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<tr>
<td>e. Telephone Number</td>
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</tbody>
</table>

3. Refuse Transfer Station and Owner:

<table>
<thead>
<tr>
<th>Minerva Enterprises Inc</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Name of Transporter</td>
</tr>
<tr>
<td>b. Address</td>
</tr>
<tr>
<td>c. City/Town</td>
</tr>
<tr>
<td>d. Zip Code</td>
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<td>e. Telephone Number</td>
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</tbody>
</table>

4. Final Disposal Site Location Name:

<table>
<thead>
<tr>
<th>Minerva Enterprises Inc</th>
</tr>
</thead>
<tbody>
<tr>
<td>9000 Minerva Road</td>
</tr>
<tr>
<td>Waynesburg</td>
</tr>
<tr>
<td>State</td>
</tr>
<tr>
<td>Zip Code</td>
</tr>
<tr>
<td>Telephone Number</td>
</tr>
</tbody>
</table>

### D. Certification

The undersigned hereby states, under the penalties of perjury, that he/she has read the Commonwealth of Massachusetts regulations for the Removal, Containment or Encapsulation of Asbestos, 453 CMR 6.00 and 310 CMR 7.15, and that the information contained in this notification is true and correct to the best of his/her knowledge and belief.

<table>
<thead>
<tr>
<th>JIM DOYLE</th>
</tr>
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<tbody>
<tr>
<td>a. Name</td>
</tr>
</tbody>
</table>
| b. Authorized Signature
| 8/23/2011 |
| c. Position/Title |
| d. Date (mm/dd/yyyy) |
| e. Telephone Number |
| f. Representing |
| g. Address |
| h. City/Town |
| i. Zip Code |

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Asbestos Notification Form • Page 3 of 3
April 6, 2017

Brian E. Allen, Chief Financial and Operations Officer
Worcester Public Schools
John Durkin Administration Building, 20 Irving Street
Worcester, MA 01609

Dear Mr. Allen:

Enclosed is a copy of the report by our Indoor Air Quality (IAQ) Program on their visit to the Doherty High School, Worcester, MA to conduct an IAQ assessment. Please refer to the recommendations section for advice on how to correct any issues identified by this assessment.

If you have any questions regarding the report or if we can be of further assistance in this matter, please feel free to call us at (617) 624-5757.

Sincerely,

Michael A. Feeney, Ph.D., J.D., C.H.O.
Director, Indoor Air Quality Program

cc: Jan Sullivan, Acting Director, BEH
Joshua Watkins, Environmental Coordinator, Worcester Public Schools
Maureen Binienda, Superintendent, Worcester Public Schools
Sally Maloney, Principal, Doherty High School
Michael Sireci, Massachusetts Teacher’s Association
The Honorable Representative John J. Mahoney
The Honorable Senator Harriette L. Chandler

Enclosure(s)
INDOOR AIR QUALITY ASSESSMENT

Doherty Memorial High School
299 Highland Street
Worcester, MA

Prepared by:
Massachusetts Department of Public Health
Bureau of Environmental Health
Indoor Air Quality Program
April 2017
Background/Introduction

Building: Doherty Memorial High School (DHS)
Address: 299 Highland Street, Worcester, MA
Assessment Requested by: Brian Allen, Chief Financial and Operations Officer, Worcester Public Schools (WPS)
Reason for Request: Concerns regarding polychlorinated biphenyls (PCBs) and general indoor air quality (IAQ)
Date of Assessment: March 10, 2017
Massachusetts Department of Public Health/Bureau of Environmental Health (MDPH/BEH) Staff Conducting Assessment: Mike Feeney, Director, IAQ Program, Jason Dustin, Environmental Analyst/Inspector and Ruth Alfasso, Environmental Engineer/Inspector IAQ Program
Date of Building Construction: 1966
Building Description: Multi-level building consisting of classrooms, auditorium, gymnasium, art rooms, kitchen, cafeteria, library and office space.
Building Population: The school has approximately 1,500 students in grades 9-12 and 100 staff
Windows: Openable

The Indoor Air Quality (IAQ) Program was asked by the WPS to provide technical assistance regarding the potential impact of window caulking at DHS. The IAQ Program assessed the building to ascertain window caulking was being managed in a manner consistent with recommendations made by the US EPA, “Practical Actions for Reducing Exposure to PCBs in Schools and Other Buildings Guidance for school administrators and other building owners and managers” (Appendix A). In this document, the US EPA makes the following recommendations regarding window caulking:

- Clean inside schools and other buildings frequently to reduce dust and residue.
- Encapsulate the caulking.
- Ensure that ventilation systems are operating. (US EPA, 2015).
BEH/IAQ staff conducted two activities at DHS: a general assessment of IAQ to determine if the ventilation system was operating adequately, as well as an examination of window caulking throughout the building. The assessment of window caulking was to ascertain if it was intact and whether any caulking debris was present on window frames or sills inside classrooms.

Methods

Please refer to the IAQ Manual and appendices for methods, sampling procedures, and interpretation of results (MDPH, 2015).

Results and Discussion

Window Frame Caulking Conditions

Window frames in the DHS were encapsulated with a sealant prior to the MDPH/IAQ visit. The sealant was intact in most locations (Table 1). Windows that had incomplete sealant cover were noted (Table 1). IAQ staff examined 92 areas with windows. Three locations were found with exposed damaged original window caulking.

- One window frame in the gymnasium hallway (Picture 1).
- All windows in the television studio (Picture 2). Caulking debris was noted on the windowsill.
- Room 306 which has a wood-framed wall of Plexiglas installed on the interior side of the classroom window system (Picture 3).

The following rooms/areas did not appear to have sealant applied or had sealant that was separating from the window frame: 103, 212, 303A, 303B, 304, 314, kitchen storeroom; faculty restroom (Picture 4), and head guidance counselor office. No windowsill debris was observed in these locations.

IAQ Testing Results

The following is a summary of indoor air testing results (Table 2).
• **Carbon dioxide** measurements were above the MDPH recommended level of 800 parts per million (ppm) in the majority of areas surveyed the day of assessment, indicating a lack of fresh air exchange. In some areas, levels exceeded 3000 ppm. This is discussed further in the “Ventilation” section below.

• **Temperature** was within the MDPH recommended range of 70°F to 78°F in all but one of the areas visited.

• **Relative humidity** was below the MDPH recommended range of 40% to 60% in all areas surveyed.

• **Carbon monoxide** levels were non-detectable in all areas tested.

• **Particulate matter (PM2.5)** concentrations measured were below the National Ambient Air Quality (NAAQS) level of 35 μg/m³ in all areas surveyed.

**Ventilation**

Fresh air in most classrooms is supplied by air handling units (AHUs) located on the roof. The AHUs draw air from outdoors, filter and heat it, and distribute it to classrooms, offices and other areas through ceiling-mounted supply vents (Picture 5). It was reported by facilities staff that some of the AHUs were not operating on the day of the assessment, partially accounting for the high levels of carbon dioxide in many classrooms.

Some rooms also had unit ventilators (univent, Picture 6) which draw fresh air through a vent on the outside wall (Picture 7). Air is mixed with return air from the room, filtered, heated (if needed) and delivered back to the room (Figure 1). In some cases, fresh air vents for the univent were deliberately blocked (Picture 8) and the univent was run to heat, filter and recirculate air only. Many of the units were not operating at the time of the assessment.

In classrooms and other rooms, exhaust vents on walls or ceilings remove stale air and exhaust it through vents on the roof (Pictures 5 and 9). As shown in Picture 9, some exhaust vents were partially blocked by furniture and items. Many exhaust vents were not functioning at the time of the assessment (Table 2).

Some offices and other areas lacked either a supply of fresh air or exhaust or both (Table 2). In some cases, doors were left open or were undercut to provide some air exchange. Adequate
fresh air supply and properly functioning exhaust are both extremely important in diluting and removing normally occurring indoor air pollutants.

It is important to note that windows appear to be permanently sealed shut throughout the building. Numerous locations have window latches removed (Picture 1). Without openable windows, occupied areas must have an adequately operating mechanical ventilation system.

In order to have proper ventilation with a mechanical supply and exhaust system, these systems must be balanced to provide an adequate amount of fresh air while removing stale air from a room. The date of the last balancing of these systems was not available at the time of the assessment. It is recommended that existing ventilation systems be re-balanced every five years to ensure adequate air systems function (SMACNA, 1994).

**Microbial/Moisture Concerns**

Water-damaged ceiling tiles were observed in several areas throughout the DHS (Table 2; Pictures 10 and 11). At the time of assessment, DHS Facilities staff indicated that water-damaged ceiling tiles are replaced routinely throughout the school. Some water-damaged tiles appeared to be from old/historic leaks in areas that could not be easily changed due to the presence of fire protection equipment (e.g., Picture 11). Some tiles in the school are of an interlocking type that is difficult to remove and replace.

Measures should be taken to ensure water-damaged materials are cleaned, replaced, and/or repaired in a manner consistent with the U.S. Environmental Protection Agency’s guidelines (US EPA, 2008). The US EPA and the American Conference of Governmental Industrial Hygienists (ACGIH) recommend that porous materials (e.g., ceiling tiles, gypsum wallboard) be dried with fans and heating within 24 to 48 hours of becoming wet (US EPA, 2008; ACGIH, 1989). If not dried within this time frame they should be removed/discarded.

Sinks were observed in a number of classrooms. Some of the sinks examined lacked caulking in the space between the backsplash and countertop (Table 2; Picture 12), which may allow water damage to building materials. Many sinks examined also had porous items (paper, boxes) stored inside the sink cabinet, which is a moist environment.

A gasket in a staff refrigerator was stained with mold (Picture 13). Refrigerators should be kept clean, and gaskets should be cleaned regularly with a mild antimicrobial solution.
Several classrooms contained plants (Table 2). Plants can be a source of pollen and mold, which can be respiratory irritants to some individuals. Plants should be properly maintained and equipped with drip pans to prevent water damage to porous materials. Plants should also be located away from air diffusers to prevent the aerosolization of dirt, pollen, and mold.

An old shower and other disused plumbing fixtures were noted (Table 2; Picture 14). If drains from unused fixtures are not kept moist, the drain traps will dry out and allow gases from the sewer to penetrate into occupied spaces. Unused drains should be kept moist by having water poured into them periodically. If plumbing fixtures are not going to be used again, they should be properly cut and capped/sealed.

Ductless air conditioning units were found in some offices. These appliances have condensation drains that should be inspected periodically for leaks and clogs.

Some trees were observed close to the building foundation and overhanging the roof (Picture 15). Shrubs/trees in close proximity to the building hold moisture against the building exterior and prevent drying. The growth of roots against exterior walls can bring moisture in contact with the foundation. Plant roots can eventually penetrate the wall, leading to cracks and/or fissures in the foundation. Over time, these conditions can undermine the integrity of the building envelope and provide a means of water entry into the building via capillary action through exterior walls, foundation concrete and masonry (Lstiburek & Brennan, 2001). The freezing and thawing action of water during the winter months can create cracks and fissures in the foundation that can result in additional penetration points for both water and pests. Trees and shrubs can also be a source of pollen, debris and mold into univents, windows and rooftop AHUs. Consideration should be given to removing landscaping in close proximity to the building so as to maintain a space of 5 feet between plants and the building.

Other IAQ Concerns

Other conditions that can affect IAQ were observed during the assessment. Exposure to low levels of total volatile organic compounds (TVOCs) may produce eye, nose, throat, and/or respiratory irritation in some sensitive individuals. To determine if VOCs were present, BEH/IAQ staff examined rooms for products containing VOCs. BEH/IAQ staff noted hand sanitizers, cleaners, air deodorizers, and dry erase materials in use within the building (Table 2;
Picture 16). All of these products have the potential to be irritants to the eyes, nose, throat, and respiratory system of sensitive individuals.

In the shop areas, no local exhaust was observed for activities such as sawing of wood or fabrication using a 3-D printer. Local (direct) exhaust is recommended for activities that may create significant amounts of dust, VOCs or odors to prevent them from lingering in the air or being distributed to other occupied areas.

DHS facilities personnel reported that the filters for the AHUs and in univents are changed two to four times a year and that filters with a Minimum Efficiency Rating Value (MERV) of 8 are used; this is the recommended filter type for a typical school. A log should be kept to document recommended filter changes and other maintenance items.

Window-mounted air-conditioning units were observed in some areas (Table 2). This type of equipment has a filter, which should be cleaned prior to use. Any debris that accumulates in the coils of the unit should also be cleaned according to manufacturer’s instruction.

Missing ceiling tiles were observed in some rooms and hallways (Picture 17). Missing and ajar ceiling tiles can allow dust and debris from the ceiling plenum system to migrate into occupant spaces. All ceiling tile systems should be intact and flush.

In some classrooms, items were observed on windowsills, tabletops, counters, bookcases and desks. The large number of items stored in classrooms provides a source for dusts to accumulate. These items, (e.g. papers, folders, boxes) make it difficult for custodial staff to clean. Dust can be irritating to eyes, nose, and respiratory tract. Items should be relocated and/or be cleaned periodically to avoid excessive dust build up.

Several storerooms were observed to be cluttered and disorganized. In particular, a furniture, costume, and equipment storage room in the music area had a variety of items, many of them porous, stored in a difficult-to-access manner (Picture 18). There was a slight musty odor in this space. During the summer, hot, humid air may penetrate these storage areas and condense moisture on porous items which can eventually lead to microbial growth and odors. Items should be stored in an organized, accessible manner to allow for airflow around items and/or porous items should be enclosed in plastic containers. In addition, items should be sorted and examined regularly to remove any items with odors or water damage.

Some classrooms were noted to have accumulations of chalk dust or dry erase residue in the trays. Both of these may have irritant effects when aerosolized. Some supply vents, exhaust
vents and personal fans were dusty (Pictures 19 and 20). Dust can become reaerosolized and cause irritation.

Missing/broken light covers were seen in a few areas (Table 2; Picture 21). Fixtures should be equipped with access covers installed with bulbs fully secured in their sockets. Breakage of glass can cause injuries and may release mercury and/or other hazardous compounds.

Conclusions/Recommendations

The assessment of the window caulking found that the vast majority of areas had intact sealant. Limited areas had damaged/crumbling materials as described above that were observed on the interior of the building. In the majority of areas, window caulking was properly encapsulated with a sealant compound. The MDPH/IAQ Program recommends that WPS staff inspect the condition of the sealant on a quarterly basis and make repairs as needed.

It appears that the ventilation system could be improved to both dilute and remove environmental pollutants from the interior of the building. In view of the findings at the time of the assessment, the following is recommended:

1. Repair/replace the window caulking in the areas noted in a manner consistent with US EPA recommendations (Appendix A).
2. Examine sealant throughout the building and repair and replace as needed in a manner consistent with US EPA recommendations (Appendix A).
3. Inspect the condition of window sealant on a quarterly basis and make repairs as needed.
4. Repair and activate all AHUs on the roof and run continuously during occupied periods.
5. Ensure univents are in operable condition and that they are supplying adequate fresh air to classrooms especially in areas showing elevated carbon dioxide levels. Operate continuously during occupied periods.
6. Repair and reactivate exhaust vent fans to remove stale air.
7. Once all AHUs, univents, and exhaust fans are working properly, consider hiring an HVAC engineer to ensure the adequacy of the fresh air supply given the building design and population. Make adjustments accordingly.
8. Consider opening windows where possible during temperate weather to increase fresh air in classrooms.
9. Change filters on rooftop AHUs and univents regularly (2 to 4 times a year). Ensure that the filters have a minimum efficiency of MERV 8 as reported by DHS staff.

10. Keep a logbook or other records of filter changes and other maintenance items.

11. Remove all items blocking supply and exhaust vents to ensure adequate airflow.

12. Consider adopting a balancing schedule of every 5 years for all mechanical ventilation systems, as recommended by ventilation industrial standards (SMACNA, 1994).

13. Repair water leaks promptly and replace water-damaged ceiling tiles once a leak is repaired. Interlocking-type ceiling tiles may be difficult to remove and replace without significant disruption. These tiles may also contain asbestos; a determination of the asbestos content of the tiles should be made prior to them being disturbed and if they do contain asbestos they should be handled and disposed of in accordance with all applicable regulations.

14. Ensure that procedures are in place for occupants to report leaks, wet tiles, non-functioning univents and other maintenance conditions so that they can be logged and repaired promptly.

15. Examine seams between the sink countertops and backsplashes periodically to ensure sealant is intact. Seal areas around sinks to prevent water damage to cabinet interiors and adjacent wallboard. Avoid storing porous items or large amounts of items underneath sinks.

16. Clean out refrigerators regularly and clean gaskets and other surfaces with a mild antimicrobial solution to remove debris and mold.

17. Move plants away from any air streams in classrooms. Avoid over-watering or placing them on porous materials (e.g., cloth, paper) and examine drip pans periodically for mold growth.

18. Determine whether abandoned plumbing fixtures are to be used or not. Fixtures that are to be used should have water poured into drains on a regular basis to avoid dry drain traps. Fixtures no longer needed should be removed and properly sealed/capped.

19. Trim trees away from the sides of the building and overhanging the roof.

20. Reduce the use of or eliminate products containing VOC’s in classrooms (harsh cleaners, hand sanitizers, etc.).
21. For areas where dusts, odors and pollutants may be generated, such as the wood shop area, local exhaust ventilation is important to protect occupants and prevent spreading dusts and VOCs to other areas. Consider installing local exhaust in these areas.

22. Replace missing ceiling tiles to prevent the egress of dirt, dust, and particulate matter into occupied areas.

23. Relocate or consider reducing the amount of materials stored in classrooms to allow for more thorough cleaning. Clean items regularly with a wet cloth or sponge to prevent excessive dust build-up. Encourage occupants to report any areas that need improvement in general housekeeping as it will improve overall IAQ.

24. Clean chalk trays, dry erase board trays, and areas around pencil sharpeners to prevent accumulation of materials.

25. Clean supply and exhaust vents and personal fans periodically to remove dust.

26. For buildings in New England, periods of low relative humidity during the winter are unavoidable. Therefore, scrupulous cleaning practices should be adopted to minimize common indoor air contaminants whose irritant effects can be enhanced when the relative humidity is low. To control for dusts, a high efficiency particulate arrestance (HEPA) filter equipped vacuum cleaner in conjunction with wet wiping of all surfaces is recommended. Avoid the use of feather dusters. Drinking water during the day can help ease some symptoms associated with a dry environment (throat and sinus irritations).

27. Replace all missing covers for fluorescent light fixtures building-wide.


29. Refer to resource manual and other related IAQ documents located on the MDPH’s website for further building-wide evaluations and advice on maintaining public buildings. These documents are available at: http://mass.gov/dph/iaq.
References

ACGIH. 1989. Guidelines for the Assessment of Bioaerosols in the Indoor Environment. American Conference of Governmental Industrial Hygienists, Cincinnati, OH.


Figure 1: Unit Ventilator (Univent)
Picture 1

Window frame in the gymnasium hallway, note missing window latch

Picture 2

Window caulking in the television studio, note debris on windowsill
Plexiglas wall installed over windows of Room 306

Example of incomplete sealant/sealant separating from window frame
Picture 5

Supply (left) and return (right) vent on a classroom ceiling

Picture 6

Classroom unit ventilator (univent)
Picture 7

Univent fresh air intake

Picture 8

Sealed univent fresh air intake
Picture 9

Classroom exhaust vent, partly blocked by table

Picture 10

Water-damaged ceiling tile
Picture 11

Water-damaged ceiling tile from historic leak

Picture 12

Unsealed sink backsplash
Stained refrigerator gasket

Unused shower
Picture 15

Trees close to side of building and overhanging roof

Picture 16

Dry erase materials and cleaning products
Picture 17

Missing ceiling tile in hallway

Picture 18

Items and furniture in the music area storage room
Picture 19

Dusty supply vent

Picture 20

Dusty personal fans
Broken light cover
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Table 1
Doherty High School
March 10, 2017
Condition of Sealant, Window Caulking and Presence of Sill Dust

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## Table 1
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March 10, 2017
Condition of Sealant, Window Caulking and Presence of Sill Dust

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ppm = parts per million  
μg/m³ = micrograms per cubic meter  
AP = air purifier  
DEM = dry erase materials  
AHU = air handling unit  
CI = ceiling fan  
AI = accumulated items  
CT = ceiling tile  
DEM = dry-erase materials  
CP = cleaning products  
HS = hand sanitizer  
PC = photocopier  
PF = personal fan  
MT = missing tile  
NC = not carpeted  
UV = univent  
WD = water-damaged  

**Comfort Guidelines**

Carbon Dioxide:  
< 800 ppm = preferred  
> 800 ppm = indicative of ventilation problems

Temperature: 70 - 78 °F
Relative Humidity: 40 - 60%
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<th>Carbon Monoxide (ppm)</th>
<th>Temp (°F)</th>
<th>Relative Humidity (%)</th>
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UV = univent  
WD = water-damaged

**Comfort Guidelines**

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<td>Relative Humidity:</td>
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<td>40 - 60%</td>
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Table 2, page 2
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µg/m³ = micrograms per cubic meter  
AP = air purifier  
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**Comfort Guidelines**

Carbon Dioxide:  
- < 800 ppm = preferred  
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Table 2 (continued)

Indoor Air Results
Date: 3/10/2017
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<td>75</td>
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<td>Y off</td>
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<td>storage and janitorial, restroom, old shower</td>
<td></td>
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</tbody>
</table>

**ppm = parts per million**  
**µg/m³ = micrograms per cubic meter**  
**AHU = air handling unit**  
**AI = accumulated items**  
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**Comfort Guidelines**

Carbon Dioxide:  
- < 800 ppm = preferred  
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Temperature: 70 - 78 °F  
Relative Humidity: 40 - 60%
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<th>PM2.5 (µg/m³)</th>
<th>Occupants in Room</th>
<th>Windows Openable</th>
<th>Ventilation Supply</th>
<th>Ventilation Exhaust</th>
<th>Remarks</th>
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<tbody>
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<td>Faculty room</td>
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<td>1855</td>
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<td>75</td>
<td>29</td>
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<td>Fridges and items</td>
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<td>Y</td>
<td>exhaust in wall (see picture), microwave and fridge</td>
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<td>Y</td>
<td>Y off</td>
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<td>Y</td>
<td>HS, PC, computers</td>
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<td>Abandoned sink/urinal with plastic bags over (uncapped)</td>
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</tbody>
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**Comfort Guidelines**  
Carbon Dioxide:  
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Temperatures:  
70 - 78 °F  

Relative Humidity:  
40 - 60%
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<th>PM2.5 (µg/m³)</th>
<th>Occupants in Room</th>
<th>Windows Openable</th>
<th>Ventilation</th>
<th>Remarks</th>
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<td>Window air conditioner, DEM</td>
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<td>Painted CT</td>
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<td>205</td>
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<td>74</td>
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<td>9</td>
<td>13</td>
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<td>Y</td>
<td>Y off,</td>
</tr>
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<td>12</td>
<td>8</td>
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<td>N N</td>
<td>DEM, PF</td>
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<td>Y Y</td>
<td>DEM, PF</td>
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</tbody>
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Table 2, page 10
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<th>Windows Openable</th>
<th>Ventilation Supply</th>
<th>Ventilation Exhaust</th>
<th>Remarks</th>
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<td>211</td>
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<td>Y</td>
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<td>1540</td>
<td>ND</td>
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<td>23</td>
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<td>5</td>
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<td>Y</td>
<td>Y</td>
<td>DEM, plants</td>
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<td>Y</td>
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<td>DEM, sink backsplash open and items under sink</td>
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### 1st Floor

<table>
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<th>Location</th>
<th>Carbon Dioxide (ppm)</th>
<th>Carbon Monoxide (ppm)</th>
<th>Temp (°F)</th>
<th>Relative Humidity (%)</th>
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<th>Occupants in Room</th>
<th>Windows Openable</th>
<th>Ventilation Supply</th>
<th>Ventilation Exhaust</th>
<th>Remarks</th>
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<td>72</td>
<td>29</td>
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<td>Y</td>
<td>WD CTs</td>
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<td>Cafeteria - mid</td>
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<td>73</td>
<td>28</td>
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<td>22</td>
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<td>Y</td>
<td>Y</td>
<td>WD CTs</td>
</tr>
</tbody>
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<th>Ventilation</th>
<th>Remarks</th>
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<td>4</td>
<td>N/door</td>
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<td>Y</td>
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<td>Teacher's lunch</td>
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<td>9</td>
<td>0</td>
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<td>Y</td>
<td>Y</td>
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<td>1287</td>
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<td>76</td>
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<td>Y YYYY off</td>
<td>Sink</td>
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<td>N</td>
<td>Y YYYY off</td>
<td>PC</td>
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<td>6</td>
<td>12</td>
<td>N</td>
<td>Y YYYY off</td>
<td>Exhausts off on one side</td>
</tr>
</tbody>
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<td>Air conditioner, microwave, plant</td>
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<td>ND</td>
<td>74</td>
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<td>6</td>
<td>1</td>
<td>Y</td>
<td>N</td>
<td>Y off</td>
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<td>N</td>
<td>Air conditioner, draft</td>
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<td>Main office</td>
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<td>16</td>
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<td>Y</td>
<td>Y</td>
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<td>0</td>
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<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

**ppm** = parts per million  
**µg/m³** = micrograms per cubic meter  
**AHU** = air handling unit  
**Al** = accumulated items  
**AP** = air purifier  
**DEM** = dry erase materials  
**CF** = ceiling fan  
**CP** = cleaning products  
**CT** = ceiling tile  
**DO** = door opened  
**GW** = gypsum wallboard  
**HS** = hand sanitizer  
**MT** = missing tile  
**NC** = not carpeted  
**PC** = photocopier  
**PF** = personal fan  
**UV** = univent  
**WD** = water-damaged

**Comfort Guidelines**

<table>
<thead>
<tr>
<th>Carbon Dioxide:</th>
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<tr>
<td>&lt; 800 ppm = preferred</td>
<td>70 - 78 °F</td>
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<tr>
<td>&gt; 800 ppm = indicative of ventilation problems</td>
<td>Relative Humidity: 40 - 60%</td>
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Table 2, page 14
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<thead>
<tr>
<th>Location</th>
<th>Carbon Dioxide (ppm)</th>
<th>Carbon Monoxide (ppm)</th>
<th>Temp (°F)</th>
<th>Relative Humidity (%)</th>
<th>PM2.5 (µg/m³)</th>
<th>Occupants in Room</th>
<th>Windows Openable</th>
<th>Ventilation Supply</th>
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<td>Y</td>
<td>N</td>
<td>Y</td>
<td>MT, DEM, HS, WD CTs, No supply vent</td>
</tr>
</tbody>
</table>

ppm = parts per million  
µg/m³ = micrograms per cubic meter  
AHU = air handling unit  
AI = accumulated items  
AP = air purifier  
DEM = dry erase materials  
CF = ceiling fan  
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DO = door opened  
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Comfort Guidelines

Carbon Dioxide:  
< 800 ppm = preferred  
> 800 ppm = indicative of ventilation problems

Temperature: 70 - 78 °F  
Relative Humidity: 40 - 60%
APPENDIX A

Practical Actions for Reducing Exposure to PCBs in Schools and Other Buildings

Guidance for school administrators and other building owners and managers

July 28, 2015

Polychlorinated Biphenyls (PCBs) in Building Materials

Based on the information available, the EPA believes that there was potential widespread use of PCB-containing building materials in schools and other buildings built or renovated between about 1950 and 1979. This is an important issue because PCBs have been identified as probable human carcinogens and may cause a variety of non-cancer health effects. Although the presence of PCBs in schools and other buildings may be a concern, the presence of PCBs alone is not necessarily a cause for immediate alarm. However, if PCBs are present or suspected of being present, EPA recommends actions outlined in this document be taken by school administrators, building owners and building managers to reduce PCB exposures. You may also reference the document PCBs in Building Materials—Questions & Answers for more information.

What do I do if I think PCBs are in my building?

Regardless of whether PCBs are known to be present, the EPA recommends that all schools and other buildings built between about 1950 and 1979 implement the following best management practices to minimize potential building occupant exposure to PCBs:

- Remove all PCB-containing fluorescent light ballasts (FLBs) (details on page 2)
- Conduct the following best management practices (BMPs) listed below on a frequent ongoing basis to minimize potential exposures to PCBs (details on page 2)
- Remove PCB-containing caulk, paint and other PCB-containing building materials during planned renovations and repairs (when replacing windows, doors, roofs, ventilation, etc.) (details on page 3)
- Consider encapsulation to reduce PCB exposure (details on page 4)

https://www.epa.gov/pcbs/learn-about-polychlorinated-biphenyls-pcbs#healtheffects
APPENDIX A

Remove PCB-containing caulk, paint and other PCB-containing building materials during planned renovations and repairs (when replacing windows, doors, roofs, ventilation, etc.)

Prior to removal, EPA recommends PCB testing for caulk and other building materials that are going to be removed to determine what protections are needed during removal and to determine proper disposal requirements. Where testing confirms the presence of PCBs at regulated levels in building materials, they must be disposed of or decontaminated in accordance with the PCB regulations at 40 CFR part 761, subpart D. In lieu of testing, caulk, paint and other building materials potentially containing PCBs that are part of building repair and renovation activities may be assumed to contain PCBs at regulated levels and disposed of in accordance with 40 CFR part 761, subpart D.

To ensure that PCB-containing building material does not contaminate surrounding surfaces when it is removed and disposed of, repairs that disturb PCB-containing building material, such as window removal and replacement, should be conducted by trained workers who use safe work practices to minimize dust and contain contaminated waste. EPA has developed guidance for minimizing exposures when conducting repair and renovation activities, including cleaning the work area once the work is completed; see https://www.epa.gov/pcbs/steps-safe-renovation-and-repair-activities.

Actions contractors should take include:
- Ensure workers are properly trained and are using gloves, eye goggles, skin protection and approved particulate breathing masks.
- In dusty work areas, have showers available and separate changing areas so that dust on clothing is not brought home.
- If working with solvents, provide respirators.
- Use heavy plastic sheeting to cover floors and other fixed surfaces like large appliances in the work area.
- Close and seal vents in the work area and turn off forced-air heating and air-conditioning systems.
- Regularly clean the work area using a HEPA vacuum and wet mopping.
- Properly dispose of personal protective equipment and cleaning material.

Building occupants should be notified of the PCB repair and renovation activities (including PCB FLB removal) and be completely isolated from the parts of the building undergoing PCB repair and renovation activities to prevent exposure to PCBs. Additional actions, including physically isolating the work space with physical barriers and negatively pressurizing work areas may be necessary (see http://www.epa.gov/iaq/schooldesign/renovation.html). If complete isolation of the work space cannot be assured, school administrators and building owners and operators should temporarily remove occupants from the area of the building while the work is underway.

For additional guidance on protecting occupants during renovations or other construction activities, see ANSI/SMACNA 008-2008: IAQ Guidelines for Occupied Buildings Under Construction. The guidelines are available from the Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) at http://www.smacna.org.

A-3
What do I do if I think PCBs are in my building?

Remove all PCB-containing fluorescent light ballasts (FLBs)

EPA recommends that non-leaking PCB FLBs be removed and retrofitted as part of lighting upgrades or as a stand-alone project. Leaking PCB FLBs must be removed and disposed of as required under 40 CFR part 761, subpart D. The EPA recommends that an experienced contractor or properly trained facilities maintenance staff person perform the removal, cleanup and disposal of PCB-containing FLBs, light fixtures and building surfaces. Consult with your EPA Regional PCB Coordinator to ensure that all relevant cleanup procedures are followed; see https://www.epa.gov/pcbs/epa-regional-polychlorinated-biphenyl-pcb-programs

The EPA's recommended procedures for the proper removal and disposal of PCB FLBs are listed at:

Conduct the following best management practices (BMPs) listed below on a frequent ongoing basis to minimize potential exposures to PCBs

- Ensure that ventilation systems are operating properly and are regularly inspected and maintained according to system manufacturer instructions and guidelines or ANSI/ASHRAE/ACCA Standard 180-2012—Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems. If system cleaning is needed, follow ANSI/ACCA Standard 6 – Restoring the Cleanliness of HVAC Systems (2007).
- Clean inside schools and other buildings frequently to reduce dust and residue.
- Use a wet or damp cloth or mop to clean surfaces.
- Use vacuums with high efficiency particulate air (HEPA) filters.
- Do not sweep with dry brooms or use dry cloths for dusting.
- Wash hands with soap and water, particularly before eating.
- Wash children's toys.

For EPA's general school cleaning recommendations, visit: http://www.epa.gov/iaq/schools/clean_maintenance.html.

Due to building specific factors, these BMPs may not always adequately reduce PCB exposure. In some cases, additional and more frequent cleaning or other actions to identify and address PCB sources may be warranted.
Consider encapsulation to reduce PCB exposure

Encapsulation may be useful for the reduction of air emissions from secondary sources such as contaminated building materials under and around PCB-containing caulk or paint that has been removed. Because each site will present unique circumstances, please consult your EPA Regional PCB Coordinator regarding the application of encapsulation measures on a case-by-case basis. EPA has conducted research on the effectiveness of encapsulation and additional details may be found at: https://www.epa.gov/pcbs/fact-sheets-summarizing-research-polychlorinated-biphenyls-pcbs-school-buildings

Contact your EPA Regional PCB Coordinator

After implementing BMPs, school administrators should consult with the EPA Regional PCB Coordinator to assess if there still may be the potential for PCB releases in their school and whether to consider testing indoor air for PCBs. Each school is unique, which means that many factors should be considered when deciding whether and how to test the indoor air at a school. This decision should be made in consultation with the EPA Regional PCB Coordinator and the decision makers should thoughtfully consider all available information, such as: school-specific conditions (e.g., building age, types of materials used in construction, layout, maintenance or renovation history), BMPs already implemented to address PCB sources, and available technical resources, costs, and public concerns.

Only air testing can determine if PCBs are present in indoor air after BMPs and other actions have been implemented. In cases where school administrators, building owners and building managers have implemented BMPs and taken other actions but still have concerns about PCB exposure and potential sources, EPA recommends that they consult with their EPA Regional PCB Coordinator on appropriate next steps.

For more information visit:
https://www.epa.gov/pcbs/polychlorinated-biphenyls-pcbs-building-materials

Or Call:
EPA Region 1 (CT, MA, ME, NH, RI, VT) Tel: 617-918-1527
EPA Region 2 (NJ, NY, PR, US Virgin Islands) Tel: 732-906-6817
EPA Region 3 (DE, DC, MD, PA, VA, WV) Tel: 215-814-2177
EPA Region 4 (AL, FL, GA, KY, MS, NC, SC, TN) Tel: 404-562-8512
EPA Region 5 (IL, IN, MI, MO, OH, WI) Tel: 312-886-7890
EPA Region 6 (AK, LA, NM, OK, TX) Tel: 214-665-6796
EPA Region 7 (IA, KS, MO, NE) Tel: 913-551-7504
EPA Region 8 (CO, MT, ND, SD, UT, WY) Tel: 303-312-6446
EPA Region 9 (AZ, CA, HI, NV, American Samoa, Guam) Tel: 415-972-3360
EPA Region 10 (AK, ID, OR, WA) Tel: 206-553-1616
URGENT LEGAL MATTER: PROMPT ACTION NECESSARY

Worcester Public Schools
20 Irving St.
Worcester, MA 01609

ATTN: Jeffrey Lassey,
Director of Facilities

RE: CRWSC - Worcester
UST Release @ Doherty High School
299 Highland St.

Release Tracking Number: 2-0016770

NOTICE OF RESPONSIBILITY
M.G.L. c. 21E, 310 CMR 40.0000

Dear Mr. Lassey:

The Department of Environmental Protection (the MassDEP or the Department) was notified by your consultant on July 26, 2007, at 12:15 p.m., that a release of #2 fuel oil occurred at the above-referenced property (the Site). Specifically, during the removal of one ten-thousand (10,000) and one one-thousand (1,000) gallon underground storage tank (UST), up to two-hundred forty-five (245) parts per million by volume (ppm/v) of total organic vapor, detected "as benzene" were determined to be present in soil. Such condition required oral notification to the MassDEP as soon as possible but not more than 72-hours after obtaining knowledge of a reportable condition and performance of an Immediate Response Action (IRA). In light of the notification and other information available, the MassDEP wishes to ensure that you are aware of your rights and responsibilities under the Massachusetts Oil and Hazardous Material Release Prevention and Response Act, M.G.L. c. 21E, and the Massachusetts Contingency Plan (MCP), 310 CMR 40.0000.

The MassDEP has identified the property, or portions thereof, as a disposal site that requires the conduct of cleanup or other response actions. The cleanup of disposal sites is governed by Chapter 21E and the MCP. The MassDEP has assigned Release Tracking Number (RTN): 2-0016770 to this disposal site for the release notification received.

The MassDEP also has reason to believe that you (as used in this Notice, "you" refers to Worcester Public Schools) are a party with potential liability for response action costs and damages under Chapter 21E, § 5.
As an integral part of the response action(s) for this release, you must also comply with the following:

1. Submit a completed *Release Notification & Retraction Form* to the MassDEP by September 14, 2007 in accordance with 310 CMR 40.0300 (i.e., within 60 days of the date of release notification).

2. Submit an IRA Plan (310 CMR 40.0420), or IRA Completion Statement (310 CMR 40.0427), or a Response Action Outcome Statement (310 CMR 40.1000) whichever is applicable to the MassDEP by September 14, 2007 (within 60 days of the date of the release notification or the date of service of this Notice, whichever comes first).

No disposal site will be deemed to have had all the necessary and required response actions taken for it unless and until all substantial hazards presented by the release and/or threat of release have been eliminated and a level of no significant risk exists or has been achieved in compliance with M.G.L. c. 21E and the MCP.

A fee of $1,200.00 is assessed if an RAO is filed 120 days after release notification, but before Tier Classification. Therefore, if all remediation work has been completed, you are encouraged to have the RAO submitted promptly to avoid the fee.

Unless otherwise provided by the MassDEP, responsible parties have one year from the initial date notice of a release or threat of release is provided to the MassDEP pursuant to 310 CMR 40.0400 or from the date the MassDEP issues a Notice of Responsibility, whichever occurs earlier, to file with the MassDEP one of the following submittals: (1) a completed Tier Classification Submittal; or (2) a Response Action Outcome Statement. If required by the MCP, a completed Tier I Permit Application must also accompany a Tier Classification Submittal. The deadline for these submittals for this disposal site is July 26, 2008.

**PROCEDURES TO FOLLOW TO UNDERTAKE RESPONSE ACTIONS**

The MassDEP encourages parties having liability under M.G.L. c. 21E to take prompt action in response to releases and threats of release of oil and hazardous materials. By taking prompt action, liable parties may significantly lower cleanup costs and avoid the imposition of, or reduce the amount of, certain permit and/or annual compliance assurance fees payable under 310 CMR 4.00 (e.g., no annual compliance assurance fee is due for Response Action Outcome Statements submitted to the MassDEP within 120 days of the initial date of release notification).

You must employ or engage an LSP to manage, supervise, or actually perform all response actions that you intend to undertake at this disposal site. You may obtain a list of the names and addresses of LSPs by visiting [www.mass.gov/lsp](http://www.mass.gov/lsp), by contacting the Board of Registration of Hazardous Waste Site Cleanup Professionals by telephone at (617) 556-1091, or in person or by mail at One Winter Street, 10th Floor, Boston, Massachusetts 02108.
SUMMARY OF LIABILITY UNDER CHAPTER 21E

As stated in the Notice of Responsibility accompanying this Summary, the MassDEP has reason to believe that you are a Potentially Responsible Party ("PRP") with potential liability under M.G.L. c. 21E, Section 5, for response action costs and damages to natural resources caused by the release and/or threat of release. The MassDEP has identified you as a PRP because it believes you fall within one or more of the following categories of persons made potentially liable by Subsection 5(a):

- any current owner or operator of a site from or at which there is or has been a release or threat of release of oil and/or hazardous material;
- any person who owned or operated a site at the time hazardous material was stored or disposed of;
- any person who arranged for the transport, disposal, storage or treatment of hazardous material to or at a site;
- any person who transported hazardous material to a transport, disposal, storage or treatment site from which there is or has been a release or threat of release of such material; and
- any person who otherwise caused or is legally responsible for a release or threat of release of oil or hazardous material at a site.

For purposes of the MCP, you are considered a Responsible Party ("RP") with actual liability under Chapter 21E if you fall within one of these categories unless you (1) are entitled to a defense under Section 5 or other applicable law, and (2) have reasonably incurred cleanup costs in an amount equal to or greater than any applicable cap on liability under Subsection 5(d).

This liability is "strict," meaning it is not based on fault, but solely on your status as an owner, operator, generator, transporter or disposer. It is also joint and several, meaning that each person who falls within one of these categories may be held liable for all response action costs incurred at the site, regardless of the existence of any other liable parties.

Section 5 provides a few narrowly drawn defenses to liability, including a defense for releases and damages caused by an act of God, an act of war or an act by a third party other than an employee, agent or person with whom the party has a contractual relationship (see Subsection 5(c)); a defense for certain owners of residential property at which the owner maintains a permanent residence (see Subsection 5(h)); and a defense for certain public utilities and agencies of the Commonwealth which own a right-of-way that is a site (see Subsection 5(j)).

You may voluntarily undertake response actions under the MCP without having your liability under Chapter 21E formally adjudicated by the MassDEP. If you do not take the necessary response actions, or fail to perform them in an appropriate and timely manner, the MassDEP is authorized by Chapter 21E to perform the necessary work.

By taking the necessary response actions, you can avoid liability for response action costs incurred by the MassDEP in performing these actions. If you are a RP and you fail to perform necessary response actions at the site, you may be held liable for up to three (3) times all response action costs incurred by the MassDEP and sanctions may be imposed on you for failure to perform response actions required by the MCP.

Response action costs include, without limitation, the cost of direct hours spent by MassDEP employees arranging for response actions or overseeing work performed by persons other than the MassDEP or its contractors, expenses incurred by the MassDEP in support of those direct hours, and payments to the MassDEP's contractors (for more detail on cost liability, see 310 CMR 40.1200: Cost Recovery). The MassDEP may also assess interest on costs incurred at the rate of twelve percent (12%), compounded annually.

Any liability to the Commonwealth under Chapter 21E constitutes a debt to the Commonwealth. To secure payment of this debt, the MassDEP may place liens on all of your property in the Commonwealth under M.G.L. c. 21E, Section 13. To recover this debt, the Commonwealth may foreclose on these liens or the Attorney General may bring legal action against you.

In addition to your potential liability for response action costs and damages to natural resources caused by the release, civil and criminal liability may also be imposed by a court of competent jurisdiction under M.G.L. c. 21E, Section 11, and civil administrative penalties may be assessed by the MassDEP under M.G.L. c. 21A, Section 16, for each violation of Chapter 21E, the MCP or any order, permit or approval issued there under.

If you are an RP and you have reason to believe that your performance of the necessary response actions is beyond your technical, financial or legal ability, you should promptly notify the MassDEP in writing of your inability in accordance with Chapter 21E, Subsection 5(e), and 310 CMR 40.0172. If you assert and demonstrate in compliance therewith that performing or paying for such response action is beyond your ability, Subsection 5(e) provides you with a limited defense to an action by the Commonwealth for recovery of two to three times the MassDEP's response action costs and 310 CMR 40.0172 provides you with a limited defense to the MassDEP's assessment of civil administrative penalties.
URGENT LEGAL MATTER: PROMPT ACTION NECESSARY

Worcester Public Schools
20 Irving St.
Worcester, MA 01609

ATTN: Jeffrey Lassey,
Director of Facilities

RE: CRWSC - Worcester
UST Release @ Doherty High School
299 Highland St.

Release Tracking Number: 2-0016770

NOTICE OF RESPONSIBILITY
M.G.L. c. 21E, 310 CMR 40.0000

Dear Mr. Lassey:

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The MassDEP has identified the property, or portions thereof, as a disposal site that requires the conduct of cleanup or other response actions. The cleanup of disposal sites is governed by Chapter 21E and the MCP. The MassDEP has assigned Release Tracking Number (RTN): 2-0016770 to this disposal site for the release notification received.

The MassDEP also has reason to believe that you (as used in this Notice, "you" refers to Worcester Public Schools) are a party with potential liability for response action costs and damages under Chapter 21E, § 5.
The attached summary is intended to provide you with information about liability under Chapter 21E to assist you in deciding what actions to take in response to this Notice.

You should be aware that you might have claims against third parties for damages, including claims for contribution or reimbursement for the costs of cleanup. Such claims do not exist indefinitely but are governed by laws that establish the time allowed for bringing litigation. The MassDEP encourages you to take any action necessary to protect any such claims you may have against third parties.

**IMMEDIATE RESPONSE ACTIONS**

On July 26, 2007 at 12:15 p.m., CEA, Inc., your representative on your behalf, agreed to take the required IRA.

On July 26, 2007, the MassDEP gave your representative oral approval to conduct the IRA proposed to initiate a timely response to this release. The MassDEP’s oral IRA approval included the following:

- Remove up to 60 cubic yards of #2 fuel oil contaminated soil for proper disposal/recycling off-site at a licensed facility within 30 days of this notification date;

- Collect post-excision samples from the sidewalls and base of excavation and submit to a laboratory for analysis; and

- Install at least one vapor point and monitoring well to determine the extent of potential soil and groundwater impacts from this release within 45 days of this notification date.

You must dispose of any Remediation Waste as defined by the MCP, including, without limitation, contaminated soil and/or debris, generated at the location in accordance with 310 CMR 40.0030. Any Bill of Lading accompanying such waste must bear the seal and signature of a Licensed Site Professional (LSP).

**NECESSARY RESPONSE ACTIONS AND APPLICABLE DEADLINES**

Please be advised that **July 26, 2007** is considered to be the date of release notification. This date will be the baseline for calculating compliance with deadlines contained within the MCP.

The MCP requires responsible parties and any other person undertaking response actions at a disposal site to perform Immediate Response Actions in response to sudden releases, Imminent Hazards and Conditions of Substantial Release Migration. Such persons must continue to evaluate the need for Immediate Response Actions and notify the MassDEP immediately if such a need exists.
NOTICE OF RESPONSIBILITY
Worcester Public Schools; 299 Highland St., Worcester; RTN 2-0016770

As an integral part of the response action(s) for this release, you must also comply with the following:

1. Submit a completed Release Notification & Retraction Form to the MassDEP by September 14, 2007 in accordance with 310 CMR 40.0300 (i.e., within 60 days of the date of release notification).

2. Submit an IRA Plan (310 CMR 40.0420), or IRA Completion Statement (310 CMR 40.0427), or a Response Action Outcome Statement (310 CMR 40.1000) whichever is applicable to the MassDEP by September 14, 2007 (within 60 days of the date of the release notification or the date of service of this Notice, whichever comes first).

No disposal site will be deemed to have had all the necessary and required response actions taken for it unless and until all substantial hazards presented by the release and/or threat of release have been eliminated and a level of no significant risk exists or has been achieved in compliance with M.G.L. c. 21E and the MCP.

A fee of $1,200.00 is assessed if an RAO is filed 120 days after release notification, but before Tier Classification. Therefore, if all remediation work has been completed, you are encouraged to have the RAO submitted promptly to avoid the fee.

Unless otherwise provided by the MassDEP, responsible parties have one year from the initial date notice of a release or threat of release is provided to the MassDEP pursuant to 310 CMR 40.0400 or from the date the MassDEP issues a Notice of Responsibility, whichever occurs earlier, to file with the MassDEP one of the following submittals: (1) a completed Tier Classification Submittal; or (2) a Response Action Outcome Statement. If required by the MCP, a completed Tier I Permit Application must also accompany a Tier Classification Submittal. The deadline for these submittals for this disposal site is July 26, 2008.

PROCEDURES TO FOLLOW TO UNDERTAKE RESPONSE ACTIONS

The MassDEP encourages parties having liability under M.G.L. c. 21E to take prompt action in response to releases and threats of release of oil and hazardous materials. By taking prompt action, liable parties may significantly lower cleanup costs and avoid the imposition of, or reduce the amount of, certain permit and/or annual compliance assurance fees payable under 310 CMR 4.00 (e.g., no annual compliance assurance fee is due for Response Action Outcome Statements submitted to the MassDEP within 120 days of the initial date of release notification).

You must employ or engage an LSP to manage, supervise, or actually perform all response actions that you intend to undertake at this disposal site. You may obtain a list of the names and addresses of LSPs by visiting www.mass.gov/lsp, by contacting the Board of Registration of Hazardous Waste Site Cleanup Professionals by telephone at (617) 556-1091, or in person or by mail at One Winter Street, 10th Floor, Boston, Massachusetts 02108.
NOTICE OF RESPONSIBILITY
Worcester Public Schools; 299 Highland St., Worcester; RTN 2-0016770

If you have any questions, please contact this office at the letterhead address or at (508) 792-7653. The MassDEP requests that you inform your LSP of this Notice. All future correspondence communications regarding the disposal site should reference RTN: 2-0016770.

Sincerely,

[Signature]

SEP 7 2007
Nicholas J. Child
Section Chief, Emergency Response
Bureau of Waste Site Cleanup

NJC/WJP/red
[NOR/ISSUED-ER]
Enclosures: Summary of Liability Under Chapter 21c; DEP Compliance and Assurance Fees

cc: Worcester Fire Department
   Worcester Board of Health
   Worcester City Manager
   Joe Landyn, LSP; CEA, Inc.; 124 Hartwell St., West Boylston, MA 01581
   Patricia Reagan, MassDEP-CERO, OGC
   Database Entry

2-0016770 – Worcester - NOR
SUMMARY OF LIABILITY UNDER CHAPTER 21E

As stated in the Notice of Responsibility accompanying this Summary, the MassDEP has reason to believe that you are a Potentially Responsible Party ("PRP") with potential liability under M.G.L. c. 21E, Section 5, for response action costs and damages to natural resources caused by the release and/or threat of release. The MassDEP has identified you as a PRP because it believes you fall within one or more of the following categories of persons made potentially liable by Subsection 5(a):

- any current owner or operator of a site from or at which there is or has been a release or threat of release of oil and/or hazardous material;
- any person who owned or operated a site at the time hazardous material was stored or disposed of;
- any person who arranged for the transport, disposal, storage or treatment of hazardous material to or at a site;
- any person who transported hazardous material to a transport, disposal, storage or treatment site from which there is or has been a release or threat of release of such material; and
- any person who otherwise caused or is legally responsible for a release or threat of release of oil or hazardous material at a site.

For purposes of the MCP, you are considered a Responsible Party ("RP") with actual liability under Chapter 21E if you fall within one of these categories unless you (1) are entitled to a defense under Section 5 or other applicable law, and (2) have reasonably incurred cleanup costs in an amount equal to or greater than any applicable cap on liability under Subsection 5(d).

This liability is "strict," meaning it is not based on fault, but solely on your status as an owner, operator, generator, transporter or disposer. It is also joint and several, meaning that each person who falls within one of these categories may be held liable for all response action costs incurred at the site, regardless of the existence of any other liable parties.

Section 5 provides a few narrowly drawn defenses to liability, including a defense for releases and damages caused by an act of God, an act of war or an act by a third party other than an employee, agent or person with whom the party has a contractual relationship (see Subsection 5(c)); a defense for certain owners of residential property at which the owner maintains a permanent residence (see Subsection 5(h)); and a defense for certain public utilities and agencies of the Commonwealth which own a right-of-way that is a site (see Subsection 5(j)).

You may voluntarily undertake response actions under the MCP without having your liability under Chapter 21E formally adjudicated by the MassDEP. If you do not take the necessary response actions, or fail to perform them in an appropriate and timely manner, the MassDEP is authorized by Chapter 21E to perform the necessary work.

By taking the necessary response actions, you can avoid liability for response action costs incurred by the MassDEP in performing these actions. If you are a RP and you fail to perform necessary response actions at the site, you may be held liable for up to three (3) times all response action costs incurred by the MassDEP and sanctions may be imposed on you for failure to perform response actions required by the MCP.

Response action costs include, without limitation, the cost of direct hours spent by MassDEP employees arranging for response actions or overseeing work performed by persons other than the MassDEP or its contractors, expenses incurred by the MassDEP in support of those direct hours, and payments to the MassDEP's contractors (for more detail on cost liability, see 310 CMR 40.1200: Cost Recovery). The MassDEP may also assess interest on costs incurred at the rate of twelve percent (12%), compounded annually.

Any liability to the Commonwealth under Chapter 21E constitutes a debt to the Commonwealth. To secure payment of this debt, the MassDEP may place liens on all of your property in the Commonwealth under M.G.L. c. 21E, Section 13. To recover this debt, the Commonwealth may foreclose on these liens or the Attorney General may bring legal action against you.

In addition to your potential liability for response action costs and damages to natural resources caused by the release, civil and criminal liability may also be imposed by a court of competent jurisdiction under M.G.L. c. 21E, Section 11, and civil administrative penalties may be assessed by the MassDEP under M.G.L. c. 21A, Section 16, for each violation of Chapter 21E, the MCP or any order, permit or approval issued there under.

If you are an RP and you have reason to believe that your performance of the necessary response actions is beyond your technical, financial or legal ability, you should promptly notify the MassDEP in writing of your inability in accordance with Chapter 21E, Subsection 5(e), and 310 CMR 40.0172. If you assert and demonstrate in compliance therewith that performing or paying for such response action is beyond your ability, Subsection 5(e) provides you with a limited defense to an action by the Commonwealth for recovery of two to three times the MassDEP's response action costs and 310 CMR 40.0172 provides you with a limited defense to the MassDEP's assessment of civil administrative penalties.
Via First Class Mail

May 21, 2008

Mayor Konstantina B. Lukes
City of Worcester
206-455 Main Street
Worcester, Massachusetts 01608

RE: Response Action Outcome Statement
Doherty High School
299 Highland Street
Worcester, Massachusetts
MassDEP RTN: 2-16770
CEA Ref. File #: 6514-07

Dear Mayor Lukes:

This letter serves as official notification that a Response Action Outcome (RAO) for the above-referenced site has been filed with the Massachusetts Department of Environmental Protection (MassDEP). Corporate Environmental Advisors, Inc. submitted these documents to the MassDEP on behalf of the City of Worcester. The RAO summarizes all of the assessment and remediation activities conducted at the site relating to the 72-hour MassDEP reportable condition which occurred on July 23, 2007.

The RAO may be obtained and/or viewed at the Central Region MassDEP located at 627 Main Street Worcester, Massachusetts 01608, Massachusetts. MassDEP Central Regional Office can be contacted at 508-792-7650. If you should have any questions regarding this submittal, please do not hesitate to contact the undersigned.

Sincerely,

CORPORATE ENVIRONMENTAL ADVISORS, INC.

Dean Bebis
Environmental Scientist I

Cc: Jeffery Lassey City of Worcester Public Schools, 20 Irving Street, Worcester, Massachusetts
MassDEP Central Regional Office, Worcester, Massachusetts
CLASS A-2
RESPONSE ACTION OUTCOME
STATEMENT

Doherty High School
299 Highland Street
Worcester, Massachusetts 01602
Release Tracking Number 2-16770

May 2008

Prepared for:
WORCESTER PUBLIC SCHOOLS
20 Irving Street
Worcester, Massachusetts 01608

Prepared by:
CORPORATE ENVIRONMENTAL ADVISORS, INC.
127 Hartwell Street
West Boylston, MA 01583
(508) 835-8822

CEA File No. 6514-07-11
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CLASS A-2 RESPONSE ACTION OUTCOME STATEMENT
Fuel Oil Release
Doherty High School
299 Highland Street
Worcester, Massachusetts
MA DEP RTN 2-16770

1.0 INTRODUCTION

On behalf Worcester Public Schools (WPS) Corporate Environmental Advisors, Inc. (CEA) presents this Class A-2 Response Action Outcome (RAO) Statement for the above-referenced Site, prepared in accordance with 310 CMR 40.1035 of the Massachusetts Contingency Plan (MCP).

The location of the property is illustrated on the United States Geological Survey (USGS) Worcester North, Massachusetts Topographic Quadrangle included as Figure 1, Site Locus Map.

On July 23 and 25, 2007, CEA observed the removal of a 1,000 gallon and 10,000 gallon underground storage tank (UST) at Doherty High School. A 72-hour reportable condition related to the USTs removal was reported to the Massachusetts Department of Environmental Protection (MassDEP) on July 26, 2007. Upon notification of the 72-hour reporting condition, the MassDEP assigned Release Tracking Number (RTN) 2-16770 to the Site. A Release Notification Form (RNF) was issued by MassDEP on August 29, 2007 and an Immediate Response Action (IRA) Plan was submitted to MassDEP on October 1, 2007 detailing the USTs removal, excavation activities and proposed assessment activities. An IRA Status Report was submitted to MassDEP on November 21, 2007.

An IRA Transmittal Form (BWSC-105) for the Completion of the IRA and RAO Transmittal Form (BWSC-104) are included with this submittal.

1.1. Relevant Contacts

The entity assuming responsibility for IRA activities at the Site is:
Worcester Public Schools
20 Irving Street
Worcester, Massachusetts 01608
Phone Number: (508) 799-3141

The Licensed Site Professional for the Site is:
Mr. Joseph Landyn, LSP# 1217
Corporate Environmental Advisors, Inc.
127 Hartwell Street
West Boylston, Massachusetts 01583
Phone Number: (508) 835-8822

2.0 BACKGROUND

2.1. Site Description

The property is located at 299 Highland Street, in Worcester Massachusetts and is used as a High School. The property is owned by the City of Worcester. Pleasant Street abuts the property to the west. Highland Street abuts the property to north followed by residential properties. The school is surrounded by vacant land to the east, west and south. Commercial properties abut the property ¼ mile to the south of the Site. Figure 1 shows the property location with respect to surrounding topography and surface features.
Municipal water, sewer, telephone, and electricity service the Site. The building is heated by natural gas. *Figure 2, Site Layout Map,* depicts the property boundaries.

The Universal Transverse Mercator (UTM) Coordinates and Latitude and Longitude are:

<table>
<thead>
<tr>
<th>UTM Coordinates</th>
<th>Latitude and Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>N 4683535 M</td>
<td>42° 16' 09.65&quot; N</td>
</tr>
<tr>
<td>E 267375 M</td>
<td>71° 49' 14.54&quot; W</td>
</tr>
</tbody>
</table>

### 2.2. Potential Receptors

There are no natural resource areas, such as surface water bodies, located at the Site. The nearest mapped surface water body is an unnamed pond located approximately ¼ mile to the east of the Site.

Mixed commercial and residential properties abut the property ¼ mile to the south of the Site, several of which contain basements. Residential properties abut the Site to the North, several of which contain basements. There are no municipal drinking water supply wells within ¼ mile of the Site. There are no known public or private drinking wells within 500-feet of the Site. The Site is not located within an Interim Wellhead Protection Area (IWPA), a Zone II, or a Zone A of a Class A - Surface Water Body. The Site is not located within an area containing a Potentially Productive Medium or High Yield Aquifer.

A Medium Yield Non-Potential Drinking Water Source Area is located approximately ¼ mile southeast of the Site. Several Protected Open Space parcels are located approximately 500 feet and approximately ½ mile to the south and southwest and ¼ mile to the northeast of the Site. There is a Federal Emergency Management Association (FEMA) 100 year flood plain located approximately ½ mile to the south of the Site.

There are no Areas of Critical Environmental Concern (ACEC) located at the Site. The Site is not located within a Natural Heritage & Endangered Species Program (NHESP) wetlands habitat. *Figure 3, Site Scoring Map,* depicts the Site in relation to MassDEP Bureau of Waste Site Cleanup (BWSC) information.

The Site is a school. Approximately 1,500-1,600 students from grades 9-12 and 93 teachers attend the school. The building has no basement. The bottom or first floor known as the "boiler and maintenance room" of the building contains storage space, a generator, furnaces and the water boilers. Only School Plant maintenance personnel are permitted in this area.

### 2.3. Release History and Regulatory Status

On July 23 and 25, 2007, CEA observed the removal of one 1,000 gallon and one 10,000 gallon single-walled steel USTs at Doherty High School. The UST removals were conducted by DB Environmental of Hanson, Massachusetts. The 1,000 gallon UST was used to store diesel and the 10,000 gallon UST was used to store #2 fuel oil. The approximate locations of the former USTs are depicted on *Figure 2.* The USTs were empty prior to removal. Upon removal, the USTs and the UST grave were inspected for corrosion and evidence of leakage. Stained soil was observed in the northwest corner of the UST grave.

The UST removal was approved by the City of Worcester Fire Department under a storage tank removal permit. Fire Inspector Thomas Spencer was present during the USTs removal.

Following the removal of the USTs, soil samples were obtained from the bottom and side walls of the excavation. The soil samples were screened for the presence of total organic vapors (TOVs) with a photo-ionization detector (PID) using the MassDEP jar headspace technique. PID readings as high as 200 parts per million by volume (ppmV) were obtained at the bottom of the UST excavation and 245 ppmV beneath the vent pipe of the UST.
On July 24, 2007, an asbestos pipe containing the oil fill supply lines of the USTs was removed and disposed of by Eagle Environmental of Groton, Massachusetts. MassDEP was notified on the same day.

2.3.1 Requirement of IRA

Pursuant to 310 CMR 40.0313(2), a 72-hour release notification was made to the MassDEP because a headspace reading over 100 ppmv was obtain from a soil sample collected within 10 feet of the exterior wall of the UST and greater than 2 feet below grade surface (bgs). The Site met this requirement on July 23, 2007, when TOVs were recorded as high as 200 ppmv in soil samples collected form the bottom of the excavation during the removal of the 1,000 gallon UST. An IRA was required for this release per section 310 CMR 40.0412(2) of the Massachusetts Contingency Plan (MCP), which states:

Immediate Response Actions shall be conducted at sites where a release or threat of release of oil and/or hazardous material has occurred which requires notification to the Department under "72 Hour" notification provisions of 310 CMR 40.013 or 40.0314.

The release was reported to MassDEP on July 26, 2007 at 12:15 pm and MassDEP orally approved the following IRA response actions:

- The removal of up to 60 cubic yards of #2 fuel oil contaminated soil for proper disposal/recycling off-site at a licensed facility within 20 days of the notification date;
- Collect post-exavation samples from the sidewalls and base of excavation and submit to a laboratory for analysis; and
- Install at least one vapor point and monitoring well to determine the extent of potential soil and groundwater impacts from the release within 45 days of notification.

A RNF was submitted to the MassDEP on August 29, 2007. The IRA plan was submitted to the MassDEP on October 1, 2007. The primary objective of the IRA Plan was to document the response actions approved by MassDEP to address the release, assess the nature and extent of any fuel oil or diesel impacts to soil and groundwater. MassDEP issued a Notice of Responsibility (NOR) to WPS on September 7, 2007.

3.0 SUMMARY OF PRELIMINARY RESPONSE ACTIONS

3.1. Soil Removal

Between July 23 and July 25, 2007, approximately 62 tons of contaminated soil was excavated from the UST grave and stock piled on and covered by 6 mm polyethylene plastic sheeting. The stockpiled soil was sampled for disposal parameters and later transported from the Site to an off-site disposal facility. On August 17, 2007, approximately 62 tons of impacted soil was transported by DB Environmental personnel under a MassDEP Bill of Lading (BOL) to Aggregate Industries in Shrewsbury, Massachusetts. A copy of the BOL was submitted with the IRA Plan on October 1, 2007.

3.2. Soil Sampling

Six confirmatory soil samples were obtained between 7 and 14 feet bgs from the side walls and the bottom of the UST grave between July 23 and 25, 2007. The samples were submitted under Chain of Custody protocol to Geolabs of Braintree, Massachusetts. The soil samples were analyzed for diesel range organics via extractable petroleum hydrocarbons (EPH) methods. Samples labeled Bottom-1, WW-1, NW-3, EW-1, and Bottom-2 were also analyzed for volatile petroleum hydrocarbons (VPH). The loose unconsolidated nature of the soil surrounding the USTs created an unsafe
condition for workers to collect a soil sample from the south wall of the excavation. However, a TOV sample of non-detect was obtained with a PID at 4 feet bgs against the south wall of the UST grave.

4.0 ENVIRONMENTAL ASSESSMENT

Based on the results of soil samples and excavation observations, additional assessment activities were conducted to delineate the extent of fuel oil impact and to determine if further remediation of these impacts was necessary to achieve a level of No Significant Risk. The following subsections summarize the IRA assessment activities conducted to further assess the Site.

4.1. Monitoring Well Installation

On December 4, 2007, two soil borings were advanced by a hollow stem auger to depths ranging from 17 feet to 25 feet bgs in the immediate vicinity of the former USTs. The soil borings were completed as monitoring wells (MW-1 and MW-2) to asses groundwater. Details of the soil characteristics and monitoring well construction are included in the soil borings logs, which are attached as Appendix A. The locations of the monitoring wells are depicted in Figure 2. TOV measurements were recorded for soil samples collected from borings for monitoring wells MW-1 and MW-2 at elevations just above the water table. TOV measurements below instrument detection limits were observed in all of the soil samples. Soil samples were collected for laboratory analysis from monitoring well MW-1 (B-1/MW-1) from 12 feet to 14 feet bgs and from monitoring well MW-2 (B-2/MW-2) from 15 feet to 17 feet bgs. Groundwater was observed in the field at approximately 15 feet bgs. Each monitoring well was developed by pumping after installation to remove silts from the well.

The soil samples were properly preserved, stored on ice and transported to Spectrum laboratories (Spectrum) of Agawam Massachusetts for EPH and VPH analysis via MassDEP Methods. Laboratory analytical results are further discussed in Section 5.1.

4.2. Monitoring Well Gauging

A monitoring well gauging event occurred on March 18, 2008. During the gauging event, depth to water was gauged from the top of each well casing with an electronic interface probe. On March 18, 2008, depth to water ranged from 12.76 feet in MW-1 to 14.80 feet in MW-2. Based on the topography and soil characteristics groundwater flow direction is to the north. Groundwater gauging data is further summarized in the table below:

<table>
<thead>
<tr>
<th>WELL ID</th>
<th>MONITORING DATE</th>
<th>WATER DEPTH</th>
<th>WELL DEPTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-1</td>
<td>3/18/2008</td>
<td>12.76</td>
<td>21.16</td>
</tr>
<tr>
<td>MW-2</td>
<td>3/18/2008</td>
<td>14.80</td>
<td>20.51</td>
</tr>
</tbody>
</table>

4.3. Groundwater Sampling

On March 18, 2008, a groundwater sampling event occurred. Monitoring wells MW-1 and MW-2 were sampled using dedicated disposable polyethylene bailers. Prior to sampling, the monitoring wells were purged of approximately three well volumes to ensure the collection of representative groundwater samples. Samples were properly preserved, stored in an iced cooler, and submitted to Spectrum under Chain-of-Custody protocol for VPH and EPH analysis using MassDEP Methods. The laboratory analytical results are further discussed in Section 5.2.
4.4. Vapor Point Installation and Monitoring

On March 18, 2008, CEA personnel advanced two soil borings inside the Doherty High School boiler and maintenance room to assess soil quality beneath the boiler room floor and to install sub-slab vapor monitoring points. The soil borings were advanced using an electric vibratory hammer drill to a depth of 18 inches bgs. Upon completion of soil boring advancement, each soil boring was completed as a vapor monitoring point, VP-1 and VP-2, to monitor petroleum in sub-slab soil. During drilling, soil was evaluated for the presence of oil by visual and olfactory observations. Vapor point construction is detailed in the boring logs for VP-1 and VP-2 is included in Appendix A.

The soil vapor points located at the Site were screened on March 18, 2008. Each soil vapor point was purged of approximately three liters of air prior to screening. Following purging, an air sample was collected in a Tedlar bag and screened for TOVs with a 10.6 eV Mini-Rae brand PID using the MassDEP jar headspace method. The soil screening PID results ranged from 1.3 ppmv to 5.2 ppmv. The vapor point screening results are discussed in further detail in Section 5.3.

5.0 NATURE AND EXTENT OF IMPACTS

5.1. Soil

Laboratory analytical results from the soil sampling conducted between July 23 and 25, 2007, indicate several EPH compounds were detected above laboratory reporting limits in samples Bottom-1 (bottom), EW-1 (east) and NW-2 (north) of the excavation. Several VPH compounds were detected above the applicable MCP Standards in Bottom-1 (bottom) of the excavation. All other concentrations detected at sample locations WW-1 (west), NW-3 (North) and Bottom-3 (bottom) were below RSC-1 and/or the applicable Method 1 Standards.

Laboratory analytical results from the soil samples collected on December 4, 2007 indicate concentrations of C_{19}-C_{28} aliphatics and phenanthrene exceeded the laboratory reporting limits in sample B-1/MW-1. All other concentrations detected at sample location B-1/MW-1 and at B-2/MW-2 were below laboratory reporting limits. Laboratory analytical results are further summarized in Table 1, Soil Analytical Results – VPH and EPH. Copies of the soil laboratory analytical reports are attached as Appendix B.

Based on the laboratory analytical results, residual petroleum impacts to soils are limited to the immediate vicinity of the former USTs. Limited residual EPH carbon fraction impacts were detected along the bottom, east wall and north wall of the excavation. These samples were collected from 7 to 10 feet bgs. During excavation activities, accessible soil was removed. Based on the residual concentrations observed after excavation, it is not anticipated that these impacts extend significantly beyond the limit of the excavation. Additionally, PID screening of the soil samples collected from MW-1 and MW-2 were below instrument detection limits.

Soil observed in VP-1 and VP-2, inside the boiler and maintenance room at 18 inches bgs did not exhibit any visual or olfactory evidence of petroleum impacts. Furthermore, PID screening of soil vapor at VP-1 and VP-2 indicated very low concentrations of TOVs in soil gas.

5.2. Groundwater

Table 2, Groundwater Analytical Results - VPH and Table 3, Groundwater Analytical Results - EPH presents VPH and EPH analytical results for groundwater. VPH and EPH compounds were not detected above laboratory reporting limits in any monitoring well. Based on topography and field observations, groundwater likely flows to the north. Monitoring well MW-1 was installed downgradient of the former USTs. If groundwater was impacted by petroleum released from the USTs, concentrations...
above laboratory method detections would likely have been observed in groundwater samples collected from monitoring well MW-1. Copies of the groundwater analytical results are attached in Appendix C.

5.3. Air

The TOV readings at both soil vapor point sampling locations were below the 10.6 eV PID threshold values listed in Table 4-9 of MassDEP Policy #WSC-02-411, Implementation of the MassDEP VPH/EPH Approach. Groundwater at the Site was not impacted by the petroleum release and residual petroleum hydrocarbons in soil do not extend to the area beneath the building. In accordance with 310 CMR 40.0942(d), soil containing volatile organic compounds in vadose zone soil adjacent to an occupied structure has the potential to result in significant indoor air concentrations. The soil from soil sample Bottom-1 contains concentrations of VPH compounds. This soil is located greater than six horizontal feet from the site building. Therefore, the soil does not have the potential to impact the indoor air. Additionally, soil sample NW-3 is located closer to the site building and does not contain VPH compounds. Therefore, indoor air impacts to the on-site building are unlikely. The soil sample locations are visible in Figure 2. The Level 1 soil gas screening results are summarized in the following table:

<table>
<thead>
<tr>
<th>Vapor Point ID</th>
<th>Sample Date</th>
<th>PID Reading (ppmv)</th>
<th>Threshold Values (ppmv)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP-1</td>
<td>3/18/2008</td>
<td>1.4, 1.3</td>
<td>7.0</td>
</tr>
<tr>
<td>VP-2</td>
<td>3/18/2008</td>
<td>4.3, 5.2</td>
<td>7.0</td>
</tr>
</tbody>
</table>

*ppmv indicates parts per million by volume.*

5.4. Disposal Site Boundary

Based on the recent soil and groundwater assessment data collected for the Site, for purposes of this Class A-2 RAO, the disposal site boundary is located in the area of the former USTs located in the central courtyard of the High School. The disposal site boundary is depicted in Figure 2, Site Layout.

6.0 ELIMINATION OF UNCONTROLLED SOURCES

Pursuant to 310 CMR 40.1003(5), there are no leaking underground or aboveground storage tanks, vessels, drums or other such containers; there are no non-aqueous phase liquids; or other uncontrolled sources that would likely cause an increase in OHM concentrations at the Site. Response actions have been conducted at the Site to remove petroleum-impacted soils from the Site and to reduce petroleum concentrations in soil and groundwater. There are no uncontrolled sources of OHM known to exist at the Site.

7.0 EVALUATION OF IMMINENT HAZARDS, CRITICAL EXPOSURE PATHWAYS AND SUBSTANTIAL RELEASE MITIGATION CONDITIONS

7.1. Evaluation of Imminent Hazards

Pursuant to 310 CMR 40.0321 of the MCP, an Imminent Hazard Evaluation shall be performed at any Site where a release or threat of release could be an Imminent Hazard, which includes:

- The presence of oil and/or hazardous (OHM) vapors within buildings, structures, or underground utility conduits at a concentration equal to or greater than 10% of the Lower Explosive Limit.
• A release to the environment of reactive or explosive material which threatens human health or safety;

• A release to a roadway that endangers public safety;

• A release to the environment of OHM which poses a significant risk to human health when present even for a short period of time;

• A release to the environment of OHM which produces immediate or acute adverse impacts to freshwater or saltwater fish populations;

• Concentrations of contaminants identified in private drinking water supply wells at concentrations greater than or equal to ten times the category RCGW-1 reportable concentration;

• Concentrations of arsenic, cadmium, chromium, cyanide, mercury, methyl mercury and PCBs detected in surficial soil above their imminent hazard concentrations within 500 feet of a residential dwelling, school, playground, recreation area or park, unless access by children is controlled or prevented; or

• A release to the environment for which estimated long-term risk levels associated with current exposures are greater than ten times the Cumulative Risk Limits in 310 CMR 40.0993(6).

No conditions that pose or could pose an Imminent Hazard to health, safety, public welfare, and/or the environment have been identified at this Site. Each of these scenarios were reviewed and evaluated. Two vapor points were installed to evaluate the potential for volatile organic vapors to migrate to indoor air from soil and groundwater. Low levels of TOVs were detected with the PID from VP-1 and VP-2, located in the floor of the boiler room. These detections are below the threshold values listed in Table 4-9 of MassDEP Policy #WSC-02-411, Implementation of the MassDEP VPH/EPH Approach. Groundwater located at the Site was not impacted by the petroleum release and soil located adjacent to the site building does not contain VPH compounds. Therefore, indoor air impact is unlikely. Additionally, based on the location of residual soil concentrations, lack of groundwater impact and soil gas testing, indoor air impact is unlikely. Therefore, no Imminent Hazards exist at the Site.

7.2. Evaluation of Critical Exposure Pathways

Pursuant to the MCP, Critical Exposure Pathways (CEP) means those routes by which oil and/or hazardous materials released at a disposal Site are transported, or are likely to be transported, to human receptors via:

• Vapor-phase emissions of measurable concentrations of oil and/or hazardous materials into the living or working space of a pre-school, daycare, school or occupied residential dwelling; or

• Ingestion, dermal absorption or inhalation of measurable concentrations of oil and/or hazardous materials from drinking water supply wells located at and servicing a pre-school, daycare, school or occupied residential dwelling.

There are no public or private water supply wells located on or near the Site. Occupied residential dwellings are located in the vicinity of the Site but groundwater and soil sampling indicate no offsite impacts have occurred. The Site is located at a school where children frequent. Based on Site use and laboratory analysis performed on the soil samples and groundwater samples collected immediately adjacent to the former USTs and soil gas screening, the above conditions do not exist. At this time, there is no reason to believe a CEP exists at the Site.
7.3. Evaluation of Substantial Release Migration Conditions

According to 310 CMR 40.0006 of the MCP, a condition of Substantial Release Mitigation (SRM) is defined as:

1. Releases that have resulted in the discharge of separate-phase oil and or hazardous material to surface waters, subsurface structures, or underground utilities or conduits;

2. Releases to the groundwater surface or to the vadose zone that, if not promptly removed or contained, are likely to significantly impact the underlying groundwater, or significantly exacerbate an existing condition of groundwater pollution;

3. Releases to the groundwater that have migrated or are expected to migrate more than 200 feet per year;

4. Releases to the groundwater that have been or are within one year likely to be detected in a public or private water supply well;

5. Releases to the groundwater that have been or are within one year likely to be detected in a surface water body, wetland, or public water supply reservoir; or

6. Releases to the groundwater that have resulted or are within one year likely to result in the discharge of vapors into school buildings or occupied dwellings.

There is no reason to believe a condition of SRM exists because groundwater was not impacted in the release area.

8.0 SUMMARY OF METHOD 1 RISK CHARACTERIZATION

A Method 1 Risk Characterization was performed to characterize the risk to human health, public welfare, safety and the environment at the disposal site in accordance with 310 CMR 40.0970, 40.0960 and 40.0994. A Method 1 was selected for the site since OHM impacts are limited to soil, pursuant to Sections 40.0942(2) and 40.0970 of the MCP. The Method 1 is attached at Appendix D. The outcome of the Method 1 Risk Characterization is summarized below.

Two VPH carbon fractions were detected in discrete soil samples collected at the disposal site at concentrations in excess of the current and future applicable Method 1 Standards. However, EPCs were developed for these fractions and they were all below the applicable Method 1 Soil Standards. In addition, no compounds which have the potential to bioaccumulate have been identified within the top 2 feet of soil, and all current OHM concentrations in groundwater are below the applicable Method 1 GW-2 and GW-3 Standards. Thus, a condition of No Significant Risk to human health and the environment has been achieved for all soil and groundwater-related exposures under current and future site conditions.

No soil or groundwater OHM concentrations exceed the MCP Upper Concentration Limits. Thus, a condition of No Significant Risk to public welfare exists at the site. In addition, a condition of No Significant Risk to safety exists at the site.

9.0 FEASIBILITY OF RESTORATION TO BACKGROUND
Section 40.1020 of the MCP requires that a background feasibility evaluation be conducted consistent with the criteria established in 310 CMR 40.0860 for all sites where a remedial action has been taken to achieve a Class A Response Action Outcome. A background feasibility evaluation is included in this Class A-2 RAO which demonstrates that further response actions are not appropriate for the Site. The evaluation has been prepared in accordance with the MCP and MassDEP’s “Guidance for Conducting Feasibility Evaluations under the MCP”, Final Policy #WSC-04-160 (MassDEP, 2004). Pursuant to the MCP and MassDEP Policy #WSC-04-160, “background” refers to those levels of OHM that would exist in the absence of the disposal site, which are either:

- Ubiquitous and consistently present in the environment at and in the vicinity of the disposal site of concern, and attributable to geologic or ecological conditions, or atmospheric deposition or industrial process or engine emissions;
- Attributable to coal ash or wood ash associated with fill material;
- A release to groundwater from a public water supply system; or
- Petroleum residues that are incidental to the normal operation of motor vehicles.”

EPH and VPH compounds continue to be present in soils in the area of the former diesel and fuel oil diesel USTs at concentrations above laboratory reporting limits which would not be expected in the absence of the disposal site. The Method 1 Risk Characterization has demonstrated that the residual concentrations do not pose an unacceptable level of risk to human health, public welfare or the environment under current and/or future unrestricted use conditions. Additionally, further soil removal may compromise the structural integrity of the building.

MassDEP Final Policy #WSC-04-160 establishes a series of criterion for determining the conditions when further efforts to reduce OHM are warranted bases on an evaluation of benefit versus cost, as indicated below:

- Section 2.0(b) states that response actions to achieve background are warranted unless the costs of conducting, or risk resulting from the remedial action would not be justified by the benefits, considering such factors as potential damage to the environment, health, costs of environmental restoration, long-term operation and maintenance costs and nonpecuniary value.
- Section 3.0(a) states the incremental cost of conducting the remedial action alternative is substantial and disproportionate to the incremental benefit of risk reduction, environmental restoration, and monetary and non-pecuniary values.
- Section 9.3.2.3 states that achieving or approaching background can be deemed infeasible for degradable/non-persistent contaminants regardless of media, except for small quantities of petroleum-impacted soil considered accessible.

Considering that a condition of No Significant Risk to human health and the environment has been achieved at the Site with respect to the limited presence of residual OHM in soil, the level of additional risk reduction that would be achieved by reducing the residual impacts at the disposal site to background levels is minimal. Due to the non-persistent nature of the residual impacts at the Site (petroleum-based), and the location of the soil at depth greater than 10 feet, the benefits of additional remedial actions to achieve or approach background for these degradable/non-persistent contaminants would be insufficient to justify the costs of those actions.
In summary, in accordance with MassDEP Final Policy #WSC-04-160, further response actions designed to achieve background conditions at the Site are categorically infeasible.

10.0 DATA QUALITY EVALUATION

10.1 Data Usability Assessment

The MassDEP’s “Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data in Support of Response Actions Conducted Under the MCP” (WSC-CAM-VII-A, 1/27/2003) and 310 CMR 40.0017(3)(I) requires that all response action submittals provide details on any known conditions or findings which may affect the validity of analytical data, including unsatisfactory analytical results obtained on QA/QC blank, duplicate, surrogate or spiked samples. In accordance with the above quality assurance/quality control (QA/QC) reporting requirement, the recent Site assessment laboratory analytical reports were reviewed to identify QA/QC issues associated with the data that may alter or affect the conclusions of the RAO and/or Risk Characterization.

Specifically, the soil and recent groundwater data were reviewed with respect to precision, accuracy and compliance with the requirements of the MassDEP’s Compendium of Analytical Methods (CAMs). Precision pertains to the reproducibility of analytical results. Accuracy pertains to the degree of agreement of a sample measurement with a known reference value, and is usually indicated by acceptability of surrogate recoveries. Compliance with CAM requirements is used to assess whether Presumptive Certainty is likely to have been achieved for the data. Note that with the exception of the recent groundwater data, all laboratory reports discussed below were provided in prior MassDEP submittals.

A review of soil sampling results for precision indicates that the analytical results are generally consistent throughout the laboratory report(s) demonstrating a high degree of precision. In reviewing the July 24 and 25, 2007 and December 4, 2007 soil analytical results for accuracy, QA/QC deficiencies were noted by GeoLabs and by Spectrum. Concerning the July 25, 2007 laboratory data, GeoLabs noted that recovery for naphthalene was outside the recovery limits in sample LCS-7729. Concerning the December 4, 2007 laboratory data, Spectrum noted that sample B-1/MW-1 was not field preserved to within the 1:1 weight to volume ratio as recommended by SW846 methods 5030 and 5035. In no cases did GeoLabs or Spectrum reject soil data or were deficiencies noted that would alter the RAO findings. Presumptive certainty therefore exists for the soil data.

Referring to the groundwater laboratory analytical results, a qualitative evaluation of precision indicates that the sampling events conducted at the Site in March of 2008, demonstrates a high degree of precision has been achieved for the groundwater data. In reviewing the March 2008 groundwater results for accuracy, the groundwater laboratory report(s) indicated that all QA/QC requirements of the VPH and EPH methods were followed, no significant modifications were made to the method, however, not all performance/acceptance standards of the required QA/QC procedures were achieved. Sample 8032143-DUP1 contained 2, 5 dibromotoluene outside the surrogate recovery control limits. The data was accepted based on valid recovery of the remaining surrogates. Presumptive certainty therefore exists for the groundwater data.

10.2 Data Representativeness

Site history, release history and observations made during sampling events are consistent with the nature and level of OHM identified in the analytical data. The soil sampling locations at the Site, when combined with Site observations and field screening evidence, are adequate to define the nature and extent of the residual OHM impacts to soils. Groundwater samples collected in March of 2008 indicate that groundwater impacts did not occur from the release. Groundwater sampling locations are appropriate.
with respect to the historical release area or wells were installed in close proximity to the UST release area. Based on the degree of sampling conducted at the Site, the extent of OHM impacts have been reasonably defined and the data is considered representative. In addition, all soil and groundwater laboratory analytical data have been accepted by the laboratory and the laboratory reporting limits meet the requirements of the project.

11.0 MANAGEMENT OF REMEDIATION WASTE

Remediation wastes generated during the MCP response actions were managed in accordance with MassDEP policies and guidance, as described in prior MassDEP submittals. Complete details, including copies of the BOL are provided in the IRA Plan submitted October 1, 2007. A brief summary of remedial waste management activities is provided below:

- On July 23, 2007, approximately 980 gallons of waste petroleum oil was removed from the USTs and transported to Paradise Heating Inc in Ossining, New York.

- On July 24, 2007, an asbestos pipe containing the oil fill supply lines of the USTs was removed and disposed of by Eagle Environmental of Groton, Massachusetts. The MassDEP was notified on the same day.

- The removed USTs were transported by DB Environmental personnel to the William Reisner Corporation of Clinton Massachusetts for disposal on July 25, 2007. Copies of the tank disposal receipts are located in the IRA Plan.

- On August 17, 2007, approximately 62 tons of contaminated soil was removed form the Site and transported to Aggregate Industries of Shrewsbury, Massachusetts, by DB Environmental personnel under a Massachusetts BOL. Copies of the BOL and waste manifest are included in IRA Plan.

- Pursuant to Section 310 CMR 40.0045(7) of the MCP, water generated during groundwater sampling activities was discharged at the point of withdrawal.

No other remedial wastes have been generated during the response actions completed at the Site.

12.0 IRA COMPLETION STATEMENT

Neither an Imminent Hazard, pursuant to 310 CMR 40.0321 and 310 CMR 40.0426, nor a condition of Substantial Release Migration as defined in 310 CMR 40.0006 currently exists on-site. The release did not produce immediate or acute adverse impacts to freshwater water bodies and the environment, produce readily apparent effects to human health, or endanger public roadways and public safety.

Site conditions have stabilized and no significant risk to human receptors is apparent at this time. All remediation waste generated because of the IRA condition has been removed.

All activities were conducted under the supervision of a Licensed Site Professional, in accordance with verbal and written approval issued by MassDEP. Activities conducted as part of this IRA at the Site are complete and have been performed in accordance with 310 CMR 40.0410.

13.0 RESPONSE ACTION OUTCOME STATEMENT

The following conclusions have been reached for the disposal site identified at 299 Highland Street property located in Worcester, Massachusetts:
1) A condition of No Significant Risk of harm to health, safety, public welfare, and the environment exists for all current and future Site activities and uses based on the performance of a Method 1 Risk Characterization.

2) It is categorically infeasible to reduce such OHM levels to background conditions.

3) No additional response actions are required to achieve or maintain a condition of No Significant Risk at the Site. No Activity and Use Limitations (AUL) is required to maintain a condition of No Significant Risk.

4) A Class A-2 RAO Statement is appropriate for this Site since a Permanent Solution has been achieved, but the level of oil and hazardous material in the environment has not been reduced to background. The disposal site and RAO boundary is shown on Figure 2.

14.0 PUBLIC INVOLVEMENT

Copies of the letters that were sent to the City of Worcester Chief Municipal Officer and Board of Health informing them of the availability of this Class A-2 RAO are included in Appendix E.

15.0 RAO FEE

The RAO Compliance Fee of $1,200 will be submitted by the City of Worcester. A copy of the check will be forwarded to the MassDEP Central Regional Office.

16.0 REFERENCES


TABLES
# Table 1

Soil Analytical Results - VPH and EPH

Worcester Public Schools
Doherty High School
299 Highland Street, Worcester MA

<table>
<thead>
<tr>
<th>EPH Compounds</th>
<th>Reportable Concentrations (mg/kg)</th>
<th>Method 1 Cleanup Standards (mg/kg)</th>
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<th>WW-1</th>
<th>NW-3</th>
<th>EW-1</th>
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<th>NW-2</th>
<th>B-1/MW-1</th>
<th>B-2/MW-2</th>
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<td>Depth</td>
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<td>Depth</td>
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**Notes**

All concentrations are in micrograms per liter (µg/L)

< indicates compound was below the laboratory reporting limit

**Bold** indicates concentration exceeds the Method 1 RCS-1

Shaded indicates concentration exceeds the Method 1 S-1(GW-2-3 Standard

**Underlined** indicates concentration exceeds MCP Upper Concentration Limit

<table>
<thead>
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<th>VPH - Volatile Petroleum Hydrocarbons</th>
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<tr>
<td>MTBE - Methyl tert-butyl ether</td>
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<td>Ref® 310 CMR 40 (4/3/2008)</td>
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### Table 2
Groundwater Analytical Results - VPH
Worcester Public Schools
Doherty High School
Worcester, MA

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<th>Method 1 Standards¹</th>
<th>C5-C8 Aliphatics</th>
<th>C9-C12 Aliphatics</th>
<th>C9-C10 Aromatics</th>
<th>Benzene</th>
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### Notes
All concentrations are in micrograms per liter (µg/L)

< indicates compound was below the laboratory reporting limit

**Bold** indicates concentration exceeds the Method 1 GW-2 Standard

Shaded indicates concentration exceeds the Method 1 GW-3 Standard

*Underlined* indicates concentration exceeds MCP Upper Concentration Limit

VPH - Volatile Petroleum Hydrocarbons

MTBE - Methyl tert-butyl ether

Ref³ 310 CMR 40 (4/3/2006)
FIGURES
APPENDIX A
SOIL BORING LOGS
<table>
<thead>
<tr>
<th>Depth (feet BGS)</th>
<th>Sample ID</th>
<th>Recovery (inches)</th>
<th>Detail</th>
<th>Color</th>
<th>Soil Description</th>
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<tr>
<td>10</td>
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<td>20</td>
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<tr>
<td>25</td>
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<td></td>
<td></td>
<td></td>
<td>Refusal at 21.5'</td>
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**Bottom of well 21.5'**

### Miscellaneous Data

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<td>Trace</td>
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<td>Sample Description</td>
<td>Recovery (inches)</td>
<td>Detail</td>
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<td>------------------</td>
<td>--------------------</td>
<td>-------------------</td>
<td>--------</td>
</tr>
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<td>5</td>
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</tr>
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<td>15-17&quot;</td>
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<td>15-17&quot;</td>
<td></td>
<td>18&quot;</td>
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<td>20-22&quot;</td>
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<td>18&quot;</td>
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Refusal at 25.5'
Bottom of well 25.5'

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</tr>
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<td>Drill Rig Model:</td>
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<td>Drill Rig Model:</td>
<td></td>
<td>Trace 0 to 10</td>
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</tr>
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<td>Locus/Sketch:</td>
<td>Construction</td>
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<td>Construction Material</td>
<td>Symbol</td>
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<td>--------------</td>
<td>------------</td>
<td>-----------------------</td>
<td>--------</td>
</tr>
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<td>0 to 14</td>
<td>Teflon Tubing (3/16-inch O.D.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen</td>
<td>14 to 18</td>
<td>Slotted Aluminum Vapor Point</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backfill</td>
<td>3 to 6</td>
<td>Native Material</td>
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</tr>
<tr>
<td>Seal</td>
<td>6 to 10</td>
<td>Concrete</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sandpack</td>
<td>10 to 18</td>
<td>Medium-grained Silica Sand</td>
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<table>
<thead>
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<th>Blow Counts per 6&quot;</th>
<th>Recovery (inches)</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Roadbox w/ concrete collar at ground surface</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Brown-Light Brown Coarse Sand with Little Gravel, No Odor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4-inch, slotted steel vapor point installed at 18-inches bgs</td>
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</table>

<table>
<thead>
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<th>Percent</th>
<th>Sampling Protocol</th>
</tr>
</thead>
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<tr>
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<td>Trace 0 to 10</td>
<td>Total Organic Vapors; Meter:</td>
</tr>
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**Site:** WPS  
**Project #:** 6514-07-11  
**Site:** 299 Highland Street  
**Worcester, MA**

**Locus/Sketch:**

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<th>Inches BGS</th>
<th>Construction Material</th>
<th>Symbol</th>
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</thead>
<tbody>
<tr>
<td>Riser</td>
<td>0 to 14</td>
<td>Teflon Tubing (3/16-inch O.D.)</td>
<td></td>
</tr>
<tr>
<td>Screen</td>
<td>14 to 18</td>
<td>Slotted Aluminum Vapor Point</td>
<td></td>
</tr>
<tr>
<td>Backfill</td>
<td>3 to 6</td>
<td>Native Material</td>
<td></td>
</tr>
<tr>
<td>Seal</td>
<td>6 to 10</td>
<td>Concrete</td>
<td></td>
</tr>
<tr>
<td>Sandpack</td>
<td>10 to 18</td>
<td>Medium-grained Silica Sand</td>
<td></td>
</tr>
</tbody>
</table>

**Soil Description**

(Color, MAJOR GRAN SIZE, Minor Grain Size, Moisture, Density, Structure, Sorting, Sphericity, Roundness, Plasticity, )

- Roadbox w/ concrete collar at ground surface
- Brown-Light Brown Coarse Sand with Little Gravel, No Odor

**Miscellaneous Data**

<table>
<thead>
<tr>
<th>Depth to Water:</th>
<th>NA</th>
<th>Method: NA</th>
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</thead>
<tbody>
<tr>
<td>Drilling Method:</td>
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</tr>
<tr>
<td>Drill Rig Model:</td>
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**TOV**:  (ppmv)

- 4-inch, slotted steel vapor point installed at 18-inches bgs

**Sampling Protocol**

<table>
<thead>
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<th>Portion</th>
<th>Percent</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>And</td>
<td>35 to 50</td>
<td>0 to 10</td>
</tr>
</tbody>
</table>

NA: Not Applicable
APPENDIX D

METHOD 1 RISK CHARACTERIZATION
METHOD 1
RISK CHARACTERIZATION

Doherty High School
299 Highland Street
Worcester, Massachusetts 01602
Release Tracking Number 2-16770

May 2008

Prepared for:
WORCESTER PUBLIC SCHOOLS
20 Irving Street
Worcester, Massachusetts 01608

Prepared by:
CORPORATE ENVIRONMENTAL ADVISORS, INC.
127 Hartwell Street
West Boylston, Massachusetts 01583
(508) 835-8822

CEA File No. 6514-07-11
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Table 2 Groundwater Analytical Results – VPH
Table 3 Groundwater Analytical Results – EPH
Table 4 Soil Analytical Results – Risk Characterization

FIGURES
Figure 1 Site Locus Map
Figure 2 Site Layout Map
Figure 3 BWSC Site Scoring Map
1.0 INTRODUCTION

On behalf of Worcester Public School (WPS) Corporate Environmental Advisors, Inc. (CEA) has completed this Method 1 Risk Characterization (Method 1) for the disposal site identified as the 299 Highland Street, Massachusetts (hereinafter, the “disposal site or site”) to characterize the risk of harm to health, public welfare, and the environment. This site is listed with the Massachusetts Department of Environmental Protection (MassDEP) due to headspace readings over 100 ppmv that were obtain from a soil sample collected within 10 feet of the exterior wall of the UST and greater than 2 feet below grade surface (bgs). The MassDEP is tracking assessment and response actions at the site under Release Tracking Number (RTN) 2-16770.

Figure 1, Site Locus Map, shows the property location with respect to surrounding topography and surface features. Figure 2, Site Layout Map depicts the property boundaries.

2.0 METHODOLOGY

According to the Massachusetts Contingency Plan (MCP), a risk characterization is conducted to determine whether a condition of no significant risk to human health, public welfare and the environment has been achieved at a disposal site, and/or to determine whether remedial response actions or an Activity and Use Limitation (AUL) are required to achieve a condition of no significant risk. Under the MCP, a Method 1 Risk Characterization may be conducted at a disposal site where the OHM impacts are limited to soil and groundwater, and all the chemicals of concern (COC) present at the site have MCP-promulgated Method 1 Standards. A Method 1 Risk Characterization may not be used alone if OHM known to bioaccumulate is present within the top two feet of the ground surface and environmental receptors are identified.

A Method 1 Risk Characterization involves the direct comparison of soil and groundwater OHM concentrations at the site to the applicable Method 1 Standards for all current and future site uses and conditions. In cases where a specific OHM point concentration exceeds the promulgated current or future Method 1 Standard, an exposure point concentration (EPC) may be developed for the constituent and compared to the applicable Method 1 Standard. In the event that all OHM concentrations and/or exposure point concentrations are below the applicable standards, a condition of No Significant Risk to human health and the environment has been achieved at the site, and further response actions or an AUL are not needed.

Also included within this Method 1 Risk Characterization is an evaluation of Risk to Safety and Risk to Public Welfare. The latter is based upon a comparison of soil and groundwater exposure point concentrations to MCP-promulgated Upper Concentration Limits (UCLs). Note that at sites where chemicals which may bioaccumulate are present within the top 2 feet of soil, a separate Method 3 Stage 1 Ecological Risk Screening Evaluation must be conducted to evaluate terrestrial exposure to OHM-impacted surficial soils.

This risk assessment has been conducted in accordance with the MCP (310 CMR 40.0900), the “Guidance for Conducting Disposal Site Risk Characterizations” (MassDEP, July 1995), and “Characterizing Risks at Petroleum-Contaminated Sites: Implementation of the VPH/EPH Approach,” Final Policy (MassDEP, October 2002).
3.0 SITE BACKGROUND

3.1 Site Description

The property is located at 299 Highland Street, in Worcester Massachusetts and is used as a High School. The property is owned by the City of Worcester. Pleasant Street abuts the property to the west. Highland Street abuts the property to north followed by residential properties. The school is surrounded by vacant land to the east, west and south. Commercial properties abut the property ¼ mile to the south of the Site. Figure 1 shows the property location with respect to surrounding topography and surface features. Municipal water, sewer, telephone, and electricity service the Site. The building is heated by natural gas. Figure 2 depicts the property boundaries.

The Universal Transverse Mercator (UTM) Coordinates and Latitude and Longitude are:

<table>
<thead>
<tr>
<th>UTM Coordinates</th>
<th>Latitude and Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>N 4683535 M</td>
<td>42° 16’ 09.65” N</td>
</tr>
<tr>
<td>E 267375 M</td>
<td>71° 49’ 14.54” W</td>
</tr>
</tbody>
</table>

There are no natural resource areas, such as surface water bodies, located at the Site. The nearest mapped surface water body is an unnamed pond located approximately ¼ mile to the east of the Site.

Mixed commercial and residential properties abut the property ¼ mile to the south of the Site, several of which contain basements. Residential properties abut the Site to the North, several of which contain basements. There are no municipal drinking water supply wells within ½ mile of the Site. There are no known public or private drinking wells within 500-feet of the Site. The Site is not located within an Interim Wellhead Protection Area (IWPA), a Zone II, or a Zone A of a Class A - Surface Water Body. The Site is not located within an area containing a Potentially Productive Medium or High Yield Aquifer.

A Medium Yield Non-Potential Drinking Water Source Area is located approximately ¼ mile to the southeast of the Site. Several Protected Open Space parcels are located approximately 500 feet and approximately ½ mile to the south and southwest and ¼ mile to the northeast of the Site. A Federal Emergency Management Association (FEMA) 100 year flood plain located approximately ½ mile to the south of the Site.

There are no Areas of Critical Environmental Concern (ACEC) located at the Site. The Site is not located within a Natural Heritage & Endangered Species Program (NHESP) wetlands habitat. Figure 3, Site Scoring Map, depicts the Site in relation to MassDEP Bureau of Waste Site Cleanup (BWSC) information.

The Site is a school. Approximately 1,500-1,600 students from grades 9-12 and 93 teachers attend the school. The building has no basement. The bottom or first floor known as the “boiler and maintenance room” of the building contains storage space, a generator, furnaces and the water boilers. Only School Plant personnel are permitted in this area.

3.2 Description of Current and Future Site Activities and Uses

Under current site conditions, the property is used as a school. Under future site conditions, the property will most likely remain a school. For purposes of the risk characterization, future uses of the property are considered unrestricted.
4.0 APPLICABLE METHOD 1 SOIL AND GROUNDWATER CATEGORIES

The MassDEP has developed specific categories applicable to soil and groundwater for use in the characterization of risk posed by disposal sites. These categories, which describe the potential for exposure to OHM, are used to identify the applicable standards and to determine the need for additional response actions. The MCP soil and groundwater categories are considered general indicators of exposure potential in this Method 1 risk characterization. Groundwater beneath the disposal site is also categorized based upon its potential for human consumption, potential to volatilize into indoor air, and its potential to discharge to surface water.

Soils at the disposal site are categorized based on current and future potential receptors, frequency of use, intensity of activities, and accessibility of the soils.

4.1 Applicable MCP Groundwater Categories

Three groundwater categories (GW-1, GW-2, and GW-3) have been established in the MCP for the purpose of describing three types of OHM exposure, in accordance with the criteria set forth in Section 40.0932 of the MCP:

- Category GW-1 applies to groundwater in Current or Potential Drinking Water Source Areas.
- Category GW-2 applies to groundwater located less than 15 feet below ground surface and within 30 feet laterally of an occupied building or structure, due to the potential for volatiles in groundwater to travel through soil gas and into indoor air.
- Category GW-3 applies to groundwater which has the potential to reach surface water bodies of the Commonwealth.

More than one category may apply to groundwater at a disposal site. At a minimum, all groundwater in Massachusetts is classified as GW-3. Therefore, groundwater Category GW-3 applies to groundwater beneath the entire disposal site. Groundwater has been measured at less than 15 feet below grade. Therefore, Category GW-2 applies to all groundwater located within 30 feet of the onsite building and/or neighboring occupied buildings.

Figure 3 indicates that the site is not located within a MassDEP-approved Zone II, Interim Wellhead Protection Area or Potentially-Productive Aquifer, or EPA Sole Source Aquifer, and there are no public or private drinking water supply wells located within 500 feet of the site. Therefore, GW-1 is not applicable to the site. Thus, groundwater categories GW-2 and GW-3 apply to the site.

4.2 Applicable MCP Soil Categories

According to Section 40.0933 of the MCP, three soil categories (S-1, S-2, and S-3) have been established in the MCP to assess potential exposures based upon conservative exposure scenarios that factor the activities of children and adults on the site and the accessibility of the impacted soil. Category S-1 soils have the highest potential for exposure, and S-3 category soils the lowest. Soils at the site located at a depth of 0 to 3 feet below grade are considered "accessible" in the unpaved areas.
Soils located at a depth of 3 to 15 feet below grade in unpaved areas and 0 to 15 feet below grade in paved areas are considered "potentially accessible." Soils located at a depth of greater than 15 feet below grade or beneath the footprint of a building or other permanent structure are considered "isolated subsurface soil" (310 CMR 40.0933).

The majority of the site is occupied by the school building. Surrounding the building are parking lots and unpaved land. Access to the site is unrestricted. The area defined as the disposal site is limited open landscape, which may be used as a recreational area. Future uses of the property may be commercial, industrial or residential. Under current site conditions, adults are likely to access the site on a daily basis; therefore, the current frequency of use for adults is characterized as high. Considering there is unrestricted access to the site, children may also access the site on a regular basis; therefore, the frequency of use for children is characterized as high.

Current site activities and uses are characterized as high intensity for both children and adults because, given the current use of the property as a landscaped courtyard, recreational activities may occur on the disposal site which would result in persons directly contacting OHM-impacted soil and/or groundwater.

Under future site conditions (commercial or residential use), adults and children may access the site on a daily basis, therefore the future anticipated frequency of use for adults and children is characterized as high. Future site activities may still include recreational activities. Therefore, future site activities and uses are characterized as high intensity for both children and adults since activities still may occur on the site which would result in persons directly contacting OHM-impacted soil and/or groundwater.

Based on the current and anticipated future uses of the property, the following Method 1 soil categories apply to the specific exposure points at the site:

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<th>Categories (Current/Future)</th>
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<td>S-1/S-1 (GW-2, GW-3)</td>
</tr>
<tr>
<td>Soils greater than 15 Feet or beneath building footprints</td>
<td>S-3/S-3 (GW-2, GW-3)</td>
</tr>
</tbody>
</table>

5.0 SELECTION OF CHEMICALS OF CONCERN

5.1 Description of Release

Details of the release, clean up and assessment activities are included in the Class A-2 RAO which accompanies this report.

5.2 Results of Soil and Groundwater Assessment Activities

Immediate Response Actions and assessment activities included the excavation of soil in the immediate vicinity of the UST, groundwater assessment via the installation of two monitoring wells, and potential impact to indoor air via the installation and monitoring of two vapor monitoring points.

Post excavation soil samples and soil samples obtained during the assessments activities were analyzed for volatile petroleum hydrocarbons (VPH) and/or extractable petroleum hydrocarbons.
(EPH) in accordance with standard MassDEP Methods. Table 4, Soil Analytical Results – Risk Characterization of the RAO presents the VPH and EPH soil analytical results for the site and identify the applicable current and future MCP Soil Category and Method 1 Soil Standard applicable to each sampling location (i.e., soil exposure point).

Groundwater samples were obtained from the onsite monitoring wells on March 18, 2008 and were analyzed for VPH and EPH constituents using standard MassDEP Methods. Table 2, Groundwater Analytical Results – VPH and Table 3 Groundwater Analytical Results – EPH present the groundwater analytical results for the site. Tables 2 and 3 also identify the applicable MCP Groundwater Category and Method 1 Groundwater Standards applicable to each monitoring well (i.e., groundwater exposure point). Refer to the RAO for complete details on assessment activities and laboratory analytical reports.

5.3 Background Evaluation

As defined in the MCP, background concentrations are those levels of OHMs that would exist in the absence of the disposal site and are:

- ubiquitous and consistently present in the environment at and in the vicinity of the disposal site of concern, and attributable to geologic or ecological conditions, or atmospheric deposition of industrial process or engine emissions;
- attributable to coal ash or wood ash associated with fill material;
- releases to groundwater from a public water supply system; or
- petroleum residues that are incidental to normal operation of motor vehicles.

In accordance with MassDEP’s Background Levels of Polycyclic Aromatic Hydrocarbons (PAHs) and Metals in Soil-Technical Update (MassDEP, 2002c), PAHs and/or metals detected in soil samples are typically compared to MassDEP-established background concentrations for “natural soils” to assess whether the occurrence of such compounds are likely to be attributable to background conditions.

As indicated in Table 4, two of the PAHs (naphthalene and phenanthrene) were detected in soil samples above the laboratory reporting limits (RLs); however, the concentrations were below the MassDEP-established background concentrations for “natural soils”. Since it is appropriate to eliminate constituents below background levels unless there is evidence that the OHM is related to historical activities at the site, these compounds have been excluded from further consideration in this Method 1.

For the purpose of this assessment, all other VPH and EPH constituents detected above the laboratory RLs are not considered attributable to background conditions and are carried forward in this risk evaluation.

5.4 Selection of Chemicals of Concern

For purposes of this risk characterization, all OHM reported in soil (Table 4) above background concentrations are considered COCs and are carried through the Method 1 Risk Characterization. As indicated in Section 4.3 above, two PAHs presented in Table 4 have been deemed attributable to background conditions.
6.0 COMPARISON OF OHM CONCENTRATIONS TO METHOD 1 STANDARDS

As described in Section 2, a Method 1 Risk Characterization involves the direct comparison of soil and groundwater OHM concentrations at the site to the applicable Method 1 Standards for current and future (foreseeable) site uses. In cases where a specific OHM point concentration exceeds the promulgated current or future Method 1 Standard, an exposure point concentration (or average concentration) may be developed for the compound and compared to the applicable standard. In the event that all OHM concentrations and/or exposure point concentrations are below the applicable standards, a condition of No Significant Risk to human health and the environment has been achieved at the site without further response actions or an AUL.

6.1 Soil

Table 4 present the VPH and EPH soil analytical results for the site, respectively, and identify the applicable current and future MCP Soil Category and Method 1 Soil Standard applicable to each sampling location (i.e., soil exposure point). As indicated in Table 4, two VPH carbon fractions (C5-C8 aliphatics and C9-C10 aromatics) exceed the current and future applicable Method 1 Standard (S-1/GW-2, -3) in one sample location only (Bottom-1, 8'-9'). No other VPH or EPH constituents exceed the current or future Method 1 Standards.

6.2 Groundwater

Tables 2 and 3 present the groundwater analytical results for the site. Table 2 and 3 also identify the applicable MCP Groundwater Category and Method 1 Groundwater Standards applicable to each monitoring well (i.e., groundwater exposure point). As indicated in Table 2 and 3, none of the VPH or EPH constituents were reported above laboratory detection limits in groundwater samples collected in March of 2008. Therefore, based on current groundwater quality conditions at the site, there are no current exceedances of the Method 1 GW-2 and GW-3 Standards in site groundwater. Groundwater is not considered impacted.

7.0 COMPARISON OF EXPOSURE POINT CONCENTRATIONS TO METHOD 1 STANDARDS

7.1 Development of Exposure Point Concentrations

As indicated in Table 4, two VPH carbon fractions were reported above the current and future Method 1 Standards in soils. As indicated in the MCP, it is appropriate to utilize the site average concentration of OHM (also referred to as the exposure point concentration) when comparing to Method 1 Standards assuming the exposure point concentration (EPC) provides a conservative estimation of the concentration to which a human receptor may come into contact with.

In accordance with MassDEP policy, the following considerations shall be applied when calculating exposure point concentrations:

- EPC calculations shall only utilize samples which reflect the same current or future MCP Soil Category (S-1, S-2 or S-3) and have been collected from contiguous areas,
- Samples for which all compounds are below laboratory reporting limits shall be eliminated from the EPC calculations, and
Samples for which one or more compounds included in the EPC calculations are below laboratory reporting limits shall utilize 1/2 the reporting limit in the EPC calculation.

Table 4 presents the EPC calculations for the two VPH carbon fractions for the current applicable MCP Soil Category (S-1). Note that six samples collected between 7' and 14' feet below grade from the unpaved portions of the site are included in the EPC calculation. The resulting EPCs for C5-C8 aliphatic and C9-C10 aromatic hydrocarbons are 57.23 milligrams per kilogram (mg/kg) and 52.43 mg/kg, respectively.

7.2 Evaluation of 75/10 Rule

Prior to comparing the soil EPCs to the current and future Method 1 Standards, the MCP requires that an evaluation be performed to confirm that it is appropriate to use the average concentrations as the exposure point concentrations. More specifically, Section 40.0926(3)(b)2 of the MCP states:

2) The acceptability of site data for arithmetic averaging for EPC comparisons to Upper Concentration Limits or determination of “Hot Spots” shall be demonstrated by any one of the following criteria:

(a) For discrete or composite samples, the arithmetic average is less than or equal to the applicable standard or risk-based concentration limit, seventy-five percent of the data points used in the averaging procedure are equal or less than the applicable standard or risk-based concentration limit, and no data point used in the averaging is ten times greater than the applicable standard or risk-based concentration limit.

(b) A valid justification is provided indicating that the sample mean is unlikely to underestimate the true mean of the concentration of OHM at the Exposure Point. Such a demonstration may include, but need not be limited to consideration of the observed distribution of the data, sampling strategy, graphical representation of analytical results, and/or statistical analyses with sufficient Power and Confidence.

As shown in Table 4, all of the calculated EPCs are less than ten times the applicable Method 1 Standard. In addition, for each EPC calculation, the percentage of the soil samples exceeding the Method 1 Standard is less than 25%. Thus, more than 75% of the samples are below the Method 1 Standard. Therefore, according to the MCP, the data is suitable for arithmetic averaging, and the calculated EPCs are suitable for direct comparison to the Method 1 Standards.

7.3 Comparison of EPCs to Method 1 Standards

As shown in Table 4, the calculated EPCs for the two VPH carbon fractions are all below the current applicable Method 1 (S-1) Standard. Therefore, a condition of No Significant Risk to human health and the environment exists for all soil-related exposures at the site under current site conditions.

7.4 Evaluation of Hot Spots

According to the MCP, a hot spot is a discrete area where the concentrations of OHM are substantially higher than those concentrations in the surrounding area. In all cases, a discrete area where the concentration of an OHM is greater than a 100 times the concentration in the surrounding areas shall be considered a hot spot. Locations where concentrations are 10 to 100 times greater than the neighboring samples are considered hot spots if the frequency, intensity
and/or duration of exposure in these areas would be greater than the surrounding area. There are no “Hot Spots”, as defined in 310 CMR 40.0006, at the disposal site.

8.0 COMPARISON OF OHM CONCENTRATIONS TO MCP UCLS

The risk of harm to public welfare is characterized according to Section 40.0994 of the MCP to identify issues that are not otherwise considered in the characterization of risk of harm to health, safety and the environment. The characterization of risk to public welfare has two parts:

- It considers nuisance conditions, loss of property value, restriction of another person’s property, monetary and non-monetary costs that may accrue related to the site such as degradation of public or private resources; and
- It is also characterized by comparing the EPCs of OHM detected at the site to Method 3 Upper Concentration Limits (UCLs) listed in Section 40.0996(7) of the MCP. Soil and groundwater UCLs are concentrations of OHM that, if exceeded, indicate the potential for significant risk of harm to public welfare and the environment under future conditions.

No community in the vicinity of the disposal site experiences significant adverse impacts to public welfare based on nuisance conditions, loss of property value, restriction of another person’s property, or monetary and non-monetary costs that may accrue related to the site.

As shown in Tables 4, no soil concentrations exceed the UCL for soils. Therefore, a condition of No Significant Risk to public welfare exists at the site, with respect to soil and groundwater impacts.

9.0 CHARACTERIZATION OF RISK TO SAFETY

Conditions at the site related to the release do not pose any threat of physical harm or bodily injury to humans. Site areas disturbed by monitoring well installations or other response actions have been restored to a safe condition. No pits, rusted or corroded drums, open lagoons, or stockpiles are present at the site. No threats of fire or explosions are known to be present because of the release. No uncontained materials are present that exhibit the characteristics of corrosivity, reactivity, or flammability as described in 310 CMR 40.0347. Therefore, pursuant to 310 CMR 40.0960, a condition of No Significant Risk of harm to safety exists or has been achieved at the site.

10.0 RISK CHARACTERIZATION SUMMARY

A Method 1 was performed to characterize the risk to human health, public welfare, safety and the environment at the disposal site in accordance with 310 CMR 40.0970, 40.0960 and 40.0994. A Method 1 was selected for the site since OHM impacts are limited to soil and groundwater, pursuant to Sections 40.0942(2) and 40.0970 of the MCP. The results of the Method 1 are summarized below.

Two VPH carbon fractions were detected in discrete soil samples collected at the disposal site at concentrations in excess of the current and future applicable Method 1 Standards. However, EPCs were developed for these fractions and they were all below the applicable Method 1 Soil Standards. In addition, no compounds which have the potential to bioaccumulate have been identified within the top 2 feet of soil, and all current OHM concentrations in groundwater are below the applicable Method 1 GW-2 and GW-3 Standards. Thus, a condition of No Significant Risk to public welfare, safety and the environment at the disposal site exists.
Risk to human health and the environment has been achieved for all soil and groundwater-related exposures under current and future site conditions.

No soil or groundwater OHM concentrations exceed the MCP Upper Concentration Limits. Thus, a condition of No Significant Risk to public welfare exists at the site. In addition, a condition of No Significant Risk to safety exists at the site.
APPENDIX E
PUBLIC NOTIFICATION LETTERS
Via First Class Mail

May 21, 2008

Mayor Konstantina B. Lukes
City of Worcester
206-455 Main Street
Worcester, Massachusetts 01608

RE: Response Action Outcome Statement
Doherty High School
299 Highland Street
Worcester, Massachusetts
MassDEP RTN: 2-16770
CEA Ref. File #: 6514-07

Dear Mayor Lukes:

This letter serves as official notification that a Response Action Outcome (RAO) for the above-referenced site has been filed with the Massachusetts Department of Environmental Protection (MassDEP). Corporate Environmental Advisors, Inc. submitted these documents to the MassDEP on behalf of the City of Worcester. The RAO summarizes all of the assessment and remediation activities conducted at the site relating to the 72-hour MassDEP reportable condition which occurred on July 23, 2007.

The RAO may be obtained and/or viewed at the Central Region MassDEP located at 627 Main Street Worcester, Massachusetts 01608, Massachusetts. MassDEP Central Regional Office can be contacted at 508-792-7650. If you should have any questions regarding this submittal, please do not hesitate to contact the undersigned.

Sincerely,

CORPORATE ENVIRONMENTAL ADVISORS, INC.

Dean Bebis
Environmental Scientist I

Co: Jeffery Lassey City of Worcester Public Schools, 20 Irving Street, Worcester, Massachusetts
MassDEP Central Regional Office, Worcester, Massachusetts
Via First Class Mail

May 21, 2008

City of Worcester Board of Health
City of Worcester
206-455 Main Street
Worcester, Massachusetts 01608

RE: Response Action Outcome Statement
Doherty High School
299 Highland Street
Worcester, Massachusetts
MassDEP RTN: 2-16770
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Dear Sir/Madam:

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Sincerely,

CORPORATE ENVIRONMENTAL ADVISORS, INC.

Dean Bebis
Environmental Scientist I

Cc: Jeffery Lassey City of Worcester Public Schools, 20 Irving Street, Worcester, Massachusetts
MassDEP Central Regional Office, Worcester, Massachusetts
3.1.4 EVALUATION OF EXISTING CONDITIONS

I. Assessment of the Facility for the Presence of Hazardous Materials
FINAL REPORT
FOR
HAZARDOUS MATERIALS IDENTIFICATION
STUDY
AT THE
DOHERTY HIGH SCHOOL
WORCESTER, MASSACHUSETTS

PROJECT NO: 219 408.00

Survey Dates:
July 15-26, 2019

CONDUCTED BY:

UNIVERSAL ENVIRONMENTAL CONSULTANTS
12 Brewster Road
Framingham, MA 01702
August 1, 2019

Mr. Rob Para  
Lamoureux Pagano Associates  
108 Grove Street  
Worcester, MA  01605

Reference: Report for Hazardous Materials Identification Study  
Doherty High School, Worcester, MA

Dear Mr. Para:

Thank you for the opportunity for Universal Environmental Consultants (UEC) to provide professional services.

Enclosed please find the report for the hazardous materials identification study at the Doherty High School, Worcester, MA.

Please do not hesitate to call should you have any questions.

Very truly yours,

Universal Environmental Consultants

______________________________
Ammar M. Dieb  
President

UEC:\219 408.00\Report.DOC

Enclosure
1.0 INTRODUCTION:

Universal Environmental Consultants (UEC) has been providing comprehensive asbestos services since 2001 and has completed projects throughout New England. We have completed projects for a variety of clients including commercial, industrial, municipal, and public and private schools. We maintain appropriate asbestos licenses and staff with a minimum of thirty years of experience.

UEC was contracted by Lamoureux Pagano Associates to conduct the following services at the Doherty High School, Worcester, Massachusetts:

- Asbestos Containing Materials (ACM) determination inspection and sampling;
- Polychlorinated Biphenyls (PCB’s)-Electrical Equipment and Light Fixtures inspection;
- PCB’s in Caulking inspection;
- Lead Based Paint (LBP) inspection;
- Mercury in Rubber Flooring inspection and sampling;
- Airborne Mold inspection and sampling;
- Radon sampling;

The scope of work included the inspection of accessible ACM, collection of bulk samples from materials suspected to contain asbestos, determination and quantities of types of ACM found and cost estimates for remediation. No destructive or roof testing was performed. A comprehensive survey including roofing and destructive testing per the Environmental Protection Agency (EPA) NESHAP regulation would be required prior to any renovation or demolition activities.

Bulk samples analyses for asbestos were performed using the standard Polarized Light Microscopy (PLM) Method in accordance with EPA standard. Bulk samples were collected by a Massachusetts licensed asbestos inspector Mr. Leonard J. Busa (AI-030673) and analyzed by a Massachusetts licensed laboratory Asbestos Identification Laboratory, Woburn, MA.

Airborne mold samples were analyzed by an EPA approved laboratory EMSL, Woburn, MA.

Radon samples were analyzed by an EPA licensed laboratory AccuStar, Ward Hill, MA.

Samples results are attached.

2.0 FINDINGS:

Asbestos Containing Materials (ACM):
The regulations for asbestos inspection are based on representative sampling. It would be impractical and costly to sample all materials in all areas. Therefore, representative samples of each homogenous area were collected and analyzed or assumed.

All suspect materials were grouped into homogenous areas. By definition a homogenous area is one in which the materials are evenly mixed and similar in appearance and texture throughout. A homogeneous area shall be determined to contain asbestos based on findings that the results of at least one sample collected from that area shows that asbestos is present in an amount greater than 1 percent in accordance with EPA regulations. Per the Department of Environmental Protection (DEP) any amount of asbestos found must be disposed as asbestos.

No additional suspect or accessible ACM were found during this survey. Hidden ACM may be found during the renovation and demolition activities.

Number of Samples Collected:
Eighty-seven (87) bulk samples were collected from materials suspected of containing asbestos, including:
Type and Location of Suspect Material

1. Residue glue daub for framed chalkboard at classroom 336
2. Hard joint insulation off fiberglass insulated pipe
3. Hard joint insulation off fiberglass insulated pipe
4. Pipe insulation at kitchen laundry room
5. Fireboard on gymnasium slab
6. Fireboard on gymnasium slab
7. Small speaker coating at classroom 103
8. Speaker coating at classroom 208
9. Lab table at classroom 328
10. Interior window sill at classroom 104
11. Purple sink coating at classroom 211
12. Dark sink coating at classroom 204
13. Grey adhesive for glazed wall tile at custodian closet
14. Brown paint on perimeter heating cabinet at classroom 300
15. Wood fire door
16. Glazing caulking for window in wood door
17. Glazing caulking for window in wood door
18. Glazing caulking for interior window
19. Glazing caulking for window in wood door
20. Joint compound at classroom 303-B
21. Grey linoleum covering for original metal desk at classroom 425
22. 2’ x 2’ Suspended acoustical ceiling tile
23. 2’ x 2’ Suspended acoustical ceiling tile
24. New suspended acoustical ceiling tile
25. New suspended acoustical ceiling tile
26. New suspended acoustical ceiling tile
27. 1’ x 1’ Acoustical ceiling tile
28. 1’ x 1’ Acoustical ceiling tile
29. 1’ x 1’ Acoustical ceiling tile
30. 1’ x 1’ Acoustical ceiling tile
31. Building caulking type I at side of stairs
32. Building caulking type I at side of stairs
33. Building caulking type II at terrazzo stairs
34. Building caulking type II at terrazzo stairs
35. Building caulking type II at terrazzo stairs
36. Ceiling plaster at janitor closet
37. Wall plaster at third floor electrical room
38. Wall plaster at classroom 204
39. Wall plaster at classroom 322
40. Ceiling plaster at service room
41. Black glue in fiberglass insulated pipe at incinerator room
42. Rough wall plaster at breezeway
43. Ceiling plaster at auditorium
44. Ceiling plaster at auditorium
45. Fireproofing at center of breezeway
46. Fireproofing at breezeway
47. Fireproofing at breezeway
48. 9” x 9” Vinyl floor tile at storage room
49. Mastic for 9” x 9” vinyl floor tile at storage room
50. Mastic for 9” x 9” vinyl floor tile under newt flooring at classroom 107
51. Mastic for 9” x 9” vinyl floor tile at room 302-A
52. Residue black mastic under carpet at second floor conference room
53. Brown 12” x 12” vinyl floor tile at hallway by room 316
54. Residue black mastic for brown 12” x 12” vinyl floor tile at hallway by room 316
55. Crème 12” x 12” vinyl floor tile at classroom 204
56. Residue black mastic for crème 12” x 12” vinyl floor tile at classroom 204
57. Older lime 12” x 12” vinyl floor tile at third floor chemical storage
58. Residue black mastic for older lime 12” x 12” vinyl floor tile at third floor chemical storage
59. Older grey 12” x 12” vinyl floor tile at stairwell
60. Mastic for older grey 12” x 12” vinyl floor tile at stairwell
61. Grey floor tile at stairwell
62. Yellow mastic for grey floor tile at stairwell
63. Patch of red leveler under new floor tile
64. Black mastic for patch of red leveler under new floor tile
65. Thin grey linoleum floor covering at third floor biology
66. Adhesive for thin grey linoleum floor covering at third floor biology
67. Thin red linoleum floor covering at third floor physics
68. Adhesive for thin red linoleum floor covering at third floor physics
69. Exterior window framing caulk
70. Exterior window framing caulk
71. Exterior window framing caulk
72. Exterior window framing caulk
73. Exterior sealant in seams of metal window system
74. Exterior unit vent grille caulk
75. Exterior vertical grey caulk in brick
76. Exterior sealant behind new sealant for metal window panel
77. Exterior vertical caulk in stone wall
78. Terrazzo stairs
79. Thick red linoleum floor covering at girl’s locker room
80. Adhesive for thick red linoleum floor covering at girl’s locker room
81. Vertical caulk in CMU at gymnasium
82. Paint on vertical caulk in CMU at gymnasium
83. Vertical caulk in CMU at gymnasium
84. Pressed wood/fiberboard on gymnasium slab
85. Plaster vapor barrier on gymnasium slab
86. Red cement floor at gymnasium storage room
87. Red cement floor at gymnasium storage room

**Sample Results:**

<table>
<thead>
<tr>
<th>Type and Location of Suspect Material</th>
<th>Sample Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Residue glue daub for framed chalkboard at classroom 336</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>2. Hard joint insulation off fiberglass insulated pipe</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>3. Hard joint insulation off fiberglass insulated pipe</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>4. Pipe insulation at kitchen laundry room</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>5. Fireboard on gymnasium slab</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>6. Fireboard on gymnasium slab</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>7. Small speaker coating at classroom 103</td>
<td>5% Asbestos</td>
</tr>
<tr>
<td>8. Speaker coating at classroom 208</td>
<td>5% Asbestos</td>
</tr>
<tr>
<td>9. Lab table at classroom 328</td>
<td>10% Asbestos</td>
</tr>
<tr>
<td>10. Interior window sill at classroom 104</td>
<td>5% Asbestos</td>
</tr>
<tr>
<td>11. Purple sink coating at classroom 211</td>
<td>5% Asbestos</td>
</tr>
<tr>
<td>12. Dark sink coating at classroom 204</td>
<td>3% Asbestos</td>
</tr>
<tr>
<td>13. Grey adhesive for glazed wall tile at custodian closet</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>14. Brown paint on perimeter heating cabinet at classroom 300</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>15. Wood fire door insulation</td>
<td>13% Asbestos</td>
</tr>
<tr>
<td>16. Glazing caulk for window in wood door</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>Item Description</td>
<td>Asbestos Content</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>17. Glazing caulking for window in wood door</td>
<td>2% Asbestos</td>
</tr>
<tr>
<td>18. Glazing caulking for interior window</td>
<td>2% Asbestos</td>
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</tr>
<tr>
<td>24. New suspended acoustical ceiling tile</td>
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<tr>
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</tr>
<tr>
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<tr>
<td>27. 1’ x 1’ Acoustical ceiling tile</td>
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</tr>
<tr>
<td>28. 1’ x 1’ Acoustical ceiling tile</td>
<td>No Asbestos Detected</td>
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</tr>
<tr>
<td>31. Building caulking type I at side of stairs</td>
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</tr>
<tr>
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<tr>
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</tr>
<tr>
<td>51. Mastic for 9” x 9” vinyl floor tile at room 302-A</td>
<td>3% Asbestos</td>
</tr>
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<td>52. Residue black mastic under carpet at second floor conference room</td>
<td>2% Asbestos</td>
</tr>
<tr>
<td>53. Brown 12” x 12” vinyl floor tile at hallway by room 316</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
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</tr>
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<td>67. Thin red linoleum floor covering at third floor physics</td>
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<td>68. Adhesive for thin red linoleum floor covering at third floor physics</td>
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</tr>
<tr>
<td>69. Exterior window framing caulking</td>
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</tr>
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</tr>
<tr>
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72. Exterior window framing caulking 3% Asbestos
73. Exterior sealant in seams of metal window system 2% Asbestos
74. Exterior unit vent grille caulking 3% Asbestos
75. Exterior vertical grey caulking in brick No Asbestos Detected
76. Exterior sealant behind new sealant for metal window panel 3% Asbestos
77. Exterior vertical caulking in stone wall 5% Asbestos
78. Terrazzo stairs No Asbestos Detected
79. Thick red linoleum floor covering at girl’s locker room No Asbestos Detected
80. Adhesive for thick red linoleum floor covering at girl’s locker room 5% Asbestos
81. Vertical caulking in CMU at gymnasium No Asbestos Detected
82. Paint on vertical caulking in CMU at gymnasium No Asbestos Detected
83. Vertical caulking in CMU at gymnasium No Asbestos Detected
84. Pressed wood/fiberboard on gymnasium slab No Asbestos Detected
85. Plaster vapor barrier on gymnasium slab No Asbestos Detected
86. Red cement floor at gymnasium storage room No Asbestos Detected
87. Red cement floor at gymnasium storage room No Asbestos Detected

Observations and Conclusions:
The condition of ACM is very important. ACM in good condition does not present a health issue unless it is disturbed. Therefore, it is not necessary to remediate ACM in good condition unless it will be disturbed through renovation, demolition or other activity.

Refer to the AHERA Management Plan for condition of ACM.

1. Pipe insulation was found to contain asbestos.
2. Small speaker coating was found to contain asbestos.
3. Speaker coating was found to contain asbestos.
4. Lab table was found to contain asbestos.
5. Interior window sill was found to contain asbestos.
6. Purple sink coating was found to contain asbestos.
7. Dark sink coating was found to contain asbestos.
8. Wood fire door insulation was found to contain asbestos.
9. Glazing caulking for window in wood door was found to contain asbestos.
10. Glazing caulking for interior window was found to contain asbestos.
11. 2’ x 2’ Suspended acoustical ceiling tile was found to contain asbestos.
12. Building caulking type I was found to contain asbestos.
13. 9” x 9” Vinyl floor tile was found to contain asbestos.
14. Mastic for 9” x 9” vinyl floor tile was found to contain asbestos.
15. Residue black mastic for brown 12” x 12” vinyl floor tile was found to contain asbestos.
16. Residue black mastic for crème 12” x 12” vinyl floor tile was found to contain asbestos.
17. Residue black mastic for older lime 12” x 12” vinyl floor tile was found to contain asbestos.
18. Older grey 12” x 12” vinyl floor tile was found to contain asbestos.
19. Mastic for older grey 12” x 12” vinyl floor tile was found to contain asbestos.
20. Black mastic for patch of red leveler under new floor tile was found to contain asbestos.
21. Exterior window framing caulking was found to contain asbestos.
22. Exterior sealant in seams of metal window system was found to contain asbestos.
23. Exterior unit vent grille caulking was found to contain asbestos.
24. Exterior sealant behind new sealant for metal window panel was found to contain asbestos.
25. Exterior vertical caulking in stone wall was found to contain asbestos.
26. Adhesive for thick red linoleum floor covering was found to contain asbestos.
27. Stage fire curtain was assumed to contain asbestos.
28. Insulation and glue inside walk in refrigerators were assumed to contain asbestos.
29. Insulation inside incinerator was assumed to contain asbestos.
30. Glue holding old blackboard was assumed to contain asbestos.
31. Exterior damproofing on foundation/exterior walls was assumed to contain asbestos. The demolition contractor will have to segregate the ACM from non-ACM building surfaces for proper disposal. A non-traditional abatement plan would have to be prepared and submitted to the DEP for approval.

32. Roofing was assumed to contain asbestos.

33. Underground sewer pipes were assumed to contain asbestos.

34. All other suspect materials were found not to contain asbestos. Hidden ACM may be found during renovation and demolition activities.

Polychlorinated Biphenyls (PCB’s)-Electrical Equipment and Light Fixtures:

Observations and Conclusions
Visual inspection of various equipments such as light fixtures, thermostats, exit signs and switches was performed for the presence of PCB’s and mercury. Ballasts in light fixtures were assumed not to contain PCB’s since there were labels indicating that “No PCB’s” was found. Tubes in light fixtures, thermostats, signs and switches were assumed to contain mercury. It would be very costly to test those equipments and dismantling would be required to access. Therefore, the above equipments should be disposed in an EPA approved landfill as part of the demolition project.

PCB’s in Caulking Material:

Observations and Conclusions
Building caulking was previously found to contain <50ppm of PCB’s. PCB’s are manmade chemicals that were widely produced and distributed across the country from the 1950s to 1977 until the production of PCB’s was banned by the US Environmental Protection Agency (EPA) law which became effective in 1978. PCB’s are a class of chemicals made up of more than 200 different compounds. PCB’s are non-flammable, stable, and good insulators so they were widely used in a variety of products including electrical transformers and capacitors, cable and wire coverings, sealants and caulking, and household products such as television sets and fluorescent light fixtures. Because of their chemical properties, PCB’s are not very soluble in water and they do not break down easily in the environment. PCB’s also do not readily evaporate into air but tend to remain as solids or thick liquids. Even though PCB’s have not been produced or used in the country for more than 30 years, they are still present in the environment in the air, soil, and water and in our food. EPA requires that all construction waste including caulking be disposed as PCB’s if PCB’s level exceed 50 mg/kg (ppm). An abatement plan might also be required depending on scope of work.

Lead Based Paint (LBP):

Observations and Conclusions
A school is not considered a regulated facility. All LBP activities performed, including waste disposal, should be in accordance with applicable Federal, State, or local laws, ordinances, codes or regulations governing evaluation and hazard reduction. These requirements can be found in OSHA 29 CFR 1926-Construction Industry Standards, 29 CFR 1926.62-Construction Industry Lead Standards, 29 CFR 1910.1200-Hazards Communication, 40 CFR 261-EPA Regulations. According to OSHA, any amount of LBP triggers compliance.

Mercury in Rubber Flooring:

Observations and Conclusions:
No rubber flooring was found.

Airborne Mold:

Airborne mold testing was performed utilizing Zefon International Incorporated’s Air-O-Cell® sampling device following all manufacturer supplied recommended sampling procedures. Air-O-Cell® is a direct read total particulate air sampling device. It works using the inertial impaction principle similar to other spore trap devices. It is designed for the rapid collection and analysis of airborne particulate including bioaerosols. The particulate includes fibers (e.g. asbestos, fiberglass, cellulose, clothing fibers) opaque particles (e.g. fly ash, combustion particles, copy toner, oil droplets, paint), and bioaerosols (e.g. mold spores, pollen, insect parts, skin cell fragments).¹

The method involves drawing a known quantity of air through a sterile sampling cassette. Subsequent to sampling, the cassette is sealed and transferred to a microbiology laboratory under chain of custody protocol for microscopic analysis. This method counts both viable and nonviable mold spores.

¹ Zefon International Inc. <www.zefon.com>
### AIRBORNE MOLD and PARTICULATE

<table>
<thead>
<tr>
<th>Lab ID #</th>
<th>Location</th>
<th>Total Mold Counts/M³</th>
<th>Pollen</th>
<th>Insect Fragment</th>
<th>Hyphal Fragments</th>
</tr>
</thead>
<tbody>
<tr>
<td>131905452-0001</td>
<td>Guidance Office</td>
<td>17,580</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>131905452-0002</td>
<td>Room 107</td>
<td>3,510</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>131905452-0003</td>
<td>Room 206</td>
<td>2,640</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>131905452-0004</td>
<td>Library Service Room</td>
<td>1,540</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>131905452-0005</td>
<td>Room 104</td>
<td>1,647</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>131905452-0006</td>
<td>Room 103</td>
<td>900</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>131905452-0007</td>
<td>Room 316</td>
<td>2,140</td>
<td>ND</td>
<td>7</td>
<td>ND</td>
</tr>
<tr>
<td>131905452-0008</td>
<td>Room 322</td>
<td>2,394</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>131905452-0009</td>
<td>Auditorium</td>
<td>1,457</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>131905452-0010</td>
<td>Outside</td>
<td>41,590</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
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</tbody>
</table>

### AIRBORNE MOLD and PARTICULATE (Subjective Scales)

<table>
<thead>
<tr>
<th>Lab ID #</th>
<th>Location</th>
<th>Skin Fragment Density (SFD)</th>
<th>Fibrous Particulates (FP)</th>
<th>Total Background Particulate (TBP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>131905452-0001</td>
<td>Guidance Office</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>131905452-0002</td>
<td>Room 107</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>131905452-0003</td>
<td>Room 206</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>131905452-0004</td>
<td>Library Service Room</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>131905452-0005</td>
<td>Room 104</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
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<td>131905452-0006</td>
<td>Room 103</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>131905452-0007</td>
<td>Room 316</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>131905452-0008</td>
<td>Room 322</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>131905452-0009</td>
<td>Auditorium</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>131905452-0010</td>
<td>Outside</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Legend:

- ND - Not Detected
- SFD: 1 - 4 scale where 1 is low and 4 is high
- TBP: 1 - 5 scale where 1 is low and 5 is high

**Observations and Conclusions:**

There are currently no guidelines or standards promulgated by a government agency or widely recognized scientific organizations for the interpretation of airborne mold spore levels. The most commonly employed tool used to assess if mold growth is occurring and there is amplification in a structure is to evaluate the indoor levels and species as well as to compare levels and species of mold outdoors to indoors. Typically, if there were more molds indoors,
and/or if species were present indoors which were not present outdoors, then growth and amplification is likely occurring and further evaluation and perhaps remediation is recommended.

Indoor airborne mold spore concentrations were found to be much lower than the outside sample. Based on comparisons with historical data from projects of similar type, building utilization, geographic location and season, breathing zone indoor airborne levels are considered average.

Breathing zone indoor and also outdoor samples indicated the presence of large quantities of several common types of mold which are not considered to be hazardous. Pollen, insect fragments and Hyphal fragments were either not present or low in the samples. Hyphal fragment is a non-reproductive part of the mold.

Total background particulate on all samples was assessed as “1” on a scale of 1-5 where 1 is low and 5 is high. Skin fragment density on all samples was assessed as “1” on a scale of 1-4 where 1 is low and 4 is high. The total background levels are measured to determine airborne dust not related to airborne mold. Skin fragments are measured to determine proper housing cleaning.

No visible mold growth was found during the survey.

Radon:

**Number of Samples Collected**

Ten (10) air samples were collected at the following locations:

**Location of Material**

1. Ground floor health center
2. Ground floor cafeteria
3. Ground floor auditorium
4. Ground floor room 104
5. Ground floor room 103
6. Ground floor room 102
7. Ground floor room 100
8. Ground floor stage
9. Ground floor main office
10. Ground floor main entrance by cafeteria

**Location of Material**

<table>
<thead>
<tr>
<th>Location of Material</th>
<th>Sample Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ground floor health center</td>
<td>0.8 pCi/L</td>
</tr>
<tr>
<td>2. Ground floor cafeteria</td>
<td>&lt;0.4 pCi/L</td>
</tr>
<tr>
<td>3. Ground floor auditorium</td>
<td>0.4 pCi/L</td>
</tr>
<tr>
<td>4. Ground floor room 104</td>
<td>0.5 pCi/L</td>
</tr>
<tr>
<td>5. Ground floor room 103</td>
<td>1.0 pCi/L</td>
</tr>
<tr>
<td>6. Ground floor room 102</td>
<td>0.5 pCi/L</td>
</tr>
<tr>
<td>7. Ground floor room 100</td>
<td>0.4 pCi/L</td>
</tr>
<tr>
<td>8. Ground floor stage</td>
<td>0.4 pCi/L</td>
</tr>
<tr>
<td>9. Ground floor main office</td>
<td>0.5 pCi/L</td>
</tr>
<tr>
<td>10. Ground floor main entrance by cafeteria</td>
<td>0.5 pCi/L</td>
</tr>
</tbody>
</table>

**Observations and Conclusions:**
The measured radon concentrations were found to be much lower than the EPA guideline of 4.0-pCi/L. No further action is required based on the results.
### 3.0 COST ESTIMATES:
The cost includes removal and disposal of all accessible ACM, other hazardous material and an allowance for removal of inaccessible or hidden ACM that may be found during renovation or demolition project.

<table>
<thead>
<tr>
<th>Location</th>
<th>Material</th>
<th>Approximate Quantity</th>
<th>Cost Estimate ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throughout</td>
<td>Various Types of Flooring and Mastic</td>
<td>115,000 SF</td>
<td>460,000.00</td>
</tr>
<tr>
<td></td>
<td>Pipe and Hard Joint Insulation</td>
<td>1,500 LF</td>
<td>30,000.00</td>
</tr>
<tr>
<td></td>
<td>Transite Window Sill</td>
<td>2,200 SF</td>
<td>44,000.00</td>
</tr>
<tr>
<td></td>
<td>Sinks</td>
<td>25 Total</td>
<td>5,000.00</td>
</tr>
<tr>
<td></td>
<td>Interior Windows</td>
<td>150 Total</td>
<td>30,000.00</td>
</tr>
<tr>
<td></td>
<td>Interior Doors with Windows</td>
<td>150 Total</td>
<td>30,000.00</td>
</tr>
<tr>
<td></td>
<td>Blackboards/Tackboards</td>
<td>650 Total</td>
<td>130,000.00</td>
</tr>
<tr>
<td></td>
<td>Speaker Boxes</td>
<td>85 Total</td>
<td>8,500.00</td>
</tr>
<tr>
<td></td>
<td>Wood Fire Doors</td>
<td>15 Total</td>
<td>3,000.00</td>
</tr>
<tr>
<td></td>
<td>Building Caulking</td>
<td>2,000 LF</td>
<td>20,000.00</td>
</tr>
<tr>
<td></td>
<td>Miscellaneous Hazardous Materials</td>
<td>Unknown</td>
<td>75,000.00</td>
</tr>
<tr>
<td></td>
<td>Hidden ACM</td>
<td>Unknown</td>
<td>75,000.00</td>
</tr>
<tr>
<td></td>
<td>Light Fixtures</td>
<td>Unknown</td>
<td>150,000.00</td>
</tr>
<tr>
<td>Various Locations</td>
<td>2’ x 2’ Suspended Acoustical Ceiling Tile</td>
<td>3,500 SF</td>
<td>35,000.00</td>
</tr>
<tr>
<td>Stage</td>
<td>Fire Curtain</td>
<td>1 Total</td>
<td>4,500.00</td>
</tr>
<tr>
<td>Kitchen</td>
<td>Refrigerators</td>
<td>2 Total</td>
<td>9,000.00</td>
</tr>
<tr>
<td>Third Floor</td>
<td>Transite Tables</td>
<td>95 Total</td>
<td>28,500.00</td>
</tr>
<tr>
<td>Incinerator Room</td>
<td>Incinerator</td>
<td>1 Total</td>
<td>7,500.00</td>
</tr>
<tr>
<td>Exterior</td>
<td>Windows</td>
<td>1,960 Total</td>
<td>490,000.00</td>
</tr>
<tr>
<td></td>
<td>Metal Panels</td>
<td>765 Total</td>
<td>38,250.00</td>
</tr>
<tr>
<td></td>
<td>Unit Vent Grills</td>
<td>110 Total</td>
<td>22,000.00</td>
</tr>
<tr>
<td></td>
<td>Doors</td>
<td>45 Total</td>
<td>9,000.00</td>
</tr>
<tr>
<td></td>
<td>Vertical Caulking</td>
<td>300 LF</td>
<td>3,000.00</td>
</tr>
<tr>
<td></td>
<td>Transite Sewer Pipes</td>
<td>Unknown</td>
<td>75,000.00</td>
</tr>
<tr>
<td></td>
<td>Dampproofing/Flashing on Walls</td>
<td>3,500 Tons(^1)</td>
<td>560,000.00</td>
</tr>
<tr>
<td></td>
<td>Roofing Material</td>
<td>Unknown</td>
<td>150,000.00</td>
</tr>
<tr>
<td>PCB’s Remediation(^2)</td>
<td></td>
<td></td>
<td>350,000.00</td>
</tr>
<tr>
<td>Estimated costs for PCB’s Testing and Abatement Plans Services(^2)</td>
<td></td>
<td></td>
<td>50,000.00</td>
</tr>
<tr>
<td>Estimated costs for NESHAP Inspection and Testing Services</td>
<td></td>
<td></td>
<td>22,500.00</td>
</tr>
<tr>
<td>Estimated costs for Design, Construction Monitoring and Air Sampling Services</td>
<td></td>
<td></td>
<td>217,750.00</td>
</tr>
</tbody>
</table>

**TOTAL:** $3,100,000.00

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\(^1\): Part of total demolition.

\(^2\): Part of total demolition only. The estimated cost listed above will be significantly increased should the building were to be renovated specifically also in occupied phases. The estimated additional PCB’s remediation cost will be in the range of $750,000.00 to $1,200,000.00.
4.0 DESCRIPTION OF SURVEY METHODS AND LABORATORY ANALYSES:

Asbestos:
Asbestos samples were collected using a method that prevents fiber release. Homogeneous sample areas were determined by criteria outlined in EPA document 560/5-85-030a. Bulk material samples were analyzed using PLM and dispersion staining techniques with EPA method 600/M4-82-020.

Airborne Mold:
The samples were analyzed by an EPA approved laboratory EMSL, Woburn, MA.

Radon:
Radon samples were analyzed by an EPA licensed laboratory AccuStar, Ward Hill, MA.

Inspected By:

[Signature]

Leonard J. Busa
Asbestos Inspector
5.0 LIMITATIONS AND CONDITIONS:

This report has been completed based on visual and physical observations made and information available at the time of the site visits, as well as an interview with the Owner’s representatives. This report is intended to be used as a summary of available information on existing conditions with conclusions based on a reasonable and knowledgeable review of evidence found in accordance with normally accepted industry standards, state and federal protocols, and within the scope and budget established by the client. Any additional data obtained by further review must be reviewed by UEC and the conclusions presented herein may be modified accordingly.

This report and attachments, prepared for the exclusive use of Owner for use in an environmental evaluation of the subject site, are an integral part of the inspections and opinions should not be formulated without reading the report in its entirety. No part of this report may be altered, used, copied or relied upon without prior written permission from UEC, except that this report may be conveyed in its entirety to parties associated with Owner for this subject study.
Dear Ammar Dieb,

Asbestos Identification Laboratory has completed the analysis of the samples from your office for the above referenced project. The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency.

Laboratory results represent the analysis of samples as submitted by the customer. Information regarding sample location, description, area, volume, etc., was provided by the customer. Asbestos Identification Laboratory is not responsible for sample collection activities or analytical method limitations. Unless notified in writing to return samples, Asbestos Identification Laboratory discards customer samples after 30 days. Samples containing subsamples or layers will be analyzed separately when applicable. Reports are kept at Asbestos Identification Laboratory for three years. This report shall not be reproduced, except in full, without the written consent of Asbestos Identification Laboratory.

- NVLAP Lab Code: 200919-0
- Massachusetts Certification License: AA000208
- State of Connecticut, Department of Public Health Approved Environmental Laboratory Registration Number: PH-0142
- State of Maine, Department of Environmental Protection Asbestos Analytical Laboratory License Number: LB-0078(Bulk) LA-0087(Air)
- State of Rhode Island and Providence Plantations. Department of Health Certification: AAL-121
- State of Vermont, Department of Health Environmental Health License AL934461

Thank you Ammar Dieb for your business.

Michael Manning
Owner/Director
### Analysis Method: BULK PLM ANALYSIS EPA/600/R-93/116

<table>
<thead>
<tr>
<th>FieldID</th>
<th>LabID</th>
<th>Material</th>
<th>Location</th>
<th>Color</th>
<th>Non-Asbestos %</th>
<th>Asbestos %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>500640</td>
<td>Residual Glue Daub (For Former Chalkboard?)</td>
<td>C’rm 336 by White Board</td>
<td>brown</td>
<td>Non-Fibrous 100</td>
<td>None Detected</td>
</tr>
<tr>
<td>2</td>
<td>500641</td>
<td>@ OFF FG</td>
<td>Main Lobby Cust. Cl Pipe Chase, Sm</td>
<td>gray</td>
<td>Mineral Wool 50</td>
<td>None Detected</td>
</tr>
<tr>
<td>3</td>
<td>500642</td>
<td>@ OFF FG</td>
<td>Main Lobby Cust. Cl Pipe Chase, Lg</td>
<td>gray</td>
<td>Mineral Wool 50</td>
<td>None Detected</td>
</tr>
<tr>
<td>4</td>
<td>500643</td>
<td>P1</td>
<td>Kitchen Laundry Rm</td>
<td>white</td>
<td>Fiberglass 5</td>
<td>Detected Chrysotile 5</td>
</tr>
<tr>
<td>5</td>
<td>500644</td>
<td>Fiberboard</td>
<td>on Gym Slab</td>
<td>multi</td>
<td>Cellulose 90</td>
<td>None Detected</td>
</tr>
<tr>
<td>6</td>
<td>500645</td>
<td>Fiberboard</td>
<td>on Gym Slab</td>
<td>brown</td>
<td>Cellulose 95</td>
<td>None Detected</td>
</tr>
<tr>
<td>7</td>
<td>500646</td>
<td>Small Speaker Box Coating/Elect. Box</td>
<td>C’rm 103, Music</td>
<td>black</td>
<td>Non-Fibrous 95</td>
<td>Detected Chrysotile 5</td>
</tr>
<tr>
<td>8</td>
<td>500647</td>
<td>Speaker Box Coating</td>
<td>C’rm 208</td>
<td>black</td>
<td>Non-Fibrous 95</td>
<td>Detected Chrysotile 5</td>
</tr>
<tr>
<td>9</td>
<td>500648</td>
<td>Suspect Lab Table</td>
<td>C’rm 328</td>
<td>black</td>
<td>Non-Fibrous 90</td>
<td>Detected Chrysotile 10</td>
</tr>
<tr>
<td>10</td>
<td>500649</td>
<td>suspect Interior Window Sill</td>
<td>C’rm 104</td>
<td>black</td>
<td>Non-Fibrous 95</td>
<td>Detected Chrysotile 5</td>
</tr>
<tr>
<td>11</td>
<td>500650</td>
<td>Purple Sink DP</td>
<td>C’rm 211</td>
<td>pink</td>
<td>Non-Fibrous 95</td>
<td>Detected Chrysotile 5</td>
</tr>
<tr>
<td>12</td>
<td>500651</td>
<td>Dark Sink DP</td>
<td>C’rm 204</td>
<td>brown</td>
<td>Non-Fibrous 97</td>
<td>Detected Chrysotile 3</td>
</tr>
<tr>
<td>13</td>
<td>500652</td>
<td>Grey Adhesive for Old Glazed Wall Tile</td>
<td>Cust Cl. by 300</td>
<td>gray</td>
<td>Non-Fibrous 100</td>
<td>None Detected</td>
</tr>
<tr>
<td>14</td>
<td>500653</td>
<td>Brown Paint on Perimeter Wall Metal Btg Cabinet</td>
<td>C’rm 407</td>
<td>brown</td>
<td>Non-Fibrous 100</td>
<td>None Detected</td>
</tr>
<tr>
<td>FieldID</td>
<td>LabID</td>
<td>Material</td>
<td>Location</td>
<td>Color</td>
<td>Non-Asbestos %</td>
<td>Asbestos %</td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------</td>
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<th>Material</th>
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<th>Asbestos %</th>
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<td>87</td>
<td>500726</td>
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<td>Auditorium</td>
<td>multi</td>
<td>Fiberglass 2</td>
<td>None Detected</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Non-Fibrous 98</td>
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</tr>
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</table>

Wednesday 31 July

End of Report

Page 6 of 6

Analyzed by: [Signature]

Batch: 45054

Page 6 of 6
# CHAIN OF CUSTODY

**Universal Environmental Consultants**
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

Town/City: Worcester Building Name: John

<table>
<thead>
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<th>Sample</th>
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<th>Description of Material</th>
<th>Sample Location</th>
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<tbody>
<tr>
<td>1</td>
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<td>residue glass (for former chalkboard?)</td>
<td>cm 336 by white board</td>
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<tr>
<td>2</td>
<td></td>
<td>off FG</td>
<td></td>
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<tr>
<td>3</td>
<td></td>
<td>off FG</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>FG</td>
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<td>5</td>
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<td>Fibreboard</td>
<td>on Gym wall</td>
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<tr>
<td>6</td>
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<td>Fibreboard</td>
<td>Coating on Gym wall</td>
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<tr>
<td>7</td>
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<td>small speaker on brown box</td>
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<td>speaker box coating</td>
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<td>suspect lab table</td>
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<td>12</td>
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<td>sink</td>
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<td>13</td>
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<td>eggshell for old glazed wall tile</td>
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<td>brown point on perimeter wall metal hinge cabinet</td>
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<td>16</td>
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<td>17</td>
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<td>glass for window interior door</td>
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<td>20</td>
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<td>Joint Compound</td>
<td>wall e cm 303-B</td>
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Reported By: [Signature]
Date: 7/26/19
Due Date: 48 hr

Received By: [Signature]
Date: 7/29/2019
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<td>21</td>
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<td>QP coating for orig metal</td>
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<td>SAT-I (2.2 thick fillets)</td>
<td>3rd Fl elec rm</td>
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<td>SAT-I</td>
<td></td>
<td>main lobby</td>
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<td>new SAT</td>
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<td>cafe lobby</td>
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<td>SAT-II (24 thin fillets)</td>
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<td>SAT-III (22 thin fillets)</td>
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<td>27</td>
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<td>1x1 LA7</td>
<td>3rd Fl Biology</td>
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<td>1x1 LA7</td>
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<td>29</td>
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<td>1x1 LA7</td>
<td>storage by 106</td>
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<td>30</td>
<td>1x1 LA7</td>
<td>type-II 22</td>
<td>3rd Fl Teachers work rm</td>
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<td>cement-I (c side of stairs)</td>
<td>stairwell (SW) main lobby</td>
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<td>32</td>
<td>cement-I</td>
<td>(on 3rd fl)</td>
<td>3rd fl</td>
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<td>cement-I</td>
<td>(around teachers)</td>
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<td>37</td>
<td>wall-plaster (wp)</td>
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<td>38</td>
<td>wp</td>
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<td>39</td>
<td>wp</td>
<td>cm 322</td>
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<tr>
<td>40</td>
<td>cp</td>
<td>Science rm-11</td>
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Reported By: [Signature]  Date: 7/26/19  Due Date: 48 hr

Received By:  Date:
# Chain of Custody

**Universal Environmental Consultants**
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

Town/City:
Building Name: John F. S.

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<th>Description of Material</th>
<th>Sample Location</th>
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<td>Block in FG (P)</td>
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<td>Rough-up over head door from breezeway to 3 1/8 wing</td>
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<tr>
<td>43</td>
<td>CP</td>
<td>Auditorium, rear</td>
<td></td>
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<tr>
<td>44</td>
<td>CP</td>
<td>Auditorium, rear</td>
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<tr>
<td>45</td>
<td>Fireproofing (FP)</td>
<td>center of 200 breezeway</td>
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<tr>
<td>46</td>
<td>FP</td>
<td>200 breezeway, L 303</td>
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<tr>
<td>47</td>
<td>FP</td>
<td>330 breezeway, L 330</td>
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<td>48</td>
<td>9&quot; Floor Tile, exposed mastic</td>
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<td>49</td>
<td>Mastic 48</td>
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<td>Mastic for 9&quot; under new roof</td>
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<td>residue Black mastic under carpet 2nd Fl conference</td>
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<td>12&quot; Bowes mainland floor tile</td>
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<td>54</td>
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<td>55</td>
<td>newer 12&quot; china Floor tile</td>
<td>cm 204</td>
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<td>57</td>
<td>older 12&quot; Lime Floor Tile</td>
<td>3rd FL chemical storage</td>
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<td>58</td>
<td>residue Black mastic #57</td>
<td>&quot;</td>
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<tr>
<td>59</td>
<td>older 12&quot; Grip Floor Tile</td>
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<tr>
<td>60</td>
<td>Black mastic #59</td>
<td>silicon end of gym lobby hall</td>
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Reported By: Signed By: Date: 7/26/19

Received By: Date:
<table>
<thead>
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<th>Result</th>
<th>Description of Material</th>
<th>Sample Location</th>
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<tr>
<td>61</td>
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<td>62</td>
<td>yellow mastic</td>
<td>61</td>
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<tr>
<td>63</td>
<td>patch of red water under metal floor Tile</td>
<td>hail e outdoor</td>
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<tr>
<td>64</td>
<td>Black mastic present?</td>
<td>61</td>
<td>302-B</td>
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<tr>
<td>65</td>
<td>Thin Linoleum, grey</td>
<td>3rd Floor Biology</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>Adhesive</td>
<td>67</td>
<td>3rd Floor Physics 313-A</td>
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<tr>
<td>67</td>
<td>Thin Linoleum, red</td>
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<tr>
<td>68</td>
<td>Adhesive</td>
<td>67</td>
<td></td>
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<tr>
<td>69</td>
<td>New grey window frame caulk exterior</td>
<td>EXTERIOR</td>
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<td>70</td>
<td>Original caulk behind</td>
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<td>71</td>
<td>Orig. window behind casino</td>
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<td>72</td>
<td>Exposed orig. fr.</td>
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<td>73</td>
<td>Exposed in seams of metal window system</td>
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<td>74</td>
<td>Exposed guide fr.</td>
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<td>75</td>
<td>Treskill caulk in brick wall</td>
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<td>76</td>
<td>Sealant behind new sealant for metal window panel receiving</td>
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<td>77</td>
<td>Treskill caulk on sidewalk &amp; sidewalk level</td>
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<td>78</td>
<td>Terrazo stair</td>
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<td>79</td>
<td>Thin red line</td>
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<tr>
<td>80</td>
<td>Adhesive</td>
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</tbody>
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Reported By: [Signature]  Date: 7/26/19  Due Date: 7/26/19

Received By:  Date:
# Chain of Custody

**Universal Environmental Consultants**

12 Brewster Road  
Framingham, MA 01702  
Tel: (508) 628-5486 - Fax: (508) 628-5488  
adieb@uec-env.com

Town/City: [Worcester, MA]  
Building Name: [School]

<table>
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<tr>
<th>Sample</th>
<th>Result</th>
<th>Description of Material</th>
<th>Sample Location</th>
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<tbody>
<tr>
<td>81</td>
<td>vert. caulk in gap</td>
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<td>82</td>
<td>paint on #81</td>
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<tr>
<td>83</td>
<td>vert. caulk in gap</td>
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<td>84</td>
<td>pressed wood/Chipboard</td>
<td>Gym &amp; Lab</td>
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<td>85</td>
<td>plastic vapor barrier #84</td>
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<tr>
<td>86</td>
<td>red cement floor</td>
<td>Gym storage</td>
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</tr>
<tr>
<td>87</td>
<td>red cement floor</td>
<td>Auditorium</td>
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Reported By: [CB]  
Date: 7/26/19  
Due Date: 48 hr

Received By: __________________________  
Date: __________________________
**CHAIN OF CUSTODY**

**BUILDING / SITE NAME:** Doherty High School  
**WORK AREA:**  
**TOWN / CITY:** Worcester  
**STATE:** MA

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<td>1009</td>
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<td>150</td>
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<td>2765 7615</td>
<td>room 107</td>
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**SAMPLED BY:**  
**DATE/TIME:**  
**RECEIVED BY:**  
**DATE/TIME:**  
**RELINQUISHED BY:**  
**DATE/TIME:**  
**RECEIVED IN LAB BY:**  
**DATE/TIME:**

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<th>Sample Location</th>
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<th>Count/m³</th>
<th>% of Total</th>
<th>Raw Count</th>
<th>Count/m³</th>
<th>% of Total</th>
<th>Raw Count</th>
<th>Count/m³</th>
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<td>Guidance Office</td>
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**++** Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

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**Samples received in good condition unless otherwise noted. High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "**" Denotes particles found at 300X. "*" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. The report reflects the samples as received. When the information supplied by the customer can affect the validity of the result, it will be noted on the report.**

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA-LAP, LLC – EMLAP Accredited #180179

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Initial report from: 07/25/2019 12:54:56

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com
### Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

#### Lab Sample Number: 131905452-0004

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**++ Includes other spores with similar morphology; see EMSL’s fungal glossary for each specific category.**

No discernable field blank was submitted with this group of samples.

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**Steve Grise, Laboratory Manager**

or other approved signatory

### Spore Types

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<td>-</td>
<td>7*</td>
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<td><strong>Fibrous Particulate (1-4)</strong></td>
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<td>-</td>
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<td>-</td>
</tr>
</tbody>
</table>

**++** Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

---

**Samples received in good condition unless otherwise noted. High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. **"Denotes particles found at 300X. **"Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. The report reflects the samples as received. When the information supplied by the customer can affect the validity of the result, it will be noted on the report.**

Samples analyzed by EMSL Analytical, Inc. Woburn, MA AIHA-LAP, LLC --EMLAP Accredited #180179

---

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

**Lab Sample Number:** 131905452-0010  
**Client Sample ID:** 131905452-0010  
**Volume (L):** 10  
**Sample Location:** Outside

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<th>Count/m³</th>
<th>% of Total</th>
</tr>
</thead>
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<td>Aspergillus/Penicillium</td>
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<td>0.1</td>
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<td>Basidiosporae</td>
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<td>36900</td>
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<tr>
<td>Bipolaris++</td>
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<td>Chaetomium</td>
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<tr>
<td>Cladosporium</td>
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<td>Curvularia</td>
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</tr>
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<td>Epicoccum</td>
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</tr>
<tr>
<td>Fusarium</td>
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</tr>
<tr>
<td>Ganoderma</td>
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<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Pithomyces++</td>
<td>-</td>
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<td>Rust</td>
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<tr>
<td>Scopulariopsis/Microascus</td>
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<tr>
<td>Unidentifiable Spores</td>
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</tr>
<tr>
<td>Zygomycetes</td>
<td>-</td>
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<td>Cercospora++</td>
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<td>Nigrospora</td>
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<tr>
<td><strong>Total Fungi</strong></td>
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<td>41590</td>
<td>100</td>
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</table>

**Spore Types** includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

No discernable field blank was submitted with this group of samples.

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**Initial report from:** 07/25/2019 12:54:56
For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

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**No discernable field blank was submitted with this group of samples.**
Laboratory Report for: Universal Environmental Consultant
12 Brewster Road
Framingham MA 01702

Property Tested: Doherty High School
299 High Street
Worcester MA 01601

Log Number  Device Number  Test Exposure Duration:  Area Tested
2531728  4044783  07/15/2019  9:23 am  07/17/2019  10:26 am  Ground Floor Health Center  0.8
2531729  4044803  07/15/2019  9:26 am  07/17/2019  10:31 am  Ground Floor Cafeteria  <0.4
2531730  4044804  07/15/2019  9:29 am  07/17/2019  10:28 am  Ground Floor Auditorium  0.4
2531731  4044808  07/15/2019  9:37 am  07/17/2019  10:35 am  Ground Floor Room 104  0.5
2531732  4044793  07/15/2019  9:42 am  07/17/2019  10:37 am  Ground Floor Room 103  1.0
2531733  4044796  07/15/2019  9:46 am  07/17/2019  10:42 am  Ground Floor Room 102  0.5
2531734  4044795  07/15/2019  9:52 am  07/17/2019  10:41 am  Ground Floor Room 100  0.4
2531735  4044785  07/15/2019  9:57 am  07/17/2019  10:45 am  Ground Floor Stage Across Room  0.4
2531736  4044806  07/15/2019  10:02 am  07/17/2019  10:47 am  Ground Floor Main Office  0.5
2531737  4044797  07/15/2019  10:07 am  07/17/2019  10:50 am  Ground Floor Main Entrance by Café  0.5

Result
pCi/L

Comment: Universal Environmental Consultant was emailed a copy of this report.

Test Performed By: Laith Odeh
Distributed by: Universal Environmental Consultant
Date Received: 07/17/2019  Date Logged: 07/17/2019  Date Analyzed: 07/18/2019  Date Reported: 07/18/2019

Report Reviewed By: Michael Cleveland  Report Approved By: [Signature]
Shawn Price, Director of Laboratory Operations, AccuStar Labs

Disclaimer: The uncertainty of this radon measurement is ±10%. Factors contributing to uncertainty include statistical variations, daily and seasonal variations in radon concentrations, sample collection techniques and operation of the dwelling. Interference with test conditions may influence the test results.

This report may only be transferred to a third party in its entirety. Analytical results relate to the samples AS RECEIVED BY THE LABORATORY. Results shown on this report represent levels of radon gas measured between the dates shown in the room area of the site identified above as "Property Tested." Incorrect information will affect results. The results may not be construed as either predictive or supportive of measurements conducted in any area of this structure at any other time. AccuStar Labs, its employees and agents are not responsible for the consequences of any action taken or not taken based upon the results reported or any verbal or written interpretation of the results.
August 23, 2019

Ammar M. Dieb  
Universal Environmental Consultants  
12 Brewster Road  
Framingham, MA 01702

RE: Arsenic Analysis Results for Soil Samples  
Doherty Memorial High School  
299 Highland Street  
Worcester, MA

Dear Ammar,

Lord Associates, Inc. (LAI) has completed the sampling of shallow soil samples at three locations on the referenced property. Locations of the soil samples are shown on the attached Figure 1. One sample from each location was analyzed for arsenic via EPA Method 6010C.

The concentration of arsenic in each sample was compared to soil standards established by the Massachusetts Department of Environmental Protection (MADEP) pursuant to the Massachusetts Contingency Plan (MCP) regulations at 310 CMR 40.0000. All work has been completed in accordance with applicable state, federal, and Industry standards.

Soil samples were collected at the Site by LAI on August 8, 2019. A total of three shallow borings, designated B-101, B-102 and B-103, were advanced using a hand-auger to a depth of 12 inches below surface grade. Boring locations were specified by Robert Para, Jr. of LPA/A.

Approximately eight (8) ounces of soil were collected in laboratory provided containers and were stored on ice for delivery under chain-of-custody protocol to New England Testing Lab (NetLab) of West Warwick, Rhode Island. Table 1 attached includes a summary of laboratory analyses results. A copy of the laboratory analysis report is attached.

As is shown in Table 1, arsenic was detected in all three soil samples. Arsenic in two of the samples, B-102 and B-103, was detected at concentrations of 25.6 milligrams per kilogram (mg/kg) and 24.3 mg/kg respectively which are above the MADEP S-1 Reportable Concentration of 20 mg/kg. However, based on concentration ranges, site location and history, we are of the opinion that the arsenic levels are consistent with naturally occurring background levels in Worcester County. As such, these concentrations are exempt from MADEP notification pursuant to the Massachusetts Contingency Plan regulations (310 CMR 40.0317(22)).

Please contact us at your convenience with any questions or comments.

Sincerely,

LORD ASSOCIATES, INC.

Jonathan Puliafico, CPG  
Senior Project Manager

Ralph Tella, LSP CHMM  
President

Attached: Table 1 Soil Results Summary  
Figure 1 Sample Location Map  
Laboratory Report
# Table 1
Arsenic Analysis Results (mg/kg)
Doherty Memorial High School
299 Highland Street, Worcester, MA

<table>
<thead>
<tr>
<th>Boring</th>
<th>Depth</th>
<th>Arsenic Concentration (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-101</td>
<td>0-1'</td>
<td>9.0</td>
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<tr>
<td>B-102</td>
<td>0-1'</td>
<td>25.6</td>
</tr>
<tr>
<td>B-103</td>
<td>0-1'</td>
<td>24.3</td>
</tr>
</tbody>
</table>

Notes:
- mg/kg: Miligrams per kilogram
- Concentrations above MADEP S-1 Reportable Concentration of 20 mg/kg shown highlighted yellow
FIGURE 1: SAMPLE LOCATION MAP

LEGEND

B-103
SOIL BORING LOCATION B-103
REPORT OF ANALYTICAL RESULTS

NETLAB Work Order Number: 9H20054
Client Project: Lord Associates

Report Date: 23-August-2019

Prepared for:
Jon Puliafico
Lord Associates, Inc
1506 Providence Highway, Suite 30
Norwood, MA 02062

Richard Warila, Laboratory Director
New England Testing Laboratory, Inc.
59 Greenhill Street
West Warwick, RI 02893
rich.warila@newenglandtesting.com
**Samples Submitted:**

The samples listed below were submitted to New England Testing Laboratory on 08/20/19. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client’s designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 9H20054. Custody records are included in this report.

<table>
<thead>
<tr>
<th>Lab ID</th>
<th>Sample</th>
<th>Matrix</th>
<th>Date Sampled</th>
<th>Date Received</th>
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<tbody>
<tr>
<td>9H20054-01</td>
<td>B-101</td>
<td>Soil</td>
<td>08/20/2019</td>
<td>08/20/2019</td>
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<tr>
<td>9H20054-02</td>
<td>B-102</td>
<td>Soil</td>
<td>08/20/2019</td>
<td>08/20/2019</td>
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<tr>
<td>9H20054-03</td>
<td>B-103</td>
<td>Soil</td>
<td>08/20/2019</td>
<td>08/20/2019</td>
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</tbody>
</table>
**Request for Analysis**

At the client's request, the analyses presented in the following table were performed on the samples submitted.

**B-101 (Lab Number: 9H20054-01)**

<table>
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<th>Method</th>
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<td>Arsenic</td>
<td>EPA 6010C</td>
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</table>

**B-102 (Lab Number: 9H20054-02)**

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<td>EPA 6010C</td>
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</tbody>
</table>

**B-103 (Lab Number: 9H20054-03)**

<table>
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<tbody>
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<td>EPA 6010C</td>
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</tbody>
</table>

**Method References**

*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA*
Sample Receipt

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

Metals

All analyses were performed according to NETLAB’s documented Standard Operating Procedures, within all required holding times, and with appropriate quality control measures. All QC was within laboratory established acceptance criteria. The samples were received, processed, and reported with no anomalies.
## Results: Total Metals

**Sample:** B-101  
**Lab Number:** 9H20054-01 (Soil)

<table>
<thead>
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<th>Analyte</th>
<th>Result</th>
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<th>Reporting Limit</th>
<th>Units</th>
<th>Date Prepared</th>
<th>Date Analyzed</th>
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</thead>
<tbody>
<tr>
<td>Arsenic</td>
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<td>0.67</td>
<td>mg/kg</td>
<td></td>
<td>08/21/19</td>
<td>08/22/19</td>
</tr>
</tbody>
</table>
Results: Total Metals

Sample:  B-102  
Lab Number: 9H20054-02 (Soil)

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<th>Result</th>
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<th>Date Analyzed</th>
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</thead>
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<td>0.73</td>
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<td>08/22/19</td>
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</table>
Results: Total Metals

Sample: B-103
Lab Number: 9H20054-03 (Soil)

<table>
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<th>Result</th>
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<th>Units</th>
<th>Date Prepared</th>
<th>Date Analyzed</th>
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</thead>
<tbody>
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<td>0.74</td>
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</table>
# Quality Control

## Total Metals

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<th>Source Result</th>
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</table>
## Notes and Definitions

<table>
<thead>
<tr>
<th>Item</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Wet</td>
<td>Sample results reported on a wet weight basis.</td>
</tr>
<tr>
<td>ND</td>
<td>Analyte NOT DETECTED at or above the reporting limit.</td>
</tr>
</tbody>
</table>
# Chain of Custody Record

## Project Information
- **Project No.:** 2817
- **Project Name/Location:** John Doe
- **Client:** Lord and Associates
- **Report To:** Jon D. Johnson
- **Invoice To:** Same

## Sample Information

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Comp</th>
<th>Sample I.D.</th>
<th>Aqueous</th>
<th>Soil</th>
<th>Other</th>
<th>No. of Containers</th>
<th>Preservative</th>
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<tr>
<td>5/20/19</td>
<td>9:00</td>
<td>X</td>
<td>B-101</td>
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## Sample Handling
- **Sampled By:** [Signature]
  - Date/Time: 5/20/19 11:00
- **Relinquished By:** [Signature]
  - Date/Time: 5/20/19 13:40
  - Received By: Blackmo
  - Date/Time: 5/20/19 13:40
  - Temp. Received: 4

## Laboratory Information
- **Date/Time:** 8/26/19
- **Laboratory Remarks:** 80°

## Special Instructions
- Please deliver report by email, on or before Monday, August 26, 19.

## Netlab Subcontracts
- Radiologicals, Radon, TOC, Asbestos, UCMRs, Perchlorate, Bromate, Bromide, Sulfate, Salmonella, Carbamates.

## Turnaround Time
- 4 Business Days
### MassDEP Analytical Protocol Certification Form

**Laboratory Name:** New England Testing Laboratory, Inc.  
**Project #:** 2817

**Project Location:** Doherty  
**RTN:**

**This Form provides certifications for the following data set:** list Laboratory Sample ID Number(s): 9H20054

**Matrices:**  
- [ ] Groundwater/Surface Water  
- [x] Soil/Sediment  
- [ ] Drinking Water  
- [ ] Air  
- [ ] Other:

**CAM Protocol** (check all that apply):

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Code</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>8260 VOC CAM II A</td>
<td>☐</td>
<td>MassDEP VPH (GC/PID/FID) CAM IV A</td>
</tr>
<tr>
<td>7470/7471 Hg CAM III B</td>
<td>☐</td>
<td>8082 PCB CAM V A</td>
</tr>
<tr>
<td>9014 Total Cyanide/PAC CAM VI A</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>6860 Perchlorate CAM VIII B</td>
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<tr>
<td>8270 SVOC CAM II B</td>
<td>☐</td>
<td>MassDEP VPH (GC/MS) CAM IV C</td>
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<tr>
<td>7010 Metals CAM III C</td>
<td>☐</td>
<td>8081 Pesticides CAM V B</td>
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<tr>
<td>7196 Hex Cr CAM VI B</td>
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<tr>
<td>MassDEP APH CAM IX A</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>6010 Metals CAM III A</td>
<td>☐</td>
<td>MassDEP EPH CAM IV B</td>
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<tr>
<td>6020 Metals CAM III D</td>
<td>☐</td>
<td>8151 Herbicides CAM V C</td>
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<td>8330 Explosives CAM VIII A</td>
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<tr>
<td>TO-15 VOC CAM IX B</td>
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**Affirmative Responses to Questions A through F are required for “Presumptive Certainty” status**

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?</td>
</tr>
<tr>
<td>B</td>
<td>Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?</td>
</tr>
<tr>
<td>C</td>
<td>Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?</td>
</tr>
<tr>
<td>D</td>
<td>Does the laboratory report comply with all the reporting requirements specified in CAM VII A, “Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data”?</td>
</tr>
</tbody>
</table>
| E | VPH, EPH, APH, and TO-15 only  
  a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).  
  b. APH and TO-15 Methods only: Was the complete analyte list reported for each method? |
| F | Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all “No” responses to Questions A through E)? |

**Responses to Questions G, H and I below are required for “Presumptive Certainty” status**

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
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</thead>
<tbody>
<tr>
<td>G</td>
<td>Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?</td>
</tr>
</tbody>
</table>

**Data User Note:** Data that achieve “Presumptive Certainty” status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Were all QC performance standards specified in the CAM protocol(s) achieved?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Were results reported for the complete analyte list specified in the selected CAM protocol(s)?</td>
</tr>
</tbody>
</table>

1All negative responses must be addressed in an attached laboratory narrative.

---

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, is accurate and complete.

**Signature:**  
**Printed Name:** Richard Warila  
**Position:** Laboratory Director  
**Date:** 8/23/2019
3.1.4 EVALUATION OF EXISTING CONDITIONS

J. Supporting Documents
   1. Utility Summary
   2. AHERA 3-Year Reinspection Report
### DOHERTY MEMORIAL HIGH SCHOOL UTILITY USE

<table>
<thead>
<tr>
<th>YEAR</th>
<th>ELECTRICITY (KwH)</th>
<th>NATURAL GAS (Therms)</th>
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<tbody>
<tr>
<td>2014</td>
<td>955,600</td>
<td>111,236</td>
</tr>
<tr>
<td>2015</td>
<td>842,800</td>
<td>90,135</td>
</tr>
<tr>
<td>2016</td>
<td>830,400</td>
<td>78,019</td>
</tr>
<tr>
<td>2017</td>
<td>820,800</td>
<td>89,461</td>
</tr>
<tr>
<td>2018</td>
<td>752,800</td>
<td>86,095</td>
</tr>
</tbody>
</table>
January 30, 2017

Mr. Joshua Watkins
Environmental Coordinator
Worcester Public Schools
20 Irving Street
Worcester, MA 01608

Re: Asbestos AHERA 3-Year Reinspection Report for
Doherty High School, 299 High Street, Worcester, MA
ATC Project No. 183BS01806

Dear Mr. Watkins:

ATC Group Services LLC (ATC) performed an AHERA 3-Year Reinspection in accordance with AHERA requirements at the above referenced school on January 11, 2017. The inspection was performed by Mr. Craig Connet (AI900707), who is a State of Massachusetts licensed asbestos site inspector.

Cost estimates for Recommended Response Actions are located in Attachment A.

The asbestos 3-year reinspection report is located in Attachment B.

Further information on asbestos-containing materials can be located in the school’s AHERA Management Plan. Please contact us if you require further information or have any questions.

Sincerely,

ATC Group Services LLC

Edward Kolodziej
Senior Project Manager

Craig Connet
Environmental Hygienist

Brian Williams
Branch Manager
<table>
<thead>
<tr>
<th></th>
<th>Recommended Response Action Cost Estimate Table</th>
<th>Doherty High School</th>
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</thead>
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<tr>
<td>1.</td>
<td>Removal</td>
<td>$6,500.00</td>
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<tr>
<td>2.</td>
<td>Repair</td>
<td>$4,500.00</td>
</tr>
<tr>
<td>3.</td>
<td>Enclosure</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>4.</td>
<td>Encapsulation</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>5.</td>
<td>Operations &amp; Maintenance</td>
<td>$5,500.00 (includes floor tile replacement)</td>
</tr>
</tbody>
</table>
ATTACHMENT B

ASBESTOS 3-YEAR REINSPECTION REPORT
### Location | Material Description/ ACM Analytical Results/ ACM Category | Amount | Units | Condition/ AHERA Assessment Category | Recommended Response Action (RRA) | RRA Schedule Start | RRA Schedule Stop
--- | --- | --- | --- | --- | --- | --- | ---
1st Floor Hall | 12” x 12” Tan w/White Floor Tile & Mastic | 1130 | SF | No Damage Potential for Damage | Maintain according to O&M Plan Priority: Low | 1/2017 | 1/2020
1st Floor Hall | 9” x 9” Floor Tile & Mastic | 1130 | SF | Covered by 12” x 12” tiles Potential for Damage | Maintain according to O&M Plan Priority: Low | 1/2017 | 1/2020
302 | Hard Joint Insulation | 32 | LF | No Damage Potential for Damage | Maintain according to O&M Plan Priority: Low | 1/2017 | 1/2020
403 | 12” x 12” Tan w/White Floor Tile & Mastic | 864 | SF | No Damage Potential for Damage | Maintain according to O&M Plan Priority: Low | 1/2017 | 1/2020
403 | 9” x 9” Floor Tile & Mastic | 864 | SF | Covered by 12” x 12” tiles Potential for Damage | Maintain according to O&M Plan Priority: Low | 1/2017 | 1/2020
<table>
<thead>
<tr>
<th>Location</th>
<th>Material Description/ ACM Analytical Results/ ACM Category</th>
<th>Amount</th>
<th>Units</th>
<th>Condition/ AHERA Assessment Category</th>
<th>Recommended Response Action (RRA)</th>
<th>RRA Schedule Start</th>
<th>RRA Schedule Stop</th>
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</thead>
<tbody>
<tr>
<td>404</td>
<td>12” x 12” Tan w/White Floor Tile &amp; Mastic</td>
<td>864</td>
<td>SF</td>
<td>10 tiles detaching by heater</td>
<td>Recommend sampling prior to disturbance</td>
<td>1/2017</td>
<td>1/2020</td>
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<tr>
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<td>Damaged Non-Friable ACBM</td>
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<td>Maintain according to O&amp;M Plan</td>
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<tr>
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<td></td>
<td></td>
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<td>Priority: Low</td>
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<tr>
<td>404</td>
<td>9” x 9” Floor Tile &amp; Mastic</td>
<td>864</td>
<td>SF</td>
<td>Covered by 12” x 12” tiles</td>
<td>Maintain according to O&amp;M Plan</td>
<td>1/2017</td>
<td>1/2020</td>
</tr>
<tr>
<td></td>
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<td>Potential for Damage</td>
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<td>SF</td>
<td>No Damage</td>
<td>Maintain according to O&amp;M Plan</td>
<td>1/2017</td>
<td>1/2020</td>
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<td>9” x 9” Floor Tile &amp; Mastic</td>
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<td>Covered by 12” x 12” tiles</td>
<td>Maintain according to O&amp;M Plan</td>
<td>1/2017</td>
<td>1/2020</td>
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<td>Potential for Damage</td>
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<td>1/2020</td>
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<td>Miscellaneous</td>
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<td>Units</td>
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<td>Recommended Response Action (RRA)</td>
<td>RRA Schedule Start</td>
<td>RRA Schedule Stop</td>
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<tr>
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</tr>
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<td>12” x 12” Tan w/White Floor Tile &amp; Mastic</td>
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<td>1/2017</td>
<td>1/2020</td>
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<td>9” x 9” Floor Tile &amp; Mastic</td>
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<td>409</td>
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<td>864</td>
<td>SF</td>
<td>7 tiles detaching by heater</td>
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<td>1/2020</td>
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<td>412</td>
<td>9” x 9” Floor Tile &amp; Mastic</td>
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<td>SF</td>
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<td>1/2020</td>
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<td>430 Main</td>
<td>9” x 9” Floor Tile &amp; Mastic</td>
<td>864</td>
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<td>1/2017</td>
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<td>Auditorium/Stage</td>
<td>Hard Joint Insulation</td>
<td>560</td>
<td>LF</td>
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<td>Boiler Room</td>
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<td>160</td>
<td>LF</td>
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<td>1/2017</td>
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<td>Conference Room 200/Hall 2</td>
<td>9” x 9” Green Floor Tile &amp; Mastic</td>
<td>405</td>
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<td>Covered by carpet Potential for Damage</td>
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<td>1/2017</td>
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<td>Custodian’s Office</td>
<td>Hard Joint Insulation</td>
<td>40</td>
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<td>No Damage</td>
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<td>1/2017</td>
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<td>Custodian’s Office</td>
<td>Pipe Insulation</td>
<td>20</td>
<td>LF</td>
<td>1 damaged fitting Damaged or Significantly Damaged TSI</td>
<td>Recommend sampling prior to disturbance Remove damaged fitting Perform Initial/Additional cleaning under damaged area</td>
<td>1/2017</td>
<td>1/2018</td>
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<td>Entry</td>
<td>12” x 12” Tan w/White Floor Tile &amp; Mastic</td>
<td>1300</td>
<td>SF</td>
<td>No Damage</td>
<td>Maintain according to O&amp;M Plan</td>
<td>1/2017</td>
<td>1/2020</td>
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<td>Potential for Damage</td>
<td>Priority: Low</td>
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<tr>
<td>Entry</td>
<td>9” x 9” Floor Tile &amp; Mastic</td>
<td>1300</td>
<td>SF</td>
<td>Covered by 12” x 12” tiles</td>
<td>Maintain according to O&amp;M Plan</td>
<td>1/2017</td>
<td>1/2020</td>
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<tr>
<td>Fourth Fl. Hall</td>
<td>12” x 12” Tan w/White Floor Tile &amp; Mastic</td>
<td>6500</td>
<td>SF</td>
<td>7 chipped tiles in center of hall</td>
<td>Replace damaged tiles</td>
<td>1/2017</td>
<td>1/2020</td>
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<td></td>
<td>Damaged Non-Friable ACBM</td>
<td>Recommend sampling prior to disturbance</td>
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<td>Maintain according to O&amp;M plan</td>
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<td>Priority: Low</td>
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<tr>
<td>Fourth Fl. Hall</td>
<td>9” x 9” Floor Tile &amp; Mastic</td>
<td>6500</td>
<td>SF</td>
<td>Covered by 12” x 12” tiles</td>
<td>Maintain according to O&amp;M Plan</td>
<td>1/2017</td>
<td>1/2020</td>
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<tr>
<td>Girl’s Locker</td>
<td>Hard Joint Insulation</td>
<td>60</td>
<td>LF</td>
<td>No Damage</td>
<td>Maintain according to O&amp;M Plan</td>
<td>1/2017</td>
<td>1/2020</td>
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<td>Thermal System Insulation</td>
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<td>Condition/ AHERA Assessment Category</td>
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<td>RRA Schedule Start</td>
<td>RRA Schedule Stop</td>
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<td>Guidance Office</td>
<td>1’ x 1’ Acoustical Ceiling Tile</td>
<td>1220</td>
<td>SF</td>
<td>No Damage</td>
<td>Maintain according to O&amp;M Plan Priority: Low</td>
<td>1/2017</td>
<td>1/2020</td>
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<td></td>
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<td>Potential for Damage</td>
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<td>Guidance Offices – 1st fl.</td>
<td>9” x 9” Beige Floor Tile &amp; Mastic</td>
<td>1220</td>
<td>SF</td>
<td>20 tiles worn</td>
<td>Replace worn tiles</td>
<td>1/2017</td>
<td>1/2020</td>
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<td>Assumed</td>
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<td></td>
<td>Damaged Non-Friable ACBM</td>
<td>Recommend sampling prior to disturbance Maintain according to O&amp;M plan Priority: Low</td>
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<tr>
<td>Gym</td>
<td>Hard Joint Insulation</td>
<td>450</td>
<td>LF</td>
<td>No Damage</td>
<td>Maintain according to O&amp;M Plan Priority: Low</td>
<td>1/2017</td>
<td>1/2020</td>
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<td>Potential for Damage</td>
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<tr>
<td>Gym</td>
<td>Pipe Insulation</td>
<td>80</td>
<td>LF</td>
<td>No Damage</td>
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<td>1/2017</td>
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<td>Potential for Damage</td>
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<td>Gym Foyer</td>
<td>12” x 12” Tan w/White Floor Tile &amp; Mastic</td>
<td>1380</td>
<td>SF</td>
<td>No Damage</td>
<td>Maintain according to O&amp;M Plan Priority: Low</td>
<td>1/2017</td>
<td>1/2020</td>
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<td>Potential for Damage</td>
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<td>Gym Office</td>
<td>9” x 9” Green Floor Tile &amp; Mastic</td>
<td>450 SF</td>
<td></td>
<td>15 chipped tiles, 3 missing</td>
<td>Replace chipped tiles</td>
<td>1/2017</td>
<td>1/2020</td>
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<td>Damaged Non-Friable ACBM</td>
<td>Recommend sampling prior to disturbance</td>
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<td>Gym, Boys’ Locker</td>
<td>Duct Flex</td>
<td>1</td>
<td>Each</td>
<td>No Damage</td>
<td>Maintain according to O&amp;M Plan</td>
<td>1/2017</td>
<td>1/2020</td>
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<td>Hall at 303</td>
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<td>1/2017</td>
<td>1/2020</td>
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<td>Potential for Damage</td>
<td>Priority: Low</td>
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<td>Health Office</td>
<td>12” x 12” Tan w/White Floor Tile &amp; Mastic</td>
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<td>9” x 9” Floor Tile &amp; Mastic</td>
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<td>Incinerator Room</td>
<td>Breeching Insulation</td>
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<td>Incinerator Room</td>
<td>Hard Joint Insulation</td>
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<td>No Access</td>
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<tr>
<td>Instrument Locker</td>
<td>9” x 9” Green Floor Tile &amp; Mastic</td>
<td>30</td>
<td>SF</td>
<td>2 chipped tiles</td>
<td>Replace chipped tiles</td>
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<td>1/2020</td>
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<td>Recommend sampling prior to disturbance</td>
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<td>Miscellaneous</td>
<td>30</td>
<td>SF</td>
<td>Damaged Non-Friable ACBM</td>
<td>Maintain according to O&amp;M plan</td>
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<td>Priority: Low</td>
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<td>Main Entry</td>
<td>12” x 12” Tan w/White Floor Tile &amp; Mastic</td>
<td>1125</td>
<td>SF</td>
<td>No Damage</td>
<td>Maintain according to O&amp;M Plan</td>
<td>1/2017</td>
<td>1/2020</td>
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<td>Miscellaneous</td>
<td>1125</td>
<td>SF</td>
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<tr>
<td>Main Entry</td>
<td>9” x 9” Floor Tile &amp; Mastic</td>
<td>1125</td>
<td>SF</td>
<td>Covered by 12” x 12” tiles</td>
<td>Maintain according to O&amp;M Plan</td>
<td>1/2017</td>
<td>1/2020</td>
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<td>Stairwell at 419</td>
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<td>150</td>
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<td>1/2017</td>
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<tr>
<td>Stairwell at Gym</td>
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<td>SF</td>
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<td>1/2020</td>
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<td></td>
<td>Assumed</td>
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<td>Condition/ AHERA Assessment Category</td>
<td>Recommended Response Action (RRA)</td>
<td>RRA Schedule Start</td>
<td>RRA Schedule Stop</td>
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<td>Stairwell at Office</td>
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<td>14 Worn tiles Damaged Non-Friable ACBM</td>
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<td>45</td>
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<td>Replace missing &amp; worn tiles Recommend sampling prior to disturbance Maintain according to O&amp;M Plan Priority: Low</td>
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<td>Stairwell F (by 213)</td>
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<td>413</td>
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<td>Chipping throughout Damage Non-Friable ACBM</td>
<td>Recommend sampling prior to disturbance Replace damaged tiles Maintain according to O&amp;M Plan Priority: Low</td>
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## Material Description/ACM Analytical Results/ACM Category

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<th>Units</th>
<th>Condition/AHERA Assessment Category</th>
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<th>RRA Schedule Start</th>
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<td>Teacher’s Room</td>
<td>1’ x 1’ Acoustical Ceiling Tile Assumed Miscellaneous</td>
<td>960</td>
<td>SF</td>
<td>2 tiles missing Damaged or Significantly Damaged Miscellaneous ACBM</td>
<td>Perform Initial/Additional cleaning under area of missing tiles Maintain according to O&amp;M Plan Priority: Low</td>
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<td>Teacher’s Work Room (under carpet)</td>
<td>9” x 9” Green with Tan Floor Tile &amp; Mastic Assumed Miscellaneous</td>
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<td>Teachers Lunch Rm.</td>
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<tr>
<td>Teachers Lunch Rm.</td>
<td>9” x 9” Floor Tile &amp; Mastic Assumed Miscellaneous</td>
<td>466</td>
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<td>Third Fl. Hall</td>
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<td>12,400</td>
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<td>2 minor chipped tiles Damage Non-Friable ACBM</td>
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<td>Third Fl. Hall</td>
<td>12” x 12” Tan w/White Floor Tile &amp; Mastic Assumed</td>
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<td>Location</td>
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<td>1/2017 1/2020</td>
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**Cost Estimates:**

- **Removal:** $6,500.00
- **Repair:** N/A
- **Enclosure:** N/A
- **O&M:** $5,500.00 (includes floor tile replacement)

---

Inspector name: Craig Connett

Inspector Signature: [Signature]

Management planner name: Edward Kolodziej

Management planner signature: [Signature]

Accreditation # / State: AI900707 / Massachusetts

Expiration date: 09/05/2017

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I, the LEA’s Designated Person, have read and understood the recommendations made above:
3.1.5 SITE DEVELOPMENT REQUIREMENTS

A. Site Narrative
B. Existing Conditions Site Plans
C. Existing vs. Proposed Site Diagram
3.1.5 SITE DEVELOPMENT REQUIREMENTS

A. Site Program Narrative
3.1.5 Site Development Requirements

1.0 INTRODUCTION

Nitsch Engineering has prepared this Site Development Requirements narrative as part of a Massachusetts School Building Authority (MSBA) Module 3 - Feasibility Study for the redevelopment of Doherty Memorial High School in Worcester, MA. The report corresponds to the MSBA Module 3 Preferred Development Program (PDP) and focuses on elements that relate specifically to the site development aspects of the Feasibility Study, referencing MSBA Section 3.1.5, A. Site Development Requirements.

2.0 MODULE 3.1.5: SITE DEVELOPMENT REQUIREMENTS

2.1 General

The site development requirements are based on the educational and extracurricular programming that was established by the City of Worcester and further reviewed and refined by the Steering Committee. Certain project conditions and logistics may affect the scale and fulfillment of some of the site development requirements, depending on the development alternative eventually selected for advancement. For example, the lack of available swing space for displaced students may restrict the scale and configuration of certain site development features such as access, parking, and circulation. Under any redevelopment alternative, the site development plan and phasing approach must be capable of maintaining the existing Doherty School programs in operation during construction with appropriate measures for safety of the students and separation of the contractor functions from the school activities. The following sections include site development objectives, some of which are required due to regulatory conditions as noted.

2.2 Access, Circulation, and Parking

Pedestrian / Bicycle Access

Approximately 50% of the students (800 walkers) currently access the existing Doherty site on foot and that ratio is expected to apply to the redevelopment project. This includes morning drop-offs by parents and students walking to school. Fewer parent pick-ups occur in the afternoon and most of the walkers are students who walk home at the end of the school day. The heavy pedestrian access will require a significant focus on sidewalk connections and broad interconnected internal site pathway circulation.

The existing Doherty site and the alternative sites identified in Section 4.0 include close proximity to Worcester Regional Transit Authority (WRTA) bus stops. Safe connections from all WRTA bus stops to the school building will be required.

A smaller number of students access the existing Doherty site via bicycle, and a bike rack with a minimum of 12 racking spaces is needed.

All pedestrian access from the public ways to the school must be compliant with ADA/AAB accessible route requirements and should be distinct and separate from vehicle accesses and circulation.

Bus Access

Access and stacking capacity for 10 full-size buses adjacent to the main school entrance is required. Access and stacking for 6 half-size buses adjacent to the main entrance for special education students is also required, non-coincident with the full-size bus arrivals and departures. Bus access should
ideally be separated from ordinary passenger vehicle access, although shared site entrance and exit curb cuts may be acceptable/desirable.

**Passenger Vehicles**

Access and internal circulation for passenger vehicles should be separated from bus circulation. Stacking for approximately 20 passenger vehicles for parent drop-off / pick-up are needed.

**Emergency Vehicles**

Access drives and internal circulation drives must be wide enough to accommodate fire apparatus and other emergency vehicles with passenger vehicles present. Access to the perimeter of the building via a 20' wide emergency drive is needed per the requirements of NFPA 1 as amended by 527 CMR 1.00.

**Service Vehicles**

A depressed loading dock providing tractor trailer access is required for building deliveries/servicing is required and should be separated from bus and passenger vehicle access to the greatest extent possible. The loading dock area should provide access for at least 4 bays (compactor, recycling dumpster, 2 tractor trailers). Ramp access to the loading dock for two-wheel carts should be provided.

The building will require overhead door access for maintenance equipment and to access the boiler room. Overhead door access and outdoor space will also be required to accommodate the needs of the various Chapter 74 programs that are included in the educational programming for the school.

**Parking**

The desired parking program will include:

- 180 staff spaces ideally within close proximity to building entrances, with designated spaces near main entry for: Principal, 4 Assistant Principals, 2 Nurses;
- 5-10 visitor spaces near main entrance; and
- 250 combined visitor and student spaces (this is a target number and could be reduced if site conditions are prohibitive).

As noted previously, some shared parking for Elm Park (Newton Hill) visitors is provided at the existing site. This shared parking is assumed to be included under any redevelopment scenario on the existing site. No additional parking would be available for events at the school.

**2.3 Athletic Facilities (Site)**

The elements of the on-site athletic facilities will be heavily influenced by the physical characteristics of the selected development option, including variations on the existing Doherty site or alternative sites. Ideally, all athletic fields will be located on the same site. If spatial constraints prevent the full array of fields, the preferred prioritization includes a football/general purpose field on the site, with other facilities potentially located remotely. The elements listed below are objectives in terms of type, number, and content of athletic facilities desired by the City.

- **Practice Football Field:** 360’x160’ artificial turf football field, pole mounted lights, close access to school toilet rooms;
- **Softball Field:** skinned infield, regulation-sized outfield;
- **Baseball Field:** regulation-sized field;
- **Soccer Field:** boys and girls 240’ x 120’;
- **Basketball Courts:** 2 full-size asphalt, lighted courts;
• **Tennis Courts**: 3 full-size asphalt, lighted courts;
• **Running Track**: 400m/8 lane running track; rubber track, pole mounted lights; close access to school toilet rooms, multi-vantage press box;
• **Spectators**: seating (bleacher) capacity for each game field; and
• **Adjacent Uses**: trail connection to the existing park trails (where applicable).

### 2.4 Other Site Features and Project Conditions

The School program outlines other items to be developed with the site including:

• Outside work areas for the Chapter 74 Construction Craft Laborer program and overhead door access to the shop,
• Outside access for the Engineering and Technologies academy shops,
• Connection to the existing pathways / trail system at Newton Hill (for Doherty site), and
• Site development and phasing capability sufficient to maintain the existing Doherty School programs in operation during construction with appropriate measures for safety of the students and separation of the contractor functions from the school activities (for Doherty site).

### 2.5 Site Utilities

#### Storm Drainage

Under any redevelopment scenario, a stormwater management system meeting the requirements of the City of Worcester requirements (and by extension, the Massachusetts Department of Environmental Protection Stormwater Standards) will be required for the project. The improved system will include provisions for groundwater recharge, peak flow mitigation, and water quality treatment.

#### Sanitary Sewerage

Separated sanitary sewer connections from the school building will be required under any redevelopment scenario and will include a kitchen waste service pipe and one or more ordinary sanitary service pipes. The kitchen waste pipe will be routed through an external grease trap prior to connection with the rest of the sewer service infrastructure. All floor drains in building areas that are accessible by motorized vehicles and equipment must be connected to a gas/oil separator per state plumbing code requirements.

#### Water

Except for the Code Upgrade Option, any site redevelopment option will likely require installation of a new looped water service main that will provide fire protection (building service and hydrants) and domestic water service to the building.

#### Natural Gas

The school building (existing or new) will utilize natural gas as a primary fuel source. Refer to the mechanical engineering narrative for information related to the building fuel system.

#### Electrical / Tele-comm

An emergency generator will be required under any development scenario. Photovoltaic arrays may be considered for the building roof and/or parking areas. Refer to the electrical engineering narrative for information related to the building electric and telecommunications systems.
3.1.5 SITE DEVELOPMENT REQUIREMENTS

B. Existing Conditions Site Plans
Doherty Memorial High School
299 Highland Street, Worcester MA

TOTAL: 20 ACRES
DEVELOPED: 12.3 ACRES

3.1.5 Site Development Requirements
B. Existing Conditions Site Plan

NOTES:

EXISTING K-12 SCHOOLS
EXISTING SITE
PROPOSED SITE
200'0' 50' 100'

QUADRANT KEY PLAN:

- Existing K-12 schools
- Existing Site
- Proposed Site

LEGEND:

- Parcel Property Line
- New Roadway
- Potential acquisition
- New Construction
- New Athletic Field
- Existing Building
- Flood Plain
- Retaining Wall
- Steep Topography

PAXTON
LEICESTER
HOLDEN
9
9
122
190
290

HIGHLAND STREET
SUBURBAN ROAD
NEWTON SQUARE
TEMSCOUNTS
PLEASANT STREET
NEWTON HILL
ELM PARK
PARK AVENUE
HAVILAND STREET GERMAIN STREET WESTLAND STREET

TOTAL: 20 ACRES
DEVELOPED: 12.3 ACRES

Doherty Memorial High School
299 Highland Street, Worcester MA
3.1.5 SITE DEVELOPMENT REQUIREMENTS

C. Existing vs. Proposed Site Diagram
ATHLETIC FIELDS

Football / Track
Practice Field
Baseball
Softball
Tennis
Basketball

PARKING

180 Staff Parking
250 Visitor and Student Parking

BUILDING FOOTPRINT

Existing Footprint: 96,500 SF
Proposed Footprint: +/- 160,000 SF

CIRCULATION

8-10 Large Buses (separate loop)
6 SPED Buses (separate loop)
Queue for 50 Parent Drop-off cars (separate from Buses)

LEGEND

- ADDITIONAL SITE FEATURE REQUIRED BY EDUCATIONAL PROGRAM
- EXISTING SITE FEATURE
- TOTAL SITE FEATURES REQUIRED BY EDUCATIONAL PROGRAM

Doherty Memorial High School
299 Highland Street, Worcester, MA
3.1.6 PRELIMINARY EVALUATION OF ALTERNATIVES

A. Narrative
B. Code Upgrade Option
C. Renovation and/or Additions Option
D. New Construction on Existing Site Option A.1
E. New Construction on Alternative Site Options
F. Comparative Cost Analysis
G. Recommended Alternatives for Further Development & Evaluation
H. Supporting Documents
3.1.6 PRELIMINARY EVALUATION OF ALTERNATIVES

A. Narrative
Analysis of school district’s student assignment practices
The Worcester Public Schools District is composed of the following:
- 34 Pre-Kindergarten/Kindergarten/Elementary Schools (grades PK, PK-6 and K-6)
- 4 Middle Schools (grades 6-8 and 7-8)
- 7 High Schools (grades 7-12 and 9-12; includes Technical and Alternative programs)

Available Space in other Schools in the District
The District has previously reported that all schools in the District are at, if not over, their capacity and that there is no existing space to temporarily accommodate Doherty Memorial HS students during construction.

Tuition Agreements with Adjacent School Districts
The District has previously advised that the City of Worcester does not currently have tuition agreements with neighboring school districts.

Rental or Acquisition of Existing Buildings that could be made available for school use
City of Worcester representatives reported that there are no available buildings, in terms of existing space that could be either acquired or leased, that are suitable for District use as temporary “swing space”.

Code Upgrade “Base Repair” Option
Refer to 3.1.6.B for narrative description, site diagram, comparative cost analysis and other supporting documents.

Renovation/Addition Option
Refer to 3.1.6.C for narrative description, site diagram, comparative cost analysis and other supporting documents.

New Construction on Existing Site Option
Refer to 3.1.6.D for narrative description, site diagram, comparative cost analysis and other supporting documents.

New Construction on Alternate Site Option
City of Worcester representatives have previously reviewed available alternate sites in the Doherty Memorial High School quadrant and reported that two other sites may be suitable for development of a new high school. The City also advised that they are not interested in pursuing acquisition of any
additional adjacent land at the Doherty site in order to expand the existing site and the other two sites would require land acquisition which is being further reviewed.
3.1.6 PRELIMINARY EVALUATION OF ALTERNATIVES

B. Code Upgrade Option
   1. Narrative
   2. Site Diagram
DESCRIPTION: For purposes of this Feasibility Study, the Code Upgrade Option is defined as a “No-Build” solution that will maintain the status quo. It will not provide any additional square footage or address education or site programmatic improvements to the existing School. The Code Upgrade Option addresses pre-existing code violations, improvements required due to scope-of-work code thresholds, and the repair/replacement of existing building systems that have either exceeded their life expectancy or have already failed. It also addresses items that should be replaced as the result of related work being performed in close proximity (for instance the replacement of existing ACT, lighting, data/communication, life safety and other in/above-ceiling systems that must first be removed to install a new fire suppression system). The following Code Upgrade scope of work is based on a thorough assessment of existing building systems by the Design Team. Proposed SF areas for this option are approximately as follows:

- Renovation (existing building) = 167,000 GSF
- Add modular units for the Chapter 74 programs = 30,000 GSF

CODE UPGRADE SCOPE OF WORK:
General:
- It is assumed that the work will be performed in multiple phases while the building is occupied, and that temporary “swing space” (i.e. modular Classrooms located on or near the practice football field, or to the west of the building) will be required to draw down the student population in the existing building. Temporary enclosures/partitions will be required to isolate work areas from occupied academic areas, and safe means of egress must be maintained at all times. Phasing will be scheduled to maximize productivity during summer vacations when the majority of common-space work (at Corridors, Stairs, Gymnasium, Locker Rooms, Cafeteria/Kitchen, Administration, Media Center, etc.), will be accomplished; it is assumed that a second shift will be utilized during some or all of those times. It should be noted that the City school schedules are tied together as the district, so this schools schedule cannot be changed to increase time available for construction.

Site (refer to NE Basis of Design narrative):
- Provide full accessibility to comply with 521 CMR, and file for a variance for items that cannot be brought into compliance due to impartibility, listed as follows:
  - Provide an accessible route, via new sidewalks and curb cuts, from Highland Street to the Main Entry
  - Provide an accessible route, via new sidewalks and ramps, from the adjacent parking area to the School Entrance, the upper Gymnasium entrance, and other exit areas.
3.1.6 PRELIM EVALUATION OF ALTERNATIVES
B. Code Upgrade Option

1. Narrative

- Provide an accessible route, via new sidewalks and ramps, from School to the Sports practice fields.
- Provide new signed accessible parking spaces, including at least one van-accessible space at the main entrance and adjacent parking and the upper Gymnasium parking.
- Provide a new curb cut at the Main Entry.
  - Replace or repair exterior entry stairs.
  - Provide access and parking at rear entry to allow better access and accessible access.
  - Grind/repave all bituminous pavement and restripe line markings throughout
  - Reset granite curbing throughout
  - Provide below-grade exterior grease trap and associated piping
  - Replace exterior lighting with LED lighting and control for security.
  - Provide exterior wayfinding and directional signage
  - Provide new site utilities as required for Fire Protection, Plumbing, and Electrical/Data systems
  - Comply with MA-DEP stormwater management as required where existing site conditions are disturbed
  - Upgrade the receiving area and provide enclosure for the kitchen waste compacter.
  - Provide temporary modular classrooms and associated site utilities (FP, water, sewer, electrical/data, etc.)

Building Exterior:
- Replace missing sheet metal and roof drain strainers
- Remove all existing caulking (as hazmat) and install new sealants at all masonry control joints.
- Selectively repoint masonry at exterior walls
- Repair roof leaks at rooftop HVAC equipment and other locations as required; existing EPDM roofing system to remain. Replace roof hatches and access ladders.
- Replace all glass and polycarbonate glazing with new 1” (min.) high performance insulating glass; replace all existing windows, storefront and curtainwall with new insulated frames and insulated glass
- Replace insulated porcelain panels with new metal-faced insulated panels as part of the window systems
- Remove and replace all perimeter joint sealants at exterior penetrations and control joints
- Replace all exterior doors with new aluminum or steel doors
- Replace all hollow metal doors and frames, including all hardware
- Replace existing overhead doors
- Replace exterior door hardware
- Prepare and repaint steel lintels, plates and other exterior metal items
Building Interior:
- Provide full accessibility to comply with 521 CMR including:
  - Provide an accessible route, including maneuvering clearances at doorways, to all interior spaces throughout
  - Provide new accessible hardware throughout
  - Provide accessible Toilet Room fixtures, partitions and accessories throughout
  - Provide accessible water fountains throughout
  - Provide new accessible signage throughout
  - Modify or replace existing millwork (transaction areas, serving lines, reception desks, etc.) as required
  - Install new elevators to provide accessibility to all floors
  - Provide an accessible route, via a new platform lift, from the Auditorium to the Stage level
  - Provide accessible seating locations at Auditorium
  - Provide assistive listening systems at Auditorium, Cafeteria, Media Center, and Gymnasium
- Replace VCT flooring throughout with new resilient flooring and base
- Replace carpet flooring with new vinyl-backed carpeting
- Repaint all interior walls and finishes
- Replace telescopic bleachers at Gymnasium
- Replace Gymnasium equipment (basketball backstops, divider curtain, batting cage, etc.)
- Replace Locker Room lockers
- Provide new ACT ceilings throughout
- Provide new window treatments throughout
- Replace non-functional Food Service equipment
- Replace wire glass with tempered or laminated safety glass at doors, frames and borrowed lites
- Provide new markerboards, interactive boards and tack boards at Classrooms and all teaching or staff work locations throughout

Fixtures, Furnishings & Equipment (FF&E)/Technology:
- Remove wall-mounted televisions and provide new interactive projectors; typical at Classrooms and other learning spaces throughout
- Provide new furnishings where broken or exceeded lifespan

- Abate all exterior caulking throughout, assumed to contain PCB’s
- Abate rubber sports flooring/cement in Gymnasium/Weight Room areas
- Abate VCT and wood block flooring/mastic throughout
- Abate fire curtain at Stage
Abate lab tables and sinks at Science Labs
Abate miscellaneous hazardous materials concealed above ceilings and behind walls at all areas to be disturbed
Abate light fixtures, doors, interior windows, blackboards, tackboards, sinks and other miscellaneous hazardous materials

Structural (refer to B.D.I. Basis of Design narrative):
- Refer to Structural Narrative

Fire Protection (refer to S.S. Basis of Design narrative):
  - (no additions are planned, renovations are throughout, on major changes)
  - Refer to Fire protection Narrative

Plumbing (refer to S.E.C. Basis of Design narrative):
- Provide new plumbing for accessible toilet rooms (added throughout)

HVAC (refer to S.E.C. Basis of Design narrative):
- Expand existing Energy Management System (EMS) control system
- Refer to HVAC summary

Electrical (refer to A.R.T. Basis of Design narrative):
- Refer to Electrical narrative

Sustainable Design

DEGREE OF EDUCATIONAL PROGRAM/SPACE SUMMARY FULFILLMENT: The Code Upgrade Option does not, generally speaking, satisfy the Educational Program/Space Summary Requirements. Significant items of note include the following:
- Core Academic, Special Education, Vocational/Technical and several other areas are space-deficient and do not meet either MSBA guidelines or the proposed Educational program
- Additional chapter 74 programs cannot be added due to spatial constraints
- Gymnasium, Auditorium, Kitchen, Media center and significantly undersized, and will remain at locations distributed throughout the school, some degree of separation can be obtained for afterhours usage, but not to the security requirements of the program.
- The current problems with narrow corridors, and accessory spaces of insufficient size will not be addressed
- Current adjacencies are not ideal and there are numerous places where supervision of students is problematic.
Given the limitations of the existing building envelope, structure and systems, the sustainability goals set by the City and District are not met by the Code Upgrade option.

**IMPACT OF CONSTRUCTION PHASING:** The Code Upgrade Option scope of work involves relatively significant demolition, abatement and renovation/reconstruction activities throughout the entire school. It is improbable that the work can be scheduled and accomplished wholly during summer vacations and/or during off-hours (second/third shifts at premium cost) in order to allow uninterrupted District use of existing school spaces. Although summers and off-hours will no doubt be utilized to the maximum extent possible, particularly in main circulation and common spaces (Corridors, Stairs, Gym/Locker Rooms, Cafeteria/Kitchen, Administration, Media Center, etc.) it will be necessary to perform the Code Upgrade Option in multiple phases while the building remains partially occupied. Consequently, to avoid overcrowding in occupied areas, it will be necessary to draw down the student population enough to provide the Contractor with vacant areas large enough to perform work efficiently. Common methods of reducing student population include displacement of students to other District schools or leased space, or by providing temporary onsite “swing space” (i.e. modular classrooms). The District has previously concluded that suitable space in other District schools or leased buildings is unavailable; therefore, temporary modular classrooms will be required. Temporary modular classrooms are considered, in terms of the MA Building Code, as permanent structures and must comply with current codes including fire protection, plumbing, energy, accessibility, and structural. They are also categorically ineligible for reimbursement by MSBA; their full cost would be borne by the City/District.

Doherty Memorial High School has been, for the past several decades, championing the spatial constraints of their existing facility to the best of their ability. Despite their efforts, no base repair solution or amount of code upgrades will improve the educational plan, make the facility fully and truly accessible, and address the overcrowding conditions for both teachers, students and administrators.
Doherty Memorial High School
299 Highland Street, Worcester MA

FEASIBILITY STUDY

TOTAL: 20 ACRES
DEVELOPED: 12.3 ACRES

LEGEND:
- Parcel Property Line
- New Roadway
- Potential acquisition
- New Construction
- New Athletic Field
- Existing Building
- Flood Plain
- Retaining Wall
- Steep Topography

NOTES:
- Systems replacements
- Energy upgrades
- Accessibility
- Window Replacement
- Phased occupied renovations including modular classrooms
- Does not meet Educational Program

QUADRANT KEY PLAN:
- Existing K-12 schools
- Existing Site
- Proposed Site

3.1.6 Preliminary Evaluation of Alternatives
B. Code Upgrade Option (No-Build)
2. Site Plan Diagram
3.1.6 PRELIMINARY EVALUATION OF ALTERNATIVES

C. Renovation and/or Additions Option
   1. Narrative
   2. Site Diagram
3.1.6 PRELIM EVALUATION OF ALTERNATIVES
C. Renovation/Addition Option

1. Narrative

DESCRIPTION: The Renovation/Addition Option scope of work includes renovation and partial demolition of the existing School, along with construction of multiple additions, to provide a solution that meets the Educational Program requirements to the maximum extent possible. This option assumes that the existing School will remain occupied during construction. The work will need to be done in multiple phases, including building additions, and phased renovation and reconstruction of all the existing spaces, including complete replacement of all systems, while maintaining the existing systems at areas until renovated. The following Renovation/Addition scope of work is based on a thorough assessment of existing building systems by the Design Team. Proposed SF areas for this option are approximately as follows:

- Add modular units for Swing Space = 30,000 GSF
- Renovation (existing building) = 98,000 GSF
- Demolition (existing building) = 77,500 GSF
- Addition = 322,000 GSF
Total = 420,000 GSF

RENOVATION/ADDITION SCOPE OF WORK:

General: Work will be performed in multiple phases while the building is occupied:

- **Enabling Early Site Package** would include preparation of the site:
  - excavation of practice fields for new construction, parking, and contractor staging
  - adding temporary retaining along Highland street for temporary parking
  - excavation and installation of permanent retaining walls at the rear of the building for temporary parking and permanent perimeter access.
  - adding temporary modular classrooms for swing space
- **Phase I** begins with construction of a 3-story Cafeteria, Science, Engineering Technology Academy (“ETA”, a Chapter 74 program), and mechanical spaces, as well as a 4-story Auditorium, Gymnasium, Administration and media center building.
- **Phase II** is three-fold. Sequence 2A will involve occupancy of phase 1 spaces. Sequence 2B involves demolition of the buildings containing the Gym/Physical Education support spaces and ETA as well as the west ends of both building containing the Cafeteria, Art Rooms, Classrooms and some Special Education rooms. Sequence 2C involves a mix of classroom additions as well as gut renovations of Auditorium, Science Classrooms and Classrooms below science room spaces.
Phase III is twofold. Sequence 3A involves occupying newly renovated and newly built spaces including: new Administration/Guidance/Medical Suite, Art Classrooms, General Classrooms in renovated areas as well as new General Classrooms in newly constructed academic wings. Sequence 3B involves the gut/renovation of remaining spaces, the former Administration Suite with library above and the remaining classrooms within that area as well as the group of classrooms adjacent to the former gym.

Phase IV is two-fold. Sequence 4A involves occupying newly renovated classrooms. Sequence 4B involves construction of the multipurpose field and finishing site and landscaping scope.

The additions will provide enough space so that the staff and students can be shifted to occupy the new or renovated areas when available, and isolated from areas of the active construction by use of temporary enclosures/partitions. These isolations will be required to contain work areas from occupied academic areas, and safe means of egress must be maintained at all times. Temporary enclosures are required for all hazardous materials removal that will need to be done in advance of each phase. Phasing will be scheduled to maximize productivity during school breaks with focus on the summer when the majority of common–space work (at Corridors, Stairs), will be accomplished; it is assumed that a second working shift will be utilized during some or all of those times to improve productivity. The entire envelope will require complete renovation, including all new doors and windows, new roofs.

Site (refer to Nitsch Engineering Basis of Design narrative):
- Provide full accessibility to comply with 521 CMR including:
  - Provide a new driveway entrance for buses, parent pickup and parking.
  - Provide an accessible route, via new sidewalks and ramps, to all new and existing building and site elements
  - Provide new signed accessible parking spaces, including at least one van–accessible space, distributed throughout the site
  - Provide accessible seating, and access to the new fields
- Cut back and remove overgrown/invasive vegetation throughout the site
- Provide new synthetic turf multi–use field including lighting and bleacher seating, seating count TBD
- Provide new paved driveway, including new retaining walls as required, to allow vehicular access around full building perimeter
- Provide new bituminous pavement parking area(s) as required to replace space lost to footprint of new addition(s)
- Grind/repave bituminous pavement and restripe line markings throughout
- Provide new granite curbing throughout
3.1.6 PRELIM EVALUATION OF ALTERNATIVES

C. Renovation/Addition Option

1. Narrative

- Provide new cover(s) for manhole structure(s) where missing
- Install new perimeter drain(s) and/or waterproofing as required to mitigate below-grade water infiltration
- Provide new MA–DEP–compliant stormwater management infrastructure as required for reconstructed/new paving and impervious areas
- Provide below-grade exterior grease trap and associated piping
- Provide new exterior lighting throughout
- Provide exterior wayfinding and directional signage
- Provide new site utilities as required for Fire Protection, Plumbing, and Electrical/Data systems
- Provide new landscaping at all disturbed areas
- Provide new playground equipment, surfacing and fencing

**Building Exterior:**
- Selectively repoint masonry at exterior walls as required
- Provide new adhered PVC roofing system throughout, including all membrane/flashing, roof edging, sheet metal work, insulation, roof vapor barrier, wood blocking and other roof accessories (ladders, hatches, etc.) as required
- Replace all existing windows, storefront and curtainwall with new thermally broken aluminum systems, including 1” (min.) high performance insulating glass, perimeter joint sealants, insulated panels, screens, operable hardware, sheet metal work, air/vapor barrier (AVB) transitions and other accessories as required.
- Replace roof hatches and access ladders.
- Remove and replace all perimeter joint sealants at exterior penetrations and control joints
- Replace all exterior doors and frames with new aluminum or steel doors, including hardware
- Prepare and repaint steel lintels, plates and all other exterior metal items
- All new construction to the current standards and code requirements

**Building Interior:**
- Provide Code Upgrade Option scope of work at all renovated areas
- Provide full accessibility to comply with 521 CMR including:
  - Provide accessibility to all areas to the code for new construction
- Provide new interior finishes throughout at the existing areas including flooring, base, walls and ceilings
- Provide new doors, frames, borrowed lites and hardware
- Replace Corridor lockers throughout
- Provide new window treatments throughout
- Provide new millwork/casework throughout
3.1.6 PRELIM EVALUATION OF ALTERNATIVES
C. Renovation/Addition Option
1. Narrative

- Provide new elevators in the additions and accessible routes to all existing renovated areas
- Provide new stair systems throughout, including at least one extending to the highest roof level
- All new construction to the current standards and code requirements

**Sustainability / Net Zero Energy Goal:**
(to the extent possible in renovated areas, designed for new construction areas)
- Provide infrastructure required for sustainable building project, and net zero energy goals
- The City / School Facilities departments have developed a list of preferred systems and equipment choices that are maintainable, durable and efficient, and updates their list with newer equipment as systems come on the market.
- A design charrette will be scheduled early in the design process to solicit input and priorities in an effort to determine the best strategies for this project. The Sustainable Design consultant and MEP consultants will attend and present new energy saving strategies for consideration.
- One approach used in the past that would be continued on this project are to maximize the R value of the building envelope, including components such as windows and doors.
- Refer to the MEP narratives for additional information

**Fixtures, Furnishings & Equipment (FF&E)/Technology:**
- Provide new FF&E throughout including furnishings, equipment, maintenance items, etc.
- Provide new Technology throughout including student/teacher computers, laptop carts, interactive projectors, servers, etc.

**Hazardous Materials (refer to UEC Basis of Design narrative):**
- Refer to the hazardous materials report for extent of materials encountered
- Work must be done in phases, and all areas of abatement completely separated from occupied areas
- Additional scheduling will be required at each phase
- Demolition and abatement would be a combined work scope, to best remove all materials while in contained areas, and minimize the potential of encountering hazardous materials at later stages of the renovation
- Intent is to abate all hazardous materials in the building

**Structural (refer to BDI Basis of Design narrative):**

**Fire Protection (refer to SS Basis of Design narrative):**

**Plumbing (refer to SEC Basis of Design narrative):**
3.1.6 PRELIM EVALUATION OF ALTERNATIVES

C. Renovation/Addition Option

1. Narrative

HVAC (refer to SEC Basis of Design narrative):

Electrical (refer to ART Basis of Design narrative):

DEGREE OF EDUCATIONAL PROGRAM/SPACE SUMMARY FULFILLMENT: The Renovation/Addition Option will satisfy the majority of Educational Program/Space Summary objectives. Several items of note include the following:

- To meet the Education Program, due to all the existing spaces being deficient in size, this scheme is close to a complete reconstruction of the building, but within the occupied building.
- The Site Program, circulation and parking will be displaced throughout construction activities and change as the project delivery evolves.
- The efficiency factor of a Renovation/Addition solution will be less than that of New Construction due to existing structure (particularly low floor to floor height), interior/exterior walls and openings.
- Sustainability goals are more readily achieved with New Construction than with the Renovation/Addition of an existing building.
- Full building code compliance, in terms of structure, accessibility, energy and life safety, will be more difficult to achieve in an existing building than with New Construction. Variances and/or compliance alternatives may be warranted if full compliance with applicable codes is impractical.
- Adjacencies between spaces and to the exterior may not meet ideal program goals, but are not seen as detrimental to the extent that a Renovation/Addition solution should be dismissed.

IMPACT OF CONSTRUCTION PHASING: Similar to (but to a greater extent than) the Code Upgrade Option, the Renovation/Addition Option scope of work involves significant demolition, abatement and renovation/reconstruction activities throughout the entire school. Since the Renovation/Addition Option must also be occupied during construction, it is assumed that the work will be done in multiple phases over a target period of 4 –5 years, subject to unforeseen conditions, which may cause delays. The Renovation/Addition Option inherently provides some “swing space”, there will be a need for additional swing space utilizing modular classroom buildings. By occupying the modular classrooms while also building and occupying completed portions of the building Additions, the project has a better opportunity to be completed in the timeliest manner an add/reno project can be to the original schedule goals.

Accordingly, the first 12–15 months of work will have much less impact to the occupants of the existing building than later phases, as the addition is a connected but separate addition. Phase II, III additions
would take 12–15 months to complete and work would include connections to the existing and as stated previously, summer vacations will be leveraged to maximize productivity during unoccupied phases; this will help to reduce disruption to the District’s educational delivery during the school year. Other impacts related to construction phasing are site–related. Since the proposed Addition will occupy the area of the parking lot, and parking would be installed at the current practice fields, the school will need to find additional area for the fields for the duration of the construction. Contractor staging/storage/laydown of materials as well as parking and temporary offices, would be at the location of the sports field, and this field would be constructed at the projects last phase. Physical Education/Athletics programs will be limited to the new gym/PE facilities, remote field at Foley Stadium and Beaver Brook, for the full project duration.
FEASIBILITY STUDY

Doherty Memorial High School
299 Highland Street, Worcester MA

TOTAL: 20 ACRES
DEVELOPED: 15.4 ACRES

NOTES:
• Demolition: (77,600 SF)
• Renovation: 98,000 SF
• Addition: 322,000 SF
• Total: 420,000 SF

• Greatest disruption to staff and students
• Extended schedule to 2025
• Compromised educational program

3.1.6 Preliminary Evaluation of Alternatives
C. Addition Renovation
2. Site Plan Diagram

QUADRANT KEY PLAN:
- Existing K-12 schools
- Existing Site
- Proposed Site

LEGEND:
- Parcel Property Line
- New Roadway
- Potential acquisition
- Bus Circulation
- Parent Circulation Connection
- New Construction
- New Athletic Field
- Existing Building
- Flood Plain
- Retaining Wall
- Steep Topography

PHASES 1, 2A
PHASES 2B, 3A
PHASES 2, 3A
PHASES 2B, 3A
PHASES 2C, 3A
PHASES 3B, 4A
PHASES 1, 2A
EESP TEMP MODULAR CLASSROOMS
PHASES 1B, 4A
EESP
TEMP MODULAR
CLASSROOMS

TOTAL: 20 ACRES
DEVELOPED: 15.4 ACRES
3.1.6 PRELIMINARY EVALUATION OF ALTERNATIVES

D. New Construction on Existing Site Option A.1
   1. Option A.1 Narrative
   2. Option A.1 Site Plan
   3. Option A.1 Site Diagrams
      Phase 1–3
   4. Option A.1 Evaluation
DESCRIPTION: The New Construction Option is based on a new building located on the adjacent field area east of the existing building, and assumes that the new building will be constructed while the existing building remains fully occupied. Once the new building is complete, the existing building would be demolished in its entirety and any remaining site features (athletic fields, parking, driveways, etc.) would be completed. While there will be temporary construction impacts with this option, most notably the loss of nearly all existing outdoor areas and student parking capacity in part, they are primarily site-related and the end result is a solution that meets most if not all of the Educational Program requirements. However, the sports fields site program will not be met.

Proposed SF areas for this option are approximately as follows:

- New Construction = 420,000 GSF
- Demolition (existing building) = 167,000 GSF

NEW CONSTRUCTION SCOPE OF WORK:

General: It is assumed that the work will begin with construction of a new building, including associated sitework infrastructure, to be located on the field area east of the existing building. We anticipate that the entire practice football field, and the student/Newton Hill visitor parking lot, will be consumed by the building and the Contractor for staging material laydown/storage, worker/equipment parking areas and temporary office trailers. During this time the existing building would remain fully occupied and functional, at least internally, much like it does presently. Externally, construction access would impact vehicular traffic and parking patterns as well as losing the PE/Athletic practice fields. We expect that the Contractor will access the site via the driveway and parking area to the side of the existing building, however, construction access may also have a construction only access road at the east side. Similar to the Code Upgrade and Renovation/Addition Options, the summer break will be leveraged to maximize productivity for work (i.e. sitework such as repaving, new site utilities, drainage infrastructure, etc.) that would normally disturb school vehicular/pedestrian traffic.

Site (refer to Nitsch Engineering Basis of Design narrative):
- Provide full site accessibility to comply with 521 CMR including:
  - Provide an accessible route, via new sidewalks ramps, and curb cuts, from Highland Street

Building Exterior/Interior:
The Doherty High School Visioning Sessions culminated in the definition of project goals and priorities for the re-imagined Doherty High School. Some of these goals and priorities have direct architectural implications that will help to establish the architectural basis of design. The following
items are a summary of organizational or aesthetic architectural features which are desired in the new Doherty High School:

- An entry sequence which is welcoming yet secure, with an interactive dedication feature.
- A prominent lobby space that enhances and encourages community use after school hours.
- Building organization that ensures the educational program is equally accessible to all students.
- Building features displaying student work, to encourage a sense of “Doherty Pride”.
- Integration of special education spaces so as to increase inclusion and reduce stigma.
- Organization of classrooms to create 9th grade “communities” to assist the difficult transition into high school.
- Introduce and feature STEM spaces that the existing Doherty High School could not spatially support, such as Maker Spaces, Computer Science Classrooms, Science Labs and Chapter 74 Spaces.
- Careful consideration of massing and daylighting of interior spaces.
- Featured spaces that will be used for collaboration.
- Durable and low maintenance interior finishes, with a “timeless” color palette.
- Integration of the history of Doherty Memorial High School, featuring its role in the City of Worcester.
- Building massing and façade design that is sensitive to the surrounding neighborhood scale and park land.
- Durable and low-maintenance exterior materials.

**Sustainability / Net Zero Energy Goal:**

- Provide infrastructure required for sustainable building project, and net zero energy goals.
- The City / School Facilities departments have developed a list of preferred systems and equipment choices that are maintainable, durable and efficient, and updates their list with newer equipment as systems come on the market.
- A design charrette will be scheduled early in the design process to solicit input and priorities in an effort to determine the best strategies for this project. The Sustainable Design consultant will attend and present new energy saving strategies for consideration.
- One approach used in the past that would be continued on this project are to maximize the R value of the building envelope, including components such as windows and doors.
- Refer to the MEP narratives for additional information.

**Fixtures, Furnishings & Equipment (FF&E)/Technology:**

- Provide new FF&E throughout including furnishings, equipment, maintenance items, etc.
- Provide new Technology throughout including student/teacher computers, mobile device charging carts, interactive projectors, servers, etc.
Hazardous Materials (refer to UEC Basis of Design narrative):
- Abate entire existing building prior to demolition
- Provide radon mitigation system at Lower Level slab-on-grade areas

Structural (refer to BDI Basis of Design narrative):

Fire Protection (refer to SS Basis of Design narrative):

Plumbing (refer to SEC Basis of Design narrative):

HVAC (refer to SEC Basis of Design narrative):

Electrical (refer to ART Basis of Design narrative):

DEGREE OF EDUCATIONAL PROGRAM/SPACE SUMMARY FULFILLMENT: The New Construction Option will satisfy most if not all Educational Program/Space Summary objectives. However, the extensive site program requirements represent a challenge due to the parcel’s restriction in developable area, and will not be met in full. However, select high priority site program features will be included.

IMPACT OF CONSTRUCTION PHASING: Because a new building can be constructed entirely outside the footprint of the existing building (which can remain fully occupied), the New Construction Option will have less impact to students than the Code Upgrade or Renovation/Addition Options, all without the need for “swing space”. As previously noted, the biggest temporary construction impacts are site–related and include the following:
- Loss of PE/Athletic fields and other outdoor spaces during construction.
- Loss of student parking.
- Relocation of pedestrian/vehicular traffic and staff/faculty parking from a reconfigured site layout, designated parking areas, and a dedicated construction access–way.

One advantage of New Construction is that it doesn’t have the same limitations, in terms of work area, as either the Code Upgrade or Renovation/Addition Options. More workers can be productive because there is a greater area to work in. Consequently, the duration of the project can be less than an occupied project which has numerous phases with complex scope of work, relocations, and temporary support facilities. Like the other options, the New Construction Option will leverage summer breaks to maximize productivity, particularly site–related, and reduce construction impacts.
The conceptual project phasing at the time of this report is as follows:

- **Site Enabling**: This phase would be planned in advance and scheduled to be completed over the summer of 2021, and would include adding parking at the front of the school, grading at the buildings rear to have access around and add parking.

- **Phase I**: Includes construction of the New School Building with a clear separation between the work site and the school, to be completed in 2024, late spring.

- **Phase II**: Includes demolishing the existing building over the summer of 2024, and the entrance driveway constructed for the September of 2024 school season.

- **Phase III**: Includes separation of the new work with the remaining work by the summer of 2025:
  - the completion of the building demolition
  - construction of the garage
  - fields
TOTAL: 20 ACRES
DEVELOPED: 12.3 ACRES

NOTES:
- Established location
- Steep topography
- Abutted by park land
- Highland Street access only

QUADRANT KEY PLAN:
- Existing K-12 schools
- Existing Site
- Proposed Site

LEGEND:
- Parcel Property Line
- Potential acquisition
- New Construction
- New Athletic Field
- Existing Building
- Flood Plain
- Retaining Wall
- Steep Topography
- New Roadway
- Bus Circulation
- Parent Circulation Connection

Doherty Memorial High School
299 Highland Street, Worcester MA

3.1.6 Preliminary Evaluation of Alternatives
D. New Construction on Existing Site
2. Option A.1 Existing Site Plan
TOTAL: 20 ACRES
DEVELOPED: 15.4 ACRES

NOTES:
• Pave around existing building to maximize parking
• No practice fields available throughout construction

3.1.6 Preliminary Evaluation of Alternatives
D. New Construction on Existing Site
3. Option A.1 Site Diagram – Phase 1

Doherty Memorial High School
299 Highland Street, Worcester MA
FEASIBILITY STUDY

TOTAL: 20 ACRES
DEVELOPED: 15.4 ACRES

NOTES:
- Demolition of existing building
- Construction of roads for bus circulation
- Occupancy of new building

Doherty Memorial High School
299 Highland Street, Worcester MA
### EXISTING DOHERTY SITE

<table>
<thead>
<tr>
<th>GENERAL INFORMATION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Property Information</td>
<td></td>
</tr>
<tr>
<td>299 Highland Avenue, Worcester MA</td>
<td></td>
</tr>
<tr>
<td>20 Acres</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WEIGHT</th>
<th>CRITERIA</th>
<th>SCORE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>ABILITY TO MEET BUILDING PROGRAM</td>
<td>5</td>
<td>Building program requirements can be satisfied.</td>
</tr>
<tr>
<td>5</td>
<td>ACQUISITION ISSUES, NEGOTIATION &amp; EXPANSION</td>
<td>5</td>
<td>The Site is bounded by park land; there are no expansion options or acquisition issues. The Doherty sports programs utilize Foley Stadium for practices and games. Better access and expansion to Foley would be beneficial.</td>
</tr>
<tr>
<td>5</td>
<td>COMPARATIVE STAFF &amp; STUDENT IMPACT</td>
<td>2</td>
<td>The construction project is planned to be phased while the existing school building remains occupied and functional. During construction, the school will have limited parking, no on-site sports practice fields, and the final site work is expected to be complete one year beyond the base schedule.</td>
</tr>
<tr>
<td>4</td>
<td>ABILITY TO MEET SITE ATHLETICS PROGRAM</td>
<td>3</td>
<td>While the program ideally would have all the desired fields on the same site, limited field development is anticipated. Early studies show a football/practice field and softball overlay could be developed on the site. The off-site fields at Foley Stadium will still be beneficial to supplement the athletic program.</td>
</tr>
<tr>
<td>4</td>
<td>CENTRAL TO DISTRICT/QUADRANT</td>
<td>5</td>
<td>The existing school site is recognized as central to the Doherty Quadrant.</td>
</tr>
<tr>
<td>3</td>
<td>SITE DEVELOPMENT COSTS (Earth moving, soils, retaining walls, parking structures)</td>
<td>3</td>
<td>The Soils test from the original construction and record information indicate heavy glacial till and assumed ledge or boulders. Short to moderate height retaining walls are anticipated to optimize site area available. Conceptual designs include moderate soils cutting at existing the sports field and parking garage. To better meet the site program, a parking deck is proposed beneath the sports fields is planned.</td>
</tr>
</tbody>
</table>
### 3.1.6 PRELIM EVALUATION OF ALTERNATIVES

**D. New Construction on Existing Site Option**

**4. Option A.1 Site Evaluation**

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRAFFIC IMPACTS &amp; ACCESS</td>
<td>3</td>
<td>The existing Doherty site is limited to access from Highland Street only, which has limitations, and is subject to traffic congestion. Refer to Civil Narrative for Traffic analysis.</td>
</tr>
<tr>
<td>BUS &amp; PARENT VEHICULAR CIRCULATION &amp; PARKING</td>
<td>2</td>
<td>This option separates the bus and parent circulation, but all access is from Highland Street, adding to traffic flow complexities. In order to achieve the required student parking, a decked parking area below the athletic fields is included. The parking deck represents a moderate cost and some security/surveillance issues. Perimeter access around the building for emergency vehicles is available per requirements, but compromised.</td>
</tr>
<tr>
<td>CONSTRUCTION SCHEDULE IMPACT</td>
<td>3</td>
<td>With the phased construction, the building is anticipated to meet the current occupancy goal of Fall 2024, however the fields will not be available until the following year. The project team will review at the next phase more detailed construction sequence.</td>
</tr>
<tr>
<td>ADJACENT USES &amp; NEIGHBORHOOD IMPACT</td>
<td>4</td>
<td>The existing school is an established location, so impact on the neighborhood is expected to be limited primarily to construction related activities. The portion of the site that is currently undeveloped is used by the Newton Hill parks programs, disc golf, trails, and buffer land. Elm Park, Newton Hill Park and Foley Stadium are all significant adjacencies to the site to be considered more during the PSR phase.</td>
</tr>
<tr>
<td>UTILITIES &amp; DEVELOPMENT ISSUES</td>
<td>3</td>
<td>Utilities are available and adequate. Because the development of the site is constrained, with phased construction, the score for this category is average.</td>
</tr>
</tbody>
</table>

**TOTAL**                                      | **132**|                                                                                                                                                                                                       |
3.1.6 PRELIMINARY EVALUATION OF ALTERNATIVES

E. New Construction on Alternate Site Options
   1. Alternative Site Narrative
   2. Site Selection Narrative
   3. Option B Foley Stadium Site Plan
   4. Option B.1 Foley Stadium Site Diagram
   5. Option B.1 Foley Stadium Site Evaluation
   6. Option C. Chandler Magnet School Site Plan
   7. Option C.1 Chandler Magnet School Site Diagram
   8. Option C.1 Chandler Magnet School Site Evaluation
   9. Option C.2 Chandler Magnet School with Added Land Site Diagram
  10. Option C.2 Chandler Magnet School with Added Land Site Evaluation
DESCRIPTION: The New Construction on an alternate site option is based on a new building located on separate parcel from the existing school, and assumes that the new building will be constructed while the existing building and site remains virtually undisturbed from construction activities. The two alternative sites with the most potential based on the site assessment process were the Chandler Magnet School site, and the Foley Stadium site. With either of these options, once the new alternative site facility is complete, the existing Doherty and site would be the responsibility of the School/City to further evaluate the future use, including any deed restrictions, within the WPS budget. The end result is a solution that meets most if not all of the Educational Program requirements and more site program features than the existing site with the distinction of not disturbing the existing school and its operation. The following narrative discusses the common factors between the options, and a following rating matrix and discussions of the particular site and other factors.

Proposed SF areas for this option are approximately as follows:

- **B.1 New Construction –Foley Stadium Site** = 420,000 GSF
- **B.1 Demolition (existing Foley Stadium / fields)** = 127,500 GSF
- **B.1 Demolition (existing Foley maintenance building)** = 6,500 GSF
- **C.1/C.2 New Construction –Chandler Magnet Site** = 420,000 GSF
- **C.1/C.2 Demolition (existing Chandler School building)** = 85,973 GSF

NEW CONSTRUCTION ON ALTERNATE SITES SCOPE OF WORK:

**General:** For the siting options considered in the PDP phase, refer to Site Selection Narrative. Following the Doherty quadrant review and shortlisted site selection process, a test fit for the building and site components was conducted, to the degree that a comparative analysis could be done to assess the features that what would potentially fit on the sites. Each alternative site was reviewed first within the established boundaries, and then with the potential of expanding the boundaries into abutting land to the minimum degree to better satisfy the building program, and address the level of athletic field development as prioritized by the School athletics department. Each site has advantages, and issues, these points are outlined on the review matrix, as well as a comparative budget. Clearly the level of detail is for comparative analysis purposes only, the next phases will develop to the point where more definitive information and likely alternatives will be developed and analyzed.
The building footprint used in the test fit slightly differ from the Doherty site and the alternative sites, based on the site conditions. Based on evaluations to date, the building will be a compact, four story building, as outlined in the narrative outline of 3.1.6.A.1 is the base model.

Site (refer to Nitsch Engineering Basis of Design narrative):

Building Exterior/Interior:
- Same as New Construction Option A.1

Sustainability, Net Zero Goal:
- Same as New Construction Option A.1

Fixtures, Furnishings & Equipment (FF&E)/Technology:
- Same as New Construction Option A.1

Hazardous Materials:
- No Haz mat study was conducted at this time, Scope to include budget to remove hazardous materials was based on the most recent AHERA reports provided from the City to the Haz Mat consultant.
- B.1 Foley Stadium Site, the Stadium building was constructed in 1961
- C.1/C2 Chandler Magnet School was constructed in 1951

Geotechnical Considerations:
- B.2 Foley Stadium Site: refer to test borings provided by the City, up to 12 feet coal ash and urban fill, over peat (refer to appendices)
  Scope to include budget for piles grade beams, structural slab or similar improvements
- B.2 – If selected, full geotechnical analysis would need to be conducted at the next phase and include soils investigations by an LSP.
- C.1/C2 Chandler Magnet School, Native till, assume ledge could be encountered (refer to appendices) If selected, full geotechnical analysis would need to be conducted at the next phase and include soils investigations by an LSP.

Structural (refer to BDI Basis of Design narrative):
- Foley Stadium Site B.2: Same as New Construction Option D.1 except scope to include budget for piles grade beams, structural slab or similar improvements
3.1.6 PRELIM EVALUATION OF ALTERNATIVES

E. New Construction on Alternative Site Option

1. Narrative

- C.1/C2 Chandler Magnet School: Same as New Construction Option D.1

Fire Protection (refer to SS Basis of Design narrative):
- B.2 Foley Stadium Site: all below grade piping to be engineered to be supported based on investigations of the soils conditions to be completed at future phases.
- C.1/C2 Chandler Magnet School: Same as New Construction Option D.1

Plumbing (refer to SEC Basis of Design narrative):
- B.2 Foley Stadium Site: all below grade piping to be engineered to be supported based on investigations of the soils conditions to be completed at future phases.
- C.1/C2 Chandler Magnet School: Same as New Construction Option D.1

HVAC (refer to SEC Basis of Design narrative):
- Same as New Construction Option A.1

Electrical (refer to ART Basis of Design narrative):
- Same as New Construction Option A.1

Alternate Site Ranking Criteria (refer to Site Ranking Criteria Matrix/Table):
- See Criteria Matrix for further comparative notes on the Alternative sites

DEGREE OF EDUCATIONAL PROGRAM/SPACE SUMMARY FULFILLMENT: The New Construction Option on an alternative site will have more and different opportunities to satisfy the Educational Program/Space Summary objectives, except the Chandler Magnet option C-1, with the site configuration, the building would be in two separated pods, which is not advantageous. The site program requirements, in particular, may still represent a challenge, due to the boundaries unique to each parcel. The test fits show the potential fields that can be developed on each site, and do not fully satisfy the site program.

IMPACT OF CONSTRUCTION PHASING: Because a new building can be constructed entirely separate from the existing building (which can remain fully occupied), the New Construction Option will have the least impact to Doherty students than on any option on the existing site, and all without the need for “swing space”. The biggest impacts include the following:
3.1.6 PRELIM EVALUATION OF ALTERNATIVES

E. New Construction on Alternative Site Option

1. Narrative

- Loss of existing building and site features unique to the alternate site
- At project completion, school facility surplus and next steps (separate from the Doherty Memorial High School project)

One advantage of New Construction on an alternative site is that it doesn’t have the limitations, in terms of work area, as any option on the existing school site. The entire site is free for development. More workers can be productive because there is a greater area to work in. Consequently, the duration of the project can be less than a project which has numerous phases, relocations, and temporary support facilities. There will be more efficiency realized when compared against building on an active school site.

The piles or ground improvements at B.1 Foley stadium will require adding additional time over C.1 /C.2 Chandler Magnet, however at this stage it is not foreseen as affecting the overall schedule projected. Further discussions would be had after Geotechnical investigations.

Both sites are bounded by residential Neighborhoods in part, and setbacks, buffer areas would be developed in future phases, as well as traffic routing and other factors. Refer to the Civil/Landscaping narratives.

SITE RANKING CRITERIA

Following is a description of the criteria used to evaluate each of the site options. The criteria are weighted from 1–5, 5 being the most important to the City and School District. The ratings were developed as part of the Steering committee and School meetings. Each of the alternate site options, (as well as Option A.1 New Construction on the Existing Doherty Site) were given a score between 1 and 5 for each of these criteria. This score is then multiplied by the weight, and added cumulatively to determine the final score. A perfect score using this matrix would be 185.

<table>
<thead>
<tr>
<th>WEIGHT</th>
<th>CRITERIA</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>ABILITY TO MEET BUILDING PROGRAM</td>
<td>Rated based on the ability for the site to support a building that meets the full educational program (organization, adjacencies, exterior access, daylight) as outlined in Section 3.1.2.</td>
</tr>
<tr>
<td>5</td>
<td>ACQUISITION ISSUES, NEGOTIATION &amp; EXPANSION</td>
<td>Cost of land acquisition or purchase of adjacent land are factored in the rating of this category.</td>
</tr>
</tbody>
</table>
### 3.1.6 PRELIM EVALUATION OF ALTERNATIVES

**E. New Construction on Alternative Site Option**

#### 1. Narrative

<table>
<thead>
<tr>
<th>Rating</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Comparative Staff &amp; Student Impact</td>
<td>Rated on the relative impact to the Doherty Staff and Students and to the school district as a whole.</td>
</tr>
<tr>
<td>4</td>
<td>Ability to Meet Site Athletics Program</td>
<td>Rated on the ability for the site to meet the desired site athletic field program.</td>
</tr>
<tr>
<td>4</td>
<td>Central to District/Quadrant</td>
<td>Rated on the ability to achieve equitable access for high school students throughout the quadrant.</td>
</tr>
<tr>
<td>3</td>
<td>Site Development Costs (Earth moving, soils, retaining walls, parking structures)</td>
<td>Rated on a comparative cost/difficulties factor on the options reviewed. These factors include: soils conditions, foundation requirements needed to provide proper bearing, the amount of excavation required for the building and site, the amount of site retaining walls or slope mitigation, added features such as parking decks.</td>
</tr>
<tr>
<td>3</td>
<td>Traffic Impacts &amp; Access</td>
<td>Rated on a combination of factors including vehicular &amp; pedestrian access and potential impact on traffic.</td>
</tr>
<tr>
<td>3</td>
<td>Bus &amp; Parent Vehicular Circulation &amp; Parking</td>
<td>Rated on the extent to which the site could accommodate separate parent and bus circulation and parking requirements.</td>
</tr>
<tr>
<td>3</td>
<td>Construction Schedule Impact</td>
<td>Rating reflects aspects of the site that may result in delays to the project target occupancy of Fall 2024 or extended construction beyond building occupancy.</td>
</tr>
<tr>
<td>1</td>
<td>Adjacent Uses &amp; Neighborhood Impact</td>
<td>Rated according to the current uses of the subject parcel as well compatible adjacencies for a School including: residential, business and publicly owned open space (i.e. parks, recreation fields, etc.).</td>
</tr>
<tr>
<td>1</td>
<td>Utilities &amp; Development Issues</td>
<td>Rated on the availability of utilities, including public sewer, water, electrical power, fiber, and natural gas, determine this criterion.</td>
</tr>
</tbody>
</table>
3.1.6 Preliminary Evaluation of Alternatives

E.2. Site Selection

1.0 INTRODUCTION

Nitsch Engineering has prepared this Preliminary Evaluation of Alternatives narrative as part of a Massachusetts School Building Authority (MSBA) Module 3 - Feasibility Study for the redevelopment of Doherty Memorial High School in Worcester, MA. The report corresponds to the MSBA Module 3 Preferred Development Program (PDP) and focuses on elements that relate specifically to the site development aspects of the Feasibility Study, referencing MSBA Section 3.1.6 Preliminary Evaluation of Alternatives, E.2. Site Selection Narrative.

2.0 MODULE 3.1.6: PRELIMINARY EVAL. OF ALTERNATIVES, E.2. SITE SELECTION

2.1 Identification of Alternative Sites

Nitsch Engineering and LPA|A conducted a 3-step process to identify and evaluate potential alternative development sites for the Doherty High School redevelopment project (the Project). This effort included:

1. A first-round site viability assessment of all potential alternative sites located within the Doherty Quadrant;
2. An initial evaluation of all potentially viable parcels; and
3. A secondary evaluation and ranking of “short-listed” parcels.

The ultimate objective of this effort was to provide the City of Worcester with a recommendation for a single alternative development site to be included in the upcoming alternatives analysis of the Preferred Schematic Report project phase.

2.1.1 Site Viability Assessment

Nitsch/LPA|A identified all parcels within the Doherty Quadrant that are 10 acres or larger. Although the anticipated minimum parcel area required for the Project is significantly larger than 10 acres, this minimum area was used as the basis for identifying “large” parcels in the Quadrant, with the assumption that further investigation of contiguous parcels under common ownership or of similar nature could be combined to provide an area sufficient for the Project. This exercise yielded a total of approximately 90 separate parcels for inclusion in a viability assessment. See Figure E2.1 Quadrant Diagram: 10+ Acre Parcels. The viability assessment involved eliminating parcels from further consideration based on a series of general site criteria that would effectively negate the potential for new site development. Parcels were eliminated from consideration that included any of the following characteristics:

- Predominance of dedicated/protected open space,
- Predominance of areas subject to environmental protection,
- High degree of existing and active development, or
- Prohibitive ownership conditions (e.g., Massport)

Of the 90 parcels initially identified, 7 parcels (or combination of parcels) were identified for inclusion in initial site evaluations. See Figure 2.2 Quadrant Diagram: Parcels for Initial Evaluation. All other parcels were excluded from consideration based on one or more of the
above factors. The remaining parcels that were selected for advancement to Step 2 as defined below included:

1. 199 Moreland Street,
2. 72 Flagg Street / 4 High Ridge Road,
3. 3 Suburban Road,
4. 100 Laureldale Road,
5. 195 Mill Street / 160 Brookline Street,
6. 525 Chandler Street (Chandler Magnet School), and
7. 305 Chandler Street (Foley Stadium).

2.1.2 Initial Site Evaluations

The 8 parcels that were not eliminated in Step 1 were subjected to an initial evaluation based on a gross assessment of the following site characteristics:

Natural Characteristics:
- Topography, slopes, and orientation
- Geological conditions,
- Hydrology,
- Environmentally sensitive, regulated, or restricted areas

Planning Characteristics:
- General property configuration
- Adjacent uses, neighborhood impact
- Access potential / transportation
- Existing development in the vicinity of the site
- Views, visual characteristics, and scenic factors
- Recreation and open space, joint use enhancements

The evaluation also included several “elimination factors” that would negate advancement of certain sites for further consideration including:

- Property configurations that cannot accommodate spatial requirements,
- Surrounding land uses inconsistent with school use,
- Significant lack of access potential or significant disruption of existing traffic conditions, or
- Prohibitive environmental conditions (flood plain, wetlands)

The following is a summary of results of the initial evaluation of each parcel.

1. 199 Moreland Street – eliminated from consideration

199 Moreland Street includes approximately 21 acres. Although the property is undeveloped and does not present significant spatial or topographic constraints, it was excluded from further consideration due to two factors. First, the parcel is located within a densely populated residential area which currently includes no divergent uses. The planned secondary school use is inconsistent with and would be disruptive to the surrounding use. Second, the access to the parcel is severely restricted by relatively narrow residential streets and very steep roadway grades. In our opinion, these two factors cannot be reasonably mitigated.
2. **72 Flagg Street / 4 High Ridge Road – eliminated from consideration**

This parcel combination includes approximately 19 acres and is undeveloped except for a single-family dwelling. The property presents significant topographic constraints (steep slopes) which would significantly affect its development potential. This condition affects development potential of the interior of the parcel and presents a significant barrier from the primary access frontage on Flagg Street. Although Flagg Street is a well-traveled road, it is relatively narrow and the terrain on its west side (i.e., the parcel locus) is severe. The steep terrain and lack of access potential effectively make this parcel undevelopable for the intended use.

3. **3 Suburban Road – eliminated from consideration**

3 Suburban Road includes 16 acres of undeveloped land surrounding a multi-family parcel (apartment building complex) across Highland Street from the existing Doherty High School site. The property includes reasonable access potential and good topographic conditions. Although the surrounding uses are residential, a new school use at this location would be consistent with the current use due to the proximity of the existing Doherty High School. However, the size and configuration of the parcel are insufficient to support the scale of the development program required for the new school. This factor negates further consideration of this property.

4. **100 Laureldale Road – eliminated from consideration**

100 Laureldale Road includes 10 acres and is developed with a single-family dwelling. Its small area and lack of other contiguous undeveloped parcels exclude this parcel from further consideration.

5. **195 Mill Street / 160 Brookline Street – eliminated from consideration**

This parcel combination includes a total of 32 acres with access on a major secondary roadway. The frontage parcel is developed with a large-scale retail use (now defunct); the contiguous parcel is undeveloped and offers secondary access on Brookline Street to the west. Although this property includes ample acreage, its topographic conditions are very steep and represent a severe development and access constraint. It is also located just outside of the southerly limit of the Doherty Quadrant. Both factors excluded the parcel combination from further consideration.

6. **50 Abbott Street (Foley Stadium) – advanced to secondary evaluation**

The Foley Stadium site includes 14 acres and is currently developed with Foley Stadium, a football field / track, baseball / playing fields, and tennis courts. Despite its small size compared to other parcels its developable area is similar in scale. The site is relatively flat, does not present any topographic constraints, and is effectively fully available for redevelopment. Its location on a major secondary roadway and proximity another secondary roadway (Park Avenue) offer advantages in terms of transportation / traffic conditions. It is centrally located in the Doherty Quadrant and has practical adjacency to the existing Doherty High School property. Although a high school use would be divergent from its current athletic facility use, it is in a semi-urbanized section of Worcester. In our opinion, a high school use at this property would not negatively impact the surrounding area. Initial site investigations have indicated that there are fill and utility conditions on the site that could affect development costs.
7. **525 Chandler Street (Chandler Magnet School) – advanced to secondary evaluation**

The existing Chandler Magnet School site includes 22 acres and offers several advantages as a potential alternative site. The current use is consistent with the proposed use. The site is located on a major secondary roadway with access potential on two roadways (Chandler Street and May Street). It is also centrally located within the Doherty Quadrant and its proximity to Worcester State University offers certain pedagogical opportunities that align with the desired educational programming of the new school. The configuration of the parcel and its topographic conditions present challenges to site development and are likely to constrain its practical developable area, but not to the extent that they eliminate the parcel from advancement to the next evaluation phase.

After discussions with the Steering Committee, 50 Abbott Street (Foley Stadium Site) and 525 Chandler Street (Chandler Magnet School Site) were selected to be advanced for further evaluations. See Figure 2.3 Quadrant Diagram: Parcels for Final Evaluation. Refer to the balance of this section and to 3.1.6.H Supporting Documents for more in-depth analysis and development opportunities for these two alternate sites.
Figure 1a: 10 Acre+ Parcel Identification - Doherty Quadrant
Doherty Memorial High School
Worcester, MA

Data Source: MassGIS
Nitsch Project #13325
Figure 1b: Parcels Identified for Initial Evaluation - Doherty Quadrant
Doherty Memorial High School
Worcester, MA

Data Source: MassGIS
Nilsch Project #13325
Figure 1c: Parcels Identified for Final Evaluation - Doherty Quadrant
Doherty Memorial High School
Worcester, MA

Data Source: MassGIS
Nitsch Project #13325
FEASIBILITY STUDY

ASSESSOR: 12.2 ACRES
GIS TAKEOFF: 14 ACRES

NOTES:
- Flat, developed site
- Unsuitable soil conditions
- Beaver Brook culvert
- Beaver Brook Park, not regulation size fields
- Recently refurbished Foley Stadium is heavily used by the district and community

QUADRANT KEY PLAN:
- Existing K-12 schools
- Existing Site
- Proposed Site

LEGEND:
- Parcel Property Line
- New Roadway
- Potential acquisition
- New Construction
- New Athletic Field
- Existing Building
- Flood Plain
- Retaining Wall
- Steep Topography

3.1.6 Preliminary Evaluation of Alternatives
E. New Construction on Alternate Site
3. Option B. Foley Stadium Site Plan

Doherty Memorial High School
299 Highland Street, Worcester MA
ASSESSOR: 12.2 ACRES
GIS TAKEOFF: 14 ACRES

NOTES:
• District owned parcel, optional land acquisition
• Adequate Staff Parking
• Limited Student Parking (Option for parking on acquired land, joint use of Beaver Brook parking, or a parking garage.)

QUADRANT KEY PLAN:
- Existing K-12 schools
- Existing Site
- Proposed Site

LEGEND:
- Parcel Property Line
- New Roadway
- Potential acquisition
- Bus Circulation
- New Construction
- Parent Circulation Connection
- New Athletic Field
- Existing Building
- Flood Plain
- Retaining Wall
- Steep Topography

0.57 ACRES

3.1.6 Preliminary Evaluation of Alternatives
E. New Construction on Alternate Site
4. Option B.1 Foley Stadium Site Diagram
### 3.1.6 PRELIM EVALUATION OF ALTERNATIVES

E. New Construction on Alternative Site Option

5. Foley Stadium Evaluation

#### FOLEY STADIUM SITE

<table>
<thead>
<tr>
<th>GENERAL INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Property Information</strong></td>
</tr>
<tr>
<td>50 Abbott Street</td>
</tr>
<tr>
<td>14 Acres (Assessors records list as 12 acres, but it is assumed 14 acres is correct as shown on GIS records. A survey would be required to determine actual area.)</td>
</tr>
<tr>
<td><strong>Potential Land Acquisition:</strong></td>
</tr>
<tr>
<td>• ±0.57 Acres of rear land from Abbott Street abutting parcels</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WEIGHT</th>
<th>CRITERIA</th>
<th>SCORE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>ABILITY TO MEET BUILDING PROGRAM</td>
<td>5</td>
<td>As a previously developed, flat site which is widest at the Chandler Street frontage, the Foley site presents a good opportunity to situate the building on the site to meet the building program.</td>
</tr>
<tr>
<td>5</td>
<td>ACQUISITION ISSUES, NEGOTIATION &amp; EXPANSION</td>
<td>2</td>
<td>The School/City has advised that the existing Foley Stadium and surrounding fields are heavily scheduled and continually used by all of the Worcester Public High schools and by the community at large. It is currently the only field in the city that can host High school varsity football games, and would represent a significant logistical and financial burden if removed from district use without immediate replacement. This option also indicates potential acquisition of additional vacant and residential back land to provide additional expansion.</td>
</tr>
<tr>
<td>5</td>
<td>COMPARATIVE STAFF &amp; STUDENT IMPACT</td>
<td>1</td>
<td>The new facility could be constructed without impact on the Doherty site or student population. However, in the case of the Foley Stadium site, the loss of the District’s only stadium and surrounding fields would be a detriment to the athletics programs throughout the Worcester school district. The City and District have advised that the</td>
</tr>
</tbody>
</table>
### 3.1.6 PRELIM EVALUATION OF ALTERNATIVES

#### E. New Construction on Alternative Site Option

#### 5. Foley Stadium Evaluation

<table>
<thead>
<tr>
<th>4</th>
<th>ABILITY TO MEET SITE ATHLETICS PROGRAM</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>disruption of losing Foley Stadium and/or the potential costs of building a replacement stadium would be problematic across the district.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conceptual studies show, limited fields could be developed with this option might include: a practice field, potential tennis, basketball or similar courts on additional land.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The existing Beaver Brook Park, across the street from Foley Stadium, is operated and scheduled through the City’s Parks Department. The park fields (two little league fields, a softball field and a youth football field) are not sized appropriately for high school use, and are scheduled heavily by the community.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beaver Brook is city-owned Park land protected under Article 97; any development would have to be a parks department project.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4</th>
<th>CENTRAL TO DISTRICT/QUADRANT</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The Foley Stadium site is relatively central to the district, especially with access to major feeder routes.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>SITE DEVELOPMENT COSTS (Earth moving, soils, retaining walls, parking structures)</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The Soils logs provided as reported under the Geotechnical review noted that the parcel is filled with a mix of urban fill, and coal ash. A system of piles foundations at a premium cost would be anticipated to support any structure on the site.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>TRAFFIC IMPACTS &amp; ACCESS</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This option would include several curb cuts along Chandler Street, as well as a potential access to Abbott Street or Coombs Road. Traffic impacts would be similar to the other site options. Refer to the Civil Narrative</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>BUS &amp; PARENT VEHICULAR</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bus and parent circulation are separated in this option. The proposed parking provided is short of the required</td>
<td></td>
</tr>
</tbody>
</table>
3.1.6 PRELIM EVALUATION OF ALTERNATIVES

E. New Construction on Alternative Site Option

5. Foley Stadium Evaluation

<table>
<thead>
<tr>
<th>Topic</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIRCULATION &amp; PARKING</td>
<td></td>
</tr>
<tr>
<td>spaces. The next phase investigations would be done to review options, and look to add parking at the acquired land, reduce or reorganize the fields, or investigate adding a parking deck or garage at a premium cost. Refer to the Civil Narrative.</td>
<td></td>
</tr>
<tr>
<td>3 CONSTRUCTION SCHEDULE IMPACT</td>
<td>4</td>
</tr>
<tr>
<td>An unoccupied/available site with room for construction staging is the most advantageous from a schedule standpoint. Construction is anticipated to meet the current occupancy goal of Fall 2024, but the schedule must factor in several additional months for structural piles and soils conditions.</td>
<td></td>
</tr>
<tr>
<td>1 ADJACENT USES &amp; NEIGHBORHOOD IMPACT</td>
<td>4</td>
</tr>
<tr>
<td>Foley Stadium is a long-standing public facility, the parcel backs up to the surrounding residential neighborhood. It is anticipated that building would be positioned at the street, and parking and fields would be adjacent to the residences. Buffers could be established to minimize the impact to the neighbors.</td>
<td></td>
</tr>
<tr>
<td>1 UTILITIES &amp; DEVELOPMENT ISSUES</td>
<td>1</td>
</tr>
<tr>
<td>Beaver Brook runs in a conduit through the site, and is assumed to be original to the site development in the 1920’s. This 84” conduit would have to be relocated around the building, and also be supported on ground improvements or piles. Additionally, a significant stormwater management system would be required to address the increased impervious site cover. Refer to Civil Narrative.</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>101</td>
</tr>
</tbody>
</table>
21.4 ACRES

Doherty Memorial High School
299 Highland Street, Worcester MA

NOTES:
- Tiered site
- Steep topography
- Limiting parcel shape
- Multiple access points
- Existing 1950's school building
- WSU Adjacency

QUADRANT KEY PLAN:
- Existing K-12 schools
- Existing Site
- Proposed Site

LEGEND:
- Parcel Property Line
- Potential acquisition
- New Construction
- New Athletic Field
- Existing Building
- Flood Plain
- Retaining Wall
- Steep Topography

3.1.6 Preliminary Evaluation of Alternatives
E. New Construction on Alternate Site
6. Option C. Chandler Magnet Site Plan
Doherty Memorial High School
299 Highland Street, Worcester MA
### OPTION C.1 – CHANDLER MAGNET SCHOOL SITE

<table>
<thead>
<tr>
<th>WEIGHT</th>
<th>CRITERIA</th>
<th>SCORE</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>ABILITY TO MEET BUILDING PROGRAM</td>
<td>2</td>
<td>The existing parcel configuration limits the building footprint and organization, particularly where the site narrows in the center where the topography also changes. In comparison to the other sites, is not seen as advantageous.</td>
</tr>
<tr>
<td>5</td>
<td>ACQUISITION ISSUES, NEGOTIATION &amp; EXPANSION</td>
<td>4</td>
<td>This option assumes no additional land taking, however, there will also be some grant repayment costs associated with the MSBA Accelerated Repair window replacement work that was completed in 2013–2014. ($2.8 M) A recent existing condition review of the existing Chandler Magnet recommended a budget of $7,4M (construction cost only) for required capital improvements.</td>
</tr>
<tr>
<td>5</td>
<td>COMPARATIVE STAFF &amp; STUDENT IMPACT</td>
<td>4</td>
<td>The new facility could be constructed without impact on the Doherty site or student population. The current Chandler Magnet School students and Dual Language program would need to be relocated to other District facilities. Demolition of the existing school would result in one less District facility.</td>
</tr>
<tr>
<td>4</td>
<td>ABILITY TO MEET SITE ATHLETICS PROGRAM</td>
<td>2</td>
<td>With the existing site configuration, the proposed layout limits the field development to one practice field and (with significant earthwork to achieve an accessible path) one potential softball field.</td>
</tr>
<tr>
<td>4</td>
<td>CENTRAL TO DISTRICT/QUADRANT</td>
<td>4</td>
<td>The Chandler Magnet School site is relatively central to the district and located on major access routes.</td>
</tr>
</tbody>
</table>
### 3.1.6 PRELIM EVALUATION OF ALTERNATIVES

#### E. New Construction on Alternative Site Option

#### 8. Option C.1 Chandler Magnet School Site Evaluation

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3</strong> SITE DEVELOPMENT COSTS (Earth moving, soils, retaining walls, parking structures)</td>
<td><strong>3</strong></td>
<td>The Soils test from the original construction, and record information indicate heavy glacial till, and assumed ledge or boulders. Fields and building would have average development issues and related costs.</td>
</tr>
<tr>
<td><strong>3</strong> TRAFFIC IMPACTS &amp; ACCESS</td>
<td><strong>3</strong></td>
<td>While the Chandler Magnet School site has the advantage of access from both Chandler Street and May Street, it is also across the street from Worcester State University. A larger high school on the Chandler Magnet site could generate additional day to day traffic in addition to the pre-existing traffic congestion in this area. Refer to the Civil Narrative.</td>
</tr>
<tr>
<td><strong>3</strong> BUS &amp; PARENT VEHICULAR CIRCULATION &amp; PARKING</td>
<td><strong>2</strong></td>
<td>Bus and parent circulation are separated in this option and adequate parking is achieved. However, topography and parcel configuration result in steep slopes, bottlenecks, and restricted perimeter access. Refer to the Civil Narrative.</td>
</tr>
<tr>
<td><strong>3</strong> CONSTRUCTION SCHEDULE IMPACT</td>
<td><strong>5</strong></td>
<td>An unoccupied/available site with room for construction staging is the most advantageous from a schedule standpoint. Construction is anticipated to meet the current occupancy goal of Fall 2024.</td>
</tr>
<tr>
<td><strong>1</strong> ADJACENT USES &amp; NEIGHBORHOOD IMPACT</td>
<td><strong>3</strong></td>
<td>The existing Chandler Magnet parcel includes a school and practice fields, and is surrounded by dense residential neighborhoods. In this option, the new four-story building would be directly behind the residences along May Street and is not ideal. Buffers could be established to minimize the impact to the neighbors. The adjacent Worcester State University presents opportunities for mutually beneficial programs.</td>
</tr>
<tr>
<td><strong>1</strong> UTILITIES &amp; DEVELOPMENT ISSUES</td>
<td><strong>3</strong></td>
<td>Existing 10” sanitary pipes and 30”–42” storm drain mains traverse the site in multiple locations (refer to the Civil Narrative.) These conduits would need to be re-laid around the building. Otherwise utilities are available and</td>
</tr>
</tbody>
</table>
### 3.1.6 PRELIM EVALUATION OF ALTERNATIVES

E. New Construction on Alternative Site Option

8. Option C.1 Chandler Magnet School Site Evaluation

<table>
<thead>
<tr>
<th></th>
<th>development is comparable to the other sites.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>119</td>
</tr>
</tbody>
</table>
### OPTION C.2 – CHANDLER MAGNET SCHOOL SITE WITH ADDED LAND

<table>
<thead>
<tr>
<th>GENERAL INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property Information</td>
</tr>
<tr>
<td>525 Chandler Street</td>
</tr>
<tr>
<td>22 Acres (original parcel)</td>
</tr>
<tr>
<td>Potential Land Acquisition:</td>
</tr>
<tr>
<td>• ±0.85 Acres of rear land from May Street residential parcels</td>
</tr>
<tr>
<td>• ±0.95 Acres of rear land from 535 Chandler Street (WSU President’s House parcel)</td>
</tr>
<tr>
<td>• ±0.3 Acres full parcel of 531 Chandler Street (WSU Garden Lot)</td>
</tr>
</tbody>
</table>

### WEIGHT | CRITERIA | SCORE | COMMENTS
--- | --- | --- | ---
5 | ABILITY TO MEET BUILDING PROGRAM | 5 | The proposed added land for this option alleviates the “throat” of the existing parcel configuration and allows for a building footprint and organization that meets the educational program.

5 | ACQUISITION ISSUES, NEGOTIATION & EXPANSION | 2 | This option proposes land acquisition of parcels owned by Worcester State Foundation Real Estate LLC, and potential rear land actuations from May Street Residences. There will also be some grant repayment costs associated with the MSBA Accelerated Repair window replacement work that was completed in 2013–2014. ($2.8 M ) A recent existing condition review of the existing Chandler Magnet recommended a budget of $ 7,4M (construction cost only) for required capital improvements.

5 | COMPARATIVE STAFF & STUDENT IMPACT | 4 | The new facility could be constructed without impact on the Doherty site or student population. The current Chandler Magnet School students and Dual Language...
### 3.1.6 PRELIM EVALUATION OF ALTERNATIVES

**E. New Construction on Alternative Site Option**

**10. Option C.2 Chandler Magnet Site with Added Land Evaluation**

<table>
<thead>
<tr>
<th>4</th>
<th>ABILITY TO MEET SITE ATHLETICS PROGRAM</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>With the addition of land, access to the upper plateau of the site is more readily achievable. This site option can accommodate a football field with track and a soccer/practice field.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4</th>
<th>CENTRAL TO DISTRICT/QUADRANT</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Chandler Magnet School site is relatively central to the district.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>SITE DEVELOPMENT COSTS (Earth moving, soils, retaining walls, parking structures)</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Soils test from the original construction, and record information indicate heavy glacial till, and assumed ledge or boulders. Fields and building would have average development issues and related costs with some retaining wall construction anticipated.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>TRAFFIC IMPACTS &amp; ACCESS</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>While the Chandler Magnet School site has the advantage of access from both Chandler Street and May Street, it is also across the street from Worcester State University. A larger high school on the Chandler Magnet site could generate additional day to day traffic in addition to the pre-existing traffic congestion in this area. Refer to the Civil Narrative.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>BUS &amp; PARENT VEHICULAR CIRCULATION &amp; PARKING</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>In this option adequate parking is achieved and bus and parent circulation have separate entrances to the site, but converge before exiting onto Chandler Street. The additional land in this scheme allows for shallower roadways, improved perimeter access, and more efficient parking. Refer to the Civil Narrative.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>CONSTRUCTION SCHEDULE IMPACT</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>An unoccupied/available site with room for construction staging is the most advantageous from a schedule standpoint. Construction is anticipated to meet the</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 3.1.6 PRELIM EVALUATION OF ALTERNATIVES

E. New Construction on Alternative Site Option

10. Option C.2 Chandler Magnet Site with Added Land Evaluation

<table>
<thead>
<tr>
<th></th>
<th>ADJACENT USES &amp; NEIGHBORHOOD IMPACT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The existing Chandler Magnet parcel includes a school and practice fields, and is surrounded by dense residential neighborhoods. The new four-story building would be directly adjacent to the abutting residential parcels. Buffers could be established to minimize the impact to the neighbors. The adjacent Worcester State University presents opportunities for mutually beneficial programs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>UTILITIES &amp; DEVELOPMENT ISSUES</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Existing 10” sanitary pipes and 30”–42” storm drain mains traverse the site in multiple locations (refer to the Civil Narrative.) These conduits would need to be re-laid around the building. Otherwise utilities are available and development is comparable to the other sites.</td>
</tr>
</tbody>
</table>

| TOTAL | 131                     |

current occupancy goal of Fall 2024.
3.1.6 PRELIMINARY EVALUATION OF ALTERNATIVES

F. Comparative Cost Analysis & Site Ranking Matrix
   1. Narrative
   2. Site Ranking Matrix
   3. Comparative Cost Analysis
For comparative purposes at this preliminary stage of design, order of magnitude construction budgets were developed based on Gross Square Footage (GSF) of Demolition/Renovation/Addition/ New Construction, plus relevant Sitework and Hazardous Waste Removal budget, as applicable to each Option. For purposes of this feasibility study, it was assumed that a Chapter 149A Construction Manager (CM) at Risk construction delivery method will be utilized as the City has successfully used this delivery method on their most recent major capital projects. Indirect costs such as CM Contingency, General Conditions/Requirements, Bonds/Insurance and Profit were calculated accordingly. A Design Contingency is included for each option, due to the limited level of detail, and will be reduced incrementally in future estimates as the design is refined and more detail becomes available. The project duration, in terms of months, will vary depending on the option; phased/occupied Base Repair and Renovation/Addition Options will take longer than New Construction because of the limitations associated with working in an occupied building.

It should be emphasized that comparative budgets are for construction only and exclude other project costs (i.e. Designer and OPM fees, temporary swing space required for parking or field use, escalation of non-construction items, legal fees, Owner’s project contingency, furnishings/fixtures/equipment, technology/computer equipment, surveys, construction testing, printing, etc.) which commonly add 25% or more to the construction cost.

Land costs, and other relocation costs incurred by the City are not included in the following summaries. The Owners Project Manager has included these costs and other related costs with their summary.

It should be noted that the site comparisons, the number of developable athletic fields with each scheme varies; therefore, the site costs are not equal. Sites that are selected to proceed for further study during the Preferred Solution Report phase may include pursuing options to incorporate other features, and would be subject to adjustments to the budgets. Additional site development features including retaining walls, foundation types, and phasing sequences have been evaluated on a preliminary basis for each site as well.
3.1.6 PRELIM EVALUATION OF ALTERNATIVES

F. Comparative Cost Analysis & Ranking Matrix

2. Site Ranking Matrix

Below is a summary of the site ranking evaluations from each individual option. Refer to E.1.6.E.1 for detailed description of each criteria.

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>DOHERTY SITE (A.1)</th>
<th>FOLEY STADIUM SITE (B.1)</th>
<th>CHANDLER MAGNET SITE (C.1)</th>
<th>CHANDLER MAGNET SITE W/ ADDED LAND (C.2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WEIGHT (1-5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 ABILITY TO MEET BUILDING PROGRAM</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>5 ACQUISITION ISSUES, NEGOTIATION &amp; EXPANSION</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>5 COMPARATIVE STAFF &amp; STUDENT IMPACT</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>4 ABILITY TO MEET SITE ATHLETICS PROGRAM</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4 CENTRAL TO DISTRICT/QUADRANT</td>
<td>5</td>
<td>4</td>
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Doherty High School  
Worcester, MA  

August 26, 2019  

**GRAND SUMMARY**

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<td>B.1 NEW CONSTRUCTION OPTION - FOLEY STADIUM</td>
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<td>C.1 &amp; C.2 NEW CONSTRUCTION OPTION - CHANDLER MAGNET</td>
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STUDY
Doherty High School
Worcester, MA

26-Aug-19

Designer: Lamoureux Pagano Architects

CODE UPGRADE OPTION

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TOTAL DIRECT COST $55,496,250

CM AT RISK CHPTR 149A

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TOTAL CONSTRUCTION COST $81,687,070
COST PER SF $489.14
# STUDY

**Doherty High School**  
**Worcester, MA**  
26-Aug-19

**Designer: Lamoureux Pagano Architects**

## RENOVATION AND ADDITION OPTION

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- **ESCALATION (bid winter 2021)**  4.0%  $7,750,529

**GENERAL CONDITIONS**  48 MOS  $150,000  $7,200,000

**GENERAL REQUIREMENTS**  3%  $6,435,799

**BUILDING PERMIT**  0%  $0

**P&P BOND & INSURANCE**  2%  $4,419,249

**PROFIT**  3%  $5,634,542

**TOTAL CONSTRUCTION COST**  $231,016,227

**COST PER SF**  $550.04

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DOHERTY HIGH SCHOOL PDP  8-26-198/27/20191:28 PM
STUDY
Doherty High School
Worcester, MA

26-Aug-19

Designer: Lamourex Pagano Architects

A.1 NEW CONSTRUCTION - DOHERTY SITE

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CM AT RISK CHPTR 149A

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TOTAL CONSTRUCTION COST $241,720,211
COST PER SF $575.52
STUDY
Doherty High School
Worcester, MA

26-Aug-19

Designer: Lamoureux Pagano Architects

B.1 NEW CONSTRUCTION - FOLEY STADIUM

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TOTAL DIRECT COST $175,922,500

CM AT RISK CHPTR 149A

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TOTAL CONSTRUCTION COST $240,741,644
COST PER SF $573.19

DOHERTY HIGH SCHOOL PDP 8-26-198/27/20191:28 PM
STUDY
Doherty High School
Worcester, MA
26-Aug-19

Designer: Lamoureux Pagano Architects

C.1 & C.2 NEW CONSTRUCTION - CHANDLER MAGNET

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TOTAL DIRECT COST $162,812,784

CM AT RISK CHPTR 149A

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- CM CONTINGENCY 3.0% $5,617,041
- ESCALATION (bid winter 2021) 4.0% $7,489,388
- GENERAL CONDITIONS 36 MOS $150,000 $5,400,000
- GENERAL REQUIREMENTS 3% $6,172,234
- BUILDING PERMIT 0% $0
- P&P BOND & INSURANCE 2% $4,238,267
- PROFIT 3% $6,484,549

TOTAL CONSTRUCTION COST $222,636,181
COST PER SF $530.09
3.1.6 PRELIMINARY EVALUATION OF ALTERNATIVES

G. Recommended Alternatives for Further Development and Evaluation
As a result of the work of the Design Team to date, LPA|A and the Steering Committee recommend that the following four options be further developed and evaluated during the Preliminary Schematic Report (PSR) phase:

- Code Upgrade Option
- Renovation/Addition Option
- Option A.1 New Construction at the Doherty Site
- Option B.1 New Construction at the Foley Stadium Site
- Option C.2 New Construction at the Chandler Magnet School Site with Added Land
3.1.6 PRELIMINARY EVALUATION OF ALTERNATIVES

H. Supporting Documents
   1. Site/Landscape–Basis of Design
   2. Structural–Basis of Design
   3. Fire Protection–Basis of Design
   4. HVAC & Plumbing–Basis of Design
   5. Electrical Systems–Basis of Design
   6. Charette Sketches
3.1.6 Preliminary Evaluation of Alternatives

A. Site Narrative

1.0 INTRODUCTION

Nitsch Engineering has prepared this Preliminary Evaluation of Alternatives narrative as part of a Massachusetts School Building Authority (MSBA) Module 3 - Feasibility Study for the redevelopment of Doherty Memorial High School in Worcester, MA. The report corresponds to the MSBA Module 3 Preferred Development Program (PDP) and focuses on elements that relate specifically to the site development aspects of the Feasibility Study, referencing MSBA Section 3.1.6 Preliminary Evaluation of Alternatives, A. Site Narrative, focusing on redevelopment alternatives on the existing Doherty High School site.

2.0 MODULE 3.1.6, A.: PRELIMINARY EVALUATION OF ALTERNATIVES - SITE

2.1 Code Upgrade Option

The Code Upgrade Option represents the improvements required to align the existing school facility with current codes and standards, and to repair or replace aspects of the facility that have exceeded their useful life or have already failed. The improvement items referenced in this section and those listed under all other development alternatives are related to site construction only. Refer to the architectural narrative by LPA|A for development items related to the actual school building. The Base Repair Option for the Doherty Memorial High School project include renovation of the existing 167,000sf building, and the addition of 30,000sf of modular classroom units. See Figure: “3.1.6.B.2 Code Upgrade Option Site Plan Diagram.”

Certain aspects of the building renovation effort will result in disruption of the site, including installation of temporary modular classrooms during the construction phase to facilitate swing space, and related or unrelated building service utility construction for example. Regardless of the site disruption related to the building renovation, the deteriorated condition of most of the site pavements, lack of accessible routes, and other aspects of the Site that are in disrepair or do not comply with current codes and standards will require significant site construction under any redevelopment scenario.

Access Improvements

Currently, the Site lacks accessible route connections from Highland Street to the building entrances and between various points internal to the Site. Necessary access improvements, which may require ramp construction where an accessible route is indicated, include:

- An accessible route, via new sidewalks and curb cuts, from Highland Street to the main entry of the school;
- Accessible parking and an accessible route from the bus loop to the main entry of the school;
- Accessible parking and an accessible route from the parking area on the east side of the school building to all adjacent school entrances;
- Accessible parking and an accessible route from the upper parking area to the athletic fields;
- An accessible route from the school building to the athletic fields; and
- Repair or replacement of all levels and locations of the exterior stairs that connect Highland Street to the school building.
Pavement and Service Improvements

Except for the bus loop, all site paving elements including access drives, sidewalks, curb cuts require replacement.

- Reclaim, repave, and restripe all parking and access drives and service areas,
- Remove and reset (or replace where needed) all existing granite curbs,
- Reconstruct existing curb cuts to comply with current standards,
- Provide improved exterior wayfinding and directional signage, and
- Upgrade the receiving area and provide enclosure for the kitchen waste compacter.

The portion of the existing southeastern parking lot (adjacent to the existing athletic fields) that encroaches onto the remaining land of Elm Park (Newton Hill) and which provides shared parking for the school and for the Newton Hill trails will remain under this development option, with certain improvements to be negotiated with the park users.

Site Utilities

Some aspects of the site and building renovation work will require associated site utility improvements. The most significant site utility improvements will result from the reconstruction of site pavements. In accordance with the City of Worcester Wetland Protection Bylaw, the repaving operation will trigger the need for compliance with the Massachusetts Department of Environmental Protection Stormwater Standards (DEP Standards). Compliance with the DEP Standards will require provision of Best Management Practices (BMPs) for water quality treatment (likely structural due to spatial constraints). Assuming that under the No Build option, site paving would be replaced, and not significantly expanded, peak flow controls and groundwater recharge under the DEP Standards are not likely to be significant. Storm drainage improvements could include:

- Retrofit or replace existing stormwater collection structures (catch basins) to comply with current standards for deep sumps and hoods, and
- Install structured water quality treatment BMPs upstream from existing stormwater system connection points at Highland Street.

Other site utility improvements are related to building-specific improvements including:

- A below-grade exterior grease trap and associated piping (this will likely correspond to interior plumbing reconstruction to separate kitchen discharge piping from the ordinary sanitary waste piping);
- An exterior acid waste neutralization tank (if laboratory use is continued or initiated);
- Temporary utility services (domestic water and fire protection, sanitary sewer, electric/tel-comm.); and
- Possible upgrades as required to support renovated building systems (see narratives by other engineering consultants).

2.2 Addition and Renovation Option

The Addition and Renovation option includes demolition of the existing school gymnasium, renovation to the remainder of the building, construction of several new building additions, and construction of a new athletic field (football) as described in the architectural narrative by LPA|A. The site improvements that are associated with this option are similar to those required for the No Build option in terms of overall scale, but with an added earth moving component that will be necessary to construct the building additions, relocate/reconfigure parking and access facilities, to
improve/expand site access on the south (upper) side of the building development area, and to construct the new athletic field. See Figure: “3.1.6.C.2 Additions Renovation Site Plan Diagram”.

Access Improvements

Like the Code Upgrade option, improvements to site access and accessibility will be required including provision for:

- An accessible route, via new sidewalks and improvements to existing and construction of new curb cuts from Highland Street to the main entry of the school (may require ramps);
- Accessible parking and an accessible route from the bus loop to the main entry of the school (may require ramps);
- Accessible parking and an accessible route from two new parking areas on the east and west sides of the school building to all adjacent school entrances;
- Accessible parking and an accessible route from the upper parking area to the athletic fields;
- An accessible route from the school building to the athletic fields; and
- Repair or replacement of all levels and locations of the exterior stairs that connect Highland Street to the school building.

Pavements and Parking

Except for the bus loop, all site paving elements including access drives, sidewalks, curb cuts require replacement. Existing access and parking facilities will be reconfigured:

- Construct new curb cuts on Highland Street for relocated access drives;
- Construct 2 new access drives and parking lots (with reclaimed granite curbs) totaling approximately 2 acres to accommodate roughly 375-400 parking spaces;
- Provide new exterior lighting, wayfinding, and directional signage; and
- Reconstruct a new receiving loading in accordance with the stated site development requirements.

The portion of the existing southeastern parking lot (adjacent to the existing athletic fields) that encroaches onto the remaining land of Elm Park (Newton Hill) and which provides shared parking for the school and for the Newton Hill trails will be replaced and reconfigured under this redevelopment option. The new parking would be separated from the main parking areas for school use and would be configured to more closely complement parking and access for the Newton Hill trail system.

Earth Moving

Phased construction could result in separated cut and fill operations to facilitate construction of various aspects of the development as long-term soil stockpiling at the Site is not likely to be feasible. In addition to general excavation and fill operations needed for parking lot and building addition construction, improved access around the new and existing school building complex will require excavation into the existing hillside on the south side of the developed portion of the parcel. For planning purposes, it is reasonable to assume that approximately 900 linear feet of retaining walls with low to moderate height would be required to facilitate access. It is anticipated that retaining wall types that are tiered, vegetated, or are otherwise designed to blend with the existing landscape would be considered during the design process for the project.

Site Utilities

Site utility improvements for the Addition and Renovation option will be more extensive than those required for the No Build option. The reconfiguration of the existing parking and access areas and the construction of building additions is likely to result in an increase in the total impervious coverage of the Site, triggering requirements for compliance with aspects of DEP Standards for peak flow
controls and groundwater recharge in addition to the water quality mitigation required under the No Build option. Also, substantial reconfiguration of parking and access areas will likely require replacement of most of the existing stormwater pipe and structure network. Storm drainage improvements are likely to include:

- Installation of a new closed-pipe stormwater collection and conveyance system including deep-summer hooded catch basins,
- Construction of structured subsurface groundwater recharge system(s),
- Construction of structured subsurface stormwater detention system(s) (could be coincident with groundwater recharge), and
- Install structured water quality treatment BMPs for water quality treatment.

Other site utility improvements are related to building-specific improvements including:

- A below-grade exterior grease trap and associated piping (this will likely correspond to interior plumbing reconstruction to separate kitchen discharge piping from the ordinary sanitary waste piping);
- An exterior acid waste neutralization tank (if laboratory use is continued or initiated);
- Temporary utility services (domestic water and fire protection, sanitary sewer, electric/tel-comm.);
- Additional sanitary sewer services for building additions; and
- Possible upgrades as required to support renovated building systems (see narratives by other engineering consultants).

Also see Section 2.5 Development Constraints for additional information on site conditions that could affect construction on the Doherty site.

2.3 New Construction on the Existing Site

General
The New Construction option on the existing Doherty site includes complete demolition of the exiting school, construction of a new school building, construction of new access drives and parking facilities, and construction of a new athletic field. In order to accommodate the parking objectives for the project, the athletic field would be constructed as an elevated deck with an open-air parking garage below the field. See Figure: “3.1.6 D.2 Option A.1 Site Diagrams”.

Access and Parking
The Site would be accessed by four new curb cuts on Highland Street. The western-most curb cut would provide access to the parking garage. The next curb cut to the east would provide access to the parking garage as well as the dedicated bus loop. The two easterly curb cuts would provide access to a parent pick-up / drop-off loop, with the eastern-most curb cut providing access to the building service and loading area.

The eastern-most curb cut would also provide parking and access to replace the portion of the existing southeastern parking lot (adjacent to the existing athletic fields) that encroaches onto the remaining land of Elm Park (Newton Hill). The new parking would be separated from the main parking areas for school use and would be configured to more closely complement parking and access for the Newton Hill trail system.

Earth Moving
Like the Add/Reno option, phased construction could result in separated cut and fill operations to facilitate construction of various aspects of the development as long-term soil stockpiling at the Site
is not likely to be feasible. The final build-out will require excavation into the existing hillside on the south side of the developed portion of the parcel. For planning purposes, it is reasonable to assume that approximately 900 linear feet of retaining walls of low to moderate height would be required to facilitate access. It is anticipated that retaining wall types that are tiered, vegetated, or are otherwise designed to blend with the existing landscape would be considered during the design process for the project.

Utilities

New site utility systems and services as listed under Section 3.4 would be required for this and all other New Construction options. Also see Section 2.5 Development Constraints in Nitsch Engineering’s Existing Conditions report for additional information on site conditions that could affect construction on the Doherty site.

Phasing

To address the lack of available swing space for the school population, the project would be constructed in three phases.

Phase 1 would include construction of the new school building in the current location of the athletic fields and adjacent parking area. Temporary pavement surrounding the existing school building would be installed to accommodate parking needs for the school during this phase. Construction of a retaining wall of similar scale as required for the Add/Reno option would be needed to accommodate Phase 1 parking and access requirements and the eventual build-out of the Site.

Phase 2 would be undertaken following completion of the new building construction and would involve demolition of the existing school building and construction of new access drives, some surface parking, and bus and service access to the new building. During this phase student and overflow parking would be limited.

Phase 3 would include construction of the elevated athletic field(s) and parking garage.

2.4 New Construction – Foley Stadium Site

Nitsch Engineering conducted a preliminary existing site conditions and site development assessment of the Foley Stadium site to evaluate site features and characteristics that may affect new school construction on the site. The assessment was based on record information provided to us by the City of Worcester, presented in the City of Worcester’s graphic information system (GIS) database, and presented in the Massachusetts Geographic Information System (GIS).

2.4.1 Existing Site Conditions

Location and Configuration

The subject site (Site) is located at 50 Abbott Street in Worcester, MA. The associated parcel is listed as Worcester Assessor’s Office Parcel Number 14-044-00001. The Worcester Assessor’s database lists the parcel area at 12.22 acres. Measurement of record mapping of the parcel indicates that the total area may be approximately 14 acres. The parcel is owned by the City of Worcester School Department.

The Site is situated on the north side of Chandler Street, approximately 700 feet west of the intersection of Chandler Street (MA Route 122) and Park Avenue (MA Route 9/12). Beaver Brook Park is directly across Chandler Street from the Site.
The Site is trapezoidal in shape, with most of its frontage derived from Chandler Street at 900 feet (despite its Abbott Street address). The northerly end of the Site is approximately 400 feet wide and the average depth of the Site is roughly 900 feet. The Site is bounded on the west and north by single-family residential lots. Single-family lots also line the east side as well, except for the small section of the parcel that connects to Abbott Street.

Zoning, Easements, Restrictions
The Site is located within the RS-7 Residential zoning district; single & two-family residential dwelling district with 7,000sf minimum lot size. The existing school use is allowed by right in this district. No portion of the Site appears to be located within other zoning districts, historic districts, or other overlay districts.

There do not appear to be any easements, rights of way, historic registrations, or other encumbrances related to use on the Site, based on City of Worcester Assessor’s data. However, the deed that is related to conveyance of the parcel to the City of Worcester School Department (WCRD Book 2294, Page 37) states that the use of the parcel “shall forever be used for athletic, playground park, and other public use by the City of Worcester”. The City of Worcester will review and advise if this constitutes a restriction to development of the parcel with a new school building.

Existing Development
Nearly the entire Site is developed with a stadium building, accessory building, parking area, football field / track facility, other athletic fields, and tennis courts. The Site is accessed by a single curb cut on Chandler Street.

Physical Characteristics
The Site is relatively flat, with slopes in most areas at 2-3%+-.

Except for the small portion of the Site immediately adjacent to Abbott Street and several isolated trees on the Chandler Street frontage, the Site is nearly free from tree cover. The rest of the Site is covered by athletic field surfaces and ordinary lawn.

National Resources Conservation Service (NRCS) data lists the soil across the Site as either Udorthents, or Urban Land, both of which indicate disturbed and/or filled urban areas. In this case, record soil data is available related to the stadium development and indicates significant deposits of coal ash that was presumably used to fill and flatten the Site.

Refer to 3.1.4 G Determination of need for soils explorations and geotechnical evaluations
There do not appear to be any wetland resource areas or other environmentally sensitive areas on the Site itself, although the limit of the 100-year flood plain (FEMA mapping) reaches the south side of Chandler Street directly across from the Site. The flood plan is associated with Beaver Brook which exists as an open channel in the Beaver Brook parcel and presumably includes environmental resource areas including bordering vegetated wetland and Riverfront Area. There are no rare species (NHESP designated) habitats, or vernal pools on or directly adjacent to the Site.
Site Utilities

Water, sanitary sewer, and storm drain utilities are available in the public ways adjacent to the Site. Utilities in Chandler Street along the property frontage include 8” sanitary sewer mains, 10”/15”/48” storm drains, and three water mains. The water mains include a 24” low service main (installed 1883, cleaned and lined 1985) from which the existing building derives its water service, and a 42” low service main (installed 1914), and a 30” high service main (installed 1965).

A 15” combined sewer main and an 8” low service water main (installed 1986) are located in Abbott Street. Hydrant coverage for the Site is limited to hydrants located on Chandler Street.

In addition to the utilities located within the public ways, a large storm drain (the “Beaver Brook Culvert”) traverses the Site starting at the end of Coombs Road (a dead-end Street abutting the northwest corner of the Site) and crossing under Chandler Street just east of the Stadium Building. Record documents indicate that the drain is an 84” concrete pipe with relatively shallow cover.

2.4.2 Foley Site Development Concept

General

New Construction option on the Foley site would involve complete demolition of the existing stadium building, accessory buildings, athletic field/track and other athletic facilities. A new school building would be situated generally in the location of the existing stadium and field/track. New parking, access drives, site utility services, and athletic facilities would be also constructed. See Figure: “3.1.6.E.4 Option B.1 Foley Stadium Site Diagram”.

Access, Parking, Athletic Space

The primary site access for a dedicated bus loop, and access to passenger vehicle parking facilities and an internal loop drive around the building would occur via 3 curb cuts on Chandler Street. Additional parking and a secondary vehicle access would be located on the portion of the parcel that connects to Abbott Street. Additional connections to adjacent streets are possible at the end of Coombs Road on the northwest portion of the Site, and at Norman Avenue on the northeast portion of the Site. The Norman Avenue connection would require acquisition of additional property.

The Site is located on a well-traveled “east-west” secondary road (Chandler Street - MA Route 122) and is located in close proximity to a well-traveled north-south secondary road (Park Avenue – MA Route 9/12). This condition is advantageous in terms of movement of passenger vehicles and buses to and from all areas of the Doherty Quadrant.

Spatial constraints would likely limit new athletic facilities to a football-sized field with no track. Additional practice field space may be obtained by land acquisition noted for the Norman Avenue connection noted above.

Earth Moving

Although the relatively flat terrain on the Site will be advantageous in terms of the overall earth moving operations, the presence of deleterious soil conditions (coal ash and other fill materials) is likely to require significant soil amendment and/or removal and disposal to construct the new school building, and any other structured facility on the site, possibly including some paved areas and athletic facilities.
Site Utilities

In contrast to the development options on the existing Doherty site, redevelopment of the Foley site for the new school building and accessory uses would result in a significant increase in impervious site cover. The components of the stormwater management system that correspond to peak flow and groundwater recharge mitigation would be significant, relative to the overall scale and complexity of the overall system. These components would likely consist of several structured subsurface detention/recharge systems. Provisions for water quality treatment would also be required as under other site redevelopment options. Should the results of the geotechnical investigation conclude that the coal ash soil should be classified as a hazardous material, groundwater recharge requirements and corresponding systems would need to be designed to prevent subsurface flow through these soils.

The new building footprint will extend across the existing Beaver Brook Culvert noted in Section 4.5.1. This represents several significant constraints relative to building and site utility construction:

- If the building is constructed over the existing culvert, special foundation system construction necessary to structurally bridge the culvert will be required, and internal routing of building plumbing and mechanical systems could be affected;
- Redirecting the culvert to avoid conflicts with building construction represents a significant construction cost and phasing consideration;
- The shallow depth and relatively flat slope of the existing culvert is likely to constrain the configuration and routing of site utility systems including sanitary sewer, storm drain, and water distribution systems;
- Culvert condition is unknown and investigations to determine its condition and functionality would need to be included in future site investigations; and
- If the culvert were to be replaced or relocated, it would likely need to be installed on piles or other ground improvement system, all excavated soils would be subject to the conditions established by the geotechnical investigation.

Other new site utility systems and services as listed under Section 3.4 would be required for this and all other New Construction options.

2.5 New Construction – Chandler Magnet School Site

Nitsch Engineering conducted a preliminary existing site conditions and site development assessment of the Chandler Magnet School site to evaluate site features and characteristics that may affect new school construction on the site. The assessment was based on record information provided to us by the City of Worcester, presented in the City of Worcester’s graphic information system (GIS) database, and presented in the Massachusetts Geographic Information System (GIS).

2.5.1 Existing Site Conditions

Location and Configuration

The subject site (Site) is located at 525 Chandler Street in Worcester, MA. The associated parcel is listed as Worcester Assessor’s Office Parcel Number 30-08A-00005 and includes approximately 22 acres (based on Assessor’s data) and is owned by the City of Worcester School Department.

The Site is situated on the north side of Chandler Street, approximately just west of the intersection of Chandler Street and May Street with frontage on both streets. The frontage is
interrupted by a small parcel at 301 May Street (single-family dwelling) and by a small parcel at 531 Chandler Street (vacant). The Worcester State University campus is located opposite the Site directly across Chandler Street.

The Site is configured in two sections including a triangular-shaped area generally bounded on two sides by Chandler and May Streets. This section is connected to a rectangular area to the north by a relatively narrow “neck” just over 200’ wide.

Zoning, Easements, Restrictions
The Site is located within the RS-7 Residential zoning district; single & two-family residential dwelling district with 7,000sf minimum lot size. The existing school use is allowed by right in this district. No portion of the Site appears to be located within other zoning districts, historic districts, or other overlay districts.

There do not appear to be any easements, rights of way, historic registrations, or other encumbrances related to use on the Site, based on City of Worcester Assessor’s data.

Existing Development
Approximately 11 acres of the Site is developed with the existing Chandler Magnet School, vehicle parking and access areas, pedestrian walks, and athletic/practice fields. The school building is situated on the triangular area on the south side of the property and the athletic fields are located on the lower portion of the rectangular property section to the north of the school.

The Site is accessed by three curb cuts on the north side of Chandler Street. The easternmost curb cut provides access to a parking area and the two westerly curb cuts are an entrance and exit from a looped drive. A curb cut on May Street provides access to a parking lot and service yard for the existing school building.

Physical Characteristics
The Site includes two relatively flat areas that have been developed for the construction of the existing school building and the athletic fields, respectively. These two areas are separated in elevation by approximately 15 feet. The portion of the site west of the athletic fields is undeveloped woodland in a drumlin formation with slopes in some areas in excess of 25%.

Vegetation on the developed portion of the Site is completely cleared for lawn and turf, except for minor landscaped areas and several mature trees that remain from the pre-developed site. The undeveloped areas of the site are vegetated with mature tree growth (mixed deciduous and coniferous) and moderate to thick undergrowth.

Based on National Resources Conservation Service (NRCS) data, the soils on most of the Site consist of Paxton soil. Paxton soil consists of glacial till and typically exhibits a shallow restrictive layer that can result in a seasonal perched water table and is classified as a Hydrologic Soil Group (HSG) C soil with relatively low permeability. In general, this soil type is not likely to represent a significant development constraint in terms of bearing capacity, workability, groundwater management, or erosion. Although disturbance of the currently
undeveloped southern slopes of the Site could result in seasonal high groundwater management needs.

There do not appear to be any wetland resource areas or other environmentally sensitive areas on or within close proximity to the Site. There are no rare species (NHESP designated) habitats, or vernal pools on or directly adjacent to the Site. The Site is not within nor directly adjacent to any FEMA flood hazard areas.

Site Utilities
Water, sanitary sewer, and storm drain utilities are available in the public ways adjacent to the Site. Utilities in Chandler Street along the property frontage include a 24” sanitary sewer main, a 15”/18” storm drain, and two water mains. The water mains include a 24” low service main (installed 1883, cleaned and lined 1985) from which the existing building derives its water service, and a 48” low service main (installed 1914).

An 8” sanitary sewer main and a 10” storm drain are located in May Street beginning just south of the Site’s May Street frontage. Other sanitary sewer and storm drain pipes are present in May Street just north of the Site frontage, as referenced in the following paragraph. An 8” low service water main is also located in May Street. Hydrant coverage for the Site is limited to hydrants located on Chandler and May Streets.

In addition to the utilities located within the public ways, sanitary sewer and storm drain mains traverse the Site in two locations. According to City of Worcester utility records, a 10” sewer pipe and a 36” to 42” drain pipe crosses the Site from north to south, connecting sewer and storm mains in Ashmore Road and Moore Avenue to the corresponding utilities in Chandler Street. Additionally, a 10” sanitary sewer pipe and an 18” storm drain pipe connect the May Street utilities just north of the Site frontage to the corresponding mains that cross the Site from north to south.

2.5.2 Chandler Site Development Concepts

General
Two New Construction concepts are being considered on the Chandler site. Chandler Magnet Site Option C.1 (Concept 1) relates to the existing parcel and Chandler Magnet Site + Land Option C.2 (Concept 2) relates to the existing parcel plus added land acquired from abutting properties. Both concepts would involve complete demolition of the existing Chandler Magnet School, parking and access areas, and facilities. A new school building, new parking areas, access drives, site utility services, and athletic facilities would be constructed. See Figures: “3.1.6.E.7 Option C.1 Chandler Magnet Site Diagram” and “3.1.6.E.9 Option C.2 Chandler Magnet + Land Site Diagram”. The two concepts would differ as a result of the relative spatial constraints primarily in terms of the quality of the building configuration, and the extentSCALE of the athletic facilities.

Building Configuration
Under Concept 1, the narrow “neck” described in Section 4.6.1 would restrict the building configuration to the extent that it would result in an elongated and irregular condition that would compromise spatial organization of the building program. The expanded property configuration would allow for a more consolidated building configuration.
Access and Parking

The Site is located on a well-traveled “east-west” secondary road (Chandler Street - MA Route 122), offering good access for passenger vehicles and buses. However, anecdotal information suggests that traffic conflicts with the day-to-day operation of Worcester State University could affect the school’s access potential and/or that general traffic conditions in the vicinity of the school could be negatively affected by the expanded school use (relative to the existing Chandler Magnet School).

The primary site access for both concepts would include a dedicated bus loop and access to primary passenger vehicle parking via connecting curb cuts on Chandler Street and May Street. A parent pick-up / drop-off loop and access to a loop road around the new building would extend from a second curb cut further north on May Street, connecting to the Chandler Street entrance/exit. The spatial constraints under Concept 1 would result in a dispersed parking configuration and somewhat restricted perimeter access. Under Concept 2, a more consolidated parking configuration is possible with less severe perimeter access conditions.

Athletic Facilities

The building configuration and parking/access limitations of Concept 1 will result in spatial constraints for the athletic facilities. Athletic facilities may be limited to a single field (football / soccer) located north of the new building. Additional athletic field space for softball and/or a practice field may be achievable but would require extensive earth moving to construct. The more generous spatial conditions of Concept 2 would allow for an expanded athletic field configuration that could potentially include a football field / track and an additional practice/soccer field. This expanded athletic field configuration would likely require a cut into the steep slope on the west side of the Site, and approximately 400 feet of retaining wall of low to moderate in height and tiered in configuration.

Earth Moving

Under both concepts extensive earth moving would be required to develop new building pads, to accommodate access roadways, and to construct new athletic facilities. As noted above, construction of a secondary athletic facility for Concept 1 would require a significant earth moving operation to provide access to and to create a pad area necessary for field construction. It is likely that the related cost for this aspect of the site program would outweigh the perceived benefit of the second field area. On contrast, the retaining wall construction that would be necessary to facilitate a field/track element under Concept 2 may be perceived as having a more favorable cost-benefit ratio.

Site Utilities

In general, the overall scale and scope of the site utility systems for New Construction on the Chandler Site (either concept) would be similar to those described for New Construction at the Doherty Site in Section 4.3. with the added constraint/condition of the existing storm drain and sanitary sewer utilities described in Section 4.6.1. Under either concept, the existing storm drain and sanitary sewer pipes and structures would need to be re-routed to facilitate building and site construction.

Other new site utility systems and services as listed under Section 3.4 would be required for this and all other New Construction options.
FEASIBILITY STUDY

General Information
We have reviewed the four general design options presented for the Doherty Memorial High School feasibility study by Lamoureux Pagano and Associates, and offer the following description of each structural system. Also, we will present the basic structural scope and implications of each design option. The design options are:

1. Code Upgrade
2. Renovation and Addition
3. New Construction on Existing Site (Option A.1)
4. New Construction on Alternate Sites (Options B.1, C.1 & C.2)

1. **Code Upgrade**
The “Code Upgrade” option includes completing regular building maintenance, repairing/replacement of existing building systems that have reached their life expectancy or failed, and addressing pre-existing building code violations. Maintenance and updating building systems will be completed with fixtures that serve the same purpose. The “Code Upgrade” option will need to conform to Level 1 Work of the International Existing Building Code, 2015 Edition, as modified by the Massachusetts State Building Code, Ninth Edition.

**Existing Structural Systems:**
The two-story buildings consist of:
- **Foundations:**
  - 16" Concrete frost walls (2-#6 T&B) with continuous 2′-4” wide footing.
  - 12" Concrete retaining walls with continuous 5′-0” wide footing at South walls of buildings to resist stepped soil conditions.
  - Spread footings below columns, designed for soil bearing pressure of 6,000 psf.
  - Interior concrete walls (2-#6 T&B) below CMU partitions 8” and wider.
- **Columns:**
  - Steel tube columns. TS4x4, TS5x5, TS6x6 and additional rectangular sizes.
  - Wide flange steel columns. W6’s, W8’s & W10’s.
- **Floors (at grade):**
  - 4” Concrete slab-on-grade at classrooms and common spaces.
  - 6” Concrete slab-on-grade at mechanical room.
- **Walls**
  - Interior walls are unreinforced concrete masonry units (CMU) at corridors, select interior partitions, and at perimeter of Gymnasium, Auditorium, and Mechanical Rooms.
  - Exterior walls are unreinforced CMU with brick veneer, or insulated wall panels.
  - Select interior partitions are metal studs with plaster.
- **Floors (framed):**
  - 2 ½” & 3” Concrete slab on metal form deck with 6x6 welded wire fabric at Classrooms.
  - 4” Reinforced structural concrete slabs reinforced with #3’s at second floor area surrounding the gymnasium.
  - 6” Reinforced structural concrete slabs reinforced with #3’s at connector bridges.
  - Joists: Classroom floors are typically framed with 16J & 18J Joists spaced at 24” o.c.
  - Beams: Non-composite W-beams (Typically W14’s and W16’s @ 2′-0” o.c. spanning 28 feet). Beams at the floors are typically located on column lines, corridors, or other non-repetitive framing layouts.
FEASIBILITY STUDY

Girders: Non-composite W-beams (Typically W14’s & W16’s spanning 16 feet). Girders over Cafeteria are W24’s.

- Roof:
  - steel wide flange beams on column lines, corridors, and at non-typical bays.
  - steel roof joists at framing infill between column lines (16J joists @ 4'-0" o.c.)
  - long-span steel roof joists at Auditorium and Cafeteria roofs.
  - long-span steel beams (W36’s) with steel beam infill at Gymnasium roof.
  - steel roof deck (1 ½” metal roof deck).
  - insulated plank decking on bulb tees at Gymnasium roof.
  - flat plate diagonal strapping for lateral forces (Typically 3"x ¼”).

- Bracing:
  - steel bracing towers at several column lines at each building Unit. Bracing towers are constructed with steel plates and steel rods.

**Structural Scope:**
The structural scope of the Code Upgrade option is fairly limited and will consist of correcting pre-existing Code violations and general repairs. Structural work will include:

- Seismic anchorage of interior CMU partitions built to the underside of floor/roof framing will need to be reviewed. Partitions and other walls built up to the underside, and not around, the steel members will need new anchorage or seismic clips to restrain the walls during a seismic event.

- Replacing deficient mechanical systems will include replacing equipment with similar equipment. The weights should remain unchanged, but should new, or heavier, equipment be required, the structural capacity of existing framing would need to be reviewed.

- Regular maintenance to the structure will include repointing of masonry veneer, re-caulking brick expansion joints, and painting steel lintels. Most of the brick veneer appears sound and stable, so maintenance would be limited to select locations only. Masonry infill will be required at several locations where mechanical openings were abandoned and infilled with wood framing.

- Roofing replacement is not anticipated, but if more than 50% of the roofing is replaced, the roof diaphragm will need to be investigated for resisting wind loads. Generally, most of the school roof consists of steel framing and a metal roof deck diaphragm, which appears to be adequate for resisting winds loads. The Gymnasium roof is framed differently, consisting of steel framing and insulated plank decking on bulb tees. The insulated plank on bulb tees typically do not resist diaphragm loads adequately, and will need to be investigated if the roofing is replaced. A possible solution may include removing the insulated panel system and replacing with metal roof decking and a traditional insulated roof system over the metal decking.

**Comments:** As part of the “Code Upgrade” option, the building will not be re-roofed, except at select locations where roof deck repair is required. Existing mechanical/electrical equipment will be repaired, or replaced with similar equipment. The structural scope of work will be fairly limited through most of the building and will likely need to comply with Level 1 Work, per the Building Code. As part of Level 1 Work, masonry parapets and masonry wall anchorage need to conform to the International Existing Building Code. Based on our review, there are no masonry parapets that need to be corrected, and the roof diaphragm appears to be connected to the exterior framing. Interior masonry partitions will need to be secured to the floor/roof framing to conform to the seismic code.
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The building will continue to perform as currently used, but due to lack of renovation, addition, or additional structural improvement, the “Code Upgrade” option will limit future flexibility, such as, modifying room sizes. Also, since the building will be undergoing regular maintenance as part of the “Code Upgrade” option, we recommend general repair of exterior masonry joints and repointing the brick at deteriorated locations.

2. Renovation and Addition

The “Renovation and Addition” option includes partial demolition of the existing building (77,500 ft²), renovation of the existing building (98,000 ft²), and a structurally isolated addition (322,000 ft²) for a finished building of 420,000 ft². Due to the substantial renovation work involved within the existing building, the renovation portion of the “Renovation and Addition” options will need to conform to the International Existing Building Code for Level 3 Work, as modified by Chapter 34 of the Massachusetts State Building Code. The new construction portion of the project will need to conform to the current International Building Code, as modified by the Massachusetts State Building Code.

Existing Structural Systems:
- Structural systems of the existing building are similar to “Code Upgrade” option

New Addition Structural Systems:
- Additions will be seismically isolated from the existing building by installing building expansion joints.
- Foundations:
  - Interior concrete spread footings
  - Continuous reinforced concrete frost wall and footing at exterior walls at level site areas.
  - Concrete retaining walls and possibly concrete buttress walls at sloped site conditions.
- Columns:
  - Wide flange steel columns (W8 & W10)
- Framed Floors:
  - Wide flange composite steel beams.
  - Composite metal deck.
  - Concrete fill (light-weight concrete at fire-rated slabs).
- Roof:
  - Wide flange steel beams.
  - Long-span steel trusses and joists at open areas.
  - Metal roof deck
- Lateral Force Resisting System:
  - Concentrically braced steel frames.

Structural Scope at Existing Buildings:
- Seismic anchorage of interior CMU partitions must be reviewed similar to the “Code Upgrade” option.
- Support of new or replaced rooftop mechanical equipment will be similar to the “Code Upgrade” option.
- Complete regular maintenance at exterior envelope, including: re-pointing veneer, painting lintels, and caulking brick expansion joints.
FEASIBILITY STUDY

- The proposed scope of demolition includes the existing Cafeteria/Kitchen, the west end of the upper Classroom Building, and the Gymnasium/Engineering Building. Due to the significant changes to the existing building, the remaining portions of the building will need to be fully reviewed for seismic load resistance in accordance with the Building Codes. We anticipate adding new seismic force-resisting elements throughout the existing building to comply with the current Building Code requirements. New elements may include steel bracing towers, or reinforced concrete masonry unit (CMU) shear walls. Typically, the bracing would be HSS tubes located at corridor walls and demising walls between classrooms. The installation will require attaching new plates to existing columns, beams, and foundations for the tube bracing.

Comments: From a structural point of view, the “Renovation and Addition” option is the most involved due to the significant renovation of the existing building, phasing of construction, and the integration of the new construction. At a minimum, the existing building will need to be brought into compliance with the International Existing Building Code, as modified by Chapter 34 of the MSBC to increase basic life safety to the minimum requirements of the Code. We anticipate structural modifications to the existing building will be required due to the proposed renovation. Structural modifications will likely include redesigning the seismic bracing systems to resist current seismic loads, providing support for new mechanical systems, and laterally supporting existing masonry partitions.

It should be noted that the renovation will increase the life safety of the existing building, but it will not fully bring the existing building up to standards of the current Building Code due to lesser quality materials and design practices used at the time of original construction. Also, even though the renovation will extend the life of the existing building, the building should not be expected to last as long or perform as well as the newly constructed additions or a new building. Similar to the “Code Upgrade” option, the brick veneer will need to be repointed at deteriorated locations. Other water damage or deteriorated conditions may be discovered after finishes are removed for renovation and will need to be corrected at that time.

3. **New Construction on Existing Site (Option A.1)**

The “New Construction on Existing Site” option consist of building an entirely new 420,000 ft² school on the same site as the existing school. The construction will take place while the existing school remains in use. The school will consist of a multi-story core area and multi-story classroom wings. The building will use standard construction methods and materials.

*Structural Systems:*

- **Foundations:**
  - Interior concrete spread footings
  - Continuous reinforced concrete frost wall and footing at exterior walls at level site areas.
  - Concrete retaining walls and possibly concrete buttress walls at sloped site conditions.
  - Foundation systems are assumed based on existing conditions and must be verified by a qualified Geotechnical Engineer.

- **Columns:**
  - Steel tube columns (HSS6x6 & HSS7x7) at 1 & 2-story portions of the building.
  - Wide flange steel columns (W8 & W10) at 3 & 4-story portions of the building.
FEASIBILITY STUDY

- Framed Floors:
  - Wide flange composite steel beams
  - Composite metal deck
  - Concrete fill

- Walls:
  - Light gauge framing will be used at interior partitions and exterior walls.
  - Reinforced CMU will be used at elevator shafts, locker rooms, gymnasium, and other high-abuse areas.

- Roof:
  - Wide flange steel beams
  - Metal roof deck
  - Designed to support photovoltaic panels.

- Lateral Force Resisting System:
  - Concentratively braced steel frames.

Comments: The “New Construction on Existing Site” option is a flexible option, from a structural point of view. This option will also allow for increased life safety and more flexibility for sustainable design, relative to the “Code Upgrade” or “Renovation and Addition” options. Construction materials and systems will be designed in compliance with the current Massachusetts State Building Code.

4. New Construction on Alternate Site (Options B.1 & C.1 & C.2)

The “New Construction on Alternate Site” options consist of building an entirely new 420,000 ft² school on either the Foley Stadium Site (B.1) or the Chandler Magnet Site (C.1 & C.2). The construction will take place at an alternate site and will not affect the use of the existing school. Similar to Option A.1, the new school will consist of a multi-story core area and multi-story classroom wings. The building will use standard construction methods and materials.

Structural Systems:

- Foundations (Option B.1- Foley Stadium Site):
  - Existing test pits indicate up to 12 feet of coal ash and urban fill over peat.
  - Deep foundation system using piles.
  - Reinforced concrete grade beams at exterior walls and throughout building.
  - Structural concrete slab at grade level supported on grade beams and piles.
  - Foundation systems are assumed based on existing test pit information and must be verified by a qualified Geotechnical Engineer.

- Foundations (Options C.1 & C.2- Chandler Magnet Site):
  - Interior concrete spread footings
  - Continuous reinforced concrete frost wall and footing at exterior walls at level site areas.
  - Concrete retaining walls and possibly concrete buttress walls at sloped site conditions.
  - Foundation systems are assumed based on existing conditions and must be verified by a qualified Geotechnical Engineer.

- Columns:
  - Steel tube columns (HSS6x6 & HSS7x7) at 1 & 2-story portions of the building.
  - Wide flange steel columns (W8 & W10) at 3 & 4-story portions of the building.

- Framed Floors:
  - Wide flange composite steel beams
  - Composite metal deck
FEASIBILITY STUDY

- Concrete fill
  - Walls:
    - Light gauge framing will be used at interior partitions and exterior walls.
    - Reinforced CMU will be used at elevator shafts, locker rooms, gymnasium, and other high-abuse areas.
  - Roof:
    - Wide flange steel beams
    - Metal roof deck
    - Designed to support photovoltaic panels.
  - Lateral Force Resisting System:
    - Concentrically braced steel frames.

Comments: The “New Construction on Alternate Site” options offer a flexible option, from a structural point of view. These options will also allow for increased life safety and more flexibility for sustainable design, relative to the “Code Upgrade” or “Renovation and Addition” options. Construction materials and systems will be designed in compliance with the current Massachusetts State Building Code.

The most significant difference between the two site appears to be the existing sub-grade soil conditions. The Chandler Magnet Site appears to be located on glacial till, likely allowing the use of typical shallow foundations, similar to the existing site. The Foley Stadium site appears to be located on coal ash, urban fill, and peat and will require deep foundations with structural concrete framing at the first floor due to the poor existing site conditions. Assumptions will need to be confirmed by a qualified Geotechnical Engineer, who will also need to provide design recommendations and site preparation requirements.

Conclusions:
We have reviewed the four design options and it our professional opinion that all four options are structurally feasible. The “Code Upgrade” option requires very few structural modifications due to the limited nature of the work. Minor structural work will be required to address the interior partitions and general deterioration of the building. The “Renovation and Addition” option will require demolishing a portion of the building and building a significant addition. Completing this work will require structural modifications to install building expansion joints and installing new seismic bracing within the remaining portion of the building. The addition will be structurally isolated to avoid impacting the existing building. The “New Construction” options are fairly straightforward; a new 420,000 ft² school will be constructed on either the same site adjacent to the existing school, or a new site at Chandler Magnet School or Foley Stadium. The Foley Stadium site is located on poor quality soil and will likely require deep foundations, structural concrete framing at the lowest level, and significant site maintenance to deal with poor soil during construction. The “New Construction” options provide the most flexibility, from a structural point of view, allowing the school construction to conform to the full extent of the current Building Code, but may not be as cost effective as the “Renovation and Addition” option.
WHY FIRE PROTECTION?

The 1st automatic fire suppression system was patented in England in 1723, and consisted of a cask of water, a chamber of gunpowder, and a system of fuses. By the latter half of the 19th century, a multitude of fire protection devices and design methods had come into being, leading people to recognize the need for quality standards. The National Fire Protection Association (NFPA) was formed in 1896. NFPA design and installation standard 13 forms the basis of all US fire-sprinkler system design.

The purpose of NFPA 13 is to “provide a reasonable degree of protection for life and property from fire”. Fire data collected over many years indicates that the chances of dying in a fire are reduced by 50-75%, and average property loss is reduced by 50-67% when sprinklers are present. NFPA feels this simple comparison understates the value of sprinklers, as it lumps all fires together – including those where the sprinkler system failed to operate due to an accidentally closed valve, or where the building hazard had changed without updating the sprinkler system accordingly.

Thus, a fire protection system can be expected to both save lives and reduce property damage in the event of a fire.

WHEN AND WHAT FIRE PROTECTION IS REQUIRED?

The Mass. State Building Code (MSBC) and Fire Prevention Regulations primarily define where fire protection systems are required and the required system components.

The current building code (9th edition) requires an NFPA-13-compliant fire protection system “through-out” any Educational (E)-use building over 12,000 sqft. Thus, an NFPA 13 compliant fire protection system would be required through-out for any new construction option.

The 9th edition also requires stairwell standpipes if a building’s top floor-level is 30 ft or more above the lowest fire-department access (grade) level, and requires hose-valves on both sides of stages over 1,000 sqft in size.

A 4-story academic wing is projected for all but the base-repair option. Thus standpipes would also be required for all but the base-repair option. The requirement for Stage hose valves may or may not apply – depending on building design.

The Doherty HS, was constructed in the 1960’s, when there were less stringent fire protection system requirements. Buildings constructed prior to a code requirements inception are generally “grand-fathered” and only need to be brought up to current code under certain conditions. For a renovated building, the requirements depend on the level of renovation, and whether any addition is built. Mass General Laws (MGL) 148, Section 26 G specifically states that a fire protection system must be installed through-out an existing building if either:
1. Any addition if built that brings the aggregate building area (existing plus new) over 7,500 sqft. Since the existing school is already well over 7,500 sqft, an addition of any size would trigger a requirement for sprinklers through-out.

2. The building undergoes “major alterations”. This phrase is not strictly defined in any codes, but the Mass. Dept. of Fire Services has issued guidelines to help local Fire Chiefs determine when a renovation is “major” or not. These guidelines have 2 groups of criteria (A and B), and state that if any 1 criteria from both groups is met, it can be reasonably inferred that the renovation is “major”. The criteria are:

   a. **Group A – Does the renovation include:**
      
      i. The demolition or re-construction of ceilings or the installation of new hung ceilings.
      
      ii. The removal or installation of sub-flooring (not merely the installation or replacement of carpeting or finish flooring)
      
      iii. The demolition and/or re-construction or repositioning of walls or stairways or doorways.
      
      iv. The removal or relocation of a significant portion of the buildings HVAC, plumbing, or electrical systems, involving the penetrations of walls, floors, or ceilings.

   b. **Group B**
      
      i. Does the work affect 33% or more of the total building gross square footage?
      
      ii. Is the cost of the renovation 33% or more of the total assessed value of the building, as of the date of permit application?

This study addresses 3 different levels of construction:

**Code Upgrade Option – update equipment and windows with minimal reconfiguration of spaces:** This level of renovation involves 100% of the building area (for window, electrical, plumbing, and HVAC replacement) and would also involve ceiling replacement (required in order to update the mechanical, electrical, and plumbing systems), so a new sprinkler system would be required through-out the entire building.

**Full renovation – reconfiguration and additions to building.** Both because of the addition, and the re-configurations, this would certainly be considered “major alterations”, and would require that all current FP code requirements be met by the existing building as well as any addition.
New Construction

Summary:

- A new FP sprinkler system would be required throughout the building if the alternations are considered “major” or if any size addition is built. Both the “Base-repair” and “full renovation / addition” options fall in this category.

- Any new school would require a new sprinkler system throughout. Standpipes would also be required for any 4-story construction, or any 3-story construction with average floor-to-floor heights exceeding 15 ft.

FIRE PROTECTION WATER SUPPLIES

Existing Site: The Doherty High School obtains its water from the 16” Highland St., circulating main. The line is gravity fed from 2 tanks, just downstream of the reservoir filtration plant.

The water dept. completed a flow test right across from the existing school in 2007. Static pressure was 80 psi, with a residual pressure of 75 psi, and a discharge volume of 1680 gpm.

Though this data is 12 years old, the good, steady pressure and the high flow rate achieved strongly suggest that this site would not require any fire pump.

More recent flow test data, however, is code required for design of any fire protection system. Once the preferred solution is selected by the City, a new flow test will be conducted as part of the next feasibility study phase, to confirm currently available flow and pressure.

Alternate Sites: Both alternate sites are on Chandler St, which contains both 24” and 42” city water mains. We have requested, but not yet received any data about the available flow and pressure on this street. But the city water maps call both mains “low pressure”.

It is expected that the available pressure at the Foley Stadium will be about 37 psi higher than the pressure at the Magnet School – due to the stadium’s 87 ft lower elevation. Each 2.31 ft of elevation equates to 1 psi of available pressure.

Both sites also have smaller (Foley = 12” and 14” on Pleasant St., and Magnet school = 8” on May St and Ashmore Rd) high pressure mains near the opposite end of the site from Chandler St. It is possible the smaller high pressure mains might better support a fire protection system than the larger, low pressure, Chandler St. mains.

When we receive flow and pressure data for these 2 sites, we can determine the likely hood of either site requiring a fire pump.
PRELIMINARY RECOMMENDATIONS

Sprinkler System:

The sprinkler and fire signaling recommendation are similar for all renovation and new construction options.

- Code Upgrade
- Major renovation / addition, and
- New construction (all sites)

1. Provide a new, NFPA 13, wet, sprinkler system throughout the building.

   a. For any options with an underground parking garage (i.e. new construction existing site), provide a dry fire protection system throughout the parking garage.

2. Connect new FP system alarms to a new central Fire Alarm Control Panel (FACP) (provided under electrical).

Standpipe System

The renovation-addition option, and all new construction options currently include a 4-story building. Thus they would all require stairwell standpipes.

Standpipes could be eliminated in any revised new construction design that had a top floor level less than 30’ above lowest Fire Dept. access.

The Code Upgrade option would not require standpipes.
Date: August 26, 2019
To: Rob Para, AIA
Co: Lamoureux-Pagano Assoc. Architects, Inc. (via email)
From: Kevin Seaman, P.E. LEED® AP
Re: Doherty High School: Feasibility Study HVAC & Plumbing Narrative – Code Upgrade Option

The following narrative describes the proposed scope of work pertaining to the heating, ventilation and air conditioning (HVAC) systems and the plumbing systems at the Doherty High School for the No Build Option. As noted in our earlier existing Mechanical conditions report, the systems in within the existing building vary in their age however, much of the hydronic heating and plumbing distribution systems are original and have exceeded their useful expected service life and as such we have proposed a replacement of a majority of the systems as described herein. In addition, many of the existing HVAC terminals, although not past their useful life, have no ability to cool the air and have poor acoustical performance to support a classroom environment making them undesirable for reuse within the existing building.

HVAC

Central Heating Plant:

1. The buildings heating boilers shall be replaced with high efficiency (93%+) gas-fired condensing hot water boilers. Pending final load calculations and system design, initially the boiler plant shall consist of three (3) gas-fired condensing fire-tube style boilers each with a gross input capacity of 7,500,000 BTUH similar to Lochinvar Crest or equal by Aerco or Viessman. Boilers shall be located within an existing lower level boiler room. Combustion air and flue venting for the new boilers shall run up the building to the roof level.

2. All heating piping shall be replaced with a 2-pipe hydronic hot water system complete with two (2) sets of tri-plex vertical in-line system pumps as manufactured by Armstrong, Grundfos or equal rated for the system flow for their respective building segments. Hydronic system shall connect to 2-pipe fan coil units, VAV terminals, unit heaters, hot water coils and fin-tube radiation located throughout the building. All terminals shall be designed to operate with a maximum water temperature of 140°F to maximize plant capacity. Pumps shall have premium efficient motors and be fitted with integral variable speed drives so that pump energy matches system flow demand.

3. Intermediate mechanical closets shall be provided on the upper level of the building and shall contain plate-frame heat exchangers and high efficiency pumps with variable speed ECM motors. These heat exchangers shall establish a water to glycol loop interface whereas all
packaged rooftop equipment shall be fed with a glycol water mix for improved freeze protection.

4. Phasing Comments:

- We suggest the boiler plant be located within whichever area is considered the phase 1 area of renovation. In this way the boiler plant can be built and expanded (as applicable) using modular boilers to accept and support the future construction phases.

- We recommend any temporary modular classroom structure be fitted with packaged HVAC electric heat pumps which do not rely on the main building boiler plant. Since the existing building has and will continue to undergo replacement of exiting unit ventilators with radiation as sections are renovated.

Central Cooling Plant:

Although the proposed presumes the use of packaged, refrigerant based, direct expansion (DX) cooling and dehumidification systems the design team shall review the possibility of using a central chilled water plant tied to chilled water coils in rooftop air handlers in lieu of DX coils and compressors in the rooftop equipment. Review during the design shall be done in conjunction with the energy modeler and the utility company to ascertain the various advantages and disadvantages of using such a system.

Distribution and Ventilation:

1. Most of the buildings classroom areas are heated thru the use of fan coils or classroom unit ventilators with outdoor air louvers sealed off. Outdoor air for many classrooms is provided through the use of several roof mounted total energy recovery units. Although these units are currently within their projected useful service life they offer no ability to cool or dehumidify and as such are not desirable for reuse in a fully air conditioned structure.

   We propose new packaged rooftop units be provided which shall have total energy recovery wheels to utilize waste exhaust to temper incoming fresh air, hot water coils, DX coils (see note below) & hot gas reheat coils for cooling and dehumidification control. Units shall incorporate premium efficiency direct drive plenum fans on variable speed drives to optimize air delivery volumes based on space temperature and air quality demand as determined by CO2 sensors. The units shall be as manufactured by Aaon, Daiken, Valent or equal. Note: The possibility of using a central chilled water plant in lieu of DX coils in the rooftop equipment shall be considered early on during the design and in conjunction with the energy modeler and the utility company.

2. The existing duct distribution system serving most classrooms is not adequately sized to support air conditioning. As such we recommend much of the ductwork be removed and replaced with new ductwork supporting VAV terminals. Any existing ducts reused shall be internally cleaned, sealed and insulated.
3. Most all classrooms shall be provided with ventilation and air conditioning through the use of displacement diffusers located low along the walls. This type of ventilation system improves indoor air quality, environmental conditions and energy efficiency in several ways some of which are:

- Introduces fresh air down within the breathing zone (below 6 feet).
- Reduces the amount of fresh air required to ventilate the space.
- Limits the mixing of air contaminants within the space.
- System noise is reduced with diffuser air velocities a fraction of that of most conventional mixed air systems.
- Increases periods of economizer cooling (free cooling with outside air) by using higher supply air temperatures than most conventional mixed air systems.
- Increases cooling equipment efficiency by having higher return air and supply air temperatures than most conventional mixed air systems.

4. Science lab units shall be configured for 100% OA with exhaust adjusting to maintain space under slight negative pressure with respect to school as well as to match any fume hood exhaust. The units shall be as manufactured by Valent, Aaon, Daikin or equal.

5. Throughout the building exterior perimeter areas provide fin-tube radiation to support a majority of the space heating load. VAV and/or fan powered VAV units shall be used in all interior area or where fin-tube radiation is not possible or practical.

6. The computer classrooms as well as the MDF room shall be cooled via high efficiency ductless split units (one per room) with fan coil mounted within ceiling and condensing unit on roof.

7. Automotive shop area, if applicable, shall include a dedicated packaged rooftop system. The unit shall have total energy recovery wheels, hot water coils, DX coils & hot gas reheat coils for cooling and dehumidification control. Unit shall incorporate premium efficiency direct drive plenum fans on variable speed drives to optimize air delivery volumes based on space temperature and air quality demand as determined by CO and NOx sensors. The unit shall be as manufactured by Valent, Aaon, Daikin or equal.

8. High plume style fume hood exhaust fan(s) shall be provided and connected to science lab fume hoods. Fan shall vary flow based on variable flow hood demand. Each hood shall be fitted with sash airflow monitor and branch duct damper control as manufactured by TSI or Phoenix Controls to maintain flow at each hood based on open sash air velocity.

9. Provide new code compliant kitchen hood system with energy saving smoke/heat detection systems coupled to variable speed exhaust fan. Provide new gas-fired make-up air system for the kitchen which shall have the ability to reset make-up air system volume in unison with kitchen hood exhaust demand control system.

10. Locker rooms shall be provided with packaged rooftop units and supply and exhaust ductwork. The units shall have total energy recovery wheels and hot water coils and shall be
configured for 100% OA ventilation during occupied periods. Units shall incorporate premium efficiency direct drive plenum fans on variable speed drives to optimize air delivery based on space temperature and air quality demand as determined by humidity and CO2 sensors. The units shall be as manufactured by McQuay, Trane, Aaon or equal.

11. Restrooms (other than those in the locker room), Janitors closets, etc… shall be exhaust via roof mounted exhaust fans controlled by occupancy sensors located in the respective areas served.

12. Phasing Comments:

- Most areas of the existing building shall be supported by roof mounted HVAC units serving multiple floors and as such the renovation approach should consider segmenting the building work into multi-story blocks.

- We recommend any temporary modular classroom structures be fitted with packaged HVAC electric heat pumps which do not rely on the main building boiler plant.

Controls:

1. The current school already incorporates a direct digital control (DDC) energy management system (EMS) as supplied and service by Automated Building Systems, Inc. This system shall be extended to include all new systems and incorporate further energy saving and monitoring features. The system monitors and controls the HVAC equipment for efficient use and for proper indoor air quality and temperatures. The system is designed on PC based architecture and adjustments are made on a graphics based presentation of building systems. The system also supports maintenance and record keeping needs of the facility. Occupancy of the school is based on the standard school year with occupied/unoccupied conditions based on current school day practice. This is an adjustable feature that can be made to reflect additional operating needs and use of the school building by staff or others.

2. The HVAC systems are generally operated on a school day basis coinciding with the occupied/unoccupied schedule of the standard 180-day school year. Adjustments can be made through the DDC system to allow for usage during periods other than the usual school operating periods.

3. Space temperature is monitored by individual space sensors that transmit data to the central monitoring and control station. Space conditions are adjustable through DDC system and can be modified to meet individual needs. Local control of space conditions is limited to predefined adjustments in space temperature and to facilitate a 3-hour occupied override feature.

4. All classroom systems shall incorporate space occupancy sensors to reset ventilation levels when room is unoccupied during a regularly scheduled occupied period. Systems serving high occupancy areas such as the cafeteria and gymnasium also include carbon dioxide
(CO2) indoor air quality (IAQ) sensors which optimize the fresh outdoor air ventilation levels in response to variations in space occupancies.

5. The system shall incorporate many energy-saving features such as 1) hot water temperature reset controls, 2) static pressure reset controls, 3) occupancy based controls and 4) ventilation reset controls to name just a few.

6. The building shall be connected to emergency power source for operation of heating boilers and pumps during loss of primary power. Systems on emergency power may include MDF and IDF rooms as well as areas deemed critical by the Owner.

7. Phasing Comments:

   • The existing building control system can be easily expanded to support the building in renovation segments through the use of networked unitary controls. We do not suggest the modular classrooms be connected to this system due to their temporary nature.

Sustainable Opportunities:

Many of the proposed system and control sequences noted above minimize energy consumption however, further optimization may be obtained by investigating the use of either high efficiency air cooled water chillers of water cooled cooling equipment which has an inherent better energy performance than air cooled equipment. A life cycle evaluation must be performed as size and length of cooling system run time will impact overall value.

In addition to the water cooled cooling option, consideration could also be given to a geothermal based option. A geothermal chiller/heater could support building cooling loads in the summer as well as provide supplemental heating to the building by preheating both the heating water and domestic hot water thereby reducing the demand on the building fossil fuel boilers. A geothermal well field analysis as well as a life cycle cost would need to be performed to verify economic viability.

Two solar based options to consider would be passive solar wall design using air passing through a wall assembly facing South to preheat air and/or vacuum tube thermal solar panels mounted on the roof to directly supplement the building heating and domestic hot water systems.

**Plumbing**

**Distribution & Conveying Systems**

The water distribution system is more than 40 years of age and most likely has some lead containing piping, fittings and/or solder as well as thinning pipe walls. As such, we suggest the
entire domestic water distribution system be replaced in its entirety. The new distribution system would consist of copper piping with lead-free fittings and products.

All sanitary sewer and rain water conductors located above the grade floor slab shall be replaced in their entirety unless examined and found to be in good condition. Underground waste piping shall be examined via camera inspection and if found to be in good condition shall be retained and reused. All sanitary sewer and rain water conductors shall be constructed of cast iron. An acid waste system consisting of acid rated piping and a neutralizing system shall be provided for the science labs.

All waste from the kitchen(s) shall be piped to a large (1,500 gallon+/-) exterior grease trap prior to discharge to the municipal sewer system.

Any modular classroom buildings should be equipped with adequate student and staff restrooms to support the population of the modular. These restrooms should be fed with potable cold water from the existing building. Sanitary sewer lines should tie into site sanitary sewer mains. All water and sanitary drain lines located outside the heated envelope shall be heat traced and insulated where located above grade or less than 4 feet below grade.

**Domestic Hot Water**

High efficiency (93%+) gas-fired condensing boiler/water heaters and tanks shall be used to replace the existing water heaters and support the buildings domestic hot water needs. In addition, this system shall be coupled to the heat output of thermal solar panels, if selected. The use of these supplemental systems will be dependent on their life cycle cost and require further study.

Dual water tempering valve stations shall be provided at the water heater to maintain water heater temperatures above 140°C to prevent bacterial growth in the tank while delivering 125°C water to service fixtures for sanitation and 110°C hot water to public lavatory sinks and other student and public use fixtures to prevent scalding.

For the temporary modular structures, provide local electric tank type water heaters to support the restroom lavatory and Janitor sink fixtures.

**Fixtures**

Planned renovations will most likely require removal of the existing fixtures. Once removed the fixtures should be replaced with code compliant water conserving fixtures. In addition, to achieve improved LEED® compliance and further water savings we recommend ultra-low flush water closets and urinals be utilized. The ultra low flush water closets use 1.28 gallons per flush as opposed to the 1.6 gallon per flush allowed by today’s code and the urinals use 1 pint (0.13 gallons) per flush as opposed to the current 1 gallon per flush allowed. The combination of these two can result in substantial savings overtime. However, these fixtures should only be used when
connecting to new well pitched (more than code minimum) sewer lines as the low flow fixtures do have a tendency to result in line blockages if the sewer line pitch or conditions is not good.

Lavatory faucets shall be of the low flow metered type controlled by either a wired or battery powered sensor operated faucet. Use of these faucets promotes good hygiene as well as water conservation.

**Natural Gas Service:**

The existing gas service to the building currently supports the heating boilers, domestic water heaters and many of the rooftop units. The projected new load, gas-fired heating boilers, water heaters and cooking equipment is expected to be near the same as the current load and may be less due to proposed building thermal improvements as well as more efficient heating and hot water boilers.

**Sustainable Opportunities:**

Many of the proposed fixtures and control sequences noted above minimize water usage and conserve energy however, further optimization may be obtained by investigating the use of storm water recovery systems. These systems collect, filter and utilize storm water to supply water to water closets and urinals throughout the building. A life cycle evaluation must be performed to ascertain the initial first costs, annual operating costs and projected savings associated with such a system.

Use of vacuum tube thermal solar panels shall be further considered, if desired, as part of a life cycle study analysis.

End of HVAC & Plumbing Narrative
The following narrative describes the proposed scope of work pertaining to the heating, ventilation and air conditioning (HVAC) systems and the plumbing systems at the Doherty High School for the Addition & Renovation Option. As noted in our earlier existing Mechanical conditions report, the systems in within the existing building vary in their age however, much of the hydronic heating and plumbing distribution systems are original and have exceeded their useful expected service life and as such we have proposed a replacement of a majority of the systems as described herein. In addition, many of the existing HVAC terminals, although not past their useful life, have no ability to cool the air and have poor acoustical performance to support a classroom environment making them undesirable for reuse within the existing building.

**HVAC**

**Central Heating Plant:**

1. The buildings heating boilers shall be replaced with high efficiency (93%+) gas-fired condensing hot water boilers. Pending final load calculations and system design, initially the boiler plant shall consist of four (4) gas-fired condensing fire-tube style boilers each with a gross input capacity of 12,000,000 BTUH similar to Lochinvar Crest or equal by Aerco or Viessman. Boilers shall be located within an existing lower level boiler room. Combustion air and flue venting for the new boilers shall run up the building to the roof level.

2. All heating piping shall be replaced with a 2-pipe hydronic hot water system complete with two (2) sets of tri-plex vertical in-line system pumps as manufactured by Armstrong, Grundfos or equal rated for the system flow for their respective building segments. Hydronic system shall connect to 2-pipe fan coil units, VAV terminals, unit heaters, hot water coils and fin-tube radiation located throughout the building. All terminals shall be designed to operate with a maximum water temperature of 140°F to maximize plant capacity. Pumps shall have premium efficient motors and be fitted with integral variable speed drives so that pump energy matches system flow demand.

3. Intermediate mechanical closets shall be provided on the upper level of the building and shall contain plate-frame heat exchangers and high efficiency pumps with variable speed ECM motors. These heat exchangers shall establish a water to glycol loop interface whereas all
packaged rooftop equipment shall be fed with a glycol water mix for improved freeze protection.

4. Phasing Comments:

- We suggest the boiler plant be located within whichever area is considered the phase 1 area of Addition. In this way the boiler plant can be built and expanded (as applicable) using modular boilers to accept and support the future construction phases.

- We recommend any temporary modular classroom structure be fitted with packaged HVAC electric heat pumps which do not rely on the main building boiler plant. Since the existing building has and will continue to undergo replacement of existing unit ventilators with radiation as sections are renovated.

Central Cooling Plant:

Although the proposed presumes the use of packaged, refrigerant based, direct expansion (DX) cooling and dehumidification systems the design team shall review the possibility of using a central chilled water plant tied to chilled water coils in rooftop air handlers in lieu of DX coils and compressors in the rooftop equipment. Review during the design shall be done in conjunction with the energy modeler and the utility company to ascertain the various advantages and disadvantages of using such a system.

Distribution and Ventilation:

1. Most of the buildings existing classroom areas are heated thru the use of fan coils or classroom unit ventilators with outdoor air louvers sealed off. Outdoor air for man classrooms is provided through the use of several roof mounted total energy recovery units. Although these units are currently within their projected useful service life they offer no ability to cool or dehumidify and as such are not desirable for reuse in a fully air conditioned structure.

We propose new packaged rooftop units be provided which shall have total energy recovery wheels to utilize waste exhaust to temper incoming fresh air, hot water coils, DX coils (see note below) & hot gas reheat coils for cooling and dehumidification control. Units shall incorporate premium efficiency direct drive plenum fans on variable speed drives to optimize air delivery volumes based on space temperature and air quality demand as determined by CO2 sensors. The units shall be as manufactured by Aaon, Daiken, Valent or equal. Note: The possibility of using a central chilled water plant in lieu of DX coils in the rooftop equipment shall be considered early on during the design and in conjunction with the energy modeler and the utility company.

2. The existing duct distribution system serving most existing classrooms is not adequately sized to support air conditioning. As such we recommend much of the ductwork be removed and replaced with new ductwork supporting VAV terminals. Any existing ducts reused shall be internally cleaned, sealed and insulated.
3. Most all classrooms shall be provided with ventilation and air conditioning through the use of displacement diffusers located low along the walls. This type of ventilation system improves indoor air quality, environmental conditions and energy efficiency in several ways some of which are:

- Introduces fresh air down within the breathing zone (below 6 feet).
- Reduces the amount of fresh air required to ventilate the space.
- Limits the mixing of air contaminants within the space.
- System noise is reduced with diffuser air velocities a fraction of that of most conventional mixed air systems.
- Increases periods of economizer cooling (free cooling with outside air) by using higher supply air temperatures than most conventional mixed air systems.
- Increases cooling equipment efficiency by having higher return air and supply air temperatures than most conventional mixed air systems.

4. Science lab units shall be configured for 100% OA with exhaust adjusting to maintain space under slight negative pressure with respect to school as well as to match any fume hood exhaust. The units shall be as manufactured by Valent, Aaon, Daikin or equal.

5. Throughout the building exterior perimeter areas provide fin-tube radiation to support a majority of the space heating load. VAV and/or fan powered VAV units shall be used in all interior area or where fin-tube radiation is not possible or practical.

6. The computer classrooms as well as the MDF room shall be cooled via high efficiency ductless split units (one per room) with fan coil mounted within ceiling and condensing unit on roof.

7. Automotive shop area, if applicable, shall include a dedicated packaged rooftop system. The unit shall have total energy recovery wheels, hot water coils, DX coils & hot gas reheat coils for cooling and dehumidification control. Unit shall incorporate premium efficiency direct drive plenum fans on variable speed drives to optimize air delivery volumes based on space temperature and air quality demand as determined by CO and NOx sensors. The unit shall be as manufactured by Valent, Aaon, Daikin or equal.

8. High plume style fume hood exhaust fan(s) shall be provided and connected to science lab fume hoods. Fan shall vary flow based on variable flow hood demand. Each hood shall be fitted with sash airflow monitor and branch duct damper control as manufactured by TSI or Phoenix Controls to maintain flow at each hood based on open sash air velocity.

9. Provide new code compliant kitchen hood system with energy saving smoke/heat detection systems coupled to variable speed exhaust fan. Provide new gas-fired make-up air system for the kitchen which shall have the ability to reset make-up air system volume in unison with kitchen hood exhaust demand control system.

10. Locker rooms shall be provided with packaged rooftop units and supply and exhaust ductwork. The units shall have total energy recovery wheels and hot water coils and shall be
configured for 100% OA ventilation during occupied periods. Units shall incorporate premium efficiency direct drive plenum fans on variable speed drives to optimize air delivery based on space temperature and air quality demand as determined by humidity and CO2 sensors. The units shall be as manufactured by McQuay, Trane, Aaon or equal.

11. Restrooms (other than those in the locker room), Janitors closets, etc... shall be exhaust via roof mounted exhaust fans controlled by occupancy sensors located in the respective areas served.

12. Phasing Comments:

- Most areas of the existing building shall be supported by roof mounted HVAC units serving multiple floors and as such the renovation approach should consider segmenting the building work into multi-story blocks.

- We recommend any temporary modular classroom structures, if used, be fitted with packaged HVAC electric heat pumps which do not rely on the main building boiler plant.

Controls:

1. The current school already incorporates a direct digital control (DDC) energy management system (EMS) as supplied and service by Automated Building Systems, Inc. This system shall be extended to include all new systems and incorporate further energy saving and monitoring features. The system monitors and controls the HVAC equipment for efficient use and for proper indoor air quality and temperatures. The system is designed on PC based architecture and adjustments are made on a graphics based presentation of building systems. The system also supports maintenance and record keeping needs of the facility. Occupancy of the school is based on the standard school year with occupied/unoccupied conditions based on current school day practice. This is an adjustable feature that can be made to reflect additional operating needs and use of the school building by staff or others.

2. The HVAC systems are generally operated on a school day basis coinciding with the occupied/unoccupied schedule of the standard 180-day school year. Adjustments can be made through the DDC system to allow for usage during periods other than the usual school operating periods.

3. Space temperature is monitored by individual space sensors that transmit data to the central monitoring and control station. Space conditions are adjustable through DDC system and can be modified to meet individual needs. Local control of space conditions is limited to predefined adjustments in space temperature and to facilitate a 3-hour occupied override feature.

4. All classroom systems shall incorporate space occupancy sensors to reset ventilation levels when room is unoccupied during a regularly scheduled occupied period. Systems serving high occupancy areas such as the cafeteria and gymnasium also include carbon dioxide
(CO2) indoor air quality (IAQ) sensors which optimize the fresh outdoor air ventilation levels in response to variations in space occupancies.

5. The system shall incorporate many energy-saving features such as 1) hot water temperature reset controls, 2) static pressure reset controls, 3) occupancy based controls and 4) ventilation reset controls to name just a few.

6. The building shall be connected to emergency power source for operation of heating boilers and pumps during loss of primary power. Systems on emergency power may include MDF and IDF rooms as well as areas deemed critical by the Owner.

7. Phasing Comments:
   - The existing building control system can be easily expanded to support the building additions and renovations in segment phases through the use of networked unitary controls. We do not suggest the modular classrooms, if used, be connected to this system due to their temporary nature.

Sustainable Opportunities:

Many of the proposed system and control sequences noted above minimize energy consumption however, further optimization may be obtained by investigating the use of either high efficiency air cooled water chillers or water cooled cooling equipment which has an inherent better energy performance than air cooled equipment. A life cycle evaluation must be performed as size and length of cooling system run time will impact overall value.

In addition to the water cooled cooling option, consideration could also be given to a geothermal based option. A geothermal chiller/heater could support building cooling loads in the summer as well as provide supplemental heating to the building by preheating both the heating water and domestic hot water thereby reducing the demand on the building fossil fuel boilers. A geothermal well field analysis as well as a life cycle cost would need to be performed to verify economic viability.

Two solar based options to consider would be passive solar wall design using air passing through a wall assembly facing South to preheat air and/or vacuum tube thermal solar panels mounted on the roof to directly supplement the building heating and domestic hot water systems.

Plumbing

Distribution & Conveying Systems

The water distribution system is more than 40 years of age and most likely has some lead containing piping, fittings and/or solder as well as thinning pipe walls. As such, we suggest the
entire domestic water distribution system be replaced in its entirety. The new distribution system would consist of copper piping with lead-free fittings and products throughout both the renovation and addition.

All sanitary sewer and rain water conductors located above the grade floor slab shall be replaced in their entirety unless examined and found to be in good condition. Underground waste piping shall be examined via camera inspection and if found to be in good condition shall be retained and reused. All sanitary sewer and rain water conductors shall be constructed of cast iron. An acid waste system consisting of acid rated piping and a neutralizing system shall be provided for the science labs.

All waste from the kitchen(s) shall be piped to a large (1,500 gallon+/-) exterior grease trap prior to discharge to the municipal sewer system.

Any modular classroom buildings should be equipped with adequate student and staff restrooms to support the population of the modular. These restrooms should be fed with potable cold water from the existing building. Sanitary sewer lines should tie into site sanitary sewer mains. All water and sanitary drain lines located outside the heated envelope shall be heat traced and insulated where located above grade or less than 4 feet below grade.

**Domestic Hot Water**

High efficiency (93%+) gas-fired condensing boiler/water heaters and tanks shall be used to replace the existing water heaters and support the buildings domestic hot water needs. In addition, this system shall be coupled to the heat output of thermal solar panels, if selected. The use of these supplemental systems will be dependent on their life cycle cost and require further study.

Dual water tempering valve stations shall be provided at the water heater to maintain water heater temperatures above 140°F to prevent bacterial growth in the tank while delivering 125°F water to service fixtures for sanitation and 110°F hot water to public lavatory sinks and other student and public use fixtures to prevent scalding.

For the temporary modular structures, provide local electric tank type water heaters to support the restroom lavatory and Janitor sink fixtures.

**Fixtures**

Planned renovations will most likely require removal of the existing fixtures. Once removed the fixtures should be replaced with code compliant water conserving fixtures. In addition, to achieve improved LEED® compliance and further water savings we recommend ultra-low flush water closets and urinals be utilized. The ultra low flush water closets use 1.28 gallons per flush as opposed to the 1.6 gallon per flush allowed by today’s code and the urinals use 1 pint (0.13 gallons) per flush as opposed to the current 1 gallon per flush allowed. The combination of these two can result in substantial savings overtime. However, these fixtures should only be used when
connecting to new well pitched (more than code minimum) sewer lines as the low flow fixtures do have a tendency to result in line blockages if the sewer line pitch or conditions is not good.

Lavatory faucets shall be of the low flow metered type controlled by either a wired or battery powered sensor operated faucet. Use of these faucets promotes good hygiene as well as water conservation.

**Natural Gas Service:**

The existing gas service to the building currently supports the heating boilers, domestic water heaters and many of the rooftop units. The projected new load, gas-fired heating boilers, water heaters and cooking equipment will most likely exceed the current load due to increase in building size. Once loads are confirmed a review with the local gas utility (Eversource) shall take place to confirm adequate supply.

**Sustainable Opportunities:**

Many of the proposed fixtures and control sequences noted above minimize water usage and conserve energy however, further optimization may be obtained by investigating the use of storm water recovery systems. These systems collect, filter and utilize storm water to supply water to water closets and urinals throughout the building. A life cycle evaluation must be performed to ascertain the initial first costs, annual operating costs and projected savings associated with such a system.

Use of vacuum tube thermal solar panels shall be further considered, if desired, as part of a life cycle study analysis.

**End of HVAC & Plumbing Narrative**
Date: August 26, 2019
To: Rob Para, AIA
Co: Lamoureux-Pagano Assoc. Architects, Inc. (via email)
From: Kevin Seaman. P.E. LEED® AP
Re: Doherty High School: Feasibility Study HVAC & Plumbing Narrative – New Construction A.1, B.1, C.1, C.2

The following narrative describes the proposed scope of work pertaining to the heating, ventilation and air conditioning (HVAC) systems and the plumbing systems at the Doherty High School for the New Construction Option encompassing either of the A.1, B.1, C.1 or C.2 sites.

HVAC

Central Heating Plant:

1. The buildings primary heat source shall be provided by high efficiency (93%+) gas-fired condensing hot water boilers. Pending final load calculations and system design, initially the boiler plant shall consist of four (4) gas-fired condensing fire-tube style boilers each with a gross input capacity of 12,000,000 BTUH similar to Lochinvar Crest or equal by Aerco or Viessman. Boilers shall be located within a central boiler room. Combustion air and flue venting for the boilers shall run up the building to the roof level.

2. Heating distribution to the building shall be via a 2-pipe hydronic hot water system complete with two (2) sets of tri-plex vertical in-line system pumps as manufactured by Armstrong, Grundfos or equal rated for the system flow for their respective building segments. Hydronic system shall connect to 2-pipe fan coil units, VAV terminals, unit heaters, hot water coils and fin-tube radiation located throughout the building. All terminals shall be designed to operate with a maximum water temperature of 140°F to maximize plant capacity. Pumps shall have premium efficient motors and be fitted with integral variable speed drives so that pump energy matches system flow demand.

3. Intermediate mechanical closets shall be provided on the upper level of the building and shall contain plate-frame heat exchangers and high efficiency pumps with variable speed ECM motors. These heat exchangers shall establish a water to glycol loop interface whereas all packaged rooftop equipment shall be fed with a glycol water mix for improved freeze protection.

Central Cooling Plant:

Although the proposed presumes the use of packaged, refrigerant based, direct expansion (DX) cooling and dehumidification systems the design team shall review the possibility of using a
central chilled water plant tied to chilled water coils in rooftop air handlers in lieu of DX coils and compressors in the rooftop equipment. Review during the design shall be done in conjunction with the energy modeler and the utility company to ascertain the various advantages and disadvantages of using such a system.

**Distribution and Ventilation:**

1. New packaged rooftop units shall be provided which shall have total energy recovery wheels to utilize waste exhaust to temper incoming fresh air, hot water coils, DX coils (see note below) & hot gas reheat coils for cooling and dehumidification control. Units shall incorporate premium efficiency direct drive plenum fans on variable speed drives to optimize air delivery volumes based on space temperature and air quality demand as determined by CO2 sensors. The units shall be as manufactured by Aaon, Daikan, Valent or equal. **Note:** The possibility of using a central chilled water plant in lieu of DX coils in the rooftop equipment shall be considered early on during the design and in conjunction with the energy modeler and the utility company.

2. Most all classrooms shall be provided with ventilation and air conditioning through the use of displacement diffusers located low along the walls. This type of ventilation system improves indoor air quality, environmental conditions and energy efficiency in several ways some of which are:
   - Introduces fresh air down within the breathing zone (below 6 feet).
   - Reduces the amount of fresh air required to ventilate the space.
   - Limits the mixing of air contaminants within the space.
   - System noise is reduced with diffuser air velocities a fraction of that of most conventional mixed air systems.
   - Increases periods of economizer cooling (free cooling with outside air) by using higher supply air temperatures than most conventional mixed air systems.
   - Increases cooling equipment efficiency by having higher return air and supply air temperatures than most conventional mixed air systems.

3. Science lab units shall be configured for 100% OA with exhaust adjusting to maintain space under slight negative pressure with respect to school as well as to match any fume hood exhaust. The units shall be as manufactured by Valent, Aaon, Daikin or equal.

4. Throughout the building exterior perimeter areas provide fin-tube radiation to support a majority of the space heating load. VAV and/or fan powered VAV units shall be used in all interior area or where fin-tube radiation is not possible or practical.

5. The computer classrooms as well as the MDF room shall be cooled via high efficiency ductless split units (one per room) with fan coil mounted within ceiling and condensing unit on roof.
6. Automotive shop area, if applicable, shall include a dedicated packaged rooftop system. The unit shall have total energy recovery wheels, hot water coils, DX coils & hot gas reheat coils for cooling and dehumidification control. Unit shall incorporate premium efficiency direct drive plenum fans on variable speed drives to optimize air delivery volumes based on space temperature and air quality demand as determined by CO and NOx sensors. The unit shall be as manufactured by Valent, Aaon, Daikin or equal.

7. High plume style fume hood exhaust fan(s) shall be provided and connected to science lab fume hoods. Fan shall vary flow based on variable flow hood demand. Each hood shall be fitted with sash airflow monitor and branch duct damper control as manufactured by TSI or Phoenix Controls to maintain flow at each hood based on open sash air velocity.

8. Provide new code compliant kitchen hood system with energy saving smoke/heat detection systems coupled to variable speed exhaust fan. Provide new gas-fired make-up air system for the kitchen which shall have the ability to reset make-up air system volume in unison with kitchen hood exhaust demand control system.

9. Locker rooms shall be provided with packaged rooftop units and supply and exhaust ductwork. The units shall have total energy recovery wheels and hot water coils and shall be configured for 100% OA ventilation during occupied periods. Units shall incorporate premium efficiency direct drive plenum fans on variable speed drives to optimize air delivery based on space temperature and air quality demand as determined by humidity and CO$_2$ sensors. The units shall be as manufactured by McQuay, Trane, Aaon or equal.

10. Restrooms (other than those in the locker room), Janitors closets, etc… shall be exhaust via roof mounted exhaust fans controlled by occupancy sensors located in the respective areas served.

Controls:

1. The city school system utilizes a proprietary control vendor current school Automated Building Systems, Inc. This provider shall incorporate a direct digital control (DDC) energy management system (EMS). The system shall control and monitor most all HVAC systems for efficient use and for proper indoor air quality and temperatures as well as incorporate energy saving routines. The system is designed on PC based architecture and adjustments are made on a graphics based presentation of building systems. The system also supports maintenance and record keeping needs of the facility. Occupancy of the school is based on the standard school year with occupied/unoccupied conditions based on current school day practice. This is an adjustable feature that can be made to reflect additional operating needs and use of the school building by staff or others.

2. The HVAC systems are generally operated on a school day basis coinciding with the occupied/unoccupied schedule of the standard 180-day school year. Adjustments can be made through the DDC system to allow for usage during periods other than the usual school operating periods.
3. Space temperature is monitored by individual space sensors that transmit data to the central monitoring and control station. Space conditions are adjustable through DDC system and can be modified to meet individual needs. Local control of space conditions is limited to predefined adjustments in space temperature and to facilitate a 3-hour occupied override feature.

4. All classroom systems shall incorporate space occupancy sensors to reset ventilation levels when room is unoccupied during a regularly scheduled occupied period. Systems serving high occupancy areas such as the cafeteria and gymnasium also include carbon dioxide (CO\textsubscript{2}) indoor air quality (IAQ) sensors which optimize the fresh outdoor air ventilation levels in response to variations in space occupancies.

5. The system shall incorporate many energy-saving features such as 1) hot water temperature reset controls, 2) static pressure reset controls, 3) occupancy based controls and 4) ventilation reset controls to name just a few.

6. The building shall be connected to emergency power source for operation of heating boilers and pumps during loss of primary power. Systems on emergency power may include MDF and IDF rooms as well as areas deemed critical by the Owner.

**Sustainable Opportunities:**

Many of the proposed system and control sequences noted above minimize energy consumption however, further optimization may be obtained by investigating the use of either high efficiency air cooled water chillers or water cooled cooling equipment which has an inherent better energy performance than air cooled equipment. A life cycle evaluation must be performed as size and length of cooling system run time will impact overall value.

In addition to the water cooled cooling option, consideration could also be given to a geothermal based option. A geothermal chiller/heater could support building cooling loads in the summer as well as provide supplemental heating to the building by preheating both the heating water and domestic hot water thereby reducing the demand on the building fossil fuel boilers. A geothermal well field analysis as well as a life cycle cost would need to be performed to verify economic viability.

Two solar based options to consider would be passive solar wall design using air passing through a wall assembly facing South to preheat air and/or vacuum tube thermal solar panels mounted on the roof to directly supplement the building heating and domestic hot water systems.

**Plumbing**

**Distribution & Conveying Systems**
The water distribution system throughout the building shall consist of copper piping with lead-free fittings and products.

All sanitary sewer and rain water conductors shall be constructed of cast iron. An acid waste system consisting of acid rated piping and a neutralizing system shall be provided for the science labs.

All waste from the kitchen(s) shall be piped to a large (1,500 gallon+/-) exterior grease trap prior to discharge to the municipal sewer system.

**Domestic Hot Water**

High efficiency (93%+) gas-fired condensing boiler/water heaters and tanks shall be used to support the buildings domestic hot water needs. In addition, this system shall be coupled to the heat output of thermal solar panels, if selected. The use of these supplemental systems will be dependent on their life cycle cost and require further study.

Dual water tempering valve stations shall be provided at the water heater to maintain water heater temperatures above 140°F to prevent bacterial growth in the tank while delivering 125°F water to service fixtures for sanitation and 110°F hot water to public lavatory sinks and other student and public use fixtures to prevent scalding.

**Fixtures**

All fixtures shall be of the code compliant water conserving type. In addition, to achieve improved LEED® compliance and further water savings we recommend ultra-low flush water closets and urinals be utilized. The ultra low flush water closets use 1.28 gallons per flush as opposed to the 1.6 gallon per flush allowed by today’s code and the urinals use 1 pint (0.13 gallons) per flush as opposed to the current 1 gallon per flush allowed. The combination of these two can result in substantial savings overtime. However, these fixtures should only be used when connecting to well-pitched (more than code minimum) sewer lines as the low flow fixtures do have a tendency to result in line blockages if the sewer line pitch is not good.

Lavatory faucets shall be of the low flow metered type controlled by either a wired or battery powered sensor operated faucet. Use of these faucets promotes good hygiene as well as water conservation.

**Natural Gas Service:**

All proposed sites appear to have gas service located either on property or on the public way abutting the property. It is anticipated that the gas service shall support the heating boilers, domestic water heaters, kitchen equipment and make-up air systems. Once loads are confirmed a review with the local gas utility (Eversource) shall take place to confirm adequate supply.
Sustainable Opportunities:

Many of the proposed fixtures and control sequences noted above minimize water usage and conserve energy however, further optimization may be obtained by investigating the use of storm water recovery systems. These systems collect, filter and utilize storm water to supply water to water closets and urinals throughout the building. A life cycle evaluation must be performed to ascertain the initial first costs, annual operating costs and projected savings associated with such a system.

Use of vacuum tube thermal solar panels shall be further considered, if desired, as part of a life cycle study analysis.

End of HVAC & Plumbing Narrative
August 27, 2019

Doherty High School
Worcester, MA

RE: Electrical Recommendations – Code Upgrade Option

Prepared by Azim Rawji, P.E.

Under the base repair option, only the life safety systems will be upgraded, all other existing systems will remain and will continue to be used until they fail. Most of the existing systems are either past their useful working life or inadequate and need replacement.

**Code Upgrade**

a. Electrical Service:
   i. Existing electrical service and distribution equipment is to remain.
   ii. Provide new padmount transformer and distribution equipment to the modular classrooms.

b. Emergency Power:
   iii. Provide new emergency/standby generator and distribution equipment.

c. Lighting:
   i. Evaluate existing emergency egress and exist lighting.
   ii. Provide new egress and exit lighting to comply with current codes.

d. Fire Alarm:
   i. Provide new voice evacuation fire alarm system to comply with current codes.

e. Data Communications:
   ii. The existing telecommunications infrastructure is to remain.

f. Audio-Video Systems:
   i. Provide new public address and clock systems.
   ii. Provide assistive listening system at Auditorium, Cafeteria, Media Center, and Gymnasium.

g. Security Systems:
   i. The existing security system is to remain.
August 27, 2019

Doherty High School
Worcester, MA

RE: Electrical Recommendations – Renovation-Addition Narrative

Prepared by Azim Rawji, P.E.

Net Zero Energy
The City of Worcester has established efficient energy, sustainable design and net zero energy as a goal for the project. A net zero energy building is one that is optimally efficient and generates energy onsite using clean renewable resources in a quantity equal to or greater than the total amount of energy consumed onsite.

The building mechanical and electrical systems are the chief consumers of energy within the building. A combination of the following strategies contributes to the success in reducing energy demand from these systems.

a. Reduce Energy Demand – size mechanical equipment adequately, reduce plug and lighting loads, and improve the building shell.
b. Harvest Site Energy - Orient the building to maximize passive solar, and daylighting opportunities.
c. Maximize Efficiency - use efficient equipment to maximize benefit.
d. Efficient Operations and Maintenance – building commissioning, training of staff, and ongoing preventative maintenance, combined with monitoring of ongoing performance, can ensure energy efficiency gains are realized.
e. Renewable Energy - Generate enough energy on-site using renewable technologies to meet all energy demands for the facility.

As the project progresses, meetings and design charrettes with the Owner will be planned and existing building performances will be evaluated to advance the efficient energy, sustainable design and net zero energy goals.

Enabling Early Site Package

f. Provide electrical infrastructure for temporary power.
g. Provide temporary site lighting and power.

Phase 1
Construct a 3-story Cafeteria, Science, Engineering Technology Academy (“ETA”, a Chapter 74 program), and mechanical spaces, as well as a 4 story Auditorium, Gymnasium, Administration and media center building. Maintain existing electrical, fire alarm, telecommunications and security systems in existing
areas. Provide temporary electrical, fire alarm, telecommunications and security system connections to areas affected by demolition.

a. Electrical Service:
   i. Provide electrical primary duct bank to a utility company padmount transformer located on the exterior of the building.
   ii. Provide secondary electrical service conductors and main switchboard and distribution equipment to the main electrical room.
   iii. Provide telecommunications underground duct system to the entrance facility room.

b. Electrical Distribution
   i. Provide electrical distribution equipment and feeder.
   ii. Provide wiring devices and branch circuits.
   iii. Provide lightning protection system.
   iv. Provide roof mounted solar photovoltaic system.

c. Emergency Power:
   i. Provide emergency/standby generator, transfer and power equipment. Emergency equipment must be separated from normal and standby power equipment per the Massachusetts Electrical Code.
   ii. All emergency equipment and feeders must be installed in 2-hour rated rooms or must be 2-hour rated.
   iii. Provide power to emergency egress and exit lighting, life safety and standby equipment.

d. Lighting:
   i. Provide light fixtures with LED lamps.
   ii. Provide network lighting control system including vacancy sensors and daylight harvesting.
   iii. Provide emergency egress and exit lighting fed from the emergency life safety branch of the emergency/standby system.
   iv. Integrate lighting controls with HVAC system to optimize energy performance of the building.

e. Fire Alarm:
   i. Provide voice evacuation fire alarm system.
   ii. Provide public safety radio distributed antenna system.
   iii. Provide area of refuge communications system.

f. Data Communications:
   i. Provide telecommunications cabling infrastructure per the BICSI standards. Utilize Category 6A cabling for voice and data drops. Install telecommunications equipment in dedicated rooms.
ii. Provide data network switches based on HP Procurve (Aruba Enterprise Company).
iii. Provide wireless access points based on Cisco Meraki.
iv. Provide VoIP telephone system and handsets based on Mitel.

g. Audio-Video Systems:
i. Provide sound system in the gym/auditorium.
ii. Provide in-building classroom audio system.
iii. Provide in-building cellular amplification system.
iv. Provide handheld radio amplification system.
v. Provide public address system.
vi. Provide digital signage and clock system.

h. Security Systems:
i. Provide video surveillance system based on Genetec VMS and Axis cameras.
ii. Provide access control system based on HID.
iii. Provide intrusion detection system based on Bosch.

Phase 2
Sequence 2A will involve occupancy of phase 1 spaces. Sequence 2B involves demolition of the buildings containing the Gym/Physical Education support spaces and ETA as well as the west ends of both building containing the Cafeteria, Art Rooms, Classrooms and some Special Education rooms. Sequence 2C involves gut renovation of Auditorium, Science Classrooms and Classrooms below science rooms.

a. Electrical Distribution:
i. Provide electrical distribution and feeder.
ii. Provide wiring devices and branch circuits.
iii. Provide lightning protection system.
iv. Provide rooftop mounted solar photovoltaic system.

b. Emergency Power:
i. Provide emergency distribution and feeders.
ii. Provide power to emergency egress and exit lighting, life safety and standby equipment.

c. Lighting:
i. Provide light fixtures with LED lamps.
ii. Provide network lighting control system including vacancy sensors and daylight harvesting.
iii. Provide emergency egress and exit lighting fed from the emergency life safety branch of the emergency/standby system.
iv. Integrate lighting controls with HVAC system to optimize energy performance of the building.

d. Fire Alarm:
i. Provide fire alarm devices.
ii. Provide public safety radio distributed antennas.
iii. Provide area of refuge communications system.

**e. Data Communications:**
i. Provide telecommunications cabling infrastructure per the BICSI standards. Utilize Category 6A cabling for voice and data drops. Install telecommunications equipment in dedicated rooms.
ii. Provide data network switches.
iii. Provide wireless access points.
iv. Provide VoIP handsets.

**f. Audio-Video Systems:**
i. Provide sound system in the cafetorium.
ii. Provide in-building classroom audio system.
iii. Provide in-building cellular amplification system.
iv. Provide handheld radio amplification system.
v. Provide public address system.
vi. Provide digital signage and clock system.

**g. Security Systems:**
i. Provide video surveillance cameras.
ii. Provide access control card readers.
iii. Provide intrusion detection devices.

**Phase 3**
Sequence 3A involves occupying newly renovated and newly built spaces including new Administration/Guidance/Medical Suite, Art Classrooms, General Classrooms in renovated areas as well as new General Classrooms in newly constructed academic wings. Sequence 3B involves the gut/renovation of remaining spaces, the former Administration Suite with library above and the remaining classrooms within that area as well as the group of classrooms adjacent to the former gym.

**a. Electrical Distribution:**
i. Provide electrical distribution and feeder.
ii. Provide wiring devices and branch circuits.
iii. Provide lightning protection system.
iv. Provide roof mounted solar photovoltaic system.

**b. Emergency Power:**
i. Provide emergency distribution and feeders.
ii. Provide power to emergency egress and exit lighting, life safety and standby equipment.
c. Lighting:
   i. Provide light fixtures with LED lamps.
   ii. Provide network lighting control system including vacancy sensors and daylight harvesting.
   iii. Provide emergency egress and exit lighting fed from the emergency life safety branch of the emergency/standby system.
   iv. Integrate lighting controls with HVAC system to optimize energy performance of the building.

d. Fire Alarm:
   i. Provide fire alarm devices.
   ii. Provide public safety radio distributed antennas.
   iii. Provide area of refuge communications system.

e. Data Communications:
   i. Provide telecommunications cabling infrastructure per the BICSI standards. Utilize Category 6A cabling for voice and data drops. Install telecommunications equipment in dedicated rooms.
   ii. Provide data network switches.
   iii. Provide wireless access points.
   iv. Provide VoIP handsets.

f. Audio-Video Systems:
   i. Provide sound system in the cafetorium.
   ii. Provide in-building classroom audio system.
   iii. Provide handheld radio amplification system.
   iv. Provide public address system.
   v. Provide digital signage and clock system.

g. Security Systems:
   i. Provide video surveillance cameras.
   ii. Provide access control card readers.
   iii. Provide intrusion detection devices.

Phase IV
Sequence 4A involves occupying newly renovated classrooms. Sequence 4B involves construction of the multipurpose field and finishing site and landscaping scope.

a. Electrical Distribution:
   i. Provide electrical distribution and feeder.
   ii. Provide wiring devices and branch circuits.
   iii. Provide lightning protection system.
   iv. Provide parking canopy mounted solar photovoltaic system.
   v. Provide electric vehicle charging stations.
b. Emergency Power:
   i. Provide emergency distribution and feeders.
   ii. Provide power to emergency egress and exit lighting, life safety and standby equipment.

c. Lighting:
   i. Provide light fixtures with LED lamps.
   ii. Provide network lighting control system including vacancy sensors and daylight harvesting.
   iii. Provide emergency egress and exit lighting fed from the emergency life safety branch of the emergency/standby system.
   iv. Integrate lighting controls with HVAC system to optimize energy performance of the building.

d. Fire Alarm:
   i. Provide fire alarm devices.
   ii. Provide public safety radio distributed antennas.
   iii. Provide area of refuge communications system.

e. Data Communications:
   i. Provide telecommunications cabling infrastructure per the BICSI standards. Utilize Category 6A cabling for voice and data drops. Install telecommunications equipment in dedicated rooms.
   ii. Provide data network switches.
   iii. Provide wireless access points.
   iv. Provide VoIP handsets.

f. Audio-Video Systems:
   i. Provide sound system in the athletic field.
   ii. Provide in-building classroom audio system.
   iii. Provide handheld radio amplification system.
   iv. Provide public address system.
   v. Provide digital signage and clock system.

g. Security Systems:
   i. Provide video surveillance cameras.
   ii. Provide access control card readers.
   iii. Provide intrusion detection devices.
August 27, 2019

Doherty High School
Worcester, MA

RE: Electrical Recommendations – New Construction on Existing Site Narrative (Option A.1)

Prepared by Azim Rawji, P.E.

Net Zero Energy
The City of Worcester has established efficient energy, sustainable design and net zero energy as a goal for the project. A net zero energy building is one that is optimally efficient and generates energy onsite using clean renewable resources in a quantity equal to or greater than the total amount of energy consumed onsite.

The building mechanical and electrical systems are the chief consumers of energy within the building. A combination of the following strategies contributes to the success in reducing energy demand from these systems.

a. Reduce Energy Demand – size mechanical equipment adequately, reduce plug and lighting loads, and improve the building shell.
b. Harvest Site Energy - Orient the building to maximize passive solar, and daylighting opportunities.
c. Maximize Efficiency - use efficient equipment to maximize benefit.
d. Efficient Operations and Maintenance – building commissioning, training of staff, and ongoing preventative maintenance, combined with monitoring of ongoing performance, can ensure energy efficiency gains are realized.
e. Renewable Energy - Generate enough energy on-site using renewable technologies to meet all energy demands for the facility.

As the project progresses, meetings and design charettes with the Owner will be planned and existing building performances will be evaluated to advance the efficient energy, sustainable design and net zero energy goals.

New Construction

a. Electrical Service:
   i. Provide electrical primary duct bank to a utility company padmount transformer located on the exterior of the building.
   ii. Provide new secondary electrical service conductors and new main switchboard and distribution equipment to a new main electrical room.
   iii. Provide new telecommunications underground duct system to a new server room.
   iv. Provide new electrical distribution and branch circuits.
v. Coordinate with utility company to disconnect power to the existing building at the end of construction to facilitate demolition by the General Contractor.

b. Electrical Distribution
   i. Provide electrical distribution equipment and feeder.
   ii. Provide wiring devices and branch circuits.
   iii. Provide lightning protection system.
   iv. Provide roof and parking canopy mounted solar photovoltaic system.

c. Emergency Power:
   i. Provide new emergency/standby generator, transfer and power equipment. Emergency equipment must be separated from normal and standby power equipment per the Massachusetts Electrical Code.
   ii. All emergency equipment and feeders must be installed in 2-hour rated rooms or must be 2-hour rated.
   iii. Provide power to emergency egress and exit lighting, life safety and standby equipment.

d. Lighting:
   i. Provide new emergency egress and exit lighting fed from the emergency life safety branch of the emergency/standby system.
   ii. Provide new light fixtures with LED lamps.
   iii. Provide new network lighting control system including occupancy sensors and daylight harvesting.
   iv. Integrate lighting controls with HVAC system to optimize energy performance of the building.

e. Fire Alarm:
   i. Provide new voice evacuation fire alarm system.
   ii. Provide new public safety radio distributed antenna system.
   iii. Provide area of refuge communications system.

f. Data Communications:
   i. Provide new telecommunications cabling infrastructure per the BICSI standards. Utilize Category 6 cabling for voice and data drops and Category 6A shielded cabling for wireless access points. Install telecommunications equipment in dedicated rooms.
   ii. Provide data network switches based on HP Procurve (Aruba Enterprise Company).
   iii. Provide wireless access points based on Cisco Meraki.
   iv. Provide VoIP telephone system and handsets based on Mitel.

g. Audio-Video Systems:
   i. Provide new sound system in the gym/cafetorium/auditorium/athletic field.
   ii. Provide in-building classroom audio system.
iii. Provide in-building cellular amplification system.
iv. Provide handheld radio amplification system.
v. Provide public address system.
vi. Provide digital signage and clock system.

h. Security Systems:
i. Provide new video surveillance system based on Genetec.
ii. Provide new access control system based on HID.
iii. Provide intrusion detection system based on DMP.
August 27, 2019

Doherty High School
Worcester, MA

RE: Electrical Recommendations – New Construction on Alt Site Narrative (Options B.1, C.1 & C.2)

Prepared by Azim Rawji, P.E.

Net Zero Energy
The City of Worcester has established efficient energy, sustainable design and net zero energy as a goal for the project. A net zero energy building is one that is optimally efficient and generates energy onsite using clean renewable resources in a quantity equal to or greater than the total amount of energy consumed onsite.

The building mechanical and electrical systems are the chief consumers of energy within the building. A combination of the following strategies contributes to the success in reducing energy demand from these systems.

- Reduce Energy Demand – size mechanical equipment adequately, reduce plug and lighting loads, and improve the building shell.
- Harvest Site Energy - Orient the building to maximize passive solar, and daylighting opportunities.
- Maximize Efficiency - use efficient equipment to maximize benefit.
- Efficient Operations and Maintenance – building commissioning, training of staff, and ongoing preventative maintenance, combined with monitoring of ongoing performance, can ensure energy efficiency gains are realized.
- Renewable Energy - Generate enough energy on-site using renewable technologies to meet all energy demands for the facility.

As the project progresses, meetings and design charettes with the Owner will be planned and existing building performances will be evaluated to advance the efficient energy, sustainable design and net zero energy goals.

New Construction

- Electrical Service:
  - Provide electrical primary duct bank to a utility company padmount transformer located on the exterior of the building.
  - Provide new secondary electrical service conductors and new main switchboard and distribution equipment to a new main electrical room.
  - Provide new telecommunications underground duct system to a new server room.
  - Provide new electrical distribution and branch circuits.
v. Coordinate with utility company to disconnect power to the existing building at the end of construction to facilitate demolition by the General Contractor.

b. Electrical Distribution
i. Provide electrical distribution equipment and feeder.
ii. Provide wiring devices and branch circuits.
iii. Provide lightning protection system.
iv. Provide solar photovoltaic system.

c. Emergency Power:
i. Provide new emergency/standby generator, transfer and power equipment. Emergency equipment must be separated from normal and standby power equipment per the Massachusetts Electrical Code.
ii. All emergency equipment and feeders must be installed in 2-hour rated rooms or must be 2-hour rated.
iii. Provide power to emergency egress and exit lighting, life safety and standby equipment.

d. Lighting:
i. Provide new emergency egress and exit lighting fed from the emergency life safety branch of the emergency/standby system.
ii. Provide new light fixtures with LED lamps.
iii. Provide new network lighting control system including occupancy sensors and daylight harvesting.
iv. Integrate lighting controls with HVAC system to optimize energy performance of the building.

e. Fire Alarm:
i. Provide new voice evacuation fire alarm system.
ii. Provide new public safety radio distributed antenna system.
iii. Provide area of refuge communications system.

f. Data Communications:
i. Provide new telecommunications cabling infrastructure per the BICSI standards. Utilize Category 6 cabling for voice and data drops and Category 6A shielded cabling for wireless access points. Install telecommunications equipment in dedicated rooms.
ii. Provide data network switches based on HP Procurve (Aruba Enterprise Company).
iii. Provide wireless access points based on Cisco Meraki.
iv. Provide VoIP telephone system and handsets based on Mitel.

g. Audio-Video Systems:
i. Provide new sound system in the gym/cafetorium/auditorium/athletic field.
ii. Provide in-building classroom audio system.
iii. Provide in-building cellular amplification system.
iv. Provide handheld radio amplification system.
v. Provide public address system.
vi. Provide digital signage and clock system.

h. Security Systems:
i. Provide new video surveillance system based on Genetec.
ii. Provide new access control system based on HID.
iii. Provide intrusion detection system based on DMP.
3.1.6 Preliminary Evaluation of Alternatives
H. Supporting Documents
6. LPA|A Charrette Sketches
A. Doherty Site
Highlights:

- Attempt to meet Building Program, 1 Practice Field, Staff Parking
- Footprint = 128,000 SF
- 200+ Parking Spaces
- Complete perimeter access road plus
- Multiple opportunities for drop off separation
- Option to put PE support space under gym and on grade, raise gym to 2nd floor
- Option to swap ETA and science
3.1.6 Preliminary Evaluation of Alternatives
H. Supporting Documents
6. LPA|A Charrette Sketches

B. Foley Stadium Site

Axon

Eastbound on Chandler

Westbound on Chandler

Doherty Memorial High School
299 Highland Street, Worcester MA
3.1.6 Preliminary Evaluation of Alternatives

H. Supporting Documents
6. LPA|A Charrette Sketches

B. Foley Stadium Site

- 390,000 sq ft (gross)
- 165,000 sq ft Ground Floor
- 115,000 sq ft 2nd Floor
- 110,000 sq ft 3rd Floor

Parking – 293 spaces
- opportunity for parking structure at east end of site

Fields
- Football practice field
- 2 basketball Courts
- 2 tennis courts
FEASIBILITY STUDY

Doherty Memorial High School
299 Highland Street, Worcester MA
3.1.6 Preliminary Evaluation of Alternatives
H. Supporting Documents
6. LPA|A Charrette Sketches
C. Chandler Magnet School Site
FEASIBILITY STUDY

Doherty Memorial High School
299 Highland Street, Worcester MA
3.1.6 Preliminary Evaluation of Alternatives
H. Supporting Documents
6. LPA|A Charrette Sketches
C. Chandler Magnet School Site
3.1.7 LOCAL ACTIONS AND APPROVALS

A. Narrative
B. Local Actions & Approvals Certification
C. Public Meeting Agendas and Minutes
D. Press & Local News Articles
A. Narrative
The Owner and OPM have taken a proactive approach to involve the local community in the Feasibility Study process. Key steps include the following:

- **City of Worcester Departmental Interaction:** K. Russell Adams, PE, Assistant Commissioner of the DPW, is the acting liaison between the Worcester Public Schools District and other City of Worcester Departments (City Manager, Mayor, Administration & Finance, DPW, Building/Code Enforcement, etc.).

- **Visioning Workshops:** Several public Visioning workshops were held in partnership with New Vista Design:
  
<table>
<thead>
<tr>
<th>Date</th>
<th>Workshop Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/5/19</td>
<td>Public Visioning Workshop One: Learning Goals &amp; Best Practices</td>
</tr>
<tr>
<td>6/17/19</td>
<td>Public Visioning Workshop Two: Design Patterns &amp; Guiding Principles</td>
</tr>
<tr>
<td>6/24/19</td>
<td>Public Visioning Workshop Three Key Spaces, Adjacencies &amp; Conceptual Design Directions</td>
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<tr>
<td>6/24/19</td>
<td>Public Hearing / Visioning Summary</td>
</tr>
</tbody>
</table>

Refer to section 3.1.2.D.1. for minutes of each of these Visioning Workshops.

- **School Building Committee (SBC) Meetings:** All SBC meetings have been conducted in accordance with the state’s open meeting law. The following SBC Meetings were held during the PDP Phase:

<table>
<thead>
<tr>
<th>Date</th>
<th>Meeting Description</th>
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</thead>
<tbody>
<tr>
<td>5/13/19</td>
<td>Public School Building Committee Meeting</td>
</tr>
<tr>
<td>8/19/19</td>
<td>Public School Building Committee Meeting</td>
</tr>
<tr>
<td>9/9/19</td>
<td>Public School Building Committee Meeting &amp; Vote to submit the PDP to MSBA</td>
</tr>
</tbody>
</table>

Agendas and minutes of these meetings can be found in this section.

- **Public Hearings:** Public Hearings were held on the following dates at the Doherty Memorial High School Cafeteria:

<table>
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<tr>
<th>Date</th>
<th>Hearing Description</th>
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</thead>
<tbody>
<tr>
<td>6/24/19</td>
<td>Public Hearing / Visioning Summary</td>
</tr>
<tr>
<td>7/15/19</td>
<td>Public Hearing</td>
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</table>

In addition to the required meeting notices, School Building Committee Members, students, parents, neighbors and community partners were invited to attend and provide feedback.
Agendas and minutes of these meetings can be found in this section. PowerPoint presentations of all meetings were uploaded to the Schools Website after the meetings.

- **School Committee:** The project team presented an update to the School Committee at a televised meeting that took place on July 18th, 2019. LPA|A presented an update on the project to date, and the District asked the School Committee to vote to approve the proposed Chapter 74 Program Submission to MSBA. The submission was approved unanimously. The agenda and minutes for this meeting can be found in this section, and the Chapter 74 Program submission can be found in Section 3.1.2.C.

- **Staff/Faculty Engagement:** As part of the programming process, the staff/faculty participated in in a full staff Visioning Workshop on June 3, 2019 as well as departmental focus group meetings and a questionnaire to envision the opportunities for the school improvements. See section 3.1.2 Educational Program for a summary of the questionnaire/workshop process as well as program meeting minutes.

- **Project Website:** A project web site has been established on the Doherty Memorial High School website, under the “Building Project” sub page.
  
  https://worcesterschools.org/school-subpage/doherty-memorial-high-school-building-project/

  The intent is to continue to upload public documents (i.e. meeting minutes, reports, graphics, schedules, project photos, etc.) available for viewing on this web site. The district has also added a link for the public to submit questions or comments on the project via LPA|A’s website.

- **Press & Local News Articles:** As a result of the elevated public interest in the proposed location for the Doherty Memorial High School, several news articles and blogs have been published providing updates on status of the feasibility study. Copies of these articles are provided in this section. In addition to written coverage, Worcester Charter TV 3 has covered the public meetings and conducted interviews, which can be viewed online.
B. Local Actions & Approvals

Certification

1. Local Approval of PDP
2. Certified Copies of SBC Meeting Minutes
September 10, 2019

Ms. Mary Pichetti
Director of Capital Planning
40 Broad Street
Boston, Massachusetts 02109

Dear Ms. Pichetti,

This letter serves to certify that the attached Doherty Memorial High School Building Committee meeting minutes dated May 13, 2019, June 24, 2019, August 19, 2019, September 9, 2019, sign-in sheet dated September 9, 2019 and the vote tally sheet also dated September 9, 2019, are true and accurate to the best of my knowledge. These documents relate to the School Building Committee’s vote on the Preliminary Design Program.

Sincerely,

K. Russell Adams, P.E.
Assistant Commissioner

Dated: 9/10/2019
City of Worcester
Eileen A. Holden
Commission expires: October 26, 2023

Notary Seal
September 10, 2019

Ms. Mary Pichetti
Director of Capital Planning
40 Broad Street
Boston, Massachusetts 02109

Dear Ms. Pichetti:

The Worcester School Building Committee ("SBC") has completed its review of the Feasibility Study, Preliminary Design Program for the Doherty Memorial High School project (the "Project"), and on September 9, 2019, the SBC voted to approve and authorize the Owner's Project Manager to submit the Feasibility Study related materials to the MSBA for its consideration. A certified copy of the SBC meeting minutes, which includes the specific language of the vote and the number of votes in favor, opposed, and abstained, are attached.

Since the MSBA’s Board of Directors invited the District to conduct a Feasibility Study on June 1, 2017, the SBC has held four (4) meetings regarding the proposed project, in compliance with the state Open Meeting Law. These meetings include:

**School Building Committee Meetings for Doherty Memorial High School**

*May 13, 2019 6:30PM*

299 Highland St. Presented by Paul Moosey, DPW&P Commissioner.
Meeting focused on presentation of the introduction of the project team and MSBA process for the Doherty Memorial High School.

*June 24, 2019 6:30-8PM*

299 Highland St. Worcester, Hosted by Russ Adams
Meeting focused on recap of the earlier meeting held regarding Key Spaces and Adjacencies, Bubble Diagrams, Conceptual Design Directions and Community Talking Points.

*August 19, 2019 6:30-8PM*

299 Highland St. Worcester, Hosted by Russ Adams
Meeting focused on overview of Preliminary Design Proposal status in preparation for SBC vote.

**School Building Committee Meetings for Doherty Memorial High School (continued)**

Massachusetts School Building Authority
Module 3 – Feasibility Study - PDP Submission
September 9, 2019 6:30PM
299 Highland St. Presented by Russ Adams, DPW&P Assistant Commissioner.
Meeting focused on presentation of the Preliminary Design Proposal for the Doherty Memorial
High School project with SBC vote.

In addition to the SBC meeting listed above, the District held six (6) public meetings, which
were posted in compliance with the state Open Meeting Law, at which the Project was
discussed. These meetings include:

**Public Meetings for Doherty Memorial High School**
**June 5, 2019 2-5PM**
299 Highland St. Worcester Hosted by Russ Adams
Meeting focused on Learning Practices, Future ready learning and Strengths, Challenges,
Opportunities and Goals (SCOG) Analysis.

**June 17, 2019 2-5PM**
299 Highland St. Worcester Hosted by Russ Adams
Meeting focused on 21st Century Design Patterns, Blue Sky Ideas and Guiding Principals.

**June 24, 2019 2-5PM**
299 Highland St. Worcester, Hosted by Russ Adams
Meeting focused on Key Spaces and Adjacencies, Bubble Diagrams, Conceptual Design
Directions and Community Talking Points.

**July 15, 2019 6:30-8PM**
299 Highland St. Worcester, Hosted by Russ Adams
Meeting focused on overview of project status including criteria for site analysis alternatives.

The presentation materials for each meeting, meeting minutes, and summary materials
related to the Project are available locally for public review at the Doherty Memorial High
School web site.

To the best of my knowledge and belief, each of the meetings listed above complied with the
requirements of the Open Meeting Law, M.G.L. c. 30A, §§ 18-25 and 940 CMR 29 et seq.

If you have any questions or require any additional information, please contact Russ Adams,
DPW&P Assistant Commissioner; Adamsk@ worcesterma.gov

Massachusetts School Building Authority
Module 3 – Feasibility Study - PDP Submission
By signing this Local Action and Approval Certification, I hereby certify that, to the best of my knowledge and belief, the information supplied by the District in this Certification is true, complete, and accurate.

By: Edward M. Augustus, Jr.

Title: Chief Executive Officer

Date:

By signing this Local Action and Approval Certification, I hereby certify that, to the best of my knowledge and belief, the information supplied by the District in this Certification is true, complete, and accurate.

By: Maureen Binienda

Title: Superintendent of Schools

Date:

By signing this Local Action and Approval Certification, I hereby certify that, to the best of my knowledge and belief, the information supplied by the District in this Certification is true, complete, and accurate.

By: Joseph M. Petty

Title: Chair of the School Committee

Date:
Doherty Memorial High School Project

School Building Committee (SBC) Meeting Minutes

Feasibility Study

Preliminary Design Proposal (PDP) Vote

Meeting Date and Time:
MONDAY, SEPTEMBER 9, 2019 TIME 6:30PM – 8:00PM

Introductions

Mr. Moosey made introductions welcoming all who came and explained that the reason for the meeting was for the School Building Committee to vote on the Preliminary Design Proposal being presented. He noted this process was a summary of needs for the school. He introduced the project team and handed the presentation over to Ms. Crockett of Lamoureux and Pagano (LPA).

Project team members and School Building Committee representatives in attendance include:

School Building Committee:
All members attended (see sign-in sheet attached)

City of Worcester, Department of Public Works & Parks (DPW&P)
K. Russell Adams, Assistant Commissioner

City of Worcester, School Department (WPS)
Maureen Binienda, Superintendent of Schools
Jim Bedard, Director of Environmental Management and Capital Projects
Sally Maloney, Principal Doherty Memorial High School

Lamoureux Pagano Associates, Architect (LPA)
Katie Crockett, President, LPA
Robert Para, Jr, Project Architect
Rick Lamoureux
Christina Bazelmans
Christopher M. Lee
Matt Brassard, Nitsch Engineering

Tishman Construction Corp. of MA, Owner’s Project Manager (TCCMA)
Eugene Caruso
Project Update

Ms. Crockett noted there had been five public meetings including visioning sessions and thanked all those who participated in them. She said this project has been a collective effort working with WPS and Doherty Memorial High School staff to provide the best solution for the new school.

She identified three tasks that include a code upgrade of the existing building, addition/renovation of the existing building and an option for new construction on the existing site that are being presented as part of the required MSBA submission for the PDP. She also noted two additional alternate sites included in the process, Foley Stadium and Chandler Magnet. She noted this is part of Module 3, of a multi-phased MSBA process. There is approximately 1 year of design anticipated with construction to start in the summer of 2021 and occupancy in the fall of 2024.

Ms. Crockett identified that the existing building is actually half the size of what is required and has limited space for school programs including SPED, ETA and many others. The new building is expected to be in the range of 420,000 SF to provide for core facilities, career and tech programs, adequate space for ETA, includes area for three additional Chapter 74 programs and an Advanced Academy for biotech.

Site Evaluations

Mr. Para of LPA noted there are two components being evaluated for the project including the athletic/sports/site requirements and the educational programs. There are 250 existing parking spaces and a new school would need approximately 400 spaces. The existing building is approximately 170,000 SF and the new building is close to 420,000 SF. He noted that none of the three sites are ideal to achieve all program requirements. The process started with identifying 10 acre plus sites in the district and then was narrowed down to a half dozen sites. After further review three sites were shortlisted including the existing Doherty site, Foley Stadium and Chandler Magnet.

EXISTING DOHERTY SITE
This is approximately a 20 acre site with 13 acres developed. The existing building is 170,000 sf and bound by a park on three sides with Highland Street access and is central to the district.

**Code Upgrade:** Mr. Para noted the existing building systems are beyond their life span and upgrades would be numerous including windows, ADA access, MEP systems, etc. He also said it would require a multi-year process and requires modular classrooms during the work. This option is not intended to be pursued.

**Addition/Renovation:** This option would require modular classroom units and add another year to the schedule. There is an opportunity to create a shorter route from the existing school to Foley Stadium. This is a comparative analysis and is not intended to be pursued.
**New construction on existing site:** There is no swing space for students and they will remain in the existing school during construction. The City anticipates constructing a 4 story building on the existing fields and back parking lot. The new design would include underground parking with playing fields above. The new school is scheduled to open in the fall of 2024, continuing demolition of the existing building and construct parking and new fields. During construction the school loses the use of the fields and a lot of parking.

**FOLEY STADIUM**
This is approximately a 14 acre site and is across the street from Beaver Brook Park within flood plain. The park is heavily scheduled with games. The existing stadium is built on piles. This is a flat site with soil over swampy conditions and coal ash. The new building would require sizable foundations and the stadium would need to be relocated. This site could accommodate 1 playing field and some of the required parking.

**CHANDLER MAGNET SITE**
This is approximately a 22 acre site bound with residential housing on three sides and adjacent to Worcester State University. The existing building was constructed in the 1950’s and has undergone upgrades to the windows and bathrooms. There is another $7 Million in upgrades identified for the building. The Bilingual and Dual Language programs are located at this school and if this site were selected, the programs and students would remain together, at another location.

**Existing Site:** Utilizing the existing site would introduce a long stretched building design, including cutting of woodlands for the fields and many challenges due to the steep grade of the site. This option is not recommended to pursue in the PDP.

**Existing Site with Additional Land:** Obtaining a corner of the WSU lot, owned by LLC at the Presidents house would allow for a 4 story building to be constructed. Additional area of the May Street properties would provide area for a football field and track plus another practice field.

In closing Mr. Para noted that all three sites pose traffic impacts on the neighborhoods. Soils in particular are a concern at Foley. All site options at this point are a comparative study and require further review.

**Site Matrix**
Ms. Crockett presented the criteria for evaluation of the sites in a matrix format and noted the highest attainable score would be 185. Two sites achieved a ranking in the 130 range and have the most potential to meet the program requirements. Further review will be done to see how to fit the building and program onto undersized sites. She emphasized that the MSBA requires the three options to be submitted (Code upgrades, addition/renovation and New Construction on existing site). The project team has also included two additional alternate sites for further review (Foley Stadium and Chandler with additional land).

Budgets have been prepared using MSBA data with project costs in the range of $275-$300 million not including land acquisition costs, if any, and a 1.25% multiplier for
fees/soft costs. The five options are being recommended for further study in the vote for the PDP. Another vote will be required by the SBC for the Preferred Schematic Report in December.

Mr. Moosey thanked LPA for the presentation and opened the floor for questions first from the SBC members.

**School Building Committee - Comments/Question (C/Q) & Response (R)**

1) **C/Q** – For all three options what information will be provided?
   **R** – Base line information, survey, soils, deeds, building layout and budget estimates are part of the next phase.

2) **C/Q** – What athletic impact on sports if the Foley site is chosen?
   **R** – City would need to replace the stadium and fields.

3) **C/Q** – How would Chandler students be impacted?
   **R** – Students would move with the program.

4) **C/Q** – Cost of Foley vs DMHS site?
   **R** – Cost information was provided

5) **C/Q** – City doesn’t own additional land at Chandler site.
   **R** – Further review needed in Preferred Schematic Report (PSR).

6) **C/Q** – Feasibility study not available online this past Sat. and Sun?
   **R** – Not sure why that happened, this PDP presentation will be uploaded to web sites.

7) **C/Q** – What is the City Athletic Directors input on these options?
   **R** – David Shea, City Athletic Director provided the program requirements for the PDP.

8) **C/Q** – What environmental issues are there?
   **R** – Environmental assessment has been done, “no alarms” and hazardous materials have been tested and an estimate to abate materials was prepared.

9) **C/Q** – Site security for students during construction.
   **R** – Project team will address in similar fashion to at Nelson Place School and South High school.

10) **C/Q** – Will there be property line surveys of the sites?
    **R** – Yes this will be done in the next phase of the project.

11) **C/Q** – What is the impact on residents?
    **R** – All sites impact the residents and project team will address.

12) **C/Q** – How often will we be updated on the project?
    **R** – Design team will need a few months for further study. November and December meeting dates will be determined.
Public Comments/Question (C/Q) & Response (R)

1) C/Q – Chandler traffic is a problem.
   R – Reviewing traffic at all sites.

2) C/Q – After attending some visioning sessions, how big is the school?
   R – We didn’t start with any SF in mind. School is designed for 1,670 students and used the MSBA template. Chapter 74 programs require proper space.

3) C/Q – We don’t want to move programs from Chandler;

4) C/Q – Moving programs from Chandler is a social justice issue.

5) C/Q – Purchase of additional land at Chandler is approximately $800,000

6) C/Q – Demographic growth is 0.25% how did the student number get determined?
   R – MSBA worked with the City to establish enrollment number.

7) C/Q – What impact would there be on the Dual language program at Chandler?
   R – WPS is working on a plan and the intent is to keep program intact, to be further studied with the PSR.

8) C/Q – Where will Doherty students get moved to during construction?
   R – The Mayor indicated that no student would be relocated during construction.

9) C/Q – The existing Doherty site is only 12 buildable acres and too small for a new school.

10) C/Q – Foley site is across for Beaver Brook Park.

11) C/Q – Chandler has diverse staff, dual language program, bilingual program and numerous other qualities. It has an active PTO and is like a family and we don’t want this to be separated.

12) C/Q – We have concern about the size of the school and transportation and parking.

13) C/Q – Concern raised about the added cars and impact on Doherty neighbors.

14) C/Q – Voting for which site regarding traffic impact and tight sites?
   R – Vote is for several options as shown in the PDP.

15) C/Q – Students need cars to get to after school activities as they need to travel. They should have a central campus.

16) C/Q – Need to keep Chandler Magnet programs together.
R – The Mayor indicated the programs would remain together.

17) C/Q – The Temple at Chandler Street is being considered by WSU for some type of construction work.

18) C/Q – The PSR vote should be held before the elections.

19) C/Q – There should be a campus like setting.
   R – City is committed to the Feasibility Study with the MSBA for funding.

20) C/Q – The Park is on historical land.
   R – The Doherty deed shows the school is not part of the park.

21) C/Q – Expand the Worcester Vocational High School to include the Chapter 74 programs.

22) C/Q – Foley site can be built on.

23) C/Q – The deed for Doherty gives acres for school use, need to study impact on park.

24) C/Q – What is the timeline for updates?
   R – Timeline is being developed.

25) C/Q – There are a lot of generations that will be displaced at Chandler Magnet.

School Building Committee Roll Call Vote

Mr. Moosey, DPW&P Commissioner conducted a roll call vote of the School Building Committee members to submit the Preliminary Design Proposal (PDP) to the MSBA on September 10, 2019. A roll call vote was made for each School Building Committee member and are documented on the attached SBC sign in sheet.

The results of the vote were Twenty-Three (23) votes in favor, no votes against, no abstentions and all members of the committee were present for the vote.

End of meeting.

These summary comments reflect Tishman Construction Corporation of MA’s interpretation of the discussions that took place. Any discrepancies or omissions should be brought to the author’s attention immediately. This summary shall be included as part of the Project record.

Prepared By: Eugene Caruso, Owner’s Project Manager, TCCMA
Date: September 10, 2019
## School Building Committee Member Sign-In Sheet

### Doherty Memorial High School Project

| Meeting Date: September 9, 2019 | Time: 6:30PM |

### SCHOOL BUILDING COMMITTEE VOTE

At the School Building Committee meeting held on Monday, September 9, 2019, at 6:30PM at the Doherty Memorial High School, the committee members are asked to vote their approval of the Doherty Memorial High School, Preliminary Design Proposal (PDP) as presented at the meeting by the Project team. The approved PDP will be submitted to the Massachusetts School Building Authority (MSBA) on Sept 10, 2019. The School Building Committee votes are indicated below.

<table>
<thead>
<tr>
<th>Member Designation</th>
<th>Name and Title</th>
<th>Attendee Signature</th>
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<tbody>
<tr>
<td>SBC Member</td>
<td>Jeremy Flansburg DPW&amp;P Clerk of the Works</td>
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<td>Local Chief Executive Officer &amp; Administration/Manager</td>
<td>Edward Augustus, City Manager</td>
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<tr>
<td>School Committee Member</td>
<td>Jack Foley, WPS School Committee</td>
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<tr>
<td>Superintendent of Schools</td>
<td>Maureen Binienda, WPS Superintendent</td>
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<tr>
<td>Deputy Superintendent of Schools</td>
<td>Dr. Susan O'Neil, WPS Deputy Superintendent</td>
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<tr>
<td>Local Official responsible for Building Maintenance</td>
<td>James Bedard Director of Environmental Management &amp; Capital Projects</td>
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<tr>
<td>School Principal</td>
<td>Sally Maloney, Principal</td>
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<tr>
<td>Professional Engineer</td>
<td>K. Russell Adams, DPW&amp;P Assistant Commissioner</td>
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<tr>
<td>Local Budget Official</td>
<td>Thomas Zidells, CoW Chief Financial Officer</td>
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<tr>
<td>Mayor, City of Worcester</td>
<td>Joseph Petty, COW Mayor</td>
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<thead>
<tr>
<th>VOTE</th>
<th>Yes</th>
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DMHS SBC Vote PDP
School Building Committee Member Sign-In Sheet  
Doherty Memorial High School Project

Meeting Date: September 9, 2019  
Time: 6:30PM

SCHOOL BUILDING COMMITTEE VOTE

At the School Building Committee meeting held on Monday, September 9, 2019, at 6:30PM at the Doherty Memorial High School, the committee members are asked to vote their approval of the Doherty Memorial High School, Preliminary Design Proposal (PDP) as presented at the meeting by the Project team. The approved PDP will be submitted to the Massachusetts School Building Authority (MSBA) on Sept 10, 2019.
The School Building Committee votes are indicated below.

<table>
<thead>
<tr>
<th>Member Designation</th>
<th>Name and Title</th>
<th>Attendee Signature</th>
<th>Yes</th>
<th>No</th>
<th>Abstention</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBC Member</td>
<td>Paul Moosley, DPW&amp;P Commissioner, Co-Chair SBC</td>
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<tr>
<td>SBC Member</td>
<td>Brian A. Allen, WPS - Chief Financial Officer</td>
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<tr>
<td>SBC Member</td>
<td>Christinna Kilday, Architect</td>
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<tr>
<td>SBC Member</td>
<td>Morris Bergman, City Councilor</td>
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<tr>
<td>SBC Member</td>
<td>Matthew Wally, City Councilor - District 5</td>
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<tr>
<td>SBC Member</td>
<td>Steve Bucciaglia, Teacher</td>
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<tr>
<td>SBC Member</td>
<td>Katerina Kambosos, Teacher</td>
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<tr>
<td>SBC Member</td>
<td>Renah Razzaq, Teacher</td>
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<tr>
<td>SBC Member</td>
<td>M. Jesse Garcia, Teacher</td>
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<tr>
<td>SBC Member</td>
<td>John Brissette, Parent / Community Member</td>
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</tbody>
</table>
School Building Committee Member Sign-In Sheet
Doherty Memorial High School Project

Meeting Date: September 9, 2019  
Time: 6:30PM

SCHOOL BUILDING COMMITTEE VOTE

At the School Building Committee meeting held on Monday, September 9, 2019, at 6:30PM at the Doherty Memorial High School, the committee members are asked to vote their approval of the Doherty Memorial High School, Preliminary Design Proposal (PDP) as presented at the meeting by the Project team. The approved PDP will be submitted to the Massachusetts School Building Authority (MSBA) on Sept 10, 2019. The School Building Committee votes are indicated below.

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<th>Yes</th>
<th>No</th>
<th>Abstention</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBC Member</td>
<td>Rick Miller, Parent / Community Member</td>
<td></td>
<td>✓</td>
<td></td>
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<tr>
<td>SBC Member</td>
<td>Brendan Melican, Parent / Community Member</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>SBC Member</td>
<td>Angela Plant, Parent / Community Member</td>
<td></td>
<td>✓</td>
<td></td>
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</tr>
</tbody>
</table>
3.1.7 LOCAL ACTIONS AND APPROVAL

C. Public Meeting Agendas and Minutes
1. **Project Overview**, Paul J. Moosey P.E., Commissioner Public Works & Parks
   a. Welcome
   b. Introductions
2. **Project Schedule**, Tishman Construction, Owner’s Project Manager
   a. Schedule Update
3. **Project Status**, LPA/A, Project Designer
   a. Feasibility Study
   b. Schematic Design
4. **Closing Remarks & Questions**
MSBA Building Process

Steps primarily for:

- **Districts** → **Construction Professionals**

1. **Eligibility Period** → **Forming the Project Team** → **Feasibility Study** → **Schematic Design**

2. **Funding the Project** → **Detailed Design** → **Construction** → **Completing the Project**
The following Agenda items were presented and discussed:

- **Introduction:** Paul Moosey welcomed all attendees and gave an overview of the project. A sign in sheet was also distributed. Paul noted the project is just getting started with the OPM (Tishman) and the Designer, Lamoureux Pagano (LPA) on board. He explained that both firms worked on the Nelson Place School and it was a very successful project. The City is looking at all options and he commented that the City is not considering taking any of the existing parkland for the project and will keep the project within the existing property lines of the Doherty Memorial High School site if that is the selected site.

- **Overview of MSBA Requirements and Schedule:** Eugene Caruso of Tishman presented an explanation of the eight MSBA Modules and the tasks for each as the project moves forward. Modules 1 and 2 have been completed by the City which included the MSBA agreement to accept the project for consideration and establishing the project team. The Module 3, Feasibility study is now being started. The first phase is complete the PDP (Preliminary Design Program) scheduled for submission to the MSBA in September, 2019. The next step is for the completion of the PSR (Preferred Schematic Report) by LPA and is scheduled to be submitted to the MSBA in December, 2019. Once the MSBA accepts the Feasibility study, and agrees on a preferred solution, the project can move to Module 4, Schematic Design. This phase is where the preferred solution is further developed and finalized for the MSBA approval. The remaining Modules 5 includes the financial funding for the project, Module 6 includes preparing the construction documents for bid, Module 7 is the construction phase and Module 8 is the close out procedures.

- **Activities for MSBA Submission:** Lamoureux Pagano (LPA) presented information on the activities they are doing to gather the information needed. Katie Crockett further explained the process for the PDP and they will be focused on Educational Program development and visioning, Alternate sites and existing building status. Rob Para elaborated on the various site selection criteria.

- **Questions and Answers:** Paul Moosey thanked everyone for coming. Mayor Petty– City Manager Augustus spoke and acknowledged the hard work by the City Public Works staff and gave special recognition to City and State officials who were integral to the project. He noted the focus of the City on the educational programs noting that this High School project will be the fourth High school out of the five in the city to be addressed. Paul then fielded questions as follows;
• What is the position of the MSBA regarding swimming pools?
  ▪ Paul noted this could be clarified with the MSBA and neither LPA nor Tishman were aware of new MSBA updates on pools.

• Request was made to have the meetings more publicized.
  ▪ Paul noted this could be done by placing meeting notices on the City and School websites for future meetings.

• What alternative or potential sites are being considered?
  ▪ Paul noted it was too early in the project to speculate what sites are going to be reviewed.

• Who are the members of the School Building Committee?
  ▪ Paul stated the committee includes appointed members, volunteers from the community and parents.

• What is the construction duration?
  ▪ The construction could be 2½ to 3 years depending on the final solution.

• Will the project use any of the parkland?
  ▪ Paul noted the City will not consider taking any of the existing parkland for the project and will keep the project within the existing property lines of the Doherty High School site if that is the selected site.

CLOSING:

Paul Moosey thanked everyone for coming and stated the next meeting will be towards the end of June, 2019.
Doherty Memorial High School | Public Meeting & Visioning  

06.24.2019

**Agenda:**

6:30–6:40 | Introductions | City of Worcester

6:40–6:50 | Feasibility Study Overview | LPA|A
- Feasibility Study Outline
- Schedule
- PDP Tasks

6:50–7:40 | Visioning Workshop Overview | New Vista
- Summary of feedback gathered from the three Visioning Workshops

7:40–8:00 | Public Input / Q&A
City Of Worcester

DOHERTY MEMORIAL HIGH SCHOOL PROJECT

PUBLIC MEETING MINUTES - VISIONING PROCESS

June 24, 2019 - 6:30 PM

The following Agenda items were presented and discussed;

- **Introduction**: Russ Adams (CoW) welcomed all attendees and gave a brief overview of the project. He noted that this meeting is intended to focus on the educational programming and that the site selection is still an ongoing task. He introduced Katie Crockett (LPA) and she introduced all project team members and elaborated on the various deadlines for the Feasibility Study schedule. This included the Chapter 74 submission to the MSBA on July 19 and the Preliminary Design Proposal (PDP) submission to the MSBA in early September. She then handed the session over to David Stephen from New Vista Design.

- **Overview of Visioning Sessions**: David Stephen further explained the process and intended outcome from the Visioning sessions. He discussed the emphasis on basic components for the new school that include natural lighting, heating, air conditioning, bathrooms appropriately located, special education spaces and technology throughout as some on the core MSBA criteria for new schools. He provided a comprehensive handout that summarized the first two visioning sessions. These sessions included Learning Goals and Best Practices and Design Patterns & Guiding Principles. He explained the third and final session was held earlier today and covered Key Spaces, Adjacencies & Conceptual Design Directions. The attendees were asked to participate in two different activities during the presentation that included their input on Priorities and Learning Goals for the new school. David noted that he would be incorporating all the input from this meeting and putting it together as part of the visioning session outcomes.

**CLOSING:**

Russ Adams thanked everyone for coming and stated there will be another meeting on July 15, 2019 at 6:30PM.
Doherty Memorial High School Cafeteria
Monday July 15, 2019
6:30–8:00 PM

Agenda:

6:30–6:40 | Introductions | City of Worcester

6:40–7:00 | Feasibility Study Update | LPA|A
- Feasibility Study Outline
- Schedule
- Programming & Visioning Summary

7:00–7:30 | Potential Site Location Discussion and Doherty Quadrant Analysis | LPA|A
- Proposed Site Program
- Doherty Quadrant Site Analysis
- Site Criteria
- Discussion of Potential Sites for Further Review
- PDP Goal: Recommendation of options that warrant further study in the PSR

7:30–8:00 | Public Input / Q&A
The following Agenda items were presented and discussed:

- **Introduction:** Russ Adams (CoW) welcomed all attendees and gave a brief overview of the project. He introduced Katie Crockett (LPA) and she introduced all project team members and elaborated on the various deadlines for the Feasibility Study schedule. She identified the new Chapter 74 programs that are being proposed to the School Committee. She also noted that the Advanced Academy for Biotechnology will start up in 2022. She said a new proposed building for the school would be about 400,000 sf. She introduced Christina Bazelmans who reviewed the past three educational Visioning sessions that were held in collaboration with David Stephen from New Vista Design.

- **Site Analysis:** Rob Para from LPA presented the process for the ongoing site selection analysis. Rob noted that approximately 13 acres would be needed for the educational program and another 13 acres for the athletic program, if all aspects of the requests were too be achieved. He presented slides showing approximately 30 sites district wide that could be considered, then narrowed to about 8 sites and then to a possible 3-4 sites for serious consideration. Rob noted criteria such as conservation lands, college sites and privately owned land as some factors that influenced eliminating possible sites. An attendee asked if the earlier list of sites could be re-reviewed and discussed. Rob noted that there are still no conclusions regarding site selection and a complete site comparative analysis will be presented at the tentative public meeting on August 19th.

- A question was asked if the MSBA would pay for the purchase of land. Russ Adams stated that was not included in their reimbursement. Russ also said there is a tentative meeting in August where further refinement of sites will be presented for further community input.

- A statement was made from an attendee that the Foley Stadium was donated to the City by General Foley for athletic use by the students in the City of Worcester. Rob noted that the Foley site was approximately 14 acres. A neighbor mentioned that the Beaver Brook site across the street from Foley was about 19 acres and is in the flood plain. This would have restrictive use for the site and need to confirm the route of the brook. The Harrington and Richardson site adjacent to Beaver Brook is approximately 7 acres including the paper streets. One concern raised about possible use of Foley Stadium was that there would need to be a guarantee to replicate the stadium elsewhere. Someone mentioned that this stadium is heavily used by the students. Russ mentioned that the site was brought to the attention of the project by a local newspaper article.
• Rob mentioned that the existing Doherty site is a 20 acre parcel, with approximately 8 acres of steep terrain and 12 acres developed. He stated that the Chandler Magnet site is approximately 22 acres however there are two significant grade changes one 20 ft. and another 70 ft. change in grade, plus heavy traffic in the area. A comment was made that there could be partnership with Worcester State University across the street from Chandler.

• The Big D site was ruled out due to topography and planned development, as well as being out of the quadrant. Someone mentioned the original site for Doherty was off June Street, and the site at the current location was the second choice.

• Rob mentioned there are several criteria that are being used to rank the sites and that further study will be required as the process continues. He noted the existing Doherty school building is approximately 170,000 sf.

• Parents asked about where their children would go to school during the construction and how would parents be notified. Russ mentioned that the best option would be no relocation of children during construction.

• The base line repair of the existing building suggests a significant investment would be needed by the City to update the school and yet would still not achieve the program requirements. This study is for comparison purposes to the other schemes, and is not a consideration.

• One parent noted that schools are important anchors for Worcester families. Another neighbor of the school commented that there was heavy traffic for about 20 minutes in the morning and afternoon during the school day.

• Someone asked what will happen to the Doherty site if the school is placed elsewhere. Russ said there are no plans as yet for that scenario.

• Russ noted that all the materials from the presentation today would be on the Doherty School web site. Additionally, the School Building Committee will vote on the preliminary design in September before submitting the project to the MSBA, and that is also a public meeting.

• Someone asked if the school and athletic fields could be located on two separate sites. Russ noted it could be possible to have two sites, but there would be no MSBA reimbursement for an athletic complex.

• One resident noted that it is a good thing to have a new High school, no matter where it gets located.

• One resident made comment about the impact of wireless vs wired technology. Katie stated that LPA is aware of these issues and will review the information when sent.

**CLOSING:**
Russ Adams thanked everyone for coming and stated there will be another meeting held in August.
Agenda #13 School Committee July 18, 2019

Home \ School Committee \ Agendas \ Agenda #13 School Committee July 18, 2019

CLERK OF THE SCHOOL COMMITTEE
WORCESTER PUBLIC SCHOOLS
20 IRVING STREET
WORCESTER, MASSACHUSETTS 01609

AGENDA #13

<table>
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<th>The School Committee will hold a regular meeting:</th>
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<td>on:</td>
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<th>ORDER OF BUSINESS</th>
<th>ACTION</th>
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<table>
<thead>
<tr>
<th>I.</th>
<th>CALL TO ORDER — REGULAR MEETING</th>
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<tbody>
<tr>
<td></td>
<td>INVOCATION Pastor Lou Soiles – Journey Community Church</td>
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<td>PLEDGE OF ALLEGIANCE/NATIONAL ANTHEM</td>
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<td>II.</td>
<td>ROLL CALL</td>
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<td>III.</td>
<td>APPROVAL OF RECORDS</td>
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<td>aor #9-14 — Clerk</td>
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<tr>
<td></td>
<td>(July 3, 2019)</td>
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<tr>
<td></td>
<td>To consider approval of the Minutes of the School Committee Meeting of Thursday, June 20, 2019.</td>
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<tr>
<td>IV.</td>
<td>MOTION FOR RECONSIDERATION – NONE</td>
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<td>V.</td>
<td>IMMEDIATE ACTION — NONE</td>
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Annex A (29 pages)
# REPORT OF THE SUPERINTENDENT

**ROS #9-9.1 – Administration/Administration**

(July 2, 2019)

Response of the Administration to the request to provide a detailed report on the number of homeless students currently enrolled in the Worcester Public Schools and include the number of students who are doubled up, in foster care or living in shelters.

Annex A (1 page)

**ROS #9-11 – Administration**

(July 12, 2019)

**SELF EVALUATION, GOALS AND BENCHMARKS OF THE SUPERINTENDENT FOR 2019-20.**

Annex A (4 pages)

Annex B (4 pages)

# COMMUNICATION AND PETITION

# REPORT OF THE STANDING COMMITTEE

The Standing Committee on Governance and Employee Issues met on Monday, July 1, 2019 at 5:30 p.m. in Room 410 at the Durkin Administration Building.

Annex A (4 pages)

# PERSONNEL

<table>
<thead>
<tr>
<th>VI.</th>
<th>REPORT OF THE SUPERINTENDENT</th>
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<tr>
<td></td>
<td>ROS #9-9.1 – Administration/Administration</td>
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<tr>
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<td>(July 2, 2019)</td>
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<tr>
<td></td>
<td>Response of the Administration to the request to provide a detailed report on the number of homeless students currently enrolled in the Worcester Public Schools and include the number of students who are doubled up, in foster care or living in shelters.</td>
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<tr>
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<td>Annex A (1 page)</td>
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<td>ROS #9-11 – Administration</td>
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<td>(July 12, 2019)</td>
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<td>Annex A (4 pages)</td>
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<td>Annex B (4 pages)</td>
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<tr>
<td>VII.</td>
<td>COMMUNICATION AND PETITION</td>
</tr>
<tr>
<td>VIII.</td>
<td>REPORT OF THE STANDING COMMITTEE</td>
</tr>
<tr>
<td>IX.</td>
<td>PERSONNEL</td>
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<p>| Annex A (4 pages) |</p>
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<tr>
<th>X.</th>
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**gb #8-153.5 – Administration/Administration**  
(June 27, 2019)

Response of the Administration to the request that the Superintendent and district and school leadership monitor and implement the Strategic Plan and provide a report quarterly to the School Committee.

Annex A (33 pages)
gb #9-195.3 – Administration/Administration

(June 27, 2019)

Response of the Administration to the following motions from the FY20 Budget:

**500132-92000 Special Education Tuition**

Request that the Administration provide a report on the number of special education students and indicate:

- their placement and

- the per diem costs associated with residential placement

  Mr. O’Connell

**500122-92000 Athletics Ordinary Maintenance**

Request that the Administration provide a composite list of funding obtained through grants, from the Worcester Educational Development Foundation, the District Attorney’s office and Recreation Worcester.

  Miss Biancheria

Annex A (5 pages)

Annex B (1 page)
<table>
<thead>
<tr>
<th>gb #9-225</th>
<th>Miss McCullough/Miss Biancheria/Mr. Monfredo/ Mr. O'Connell/Mayor Petty</th>
</tr>
</thead>
<tbody>
<tr>
<td>(June 14, 2019)</td>
<td>To set a date to recognize Jacob Hiatt Middle School teacher Ann Ruchala for being recognized as the Massachusetts College of Pharmacy and Health Sciences (MCPHS) community person of the year.</td>
</tr>
<tr>
<td>gb #9-226</td>
<td>Miss McCullough/Miss Biancheria/Mr. Monfredo/Mr. O’Connell</td>
</tr>
<tr>
<td>(June 14, 2019)</td>
<td>To review pick up and drop off policies for all schools to ensure student safety and smooth traffic flow.</td>
</tr>
<tr>
<td>gb #9-227</td>
<td>Mr. Monfredo/Miss Biancheria/Miss McCullough/Mr. O’Connell</td>
</tr>
<tr>
<td>(June 26, 2019)</td>
<td>Request that the Administration provide an update on when cursive writing is taught in the district and include any changes forthcoming in the future.</td>
</tr>
<tr>
<td>gb #9-228</td>
<td>Administration</td>
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</table>
(June 26, 2019)

To consider review of the following Innovation Schools Annual Evaluations:

Chandler Magnet School

Claremont Academy

Goddard Scholars Academy at Sullivan Middle School

Goddard School of Science and Technology

Woodland Academy

Academy of Science, Technology and Health at Worcester East Middle School

Worcester Technical High School and

University Park Campus School

Annex A (14 pages)

Annex B (17 pages)

Annex C (17 pages)

Annex D (25 pages)

Annex E (15 pages)

Annex F (25 pages)

Annex G (17 pages)

Annex H (15 pages)

Annex I (20 pages)
<table>
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<tr>
<th>gb #9-229  – Mr. O’Connell/Miss Biancheria/Miss McCullough/Mr. Monfredo</th>
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<tr>
<td>(July 1, 2019)</td>
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<tr>
<td>Request that the Administration consider implementation of a pilot program in Worcester, modeled on that implemented by the Las Vegas City Council, to allow parking tickets to be paid with donations of school supplies for the benefit of the Worcester Public Schools.</td>
</tr>
<tr>
<td>Annex A 9-229</td>
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<tr>
<td>(July 2, 2019)</td>
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<tr>
<td>To approve a prior fiscal year payment in the amount of $5,575.00 to an SEI Endorsement Course Instructor for services rendered.</td>
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<td>Annex A 9-230</td>
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<tbody>
<tr>
<td>(July 2, 2019)</td>
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<tr>
<td>To approve a prior fiscal year payment in the amount of $153.15 to the Director of Nursing for travel (mileage) in FY19.</td>
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<tr>
<td>gb #9-232</td>
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<tr>
<td>(July 2, 2019)</td>
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<tr>
<td>To extend the proposed contract of Attorney Paige L. Tobin from Murphy, Lamere and Murphy for three years.</td>
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<tr>
<th>gb #9-233</th>
<th>Administration</th>
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<tr>
<td>(July 2, 2019)</td>
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<tr>
<td>To extend the proposed contract of Attorney Sean P. Sweeney for three years.</td>
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<tr>
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<tbody>
<tr>
<td>(July 8, 2019)</td>
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<tr>
<td>To consider approval of the Chapter 74 Programming for the new Doherty Memorial High School.</td>
<td>Annex A (62 pages)</td>
</tr>
<tr>
<td>gb #9-235 – Administration</td>
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<tr>
<td>(July 9, 2019)</td>
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<tr>
<td>To approve a prior fiscal year payment in the amount of $284.15 for in-state travel reimbursement for a teacher.</td>
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<td>(July 9, 2019)</td>
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<tr>
<td>To consider approval of the following donations:</td>
</tr>
<tr>
<td>$688.43 from Lifetouch to Woodland Academy</td>
</tr>
<tr>
<td>$47.30 from Box Tops for Education to Woodland Academy</td>
</tr>
<tr>
<td>$136.14 from CEC Entertainment Inc./Chuck E. Cheese to Woodland Academy</td>
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<tr>
<td>$481.29 from Lifetouch to Tatnuck Magnet School</td>
</tr>
<tr>
<td>$750.00 from Verizon Foundation to Tatnuck Magnet School</td>
</tr>
<tr>
<td>$250.00 from Furniture Trust Organization, Inc. to St. Casimir's Alternative School for 2nd place in the Eco Carpentry Challenge (Small School Shop).</td>
</tr>
</tbody>
</table>
$50.00 from a donor to the South High Community School Food Pantry in memory of Maureen Mohammed

$300.00 from Sunbelt Rentals Inc. to the South High Community School Diesel Program

$500.00 from New England Dairy Food Council to South High Community School

$43.50 from Box Tops for Education to Canterbury Street Magnet Computer-Based School

$1,275.00 from various donors to the Patricia Falcone Memorial Scholarship

$500.00 from Project Bread Summer Eats for the purchase of

3-4 picnic tables for Worcester Public School’s sponsored mobile summer meal service on the front lawn area of Curtis Apartments, 32 Great Brook Valley Avenue
<table>
<thead>
<tr>
<th>gb #9-237 – Mr. O’Connell/Miss Biancheria/Miss McCullough/Mr. Monfredo</th>
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<tbody>
<tr>
<td>(July 10, 2019)</td>
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<tr>
<td>Request that the Administration coordinate with officials of the City of Worcester, and appropriate utilities, to discover and repair, leaks in gas lines in the vicinity of schools.</td>
</tr>
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<thead>
<tr>
<th>gb #9-238 – Mr. O’Connell/Miss Biancheria/Miss McCullough/Mr. Monfredo</th>
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</thead>
<tbody>
<tr>
<td>(July 10, 2019)</td>
</tr>
<tr>
<td>Request that the Administration offer training in “domestic skills” and personal financial management to Worcester students and interested citizens through Night Life and after-school and summer programs.</td>
</tr>
<tr>
<td>gb #9-239  – Mr. O’Connell/Miss Biancheria/Miss McCullough/Mr. Monfredo</td>
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<td>---------------------------------------------------------------</td>
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<td>(July 10, 2019)</td>
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<tr>
<td>Request that the Administration review “Creating the Will: A Community Roadmap to Achieving Educational Excellence for Latino Students in Worcester,” and to consider both progress made, and topics which require further attention, since issuance of the report in July 2011.</td>
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<thead>
<tr>
<th>gb #9-240  – Mr. O’Connell/Miss Biancheria/Miss McCullough/Mr. Monfredo</th>
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<tbody>
<tr>
<td>(July 10, 2019)</td>
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<tr>
<td>Request that the Administration interact with the Harvard Teacher Fellows Program, and Teach for America, as to placement of prospective teachers in the Worcester Public Schools.</td>
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<th>gb #9-241  – Administration</th>
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<tr>
<td>(July 10, 2019)</td>
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<tr>
<td>To accept the Career and Technical Education Partnership Planning Grant in the amount of $7,500.00.</td>
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gb #9-242 – Administration

(July 10, 2019)

To accept a donation of various instruments from the Berklee College of Music in the total estimated value of $13,500.
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<thead>
<tr>
<th>XI.</th>
<th>EXECUTIVE SESSION</th>
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<td>gb #9-243 – (Administration)</td>
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<td></td>
<td>(July 10, 2019)</td>
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<td>To discuss strategy with respect to collective bargaining and to conduct collective bargaining regarding Grievance #18/19-17.</td>
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<tr>
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<td>To discuss strategy with respect to collective bargaining and to conduct collective bargaining regarding Grievance #18/19-19.</td>
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<td></td>
<td>To discuss strategy with respect to litigation for a Worker's Compensation for a teacher, if an open meeting may have a detrimental effect on the litigating position of the School Committee and the chair so declares.</td>
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<tr>
<th>XII.</th>
<th>ADJOURNMENT</th>
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<tr>
<td></td>
<td>Helen A. Friel, Ed.D.</td>
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<td>Clerk of the School Committee</td>
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2. gb #9-234 - Administration
   (July 8, 2019)

   To consider approval of the Chapter 74 Programming for the new Doherty Memorial High School.

   Mayor Petty made the following motion:

   Request that the School Committee approve the Chapter 74 Programming for the new Doherty Memorial High School.

   On a roll call, the vote was as follows:

   For the motion: Miss Biancheria, Mr. Comparetto, Miss McCullough, Mr. Monfredo, Mr. O'Connell, Mayor Petty 6

   Against the motion: 0

   Absent: Mr. Foley 1

   The motion carried.

Helen A. Friel, Ed.D.
Clerk of the School Committee
Doherty Memorial High School | Public Meeting 08.19.2019

Doherty Memorial High School Cafeteria
Monday August 19, 2019
6:30–8:00 PM

Agenda:

6:30–6:40 | Introductions | City of Worcester
6:40–6:50 | Feasibility Study Update | LPA|A
6:50–7:30 | Potential Site Location Discussion | LPA|A
7:30–8:00 | Public Input / Q&A
City Of Worcester

DOHERTY MEMORIAL HIGH SCHOOL PROJECT

PUBLIC MEETING / SCHOOL BUILDING COMMITTEE MEETING MINUTES
August 19, 2019 - 6:30-8:00 PM

The following Agenda items were presented and discussed:

- **Introduction:** Russ Adams (CoW) welcomed all attendees and gave a brief overview of the project. He introduced Katie Crockett (LPA) and she introduced all project team members, the Mayor, City Manager, School Superintendent and the Public Works Commissioner. She thanked those who attended. She noted that the School Building Committee would be meeting on September 9, 2019 to vote on the Preliminary Design Proposal (PDP) being presented today. The PDP includes three tasks: Alternate Site evaluation, Existing Site Evaluation and Educational Program development. Katie noted that this meeting will focus on the alternate sites. She stated that LPA has reviewed the existing building, addition/renovations, new construction on the current site and options for construction of a new school on other sites. She spoke about the diverse experience of LPA and their expertise in the City and around the State designing and building new schools on tight sites without interruption to student learning while construction is underway. She cited both the Nelson Place Elementary School and the South High School as examples where students occupied the existing school while new construction took place on the same site.

The Mayor then spoke thanking all for coming and that there would be no vote taken during the meeting and this was an informational session. He reiterated that this is the most important project being developed in the City and the school would be “State of the Art” quality no matter where it was built. He noted we are here to listen to the project team findings and to do the project right.

The City Manager thanked all for coming and noted the efforts of the State and City representatives and School Committee for making this project a reality. He also noted the unprecedented significance of two new high schools being built in the City. He acknowledged the hard work and expertise of LPA as the finest design team, along with Tishman as OPM, the School Superintendent and Doherty Memorial High School staff contributions to this project.

The School Superintendent spoke and thanked everyone for the collaborative efforts and noted the hard work by School Principal in moving the project along. She noted the excellent educational programming for the new school including four Chapter 74 programs and a future Advance Academy.
Feasibility Schedule: Katie outlined the MSBA submission dates the project is working to achieve. The Preliminary Design Proposal (PDP) is the first phase and is due to be submitted to the MSBA on September 10, 2019. As the project moves along the Preferred Schematic Report (PSR) is due in December 2019. Then a Schematic Design phase of the project is scheduled to be submitted to the MSBA in July 2020 and she noted the occupancy for the new school is planned for the fall of 2024. She said the new school would be approximately 420,000 SF and enrollment of 1,670 students. She then introduced Rob Para (LPA) to present the site options.

Site Program: Rob noted that the existing Doherty building is approximately 170,000 SF and the new building will be 4 stories and approximately 420,000 SF. The new building footprint is somewhere around 150-180,000 SF. Existing parking is 250 spaces and the new program will require about 400 parking spaces. In addition to parking, buses and parent drop off need to be included and the ideal area for this would be about 13 acres. The other program requirement for sport fields would ideally be another 13 acre parcel. Rob noted that none of the sites actually provide this area for the program and each site is being evaluated for best options.

Rob gave a brief overview of the process to identify possible building sites in the District. LPA looked at 10 acre sites or larger and categorized each and evaluated various factors for each and boiled down 6-8 sites to be considered. Further analysis of those sites narrowed down the possible options to three; the existing Doherty site, Chandler Magnet and Foley Stadium.

Doherty Memorial High School site: Rob explained that the site was approximately 20 acres yet only 12 acres was developed and there was no area to expand the site due to steep terrain. He noted the school was designed in the 60’s and students use Foley Stadium for some of their sports programs. He also mentioned the idea of providing a shorter pathway for students to get to Foley Stadium. If the new building was on the Doherty site it would be placed on the existing playing fields while the students remain in the existing school during construction.

Foley Stadium site: Rob explained that the site was approximately 12 acres and flat. He noted that the existing stadium is heavily used by the City. He also noted there is an 84” diameter underground water culvert that runs through the site. The area is filled with 8ft to 14ft of coal ash that was placed on top of the swamp in that area. Beaver Brook Park is in the flood plain. To put the building at Foley stadium would require relocating the water culvert and placing the building on pile type foundations.

Chandler Magnet site: Rob explained that the site is approximately 22 acres, there are two streets to access the site (May and Chandler Streets) and there are some steep grade changes as well. Option 1 would design the new building on the existing site boundaries creating an elongated campus type plan and somewhat compromises the program. Option 2 would include adding land from the back yards of houses along May Street and taking a piece of land from the WSU Presidents house site. This option provides the parking and good drop off areas and several options for sport fields. Rob noted the existing Chandler Magnet school was a 1950’s building and out of date.
Site Matrix: Rob presented the site evaluation rating matrix and Katie also elaborated on the scoring process. She noted that a perfect site would score 185 points. The two best site options (Existing Doherty and Chandler Magnet with added land) score 130’s. The presentation concluded and questions were asked.

Questions:

- When would construction start? Early 2022.
- Is there a Project Labor Agreement required? This is a Public project.
- Would you develop Beaver Brook Park along with Foley Stadium? Would need special permits.
- How is traffic impacted? All sites have similar traffic conditions, aim to get school traffic off the street and further study will be done in the next phase during the PSR.
- What will be done with the existing Doherty site if build elsewhere? Further study is required and review of Doherty deed restrictions.
- What would happen to students at Chandler Magnet? Students would be relocated back to their neighborhood school.
- How many students at Chandler Magnet? Approximately 500 students.
- What would happen to Chandler students in dual language programs? Students and programs would be moved together to the other schools.
- Will the existing parkland be touched? The Doherty property is hilly with approximately a 3:1 slope.
- Can you build on the Doherty site? Yes, it is possible and the school will remain occupied for classes during construction if that is where the new school goes. All options are being reviewed as each site has limitations.
- What is the cost for underground parking and retaining walls? Will need to be further reviewed.
- Did you consider sites outside the Doherty district? Mandate to project team was to stay within the district.
- Will this presentation be online? Yes on both the school and city web sites.
- Looks like the Beaver Brook Park and Foley could meet all needs? These areas are used City wide and could not be dedicated to just Doherty use without extensive efforts to acquire park land.
- How would houses at Foley Stadium area be impacted? No land would be taken from the house lots. They would abutt the new school if built there.
- What about future student population growth? Design is trying to anticipate how spaces in the building would be used. Plan is for 1,670 students, for example 3-4 lunch sessions could be scheduled in the cafe for future growth.
- What are the Site exemptions? The MSBA has criteria for this.
- Who votes for this project? Officials are present at this meeting. The City Council authorizes funding, School Committee and School Building Committee vote on educational program.
- How did the rating on the matrix put Foley at 1 pt for item 3 (Staff and Student impact)? The rating is due to the extreme disruption to the use of City sports at the site.
- Could you use the WSU fields? This will need further review.
• What retaining walls are needed at Doherty? Not yet determined.
• On September 9th what is being reviewed? Presentation of sites shown tonight, no new added sites. Meeting will be held at the Doherty Memorial High School café at 6:30PM.
• One attendee noted that it would be good to consider the Chandler Magnet site to provide collaboration with WSU and the new school.
• Do any sites allow for future expansion? Will need further review and consideration.
• One attendee noted the Foley site was actually approximately 14.086 acres.
• Friends of Newton Hill will hold a site walk on Monday Aug. 26 at 6:30PM to review the location of the Doherty property line.
• LPA noted that any further concerns or questions can be via their web site or office.
• What about special programs? Building is designed to meet educational program as the first priority.

CLOSING:
Katie thanked everyone for coming and the meeting ended at 8:00PM.
3.1.7 LOCAL ACTIONS AND APPROVAL

D. Press & Local News Articles
**Architect chosen for Doherty High study**

By Nick Kotsopoulos

**WORCESTER**—The local firm of Lamoureux Pagano Associates, Inc., has been selected to lead the feasibility study for the Doherty Memorial High School replacement project.

It was one of five firms that submitted bids for the school project.

The field was narrowed down to two finalists earlier this month. Both firms were interviewed Monday by a selection panel that ended up overwhelmingly selecting Lamoureux Pagano Associates for the job.

Local representatives on the selection panel included School Superintendent Maureen Ríos; James Bedard, director of facilities management for the Worcester Public Schools; and, K. Russell Adams, assistant commissioner of public works and parks, who heads the DPW’s Engineering and Architectural Services Division.

Lamoureux Pagano President Katie Crockett said the first step for the architects will be to thoroughly study all options for renovating or replacing the Doherty building, including a site analysis to determine the best location for the school.

At the same time, she said, the architects will work with the Doherty community to articulate the programmatic needs of the school and district.

Lamoureux Pagano will also assist in determining the right size for Doherty, based on the school’s program and projected enrollment.

The firm will conduct a 165,000-square-foot school building that is too small for contemporary educational needs. Current enrollment at Doherty is 1,120, and city officials have been talking about building a school that could accommodate up to 1,500 students.

The Doherty High building was designed by Worcester architects Dick Lamoureux, who would later go on to found the company that is now Lamoureux Pagano.

“As a Worcester-based company, we are invested in and committed to Worcester’s success. LPA is excited to have the opportunity to plan and design a school that will be the home of the Doherty community for years to come,” Crockett said in a statement.

**LAMOUREUX PAGANO** is a nationally recognized architectural firm based in Worcester for close to 100 years.

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**Costs rising in Shrewsbury schools**

By Elaine Thompson

**SHREWSBURY**—Because of rising cost, construction costs, including a 13 percent increase in bus rates, the School Committee Tuesday night voted to increase some fees and tuition rates for the 2019-2020 school year.

The tuition for full-time, day-class students will be increased by $310 to $315 per sport per season, generating an additional $5,568 in revenue.

There would be no change in activity fees. Sherwood Middle School and Oak Middle School $50 and $70, respectively, and $100 at the high school. The current fees generate approximately $12,100, about 34 percent of the district’s cost of providing clubs and extracurricular activities at the schools.

Tuition for all preschool programs will increase by 3 percent, which is expected to generate about $17,350 in additional revenue.

The three-day per week program will increase by $52, from $2,745 to $3,257.

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**Poodle at work**

By Celine Thompson

**SPENCER**—Therapy dog Gallifrey yawns as Hailey Lacroix, 10, of Spencer, reads Dr. Seuss’ “Green Eggs and Ham” to him during a Paws and Pages program at Richard W. Harper Memorial Middle School.

Before the 1900s, the majestic American Chestnut tree was one of the most plentiful and most valuable trees in North America. Its nuts were used for an array of things including, frying oil, brooms, leather, and they are skeptical about what is going to have to be done to save them.

The GE American Chestnut Foundation announced they are launching a campaign to raise $1 million dollars to expand and improve the modified American chestnut tree program by backcross breeding. The foundation, made the announcement last Friday, melican and her husband, Denis Melican, a board member of the local chapter, were interviewed Monday by a selection panel that ended up overwhelmingly selecting Lamoureux Pagano Associates for the job.

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**Chestnut champions quit over genetic engineering**

By Eline Thompson

Rocks on planet and people, says scientist who left foundation board

Board president Lois Breault-Melican provided the last of the American chestnut seeds at Green Hill School in Worcester in October.

Lois Breault-Melican, president of the Massachusetts and Rhode Island chapter of The American Chestnut Foundation, and her husband, Denis M. Melican, a board member, harvest the last of the American chestnut seeds at Green Hill School in Worcester.

Eight months later, at the age of 59, he retired from government work, saying, “This work environment and stress” had forced him to leave the position he held for nearly 18 months ago, leaving the town planner position behind.

Former planner was teaching at Worcester State during office hours

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Climbing high

In brief

Counterfeit suspect allegedly passed $300 bill but left wallet in cab

Worcester — A 58-year-old man left his wallet in the cab after he allegedly paid his fare with a fake $100 bill, according to police. At about 3 a.m. Wednesday, a cab driver went to the lobby of the police station to report the alleged fraud. The man's wallet was picked up on Wall Street and dropped off on Mott Street, police said.

The customer handed the cab driver $100 to pay for his fare, and the cab driver gave him a receipt. Police said the customer departed.

After recovering the bill, the cab driver realized it was counterfeit. The driver also discovered that the man had dropped his wallet in the back seat of the cab.

Police said lamellla Rosado of Worcester will be summoned to court on a charge of uttering counterfeit bills.

The scene that grow in the $100 billions of transgenic trees will have profound effects. It... a program at Pernet Family Health Service show off their climbing skills Wednesday at the

The Planning Board openly discussed the possibility of switching to online classes. Joe Swenson, who was chairman of the Board of Selectmen at the time, and Mr. Craver were “motivated by personal reasons,” he said. The planning district is split between the Planning Board and the Planning Board, as the Planning Board's role is to make decisions rather than implement them. The Planning Board is the final authority on this matter.

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Central Massachusetts.

Rob Para Jr., principal of Lamoureux Pagano and architect for Doherty, said it was a privilege to once again have the support of the community in his project.

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Officer convicted of murder in 911 caller death

By Amy Fortilli
The Associated Press

MINNEAPOLIS—A Minneapolis police officer was convicted of third-degree murder Tuesday in the fatal shooting of a 911 caller during a domestic abuse call, becoming the first officer in the city in more than 40 years to be convicted of a murder.

Noor was acquitted of murder but dead, 4 injured

By Tom Foreman Jr.
The Associated Press

CHARLOTTE, N.C. — A shooting at North Carolina's University of Charlotte campus left two people dead and four injured, prompting a lockdown and causing panic across the city and the state’s other schools.

COUNCIL

From Page A1

problems. Instead of getting motorists to pay for tolls, you could just lead them to sources of what they could call a local tax fund.

All of the other city councilors signed on to Miss. Lukes’ order. District 4 Councilor Sara Rivera suggested that intersections near schools be given consideration for the pilot program.

For business, the City Council was informed that a community meeting will be held May 13 on a potential elementary school replacement project. The agenda included updates will be provided on the status of the school project. The meeting will be held at Oldsmar High, so far.

Michael True, professor emeritus at Assumption College, talks about his visit to Colombia, where he received the Nobel Peace Prize in 1983. True also put forward a bridge program with Nanjing that allows poets from that region to exchange ideas and connect more people around the world to diverse audiences.

He even co-founded what is now a peace scholar, Mr. True also put forward a bridge program with Nanjing that allows poets from that region to exchange ideas and connect more people around the world to diverse audiences.

As an artist, True wanted to create a space for the public to connect with all kinds of people, to see themselves in others. He believed in the power of art to bring about change and to inspire people to work towards a more just and peaceful society.

He said that when he was young, he used to dream about being a writer or a musician. But as he grew older, he realized that he could have a greater impact by using his art to raise awareness about important issues.

So he started writing poems and stories about the world around him, and he made art that was meant to be shared. He wanted people to look at his work and think about the world in a new way.

But perhaps the most impressive physical space is a new learning lab, a multipurpose central programming that over- looks Park Avenue.

"We have high hopes," said True. "We have developed a teleconferencing capabilities to transmit A3 programming around the world to diverse audiences and connect more people together. And there are more and more "W" we still have to do it."

But perhaps the most impressive physical space is a new learning lab, a multipurpose central programming that overlooks Park Avenue.

"It’s the window out to the world and into us," said True. "We want to share as much as we can with the American public."
By Soterios Zoulas

If you know your dad...

Today is a proper day to celebrate a father, and the life he led. He had a life before he was married, and he is still living, he has a life separate from me. Forty-five years ago, but his memory is always with me. I want to celebrate him, and let our readers know about my father from other relatives who knew him from that period.

I attended a wake and funeral of a family friend by my father and my mother were sisters. He was the oldest among all the children, and he lived in Long Island. We were never close to my father, but I knew him from that period. When I attended college and moved to Alaska to help build the Alaskan pipeline and was more of a young man with my brother and an aunt, he was always a watchman. We were always watching advanced academic degrees, protecting the war in Vietnam and women for the war on poverty in Boston, he was my father. He was a hard man in the Bronx where I never knew what he did. I do know that he bought property in Glen Cove and became wealthy. A decade ago, he became ill and was paraplegic for the last several years of his life. He was an immigrant brought over by his father, who was sponsored to migrate to America by my dad. At the money meal

in a delicious Greek restaurant, of course. In Glen Cove, Long Island, he was a leader of the Greek Orthodox Church. In Brookville and at Holy Cross and at the College of the Holy Cross. These comments appeared in the article “Worcester Catholic bishop: Transgenderism not right, but ‘gift’ in the Holy Cross deans say.”

In his opposition to transgenderism, Bishop McManus does not represent all Christians

By the Rev. David H. Wosnummer

A leader of religious communities and faithfulness advocates among us in our city, we write to address comments that have been made recently in the media and at Holy Cross regarding transgender people, transgender issues and to generally broaden the value of study of transgender identity and the high education of specific in the College of the Holy Cross. These comments appeared in the article “Worcester Catholic bishop: Transgenderism not right, but ‘gift’ in the Holy Cross deans say.”

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Parent, school depart, argue cases at hearing

Lawsuit claims educators, DCF mishandled mother’s case in violation of her constitutional right to homeschool her son

By Scott O’Connell
Telegram & Gazette Staff

WORCESTER — After presiding over a motion hearing in the case of a homeschooling parent’s lawsuit against the city school system on Monday, a federal judge will have to decide whether the law would have allowed the situation to get to that point.

See HEARING, A5

Megan Rapinoe’s penalty kicks made the difference in U.S. World Cup win over Spain as women advance

By Squeaker

The city is still in the early stages of developing plans for the new Doherty, which officials tentatively aim to open in 2016.

“If it’s a long road to get there,” said Katie Crockett, president of the Sybil H. Fuller Foundation and the Doherty’s relatively large population of daily walkers. Matt Wally, the city councilor representing District 5, where the high school is located, even revived the idea of putting an exam school at the future Doherty — an idea city and school officials explored several years ago but never fully realized.

Monday’s meeting, which was held in the current Doherty cafeteria, culminated a series of three workshops the project’s managers have held over the past month, including one on Monday afternoon.

Specifically, Worcester has to follow the strict approval steps laid out by the Massachusetts School Building Authority, which will end up funding the majority of the cost of the new high school after inviting Doherty into its project pipeline two years ago. Right now, project planners are still conducting a feasibility study, which will establish the “big-picture” needs for the project, Ms. Crockett said. That study will allow the city to find the “preferred solution” for the new high school, which would then be followed by the development of the schematic design.

That’s where Madrid-based SpiderTag comes in. Over the course of the past week, its worked with local electrician David Prybyla to erect the neon mural, which can be altered with a remote. Ms. Drexhage said there are plans to make the remote available to the public at certain times so community members can reconfigure the design to their liking.

The project was completed with funding by the George F. and Sybil H. Fuller Foundation and the Worcester Cultural Coalition.

Attendees weigh in on new Doherty High

At a glance

The Allen Court neon sign joins more than 115 pieces of public art, including 60 murals, WOW! WOW! WOW! Worcester.

At least four artists were presented there during the exhibits, which runs several stories above the alley that runs across from City Hall on Franklin Street to Federal Street.

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HEARING
From Page A1
The defendants have moved for the court to dismiss the complaint that argues they violated Woodland Acres’ lord, Miss Goodall’s constitutional right to her home.
Mr. Goodall, who removed his child from Woodland Acres in January 2019, claims the School District never responded to his initial submission of her homeschooling plan, which the district requires from all homeschooling families.
Her attorney, Peter Kanakamalicka, argued at Monday’s hearing in U.S. District Court that under the state’s constitutional right to her home to try to see her child. The Worcester schools’ lawyer, Assistant Attorney General Maureen Binienda, and the district approved homeschooling application, while the state was investigating for) child abuse and neglect.

DOHERTY
From Page A1
the Worcester Superior Court Committee, the Worcester superintendent of Children and Families after the district alerted the agency in March of 2018, which the boy allegedly missed 48 days of school. DCF subsequently coordinated the well-being check where Ms. Goodall was arrested in her own home over an outstanding warrant for an old parking ticket, according to court records. The Worcester schools’ attorney, Elizabeth Toner, meanwhile, said she was not aware of that plan was submitted to the school.
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DILBERT
From Page A1
it. The June workshop scheduled at the school on July 15, next door.

Speaker predicts state budget talks will go past July 1
By Katie Lannan
From Page A1
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BOSTON - A final state budget will probably not be in place by the start of the new fiscal year on July 1, House Speaker Robert DeLeo said on Sunday.

The competing House and Senate versions of the $42.5 billion fiscal 2020 budget have been before a six-lawmaker conference committee since May.

Asked about the potential for an on-time budget, DeLeo said that House Ways and Means Chairman Aaron Michlewitz, who is co-chairing the conference committee with Senate Ways and Means Chairman Michael Rodrigues, told him the panels are still meeting and talking.

The discussion has been productive but hardly, obviously, completed their work, so I expect if you’re asking me if it’s going to be done by July 1st, probably not,” DeLeo told reporters.

But on the other hand, he said the panel is making progress and hopefully things will come in relatively soon.

Both the House and Senate versions of the fiscal 2020 budget are not released by the conference committee, approved by the two branches and signed by Baker in the next two weeks. Final votes to send the budgets to the governor could take place on Thursday.

Last year, Massachusetts was the final state in the country to finish its budget, which Baker signed into law on July 10. This year, the state had enacted its fiscal 2020 budget’s as of June 13, according to the National Conference of State Legislatures.

Magid Takemuchi of the state Senate’s Ways and Means Committee, argued, is옹 “a vague email” from Ms. Goodall describing her intention to remove her child from school.

It takes an hour, and how she negotiated for the different deal, it was negotiated to clean out the sanctions “economic warfare,” which has shown no interest in negotiating with the Iranians.

The latest round of sanctions doesn’t come without precedent, according to Monday’s argument, US.-Iran talks are impossible under current conditions, adding, “You cannot engage in a dialogue with someone who is threatening, who is intimidating you.”

Kamakawiwoole, argued, is “a one-sided deal in which the deal, which eased sanctions on Iran in exchange for curtailing nuclear programs,” Trump called it a “vague email” from Ms. Goodall describing her intention to remove her child from school.

The Iranian ‘s U.N. ambassador, Assistant Secretary General Kate Ivey, who represented DCF at the hearing, was not cooperative” with them during the hearing, a department finds the warrant.

“Police believed (she) was not cooperative” with them during the hearing, a department finds the warrant.

Chairman Michael Rodrigues, who is co-chair of State Legislatures.

The Worcester schools’ lawyer, Assistant Attorney General Maureen Binienda, and the district approved homeschooling application, while the state was investigating for) child abuse and neglect.

Mr. Goodall, who removed his child from Woodland Acres in January 2019, claims the School District never responded to his initial submission of her homeschoo
CITY HALL NOTEBOOK

Midtown Mall owner to meet with WRA

By Steven H. Fossel Jr. Telegram & Gazette Staff

WORCESTER - The city and Starlight Properties Inc. have decided to proceed with the feasibility study for a new Doherty Memorial High School, including the current site on Highland Street, at a community meeting Monday night.

Officials at the Department of Public Works and Parks and Landmarks' Page Associates Architects presented three options pulled down from possible sites in the Doherty quadrant: the current site, Chandler Magnet School, and an army field next to the property on Chandler Street, across from Worcester State University, and Lonsford Middle School's current footprint of Foley Stadium on Chandler Street.

Presenters cautioned that the site feasibility studies are at a very preliminary look at where a new Doherty would sit. They said that the sites are fully vetted, but the potential sites could grow or shrink.

Residents, including many parents of current and future Doherty students, asked questions and voiced concerns about the viability of a small sitting of athletic facilities as part of the project. Rough estimates that include on-site parking would require 15 acres for academic programs and an additional 5 acres of athletic fields and facilities.

Bob Forbes, a project manager with Lonsford Page Associates Architects and project architect for the feasibility study, said that as the site selection process gets more specific, adjustments can be made to some of those dimensional requirements to make the school a better fit for a particular site.

Still, looking at the possible sites presented Monday, building a school and athletic facilities on the same site could present challenges.

Several residents were curious about the feasibility of building a new school on the Foley Stadium site, which would be coupled with improvements to Beaver Brook Park athletic fields and facilities.

Tuesdays are intended for residents who live in the neighborhood said they believe the Memorial High cafeteria was the best use of the location of the current stadium.

CITY HALL NOTEBOOK

Backyard farmers catch a break

By Kim Ring Telegram & Gazette Staff

HOLLODEN - It was with gritted teeth that Christine Shrestah wrote a check to the town of Hollodden every year.

The $50 to $80 an acre tax on farm animals that Mr. Shrestah, a comprehensive consultant, had received, was too much to bear. What was a $500 per year payment to the estimated 100,000 or more spent annually to feed and care for the animals, like the cow, sheep, and chickens he bred back to good health in 2004 - it was the principle.

"I don't mind paying taxes. I know what taxes are paid for. It's the way we go to buy the golden egg." Mr. Shrestah explained. "But the one thing I just wasn't used to is the way the WIC program gets its money to the town."

Mr. Shrestah began asking around and found that when they don't have to charge the excise tax on-fed in our state, he might be able to get away with paying after learning that what was collected was just what it costs to send on the bills and keep track of the payments.

To stop the process in Hollodden, Ms. Shrestah was told to town meeting vote would be needed. With the signatures of about 10 registered voters on a petition article to ask voters to do away with the tax, Ms. Shrestah went to town meeting, only to learn the matter should actually have been passed over at the meeting.

But before the dazed and confused town officials began to come to the matter. Before long, Ms. Shrestah got a call from the Town Manager Peter Lucey.

See FARMERS, B1

CITY HALL NOTEBOOK

Casino builder questions Coggin Electrical claims

By Bruce Blankman Telegram & Gazette Staff

Worcester contractor says it is owed millions of work at Encore Boston Harbor

By Byron Moussy Telegram & Gazette Staff

Suffolk Construction is pushing back against Coggin Electrical Contractors Inc.'s lawsuit that it is owed $17 million for work at the Encore Boston Harbor casino, saying the contractor has not documented its claims as necessary and has engaged in "certain business practices.

"Coggin Suffolk has submitted several requests for information over several months, Coggin has consistently failed to provide supporting documentation for a majority of the remaining claims, as required by the subcontract Coggin signed with Enscape Construction," Linda Deconno, vice president ofdiversity, inclusion and community for Suffolk said in a statement.

"Coggin's recent and unexpectedly added million dollars to its list of claims without providing any meaningful documentation to substantiate those claims. We have learned that this is not the first project in which Coggin has engaged in such unethical business practices."

But Coggin President and owner Sue Mallman said the claims: a result of changes orders could not be calculated until the project was over and should have been billed in other ways.

"The recent additions to our change order requests are claims which can never be calculated until the project is done, " Ms. Mallman said in a statement.

"Suffolk forced Coggin to sign documents to get paid. Suffolk never delivered any additional work. Now Suffolk feels Coggin's claim to be incorrect. Suffolk needs to stop and let the court sort things out."

The dispute arose in late June when Ms. Mallman told the state's Health, Hospitals, and Ambulance Services Committee that Coggin was among several subcontractors on the Encore Boston Harbor project who were still owed money. She cited the $17 million as the highest amount her company was owed.

"We are not happy with the situation at this point and expect to meet with Suffolk soon, " Ms. Mallman said.

Suffolk did not respond to repeated requests until last week, when it released a lengthy statement.

See CASINO, B1
Family displaced by Shrewsbury fire

By Brad Politcher

SHREWSBURY – A family was displaced by a fire Monday afternoon that entirely damaged their home on Rawson Hill Drive.

Firefighters were called to 33 Rawson Hill Drive around 1:30 p.m., Deputy Chief Colby said, after reports of smoke coming from the attic of the house.

Flames found heavy flames and smoke, and they extinguished the blaze in about 30 minutes, Deputy Chief Colby said, but structural damage was significant.

Mohammad Sheikh, who lives at the home with his family, said no one was inside when the fire broke out. He said he called 911 after coming to his home, opening the door and seeing heavy smoke and fire in the kitchen area.

Deputy Chief Colby said it appears the fire started in the rear kitchen area. Chief Vomac said in an initial report from investigators that it had started in the stove area and was sensational.

Neighbors also reported seeing smoke and called 911, officials said. Sheikh and his family traveled to another relative's home Wednesday afternoon and planned to stay with family. Sheikh said the ranch is a multifamily home that his son owns.

The number of people displaced wasn’t immediately available. Mr. Sheikh said there were no pets inside the home.

While he could not estimate the amount of damage, Deputy Chief Colby said the building is insured, that structural damage. The fire burned through the roof and into the attic of the home, he said.

Firefighters from Northboro and a ladder truck from Westboro came to assist, Deputy Chief Colby said.

“Special thanks to Westboro and Nobles truck for assisting, managing heat and dehydration on scene,” Chief Vomac said.

CITY HALL

From Page 1B

In including community needs in the budget.

WRH board member David Milks left the board in March after a heated debate on the subject of school improvement and revitalization. The agenda for the remaining board meetings included the approval of the school’s budget and the approval of the school’s capital projects.

The city manager has been doing a lot of work to build and maintain relationships with the community and with the city council.

Mr. Milks said he is proud of that. But now it is time to see the private developer and the city council at the table and at least see some progress.

Balpark challenge

One of the challenges facing the city council is the development of the Balpark site.

The Madison Street site of the proposal is smaller than the portion that was approved in 2019 and 2020.

At last week’s groundbreaking ceremony for the Balpark site, touring developer Justin Marcus said the success of the project is due to the “great community support and the great community that we have.”

PROBATION

From Page 1B

Allen Seymour is alleged to have been involved with investors in a fund that was investigated by the state’s attorney general and was shut down.

Mr. Seymour, who is currently serving a 1-year sentence in the state’s Department of Corrections, has been ordered to pay more than $1 million in restitution for a scheme that he is alleged to have orchestrated.

The scheme is alleged to have involved the theft of more than $1 million from investors.

Mr. Seymour was sentenced to state prison in 2019.

Mr. Seymour pleaded guilty to two counts of grand larceny and one count of fraud.

FARMERS

From Page 1B

The state’s Department of Agriculture has announced a new program to help farmers sell their products directly to consumers.

The program is designed to help farmers sell their products to local markets, such as farmers’ markets and roadside stands.

The program is funded through a grant from the state’s Department of Agriculture.

The program will provide technical assistance to farmers and will be administered by the state’s Department of Agriculture.

The program will offer farmers the opportunity to sell their products directly to consumers, which can help farmers to reduce their costs and increase their profits.

The program will also help farmers to market their products in a more efficient and effective way.

The program will be available to farmers who meet certain eligibility criteria.

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Prep work underway at Mount Carmel church

By George Burns
Telegram & Gazette Staff
WORCESTER - Preparations underway at Our Lady of Mount Carmel Church began early Monday morning and is expected to continue for a week or more. The first piece of heavy equipment arrived at about 8 a.m. and workers began removing pews and railing from inside the historic Roman Catholic church at 24 Mulberry St. Demolition supervisors from F&A Truck Co. of Milbury told the upper structure of the church will be taken down to the middle floors for safety reasons. No one is in the church at the moment and will be able to move in at a future date.

Heavy equipment arrived early Monday morning and is expected to continue for a week or more. The first piece of heavy equipment arrived at about 8 a.m. and workers began removing pews and railing from inside the historic Roman Catholic church at 24 Mulberry St. Demolition supervisors from F&A Truck Co. of Milbury told the upper structure of the church will be taken down to the middle floors for safety reasons. No one is in the church at the moment and will be able to move in at a future date.

No ‘perfect’ options for Doherty High rebuild

Current site, Chandler Magnet site rated as best options

By Scott O’Connell
Telegram & Gazette Staff
WORCESTER - The project coordinators developing plans for the new Doherty Memorial High School on Monday said the two best options would be to either rebuild the school at its current location or build it at a site where Chandler Magnet Elementary School sits. Another proposal to construct the new school, which is expected to open in 2019, is in place of the city’s Foley Stadium is comparatively less ideal, their report revealed.

“We do not have the perfect site for this project,” said Katie Crockett, president of Landscape Pugine Associates, the firm leading the current feasibility study for the project, said at Monday’s public informational meeting. “None of these are perfect, but each of them is viable.”

It’s only a building. People are the church.

Mina Force, former parishioner

Newman held on $250K bail in death of runner

Daniel DeLima was out for a run last Wednesday when he was struck and killed on Singletary Avenue in Sutton.

ULXBRIDGE - The 39-year-old suspect in last week's fatal hit-and-run at Singletary Avenue on Wednesday is being held without bail at Uxbridge District Court on a charge of murder.

Bail hearing was set for Daniel DeLima, 39, of Millbury, on Wednesday on Singletary Avenue when he was struck and killed. His body was found on the lawn outside 115 Singletary Ave.

Description of a suspect in the hit and run: He was wearing a black jacket and black pants. He was also wearing black shoes.

Mr. Newman also had numerous supporters attend the hearing. A member of Mr. Newman’s family who did not identify himself told the judge the family was "very supportive of Mr. Newman" and said they were "very happy" with the outcome of the hearing.

Local RI

JURY FINDS FOR LAWYER

Worcester Superior Court judge addressed a plaintiff who is a civil servant to say, "You are a plaintiff. You can win or lose, but you are a plaintiff. You are entitled to your day in court." A lawyer for the plaintiff told the judge the case against the state was "very strong." The state had argued that the plaintiff was not a plaintiff in the case.

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The demolition was expected to begin last week, but was delayed after Evercore went to the property Wednesday to turn off the gas and determined that the location of underground gas pipes near the church had not been properly marked.

Before the workers arrived, a former parishioner stopped by to offer a last prayer for the church and light a candle. The woman, who said she had been a constable of Christ Church, declared the church, but declined to give her name, said she was baptised and confirmed in the church, and received her sacraments there. "It's not just a building. It's a sacred place. It's the community's home."

"The woman said she does not believe the church was beyond saving when it was closed. "It's sad," she said. "Our hearts are broken."

Stella Flores, another former parishioner, was peeking into the parking lot between the church and a recreation hall that was once operated by the church. She said she was not there to see the demolition, but to ask about other former parishioners who were talking nearby.

Mr. Flores said she was a member of the parish for 50 years, but now attended a church closer to home. "I think the church is being destroyed," she said, "but it's going to be part of the history.""It's only a church," he said. "It's only a building. People are more important than a building."

Mr. Flores said the parishioners are making plans to attend services at different churches. She said although she does not attend church, she is still there at events like First Communion, which is being held at the nearby Holy Cross Church."

Stephen Seiden, a parishioner whose mother was married in the church, said he hopes to get a memorial brick that is in the parish activity center. He said the brick honors his grandfather, the late Mr. O'Malley, an immigrant from Ireland.

"When the last of us is gone, I want to make sure they have a memorial to remember the church," he said. "It's been a part of my life."

Montgomery Pedres also has been associated with Our Lady of Mount Carmel Church for much of his life. He attended school there, was a altar server, and celebrated his First Mass there, and his father's funeral was held there. His family closed in 2004, then re-opened in 2006. The church was closed in 2010 and re-opened in 2011. Montgomery Pedres said he had a funeral and baptism scheduled in the next two days. He was allowed to keep the church open for those services, but had to be closed after they were done. "We've come to the end of its life," Montgomery Pedres said. "They've been set up around the building and more fencing, but the bricks at the top of the building and the safety and keeping people from the building are the things that are being done."

Montgomery Pedres said people broke into the church on Saturday, and were removing items from the building. He said some of the items were not necessarily kept safe, but people just took an opportunity to remove things. One man was found trying to remove a thermal from the wall. A woman was taking out a collection box.

Workers begin to clear out the inside of Our Lady of Mount Carmel Church on Monday morning. (Photo by Peter St. George)

Presbyterians have been demanding Our Lady of Mount Carmel Church on Midway Street in Worcester. (Photo by Peter St. George)

Our Lady of Mount Carmel Church demolition progress work began on Monday. (Photo by Peter St. George)

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Prep work underway at Mount Carmel church

Heavy equipment arrived early Monday as workers began removing pews and furniture from inside the historic church.

By George Barros

WORCESTER – Preparations are underway at Our Lady of Mount Carmel Church in Worcester on Monday morning as workers prepare to clean up the church and remove pews and furniture from inside the historic church. The church will undergo a major renovation, which will include the replacement of some of its original pews and the installation of new ones made from wood salvaged from other churches in the area. A fund-raising campaign has been launched to help offset the costs of the project, which is expected to take several months to complete.

No ‘perfect’ options for Doherty High rebuild

Current site, Chandler Magnet site posed as best options

By Scott D’Cruz

WORCESTER – The project coordinators developing plans for the next Doherty Memorial High School on Monday said the two best options would be to either rebuild the school at its current location or build it at a site where Chandler Magnet Elementary School sits. Another proposal to construct the school on the current site, which came to light in 2014, has been ruled out, according to city officials.

“We do have the perfect site in this city,” Katie Crockett, president of Chandler Magnet Associates, said at Wednesday’s public informational meeting. “Some of these sites are not big or flat — they all have issues. In our selection process, rebuilding the school at its current location on Highland Street was the only viable option for us, given the size constraints, the lack of funding and the need for a new, modern facility.”

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The demolition was expected to begin last week, but was delayed after Everwise went to the property Wednesday to turn off the gas and determined that the location of two underground gas pipes near the church had been improperly marked.

Before the workers arrived, a former parishioner stopped by to offer a last prayer for the church and light a candle. The woman, who said she had been a member of St. Mary’s Church, was a former parishioner of the church, but declined to give her name, said she was baptised and confirmed in the church, and received her sacraments.

"I love it. It’s not just a building. It’s a sacred place. It’s the community’s home."

The woman said she did not believe the church was beyond saving when it was closed.

"It’s sad," she said. "Our hearts are heavy."

Stella Fees, another former parishioner, was parked in the parking lot but the church had been closed. She was among a group of people who say the church was demolished but was unable to enter to see the church.

"I’m only a church," she said. "It’s only a building. A habitat for people.

Stella Fees said the parishioners had a church 50 years ago, but now it’s situated in the church and it’s also a church. She said there were no parishioners who believed the church was being demolished but the church was not able to enter to see the church.

The church was closed when it was discovered that the facade of the building that faces Mulberry Street had moved five inches from the main building and the elevator was being decommissioned, and an effort was made to stabilize the building.

Mennoinger said the building was not on the list of buildings to be demolished, but the church had decided to demolish it. He said he had a funeral and baptism scheduled in the next few days. He was allowed to keep the church open for those services, but said that it had to be closed after they were done. "We come to the end of our life," Mennoinger said.

Mennoinger said that turning the building back to its original state was not an option.

The building was torn down, and the property was sold to a developer, who is planning to build a new church on the site.

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SCHOOL

new schools under construction - would result in students losing their parking lots and some parking during the three-year construction period, which would take place immediately next door while they continued to attend the current high school.

That proposal would also require the city to construct a parking garage and two off-street parking lots, which would result in students having to go back to their neighborhood schools and the magnet school’s programs being relocated to other schools.

Building at that site, which is located across from the site of the current school, would be a "big" city athletic facility, Mr. Parz, said. The site is also the smallest of the three options, at 12 acres, which would limit what could be built there, and has historic and cultural significance.

Monday’s meeting, held in the cafeteria of the current high school, drew a large crowd - more than 100 people, many of whom expressed skepticism about the latest developments in the project.

Mr. Crockett and Mr. Parz were asked about the latest developments and the city’s progress on the project, but the city could not provide a more specific timeline for the construction.

The city committee overseeing the project will be seeking the best option for the city’s school system and will continue studying it as well as providing more financial information to the city council on Sept. 6, Mr. Crockett said.

A few members of the Lady of Mount Carmel Church in Worcester, who declined to be identified, stop by the church on Monday morning, (TROY GULFARO/TAUNTON TAUNTON)
Some questions I have after last night’s Doherty meeting

The Doherty building project page now has last night’s presentation posted. Looking through that, and thinking about all of this some more, I have some questions:

- Are we ever going to get the full list of who is on the building committee? In most places, there is a public appointment and a public list. We’re this far along, and many of us are still wondering who was appointed. UPDATE: now posted here, not via the city or the schools.

- The building will more than double in size, from 170,000 square feet to 420,000 square feet. Some of this is due to required additions, like those for special ed. However, some of it is due to the addition of four Chapter 74 programs proposed for addition to Doherty:
  - Engineering and Technology (expanding to 400 students)
  - Marketing, Management, and Finance (200 students)
  - Programming and Web Development (200 students)
  - Construction Craft Laborer (150 students)

...which isn’t required. Thus, if space is a concern, and not subverting needed programming is key, should these programs be added to Doherty and B at all?

- Likewise, the parking is going from 250 parking spaces to 430, of which 180 are for staff and 250 for visitors and students. Is this really that much of a priority? We need 250 spaces for students and visitors?

- Slide 18, designing on-site replacement, has two “new athletic fields” over by Newton Square, on Parks property, on the current site of the basketball court and tennis courts (at left in the below photo).

Is that simply designating that there current is a basketball and tennis courts or is there, in fact, a plan to put fields on Pleasant and Highland on opposite ends of the rotary?

- I’m all for embracing pedestrian access—really! and it is good that it is being included and considered, as below in the white dotted lines coming down the bottom towards the far side of Newton Hill—

but slide 21 which includes that ignores some of where that foot traffic goes now (specifically, down the hill...
and straight across Park to Elm Park). There's even a stairway there! If we don't know where people are actually going, that doesn't seem very hopeful on how well we are tracking what is needed.

- Also, if you look at the above, that puts four driveways--two in and two out--on Highland. We don't have a choice on Highland, as that's where the frontage is, but that's a lot of driveways.

- For those who have ever wondered, regarding Beaver Brook and Foley Stadium a) what was floodplain, b) where that culvert went, slide 82 has an answer:

Between the end zone and the twenty yard line, it looks like. It's an 84 inch culvert, they said last night, and the soil is urban fill and ash. Not something to mess with.

Beaver Brook, of course, is city parkland, and both here and on Newton Hill, it is reassuring to see that the City and all have learned the lesson of Worcester Tech around park takings: don't do it.

- Among the "existing Chandler Magnet Site notes" is "Existing 1950's school" but somehow the actual operation of that school, the presence of 500 students being educated in the building, including the only bilingual program in the district, is entirely left off. Both here and in the site evaluations, I am troubled that this somehow didn't figure in. Leaving aside the impact on students of losing a school--something which very much does matter, as has been extensive researched--the district somehow coping with 500 students being thrust back into the rest of the system is not something that can lightly be dismissed. I heard more than one parent ask if, for example, closing Worcester Arts Magnet would be floated so lightly. Whatever the neighborhood schools of those students--and it's hard to miss the "go back where they came from" of such a push--most of Worcester's elementary schools are at or near capacity. I don't know of the current enrollment of the school, but in the past, that school drew heavily from the neighborhood of Chandler Elementary, a school so overenrolled that half of it meets at the Y. The district's not having a long term plan for Chandler Elementary's enrollment is itself dismaying; I have a difficult time imagining a reality in which we all blindly accepted that half a school would go elsewhere for the foreseeable future. That it would be worsened in part so as to avoid having Doherty students have to move for a few years is simply unjust.

- Having been part of the conversation around Worcester State's wish to have the same field at Chandler Magnet for parking, I have to ask: has anyone actually had a discussion with Worcester State about those proposed land takings needed to make this proposal work? As someone who lives in the neighborhood, my own experience with Worcester State is they are hanging on to every square inch they have and are looking to acquire more.

That's what I have right now. More as I have it.
The Constitution of the Commonwealth of Massachusetts, Chapter V, Section II.

Wisdom, and knowledge, as well as virtue, diffused generally among the body of the people, being necessary for the preservation of their rights and liberties; and as these depend on spreading the opportunities and advantages of education in the various parts of the country, and among the different orders of the people, it shall be the duty of legislatures and magistrates, in all future periods of this commonwealth, to cherish the interests of literature and the sciences, and all seminaries of them; especially the university at Cambridge, public schools and grammar schools in the towns; to encourage private societies and public institutions, rewards and immunities, for the promotion of agriculture, arts, sciences, commerce, trades, manufactures, and a natural history of the country; to countenance and inculcate the principles of humanity and general benevolence, public and private charity, industry and frugality, honesty and punctuality in their dealings; sincerity, good humor, and all social affections, and generous sentiments among the people.

(John Adams, 1779)
Family, friends, first day of school

WSU ‘not informed’ of Doherty plan

College land eyed for city high school’s potential building project not for sale
By Scott O’Connell
Telegram & Gazette Staff

WORCESTER — Worcester State University and Worcester State University Foundation said through a representative Monday that land owned by the foundation that the city has eyed as a potential acquisition for the school district’s Doherty High School project is currently not for sale.

Maureen Stokes, Worcester State’s Assistant Vice President for Communications and Marketing, said the university and its foundation also had not been informed beforehand when project managers for the city announced that proposal last week.

The relocation of Doherty to Chandler Street — one of three options under consideration for the high school building project — is partly reliant on the city being able to purchase abutting

See DOHERTY, A4

Mount Carmel cross comes down

Demolition of 91-year-old Roman Catholic Church on Mulberry Street has begun
By George Barnes
Telegram & Gazette Staff

WORCESTER — The cross on the steeple of Our Lady of Mount Carmel Church was removed Monday morning, a symbolic first step in the demolition of the large house of worship on Mulberry Street.

The Roman Catholic Church, which was built in 1928 by Italian immigrants, is being torn down, and the Worcester Diocese is expected to sell the site.

The church was closed after deterioration caused by age and vibrations from nearby Interstate 290 made the building unsafe, and dwindling attendance led to

See CROSS, A4

Sapphire Marthi, left, and Sasha Ochieng embrace after spotting each other while arriving for their first day of sixth grade at Grafton Street School on Monday.

Jose Oquendo, right, takes a picture of his daughter, Shaliany Oquendo, as he walks her to Grafton Street Elementary School on Monday. Shaliany is starting the first grade.

LEFT: India Daniels says goodbye to her daughter Uriyah Lenox on the girl’s first day of first grade Monday at Grafton Street School.

Workers load the cross and other parts removed from the steeple as the demolition of Our Lady of Mount Carmel begins Monday in Worcester. (T&G STAFF PHOTOS/RICK CINCLAIR)
Kennedy mulls Senate run

By Brian Slodysko

BOSTON — Massachusetts Rep. Joe Kennedy III, a scion of one of America’s most storied political families, is taking one more calculated step forward in his challenge Sen. Edward Markey. In the 2020 Democratic primary, setting the stage for what could be a bitter intra-party battle split along generational lines.

It’s rare for challenges to take on incumbent senators, and such a move would be provocative at a time when Democrats are trying to wrest control of the Senate from Republicans. The potential matchup is notable because there doesn’t appear to be a deep ideologically divide between the two lawmakers.

But this is a time of churn in the Democratic Party, with a younger generation asserting itself, as seen in the presidential contest and in the House, where Rep. Alexandria Ocasio-Cortez of New York overtook a seasoned party leader in a primary race last year.

Kennedy, 38, filed a statement of candidacy with the Federal Election Commission on Monday, though in a Facebook post he stopped short of formally declaring a run against the 73-year-old one-term senator.

As he seeks a second full term in the Senate after winning a special election to replace the late Edward Kennedy last year, the younger Kennedy is a rising star in the party, delivering a shot of enthusiasm to Democrats who are trying to win back the White House in 2020.

He announced his bid for the Senate in Congress, adding that while some people have told him he should wait his turn, “I’m not sure this is a moment for waiting.”

The potential for what would be a serious, costly challenge to an incumbent delivered a jolt full beyond Massachusetts. One national Democratic strategist said Kennedy’s potential candidacy was not helpful and was a waste of time and resources when Democrats would rather focus on “discounting Republicans’ grip in battleground states to flip Senate control.”

The strategy was unstructured to discuss the situation and spoke on condition of anonymity.

In recent weeks, speculation about a possible primary challenge of Markey has ramped up considerably.

At an event Monday in Boston, Kennedy said he’s “bumping hard on the issues the people of Massachusetts care most about,” citing immigration and environmental concerns and tax fights and gun laws his long companions.

That’s all I’ve done, the senator said, adding that he had been given the honor to represent the state, and that’s what I’m going to continue to do.

When asked if he would run if Kennedy officially entered the race, he replied, without uttering the name of his potential Democratic rival: “I am going to cross this state and I am going to give it everything I got.”

Kennedy is a rising star in the party who delivered Democratic’s rebuttal last year to President Donald Trump’s State of the Union address. He had previously signaled his intention to run for reelection in his House district, which stretches from the western suburbs of Boston to southern eastern Massachusetts. He is seen as a valuable member of the House, but with his seat not up for grabs.

Toppling Markey, though, would likely become a race of style rather than substance. The senator draws widespread support from liberal and environmental groups, including the Sunrise Movement, the labor-backed Our Revolution, the Service Employees International Union, and various gun-control organizations.

That’s all I’ve done, he said, adding Worcester State University officials found out about the plan from a university employee who happened to see it at a presentation.

But she pointed out the relocation plan raises several issues, including how to ensure the campus would have enough land to site the replacement Markey with Doherty would have traffic.

The city is still in the feasibility stage for the new Doherty, wherever it’s located, as it has yet to get a solution for either the site or from its campus on Chandler Street.

Staying on Highland Street or relocating the school to the expanded Chandler Magnet site are the two best options for the project, they are now there to pick a solution for further study at an upcoming meeting.

A spokesperson at Worcester State University said it wasn’t notified of plans by the city that include possibly taking land from the college on which to build a new Doherty High School.

Workers remove the cross underneath the steeple as the demolition of Our Lady of Mount Carmel Church begins Monday. (Photo/RIck Pemberton)

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Workers remove the cross as the demolition of Our Lady of Mount Carmel Church begins Monday. (Photo/RIck Pemberton)

Workers remove the cross as the demolition of Our Lady of Mount Carmel Church begins Monday. (Photo/RIck Pemberton)

The steeple on Our Lady of Mount Carmel Church is taken apart and lowered to the ground piece by piece Monday. (Photo/RIck Pemberton)

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