



Doherty Memorial High School

299 Highland Street, Worcester, MA 01602

MSBA Feasibility Study Preferred Schematic Report (PSR)

December 30, 2019

UPDATED February 18, 2020

MSBA

Massachusetts School Building Authority
40 Broad Street, Suite 500, Boston, MA 02111

OWNER

City of Worcester, MA
City Hall, 455 Main Street, Worcester, MA 01608

OPM

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February 18, 2020

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

Attn: Christina Forde
Project Manager, MSBA

Re: **Worcester Doherty Memorial High School
Feasibility Study – PREFERRED SCHEMATIC REPORT - District Response**

Dear Christina:

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, Preferred Schematic Report documents and District response to the MSBA Review Comments for the Worcester Doherty Memorial High School received via email on January 28, 2020.

The re-submittal includes one (1) hard copy of PSR and District response, 1 set of updated floor plans and one (1) electronic file in PDF format in accordance with the requirements stipulated in MSBA, Module 3 for the Feasibility Study, Preferred Schematic Report.

The updated project schedule identifies the new MSBA Board meeting for the project to be April 15, 2020.

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 Preferred Schematic Report submission is complete and is submitted for the MSBA review and comment.

Very truly yours,

TISHMAN CONSTRUCTION CORPORATION OF MASSACHUSETTS

A handwritten signature in blue ink, appearing to read 'Eugene Caruso'.

Eugene Caruso
Owner's Project Manager

Cc: Russ Adams – City of Worcester
Robert Poitras – TCCMA
Katie Crockett - LPA

3.3.1 INTRODUCTION

- A. Executive Summary (Process since PDP, Project Schedule, Final Evaluation of Existing Conditions, Final Evaluation of Alternatives and Preferred Solution) *
- B. MSBA Reviews *
 - 1. PSR Review and District Response *
 - 2. PDP Review and District Response
- C. Updated Project Directory

3.3.2 EVALUATION OF EXISTING CONDITIONS

- A. Narrative Summary
- B. Supporting Documents
 - 1. Doherty Site – Existing Conditions Survey
 - 2. Doherty Site – Deed Covenant Review
 - 3. Foley Stadium Site – Existing Conditions Site Plan
 - 4. Chandler Magnet Site – Existing Conditions Site Plan
 - 5. Land Acquisition Process
 - 6. All Sites – Proposed Geotechnical Exploration

3.3.3 FINAL EVALUATION OF ALTERNATIVES

- A. Narrative Summary
- B. Site Development Requirements
- C. Preliminary Design Options (* indicates Preferred Solution selected by the SBC):
 - 1. Code Upgrade Option
 - a. Narrative
 - b. Site Plan
 - c. Building Floor Plans
 - 2. Renovation/Addition Option
 - a. Narrative
 - b. Site Plan
 - c. Floor Plans
 - d. Massing
 - e. Phasing Plans
 - f. Design/Construction Schedule
 - 3. Option A.1 New Construction on Existing Site: Pods on Park *
 - a. Narrative

- b. Site Plan
- c. Floor Plans
- d. Section
- e. Massing
- f. Phasing Plans
- 4. Option A.2 New Construction on Existing Site: Olmsted Homage
 - a. Narrative
 - b. Site Plan
 - c. Floor Plans
 - d. Section
 - e. Massing
- 5. Option A.3 New Construction on Existing Site: Highland Proud
 - a. Narrative
 - b. Site Plan
 - c. Floor Plans
 - d. Section
 - e. Massing
- 6. Option B.1 New Construction on Foley Site
 - a. Narrative
 - b. Site Plan
 - c. Floor Plans
 - d. Massing
- 7. Option C.2 New Construction on Chandler Magnet School Site with Added Land
 - a. Narrative
 - b. Site Plan
 - c. Floor Plans
 - d. Massing
- D. Supporting Documents:
 - 1. Updated Basis of Design Narratives
 - a. Architectural
 - b. Site – Civil & Traffic
 - c. Structural
 - d. Fire Protection
 - e. HVAC/Plumbing
 - f. Electrical/Data/Security/Telephone/PA
 - g. Food Services
 - 2. Permitting Requirements (all options)

- 3. Offsite Improvements (all options)
 - E. Budget Comparison
 - 1. Narrative
 - 2. Construction Cost Estimates
 - 3. Preliminary Design Pricing Table
 - F. Summary of Merits and Limitations
 - 1. Narrative
 - 2. Site Ranking Matrix
- 3.3.4 PREFERRED SOLUTION
- A. Updated Educational Program
 - 1. Updated Educational Program (redlined)
 - 2. Updated Educational Program with Design Response (clean copy)
 - 3. MA DESE Letter Regarding Chapter 74 Programs
 - 4. Updated Adjacency Diagrams
 - B. Updated Space Summary *
 - 1. Space Summary Template *
 - 2. Space Summary Template Variation Narrative *
 - 3. Updated Existing vs. Proposed Diagram
 - C. Sustainable Design
 - 1. LEED-S V.4 Sustainability Scorecard
 - 2. Designer Statement
 - 3. Sustainability Narrative
 - D. Building Floor Plans *
 - E. Site Plan *
 - 1. Site Plan *
 - 2. Site Utility Plan
 - 3. Massing View
 - 4. Field and Building Massing Perspective
 - F. Budget Statement for Preferred Solution *
 - 1. Total Project Budget Overview *
 - 2. City of Worcester Capital Budget 2020
 - 3. Budget Statement Chart
 - G. Updated Project Schedule *
 - H. Supporting Documents
 - 1. Program Refinement Minutes & Tours

- a. District SPED Inclusion Model
- b. Chapter 74 Programs
- c. Friends of Newton Hill Meeting Minutes
- d. Parks and Athletics Meeting Minutes
- e. Chapter 74 Tours
 - 1) Durfee Tour
 - 2) Medford High School Tour
 - 3) NEL CPS CCA Tour

3.3.5 LOCAL ACTIONS AND APPROVAL CERTIFICATION

- A. Narrative *
- B. Local Actions and Approvals Certification *
- C. Certified Copy of SBC Meeting Minutes where PSR Submittal was Approved by Vote
- D. SBC and Public Meeting Minutes
- E. Press & Media Coverage

3.3.1 INTRODUCTION

- A. Executive Summary *
- B. MSBA Reviews *
- C. Updated Project Directory

*** Updated 02/18/2020**

3.3.1 INTRODUCTION

A. Executive Summary *

*** Updated 02/18/2020**

Process since the December 30, 2019 PSR Submission:

Since the Preferred Schematic Report (PSR) submission on December 30, 2019, the Steering Committee, District representatives, and Design Team have been working consistently to refine the program, develop room data sheets, and advance the Preferred Solution building and site design. The Project Team attended an MSBA Facilities Assessment Subcommittee Meeting on January 22, 2020, during which the major discussion items included:

- Proposed gymnasium design with movable partitions and MSBA's gymnasium square footage policy
- Storage of gym, wellness, and adaptive physical education equipment
- Relationship between the Educational Program and building design
- District's plan to simultaneously incorporate three additional Chapter 74 approved programs
- Development of the site plan

The MSBA subsequently requested that the project team submit an Updated PSR submission. The following document has been updated with items that have been advanced since the original PSR submission on 1/30/19. The Table of Contents indicates which line items have been updated within each document, and all text changes are highlighted in red font. A School Building Committee meeting to approve the updated PSR will be scheduled for March 2020, with the anticipation that the project will be presented to the MSBA board of directors meeting scheduled for April 15th 2020.

Since the PSR submission, the Design Team has facilitated several program refinement meetings and tours with school and district staff in order to advance the Room Data Sheets and building floor plans. The following programming meetings and tours have taken place since the submission of the PSR.

- Steering Committee Meeting | January 6, 2020
- Doherty Memorial High School (DMHS) Staff Meeting Update | January 6, 2020
- Instructional Leadership Team Update Presentation | January 16, 2020
- Media Center Program Meeting | January 16, 2020
- DMHS Department Head Update Meeting | January 23, 2020
- Chapter 74 Programs Update for the District's new CTE Coordinator | January 27, 2020
- Steering Committee Meeting | January 27, 2020
- Administration Program Meeting | January 28, 2020
- DMHS SPED Department Update | January 28, 2020
- Engineering and Technology Program Meeting | | January 29, 2020
- Art, Music and Theater Program Meeting | January 30, 2020

- Design/Visioning Follow up Meeting with David Steven of New Vista Design | January 31, 2020
- Media Center Program Meeting follow up | January 31, 2020
- Academic Organization Meeting | February 3, 2020
- Core Academic Program Meeting | February 3, 2020
- Science Program Meeting | February 3, 2020
- Special Education Program Meeting & DESE Submission Review | February 3, 2020
- Programming & Web Development (PWD) Program meeting and tour of Worcester Technical High School PWD Spaces | February 4, 2020
- Marketing Management and Finance (MMF) Program meeting and tour of Worcester Technical High School MMF Spaces | February 4, 2020
- Medical Suite Program Meeting | February 4, 2020
- Schematic Design Consultant Coordination Meeting | February 5, 2020
- Construction Craft Laborer Program Meeting and tour of New England Laborer’s Hopkinton Training Academy | February 11, 2020
- Site Requirements Program Meeting | February 12, 2020
- Building Services Program Meeting | February 12, 2020
- Safety and Security Program Meeting | February 12, 2020
- Technology Program Meeting | February 12, 2020

In addition to the meetings listed above, a space needs survey was distributed to the full Doherty Memorial High School Staff, and several conference calls and meetings were held with MSBA representatives. As a culmination of all of the efforts listed above, the updated floor plans and site plan in the Updated Section 3.3.4. (Preferred Solution) reflect the following significant developments:

Lobby: The Main Lobby has been further developed to enhance circulation to the ground floor and Level 2, while maintaining views to the exterior plaza and Elm Park. Opportunities for a history display or a gallery for student work will be reviewed further in future design phases.

Gymnasium / Wellness / Adaptive PE: A corridor and permanent partitions are now indicated between the Gymnasium and the Wellness and Adaptive PE spaces.

Cafeteria: The Cafeteria design has been refined further to include strong visual connection from the Lobby, smaller-scale alternative dining areas and a “google stair” feature which strengthens the connection to the Gymnasium and Media Center on Level 2. It is anticipated that the google stair will also serve as additional seating for presentations and dining.

Media Center / Maker Space / Video Editing Lab / Small Group Rooms: As a result of several program refinement meetings, the plan of the Media Center has been updated to include three small group rooms for collaborative team use. In the main Media Center area, teaching spaces for two separate classes of 30 students will be provided. It was determined that the Maker Space will function as a “General Education Lab Room” where teachers from any discipline can reserve the space for their class to take on a hands-on project. This space will have flexible seating, power/data for mobile technology, sinks, simple tools, and storage for a variety of project-based learning materials. Due to potential acoustic issues, it was clarified that the Maker Space is not required to be directly adjacent to the Media Center.

The Video Editing Lab area will also be carved out of the Media Center area allocation, but also does not require direct adjacency. The lab will have a filming room with a green screen and an adjacent space for video editing. Further development of this space will take place during Schematic Design.

Chapter 74 Spaces: Since the PSR submission, the Worcester Public Schools has hired a new District CTE Coordinator, who has been an asset to the further development of the proposed Chapter 74 Programs. The Design team has collaborated with the administration and teachers at Worcester Technical High school to better understand the specific needs for the Programming and Web Development Program and the Management Marketing and Finance Program. For the Construction Craft Labor program, the project team has also toured the New England Laborer’s Training Academy in Hopkinton MA, and had an opportunity to discuss the proposed space needs with regional leaders and vocational educators. Lastly, the project team met with the Engineering and Technology Academy teachers to discuss the expanded space requirements for their well-established existing program. Based on this feedback, the floor plans and the Room Data Sheets will be updated further during the balance of the Schematic Design phase.

Site Design Development: Working closely with our civil engineer and landscape architect, the site design has been further developed to indicate outdoor uses, strengthened connections from the building through the site, and more refined vehicular and pedestrian circulation patterns. Additional site opportunities, traffic analysis and geotechnical investigations are ongoing and will be used to inform the Schematic Design.

Process since PDP: The Preliminary Design Program (PDP) was submitted to the MSBA on September 10th, 2019. Since then, development of the Preferred Schematic Report (PSR) has continued in cooperation with the City of Worcester, Worcester Public Schools, Owner's Project Manager and other team members in accordance with MSBA guidelines. MSBA's PDP review comments were received on October 30th, 2019 followed by a conference call to review the team's response was held on November 15, 2019.

The three options voted for further review in the PSR phase include:

- Code Upgrade: at the existing Doherty Memorial High School
- Renovation/Addition: at the existing Doherty Memorial High School for 1670 students
- New construction: 1670 student facility at the existing Doherty site
- New construction: 1670 student facility at the Foley Stadium site
- New construction: 1670 student facility at the Chandler Magnet School site

A steering committee with representatives of the school district, the city administration, the OPM and the Design Team met on a biweekly basis as the PSR phase progressed. Several update meetings were held with the City Manager, the Mayor and other district representatives. Additionally, the following community meetings were held:

- October 1: WPS meeting to review Chapter 74 program requirements
- October 3: Meeting with Worcester Parks Department and Worcester Public Schools Athletics representatives
- October 7: Doherty Memorial High School Faculty presentation
- October 30: Friends of Newton Hill presentation
- December 9: Building Committee meeting and public presentation
- December 18: Building Committee meeting to vote on Preferred Solution

The following is the link to the Worcester Public School website featuring project updates for public viewing:

<https://worcesterschools.org/school-subpage/doherty-memorial-high-school-building-project/>

Project Schedule: The project is on schedule to submit the Schematic Design package to MSBA by July 8, 2020 and to be on the agenda for Project Scope and Budget approval at the MSBA Board of Directors meeting on August 26, 2020. Pending MSBA Board approval, the City Council vote to appropriate funding will follow. With anticipation of early bid packages to expedite the process, construction is expected to begin in the summer of 2021. Occupancy of the building is slated for the fall of 2024, with some sitework to follow.

Final Evaluation of Existing Conditions: Since the submission of the PDP in September 2019, additional information was gathered relative to the site surveys including metes and bounds for three properties, as well as desktop traffic and geotechnical reports. Additionally, further analysis of opportunities for City funded enhancements adjacent to and nearby the sites was studied. This

includes additional studies of City owned properties that could be augmented for long term project improvements with recognition that none of the studied sites could meet the full site program for the Doherty project. These studies primarily focused on opportunities to improve athletic field features and amenities that could be included in the City's long-term capital program, and are not expected to be constructed or funded as part of the Doherty Memorial High School project.

Additional scope is recommended for future phases of the MSBA project and includes: interim subsurface geotechnical exploration, more detailed survey of significant site features, and advanced traffic recommendations for the preferred site.

Final Evaluation of Alternatives: The PDP identified five options on three sites for further development during the Preliminary Schematic Report (PSR) phase of this Feasibility study. The following describes the alternatives:

- **Code Upgrade Option:** The Code Upgrade option at the existing Doherty Memorial High School was advanced for further study primarily as a gauge for comparison against the other Renovation/Addition and New Construction options. The option proposes to utilize temporary modular classrooms, located west side of the existing building, as swing space for the duration of a lengthy phased/occupied renovation. It fails to meet the Educational Program requirements described in this Feasibility Study and the phased construction schedule while the school is occupied would be significantly disruptive to the curriculum delivery during construction.
- **Renovation/Addition Option:** The renovation/addition option to the existing Doherty Memorial High School features a multi-phased construction option assuming that the school would be fully occupied during construction. The solution presented includes new construction centralized core facilities, a multi-story new construction academic wing, significant renovations to existing academic wings, and an athletic field above a parking garage. The result is a sprawling facility that fills out the majority of the developable site area. Academic wings are separated and the media center, while centrally positioned, is isolated from much of the school. With the extended construction schedule and complexities of phased occupied construction, the cost estimate for the work is close to that of new construction. While the option addresses existing conditions concerns about dispersed core facilities, lack of accessibility, and systems deficiencies, limitations with the existing floor to floor dimensions and hazardous materials do not make this facility a good candidate for renovation and additions. Due to the compromised educational program, existing conditions limitations, and the overall expense and schedule issues, the renovation/addition renovation option was not recommended as the Preferred Solution.

- **New Construction Options Doherty Site:** After review of numerous options for new construction on the existing Doherty site, three distinct options were developed for further evaluation. In all cases, it was assumed that the existing facility would remain in full operation during construction. For that reason, the east side of the site was the focus of the analysis, effectively displacing the existing practice fields, but maintaining the existing school with parking sufficient for staff and visitors at a minimum. All options are approximately 420,000 gsf, multi-story solutions that terrace up the site from Highland Street toward Newton Hill, following the existing contours.

Option A.1 Pods on Park: The option is generally organized with core facilities and the main entrance grouped on the west side of the building facing the parking and athletic fields. The academic wings are organized in pods to optimize daylight opportunities and break down the scale of the elevations that face Park Ave. The massing gradually steps up the site and effectively diminishes the scale of such a large facility. A 100-car parking garage is included on the lowest level of the south end of the building, allowing for parking to be available immediately at the completion of construction and reducing the site area required for vehicular parking. The site plan includes a strategy to separate parent pick up/drop off from bus circulation, full perimeter access, separate service delivery access on the west side and surface parking as well as an artificial turf multipurpose field and other amenities at grade level.

Option A.2 Olmstead Homage: In an effort to limit disruption to the existing site and include all core facilities at the main entrance level, the option includes academic organization that wraps the auditorium and gymnasium with some daylighting compromises and potential issues with separating the core facilities from academic areas after hours. The massing of the solution is compact but provides limited opportunities to break down the scale of the facility. A separate level of parking at the north end of the building would provide approximately 165 staff parking spaces beneath the building, allowing for more open site features.

Option A.3 Highland Proud: Featuring the main entry at the Highland Street elevation, the option includes a terraced plan organized around a strong north/south circulation spine. A secondary entrance at the gymnasium level is positioned for after-hours use and convenient access to parking and the athletic field. The site plan features a Highland Street forecourt with bus circulation, separate parent pick-up/ drop off at side the gymnasium entrance, and an elevated athletic field with parking below. The main entrance and first floor program elements are somewhat isolated from the balance of the facility. Concerns were raised about the limitations of an elevated athletic field in terms of run off space and expense.

Preferred Doherty Option: After discussion of the merits and limitations of each Doherty new construction option, there was consensus that the A.1 Pods on the Park option offered the most potential for further development based on the following factors:

- Clear separation of academic spaces from core facilities with simple organizational principles for clarity of orientation and circulation

- Best opportunities for daylight and views in the most appropriate areas
 - Options for optimizing the available site features due to parking garage under the building
 - Appropriate massing for the site and adjacencies
 - Opportunity for clear separation of construction site from the existing facility during construction
-
- **New Construction Foley Stadium Site:** New construction at the existing Foley Stadium site requires demolition of the existing District Wide athletic facility including the only competition track in the school district, a recently refurbished football field, bleachers and associated buildings, and additional athletics fields. The option includes a plan suitable for the relatively flat site. Poor soil conditions limit under grade construction and would require pile foundations. The main entry and core facilities are organized to face Chandler Street with academic wings fanning out toward the back of the site. Surface parking and a small multipurpose field fill out the additional site area available. Multiple points of entry to the site are advantageous for vehicular traffic options on site. However, the deep ash fill and peat soil make this a geotechnical challenge for development. Use of the Beaver Brook Park fields on the opposite side of Chandler Street is available through permission of the Parks department. An advantage of the Foley Stadium site is that the existing Doherty program could remain as is until the new construction is complete. A major disadvantage is that the District wide athletic facilities would need to be replaced prior to demolition, and such a capital project has not yet been developed.

 - **New Construction Chandler Magnet School Site:** The existing site configuration at the Chandler Magnet School is challenging to meet the program due to elevation changes and a narrowing at the center of the site. For that reason, additional land would be required to provide adequate space for the facility. The site is prominently located on major routes with multiple points of access. The option features a main entry at the lowest level facing Chandler St. with most core facilities one level up with access through the rear. The academic wings are relatively well separated from the community use spaces and have potential to be developed for strong organization. Surface parking is dispersed between the Chandler St. level and the rear athletic fields. Demolition of the existing Chandler Magnet School would be required for the option, but the District does not have a facility within the district that can accommodate all 500 elementary students currently enrolled in the bilingual and dual language programs that are currently housed there.

PSR Preferred Solution

At the December 18, 2019 Building Committee meeting, the New Construction on Doherty Site, Option A.1 Pods on Park at the Existing Doherty Site was approved as the Preferred Solution for further development in the Schematic Design phase of the project.

The following is an outline of the major points raised during the discussion of the options:

- The Code Upgrade was dismissed as it does not meet the proposed building or site program.
- The Renovation/Addition option was not supported due to the extended construction period with phased occupied construction and a compromised final product
- The Doherty site option was the only option that did not require demolition of an existing building prior to new construction. Both the Foley Stadium and Chandler Magnet Schools would require replacement and there is no current capital plan to do so.
- The neighborhood impact at the existing Doherty site is less than it would be to introduce a new high school either of the alternative sites.
- The Pods on Park option has clear organizational principles that support the Educational Program with the opportunity to integrate well with the terraced site and adjacent park.

Opportunities to enhance Doherty Options

At the request of the Building Committee, the Design Team analyzed opportunities to enhance existing City owned parcels within the Doherty quadrant. The purpose of the expanded study was to consider improvements to optimize athletic fields in the vicinity of the potential school project. The request was borne out of the acknowledgment that no sites under consideration for the school project could fully meet the site program, but augmented and improved parks and school properties in the vicinity could ameliorate the issue. It is acknowledged that any off-site improvements listed would not be considered reimbursable by MSBA, but might be a worthwhile investment by the City for the community as well as the school district. The following options were considered:

- Duffy Field improvements for athletic fields as well as parking
- Newton Hill Park trail improvements
- Foley Stadium parking and connections
- Foley Stadium field improvements
- Chandler Magnet School field improvements

Refer to Section 3.3.3.D.3 for additional information on these studies. All park properties are operated and maintained by the City of Worcester Parks Department and the Foley Stadium and Chandler Magnet School properties are operated and maintained by the Worcester Public Schools – which is a consideration for the mechanics of any improvement project.

Several important considerations informed the Final Evaluation of Alternatives as follows:

- **Existing Conditions:** Due to the extensive scope required to improve the existing Doherty Memorial High School to meet current code requirements and the limited height available for

new systems integration, the Code Upgrade and Renovation/Additions option were not deemed viable candidates for the project.

- **Schedule:** Due to the requirement to maintain the existing Doherty school in operation during construction, the schedule for new construction at the current site extends out to the spring of 2025 for completion of the site work. While both the Foley Stadium and Chandler Magnet School sites are desirable as options that could be developed without disturbing the existing program or site, the advantage is overshadowed by the imperative to find replacements for the Foley Stadium and Chandler Schools respectively. Code Upgrade and Renovation/Addition options would have even more extended schedule implications than the New Construction options. There is no designated City owned space available for relocation of the programs nor is there a capital plan in place for their replacement.
- **Traffic Studies:** updated traffic reports included in the PSR submission indicate that increased traffic would be a significant impact at the Foley Stadium and Chandler Magnet sites and mitigations would be recommended. The existing Doherty site is located on a busy thoroughfare and the area currently experiences some slowed traffic during the school opening and closing periods. Additionally, Highland Street is a major artery in the city and is commonly used by emergency vehicles. With a larger enrollment and staff planned for Doherty, additional traffic is expected and would need to be addressed, but would be a less dramatic change than at the other sites without existing high schools.
- **Soil Conditions:** Available geotechnical information on the Doherty and Chandler sites indicates reasonable soil conditions for typical construction. The Foley Stadium site consists of poor bearing capacity, filled soil and pile foundations are recommended. Additionally, a conduit for Beaver Brook would need to be relocated to avoid an under-building location.

Each of the design options included in the PSR are described by written narratives and graphics (site/floor plans, phasing plans, massing models, design/construction schedules and each option's merits and limitations). Supporting documents include updated Basis of Design Narratives, Permitting Requirements, Comparative Budget Data and a Summary of Merits/Limitations. Refer to Section 3.3.3.E. Budget Comparison and 3.3.3.F. Merits and Limitations.