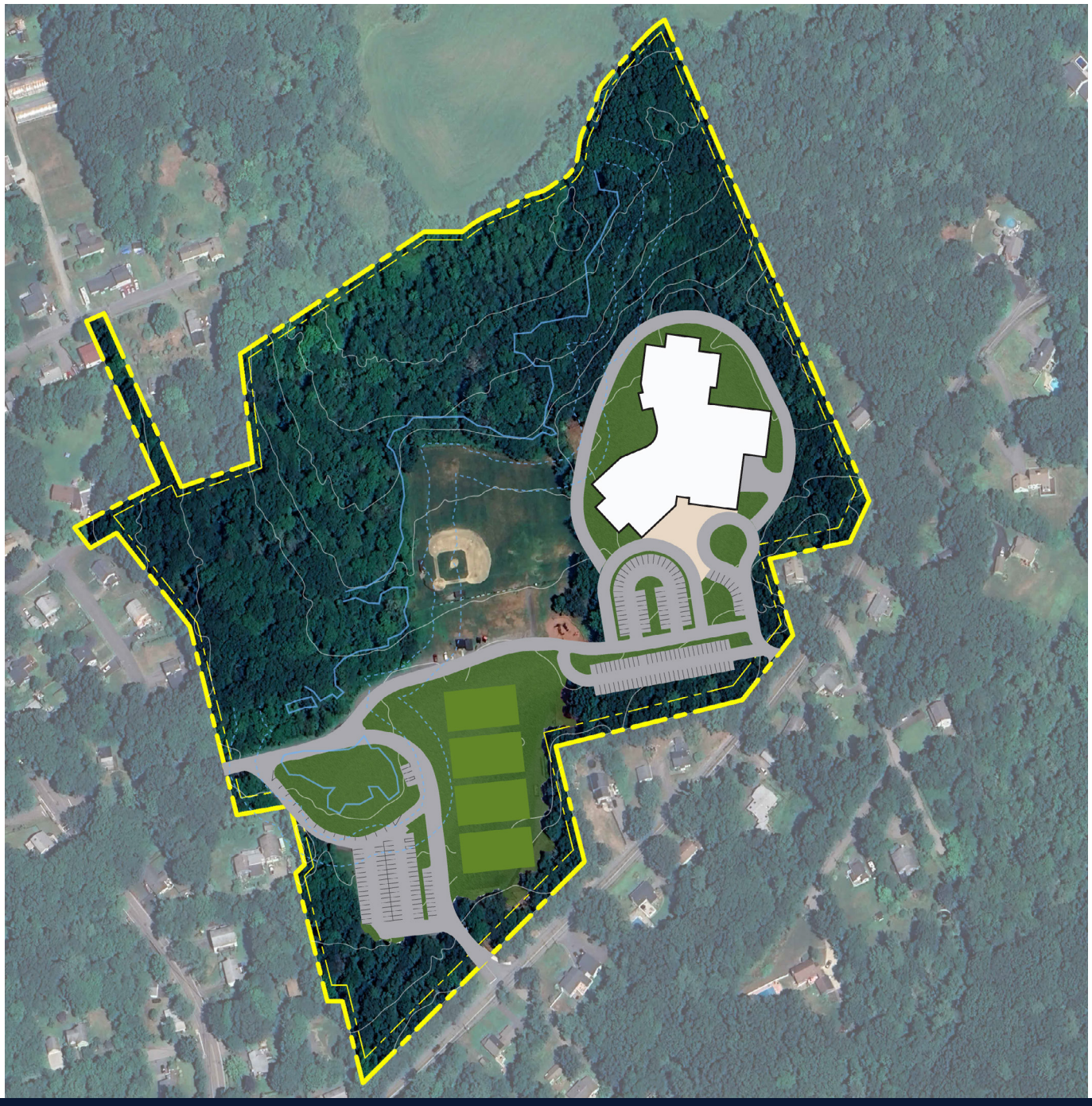
Town of Littleton, Massachusetts

Shaker Lane School

Module 3 | Preferred Schematic Report

December 6, 2024 - *REVISED December 17, 2024*



Littleton Public Schools
Town of Littleton, MA

Turner & Townsend Heery

ATLANTIC CONSTRUCTION & MANAGEMENT, INC.
An SDO-certified MBE firm

MSBA Project #202101580005

December 6, 2024

Ms. Robin McElaney, Project Coordinator
Massachusetts School Building Authority
40 Broad Street, Suite 500
Boston, MA 02109

Re: Shaker Lane Elementary School, Littleton, MA
Preliminary Design Program Submission
MSBA Project ID: 202101580005

Dear Ms. McElaney:

Please find enclosed the following documents related to the Preferred Schematic Report (PSR) for the Shaker Lane Elementary School Project. These documents have been prepared by the Designer, Studio G Architects with assistance from the School Building Committee and the OPM, Turner & Townsend Heery.

We have included one hard copy and one electronic file of the Preferred Schematic Report Submission. This submission has been reviewed and coordinated by the OPM in accordance with the requirements of Module 3. The School Building Committee reviewed this information and voted on 11/19/24 to authorize the OPM to forward this submission to the Massachusetts School Building Authority (MSBA).

If you have any questions or require additional information, please do not hesitate to contact me.

Sincerely yours,

Turner & Townsend Heery

Chuck Adam
Project Executive

Enclosure

c: *Steve Moore — Chair, Shaker Lane School Building Committee*
Dr. Kelly R. Clenchy — Superintendent of Schools / Littleton
Meryl Nistler — Studio G Architects
Veatriki Dagkalakou – MSBA
Mark Stafford – Turner & Townsend Heery
Matt McCafferty – Turner & Townsend Heery
Suresh Bhatia – Atlantic Construction & Management, Inc.

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ACKNOWLEDGMENTS

Thank you to these individuals and organizations for their contributions to this Feasibility Study:

MASSACHUSETTS SCHOOL BUILDING AUTHORITY

Robin McElaney – Project Coordinator
Veatriki Dagkalakou – Project Manager III
Mary Pichetti – Executive Director

SHAKER LANE SCHOOL BUILDING COMMITTEE

Stephen Moore – Chair, PMBC Member
Dr. Kelly Clenchy – Vice-Chair, Superintendent of Schools
Stacy Desmarais – Clerk, School Committee Member
Chuck Decoste – Select Board Member
Ryan Ferrara – Assistant Town Administrator
Michelle Kane – Shaker Lane School Principal
Robert Romilly – PMBC Member
Michael Scaduto – PMBC Member
Steven Venuti – Finance Committee Member

LITTLETON SELECT BOARD

Mark Rambachar – Chair
Karen Lee Morrison – Vice-Chair
Matthew Nordhaus – Clerk
Charles Decoste – Member
Gary Wilson – Member

LITTLETON SCHOOL COMMITTEE

Justin McCarthy – Chair
Binal Patel – Vice-Chair
Elaine Santelmann – Clerk
Stacy Desmarais – Member
Jeanine Wood – Member

OWNER'S PROJECT MANAGER

Turner & Townsend Heery (TTH)
Atlantic Construction & Management, Inc.

DESIGN TEAM

Studio G Architects (SGA)
Designer

My Learning Place Integrated Design (MLP)
Educational Planner

Samiotes
Environmental Permitting, Civil Engineer & Surveying

Warner Larson
Landscape Architect

Foley Buhl Roberts & Associates (FBRA)
Structural Engineer

GGD Consulting Engineers
Mechanical & Electrical Engineer, Data Communications

VAV International
Plumbing & Fire Protection Engineer

Building, Fire & Access (BFA)
Code Accessibility Consultant

PM&C
Cost Estimator

GeoEngineers USA
Geotechnical Engineer

PEER Consultants, PC
Geoenvironmental Engineer

Crabtree McGrath
Kitchen & Food Service Consultant

MDM
Traffic Consultant

Pamela Perini Consulting (PPC)
Security Consultant

EFI Global
Hazardous Materials

1 INTRODUCTION

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The purpose of the Preferred Schematic Report (PSR) is to summarize the process and conclusions of the Preliminary and Final Evaluation of Alternatives, and to substantiate and document the selection and recommendation of a preferred solution for the Shaker Lane School (SLS) by the Shaker Lane School Building Committee (SLSBC) and the district. The PSR addresses the concerns and questions raised by the MSBA during its review of the Preliminary Design Program, and identifies any changes incorporated by the district based on further evaluations and considerations.

1.1 Process Overview

Since the Preliminary Design Program (PDP) submission on August 30, 2024, the planning process of the SLS project has been fluid, transparent, engaging and direct. Further evaluation of the program, adjacencies, cost implications and site restrictions were conducted at length during this, the PSR phase of the feasibility study. It became clear, during this phase that a new school at the existing SLS campus is the preferred solution and is wholly supported by the community, staff, the School Committee and the School Building Committee.

The PDP submission included a total of six potential options, of which three were selected to be pursued during the Preferred Schematic Report. Of those three, it became clear that one option was more feasible and desirable than the others, in terms of site layout and adjacencies, and accommodation of the Educational Program.

A Special Town Meeting took place October 29, 2024 and was the first widely attended community forum to introduce the project to Littleton residents. Tours of the existing school and Q&A sessions were held November 13, 2024 and November 19, 2024. Additional community outreach efforts such as a newsletter, postcards, videos, local television spots, and connections with local groups and organizations are being held now until the Town meeting vote in October of 2025.

Due to the high engagement of the Littleton community, the SLSBC designated a Community Outreach Subcommittee (COS). The COS identifies and creates outreach and engagement opportunities which are highlighted on the project website and throughout the Littleton community.

The meeting presentation materials, meeting minutes and summary materials as they relate to the SLS project are available online for public review at: https://sites.google.com/littletonps.org/shaker-lane-school-project/home

EVENT	DATES
SLSBC Meeting (Public)	September 18, 2024 October 2, 2024 November 13, 2024 November 19, 2024
Joint Committee Meeting (Public) - SLSBC joined by: • Finance Committee • Select Board • School Committee	October 16, 2024 October 23, 2024
Educational Working Group Meeting • Dr. Kelly Clenchy, Superintendent • Michelle Kane, SLS Principal • Rebecca Deacon, SLS Assistant Principal • Lyn Snow, LPS Director of Student Services • Elizabth Steele, LPS Director of Teaching and Learning	September 11, 2024 September 26, 2024 October 2, 2024 October 9, 2024
Special Town Meeting (Public)	October 29, 2024
Tour of the Existing SLS with Q&A Session	November 13, 2024 November 19, 2024
"Make Your Voice Heard" Website Feedback Form	Ongoing

1.2 Summary of Updated Project Schedule

Refer to Section 4 – Preferred Solution for detailed project schedule.

The project schedule included in this report has been updated by the OPM to reflect actual dates of completed tasks along with look-ahead fixed and anticipated dates. To date all project team members have been using the schedule as an important instrument to stay on task and to meet project deadlines.

This schedule includes a variety of milestone dates to meet and to provide the reader with look ahead timelines for proper planning and preparation purposes. A few examples include: fixed calendar dates for MSBA subcommittees and board of director's meetings, planning dates for the school district, building committee and community. Look ahead dates for the OPM, Designer and related consultants.

Following the submission of the Preferred Schematic Report key dates will be MSBA Facilities Assessment Subcommittee meeting on either January 15, 2025, or January 29, 2025. Then the MSBA Board of Directors meeting on February 26, 2025, to consider allowing the project to move into Schematic Design. Full Schematic Design to establish an overall Project Scope and Budget Agreement will run from December 2024 through July 2025 with an MSBA Board of Directors meeting scheduled for August 2025. Local approval in October 2025 with full and final design from December 2025 to January 2027 followed by Bid/Award and Construction from February 2027 to August 2028. The new Building is scheduled for opening of the 2028/29 academic year. Followed by a 12 to 16 months closeout period.

Based on weather conditions that will be ongoing in the beginning of 2029, the planting season will not be captured in time for move-in. Thus, planting, topcoat, and other weather dependent scope will be completed in the spring of 2029 after ground thaw and mild temperatures.

MILESTONE ACTIVITIES	PLANNED START	PLANNED COMPLETION	ACTUAL START	ACTUAL COMPLETION	NOTES
Feasibility Study	Jun 11, 2024	Feb 26, 2025	Jun 18, 2024		
Preliminary Design Program (PDP)	Jun 11, 2024	Sep 10, 2024	Jun 18, 2024	Aug 30, 2024	
Preferred Schematic Report (PSR)	Aug 22, 2024	Dec 19, 2024	Sep 2, 2024	Dec 6, 2024	
MSBA FAS Meeting	Jan 2025				15th or 29th
MSBA BoD PSR Approval	Feb 26, 2025				
Schematic Design	Dec 9, 2024	Jul 2025	Dec 9, 2024		
DESE Submittal / Approval	Jun 2025	Aug 2025			
MSBA BoD PSBA Approval	Aug 2025				
Special Town Meeting Vote	Oct / Nov 2025				2/3 to pass
PSBA / Debt Exclusion Town Vote	Dec 2025				Majority
Design Development	Dec 2025	May 2026			
Construction Documents	May 2026	Jan 2027			
60% CDs	May 2026	Aug 2027			
90% CDs	Aug 2027	Jan 2027			
100% CDs	Jan 2027				
Bidding / CM Selection	Feb 2027	Jun 2027			Assumes DBB
Anticipated Start of Construction	Jun 2027				
Construction	Jun 2027	Nov 2028			
Student / Staff Move-In	Aug 2028				
Abate / Demo Existing Building	Aug 2028	Nov 2028			
Closeout	12-16 months duration				

1.3 Summary of Final Evaluation of Existing Conditions

No additional analysis of the existing conditions has been done since the Preliminary Design Program because there have been no changes. This summary has been adapted from the Preliminary Design Program; for the original complete evaluation, refer to the PDP, Section 4 – Evaluation of Existing Conditions.

The original Shaker Lane building was constructed in 1959. An addition to the classroom wing was made in 1962, and an addition to the north of the building including cafeteria, admin spaces, and more classrooms was made in 1997-1998. The design team made several visits to the site between June – July 2024. The conditions reports are based on observations and reference to a previous 'Physical Needs Assessment' prepared in 2013. No destructive testing or investigation has been conducted at the time of this report.

The building is masonry clad, steel framed construction with the main entry at the southwest in the 1997-98 addition. There is a 2-story classroom wing to the south. The site includes parking areas with a total of 85 parking spaces, paved with asphalt and accessed from a drive aisle from Roxbury Drive.

The building has brick masonry cladding that appears to be in fair condition with some mortar and sealant joints needing repair. The windows appear to all be aluminum frame and in fair condition without visible fogging. Exterior doors appear to be in fair condition with some deteriorated sealant. Much of the roof needs to be repaired or replaced. There is large bubbling of EPDM membrane, and many sections of flashing and roof edge metal are deteriorated. Gutters are damaged or clogged. Insulation at exterior is unknown and the envelope would likely need significant upgrades to meet current energy codes.

HVAC systems observed to be beyond their useful life. Selected unit ventilators have been replaced within the past 10 years. Exterior louvers for HVAC systems, penetrations, and other miscellaneous wall accessories are in many cases damaged and corroded or soiled. There is no sprinkler system. The current plumbing counts are insufficient to meet current code.

Significant upgrades will be needed to meet current accessibility standards. Many railings appear to be non-compliant, and several doors are above grade and not accessible. There is a 3-sided lift rather than a full-sized elevator.

The town of Littleton sewage treatment is handled by septic systems. Over 20 years ago, the leaching field of the existing septic system was moved off site. In a previous 'Physical Needs Assessment' done by others, the system was identified in 'good and adequate condition.' The Town procured a Title 5 Septic Inspection in August 2024 which confirmed the system is in good working order.




Great Rd
Goldsmith St
Roxbury Dr
Shaker Ln
EXISTING SEPTIC LINE
EXISTING LEACHING FIELD & RESERVE
Meadow Dr


WATER FLOW
PROPOSED LOCATION
WETLAND EDGE
50' BUFFER
100' BUFFER
UPPER FIELD
LOWER FIELD
SEPTIC PUMP HOUSE
EMERGENCY ACCESS
SEPTIC PUMP HOUSE
SEPTIC LINE
University Dr
BUSES
CARS
EXISTING SLS
K-2 PLAYGROUND
PAVED PLAY
PRE-K PLAYGROUND
Roxbury Dr
Goldsmith St
Shaker Ln
N

1.4 Summary of the Final Evaluation of Alternatives

OPTION 1: CODE UPGRADE (EXISTING SITE)

No additional analysis of this option has been done since the Preliminary Design Program. It was not selected to be pursued into the Preferred Schematic Report for the following reasons:

- Space program:
  - Will not meet MSBA guidelines
  - Will not meet educational plan or modern teaching methods
  - Will be reduced to accommodate additional toilets, envelope thickness, elevator, etc.
- High costs for:
  - Installation/upgrades to fire protection
  - Upgrade envelope (doors, windows, roof, exterior walls)
  - Additional plumbing fixtures
  - Full-sized elevator
- Impacts to building occupants during construction, will require complex phasing and potentially swing space/modulars

This option summary has been adapted from the Preliminary Design Program; for the original complete evaluation, refer to the PDP. The Code Upgrade option focuses on repairs and modifications required for compliance with current building and accessibility codes. Despite appearances, the building requires myriad upgrades to meet code requirements. Because of the extensive nature of the work, little of the existing building would remain untouched. The upgrade work will snowball into a significant replacement of finishes and other elements.

Due to the square footage of the building, the lack of code compliant fire walls, and no sprinkler system, in order to bring the building in compliance with construction classification, a sprinkler system must be added, and a compliance alternative must be approved by the building official and the Board of Building Regulations and Standards (BBRS).

Assuming approval is attained, the code upgrade option would further require: structural upgrades for reinforcement and seismic resistance, mechanical system upgrades to provide fresh air and exhaust, envelope upgrades to meet energy code requirements, and installation of new fire protection / alarm systems. Meeting accessibility regulations will require significant modifications to doors, hardware, bathrooms, stairs, and site elements including new curb cuts and grading. The extent of work required to bring the building into compliance would trigger additional work under the building code and may include new plumbing fixtures, as well as other elements.

The replacement with new construction of the demolished section of the building, and a code upgraded school building, would still leave the District with a building which does not support the required educational program, configurations, adjacencies, and sizes. A majority of the existing spaces would remain undersized, inefficient, and inadequate based on the schools programmatic needs and MSBA standards. Furthermore, many program areas needed for successful delivery of the Education Plan, would remain unaccounted for in the existing facility. Additionally, the building would not be able to accommodate the additional projected student enrollment.

The scope of work required in this option would be widespread throughout the building and site. Currently there is no identified temporary swing space available, in the Town of Littleton, for either a whole or partial relocation of the school population during construction. Temporary modular classrooms for swing space would be required and would entail substantial additional costs. Since this Code Upgrade option does not address the programmatic deficiencies, would be costly for code and systems upgrades, and incurs additional swing space costs, it was determined that this concept has no merit to evaluate further. The cost and further study of this option will not be included with the Preferred Schematic Report.



OPTION 2.1: RENOVATION AND ADDITION TO THE EAST OF SLS (EXISTING SITE)

This option has been further developed as part of this Preferred Schematic Report. For additional evaluation of this option, refer to Section 3 – Final Evaluation of Alternatives.

A renovation and addition at the existing Shaker Lane Elementary School would address many but not all of the programmatic deficiencies of the current school building. The design enrollment of 435 K-2 students could be satisfied. Structural limitations limit the sizing of existing spaces including a renovated Media Center, administrative spaces, kitchen and receiving. Site limitations preclude the optimal indoor/outdoor adjacencies.

To achieve this option, the existing 2-story classroom wing would be demolished. A new 2-story addition housing classroom neighborhoods would be connected to the existing building to the east. A new gymnasium would be connected to the existing building to the south. The remaining existing building would be renovated and programmatically reconfigured to create right-sized important program elements such as the media center, Imagatorium, admin, art, and music rooms. Renovations would include bringing the remaining portions of the existing building up to current accessibility, structural, and fire protection codes.

Traffic patterns would be updated to improve circulation and pedestrian safety. A car loop will use the existing entry from Roxbury Drive with a bus loop entering from Shaker Lane. Service deliveries to the cafeteria would be accommodated by a new drive aisle to the north of the school that connects through the site for emergency access.

This option was ultimately not pursued as the Preferred Solution for the following reasons:

- Constrained to existing footprint and building layout of renovated areas
- Renovated areas have high costs for:
    - Installation/upgrades to fire protection
    - Upgrade envelope (doors, windows, roof, exterior walls)
    - Additional plumbing fixtures
- Impacts to abutters and building occupants during construction
- Will require complex phasing
- Extensive site work at addition, potential ledge
- Space limitations on outdoor classrooms and play areas
- Estimated costs were not substantially less than the new construction options



OPTION 2.2: RENOVATION AND ADDITION TO THE NORTH OF SLS (EXISTING SITE)

No additional analysis of this option has been done since the Preliminary Design Program. It was not selected to be pursued into the Preferred Schematic Report for the following reasons:

- Constrained to existing footprint and building layout of renovated areas
- Renovated areas have high costs for:
- Installation/upgrades to fire protection
  1. Upgrade envelope (doors, windows, roof, exterior walls)
  2. Additional plumbing fixtures
- Reduces community access to play fields & reduces size of lower field
- Impacts to building occupants during construction, will require complex phasing
- 3 story building not desirable
- Construction interferes with existing septic system

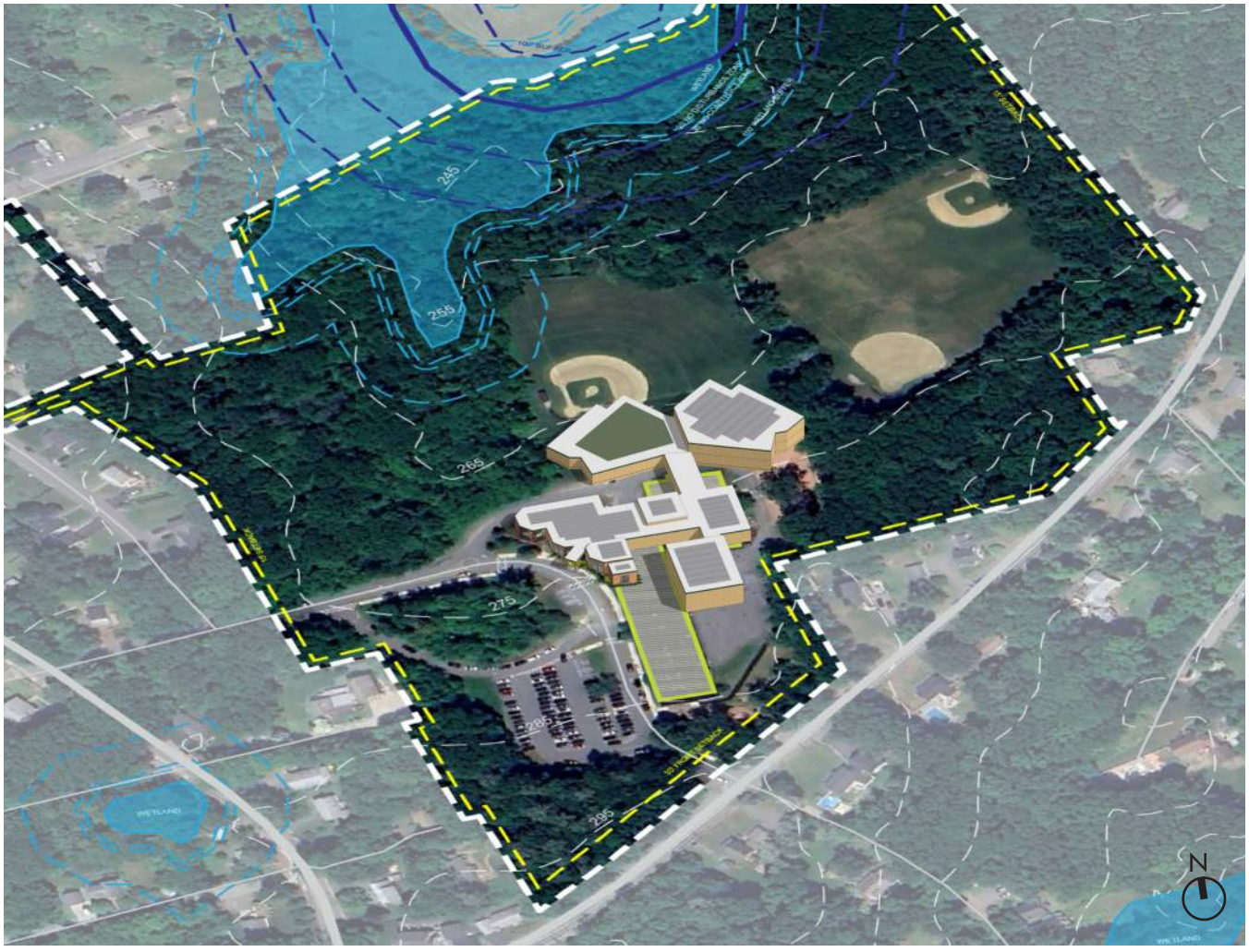
This option summary has been adapted from the Preliminary Design Program; for the original complete evaluation, refer to the PDP.

To achieve this option, the existing 2-story classroom wing and 3 of the classrooms added in the 1997/98 addition would need to be demolished. A 3-story addition housing classroom neighborhoods would be connected to the existing building to the north and a new gymnasium would be connected to the existing building to the south.

Much of the remaining existing building would be renovated and programmatically reconfigured to create right-sized important program elements such as the media center, imagatorium, art, and music rooms.

Renovations would also include bringing the remaining portions of the existing building up to current accessibility, structural, and fire protection codes.

Through this option of renovation and addition, the design enrollment of 435 students could be satisfied, although site limitations preclude the optimal indoor/outdoor adjacencies, and sizing of certain spaces.



OPTION 3.1: NEW CONSTRUCTION AT UPPER FIELD (EXISTING SITE) - PREFERRED OPTION

This option has been further developed as part of this Preferred Schematic Report. For additional evaluation of this option, refer to Section 3 – Final Evaluation of Alternatives.

Option 3.1 constructs a new building to replace the existing Shaker Lane Elementary School. The new construction would be located at the Upper Field and would be built while the existing school remains occupied. A new Shaker Lane Elementary School would be designed in accordance with all current building codes and accessibility requirements and would allow the opportunity to fully incorporate energy-efficiencies and educational programming initiatives, while fully supporting the District goals for 21st Century learning. New construction at the Upper Field would offer the least disruption to the school community since the elementary school could remain occupied during construction.

The proposed organization of the building would be to create a 2-story building that has a central entrance along the south side. The building's main entry access point would be from a gathering plaza where there would be plantings, welcoming benches, and security/safety features incorporated into the design. From the main entry, the building would be divided into two separate wings: Classroom academic wings flanking a shared central core. This division allows public access (after hours) to community spaces while being able to secure access to the classroom wing.

The two-story configuration would organize the grades into neighborhoods, with services distributed throughout to support the Educational Program provided by the District. The shared core space of the building would house the larger program elements of the gym, cafeteria, and media center.

Traffic patterns would be updated to improve circulation and pedestrian safety. A new road would connect through the site from Roxbury Drive to Shaker Lane with separate car and bus loops with parking. Service deliveries would be accommodated by a drive aisle connecting from the bus loop and the emergency access drive.

This is the district's preferred option.



OPTION 3.2: NEW CONSTRUCTION AT LOWER FIELD (EXISTING SITE)

This option has been further developed as part of this Preferred Schematic Report. For additional evaluation of this option, refer to Section 3 – Final Evaluation of Alternatives.

Option 3.2 constructs a new building to replace the existing Shaker Lane Elementary School. The new construction would be located at the lower field of site A. Applicable to all of the new building options (Options 3.1 – 4.1) a new Shaker Lane Elementary School would be designed in accordance with all current building codes and accessibility requirements and would allow the opportunity to fully incorporate energy-efficiencies and educational programming initiatives, while fully supporting the District goals for 21st Century learning.

The proposed organization of the building would be to create a 2-story building that has an entrance along the south western side flanked by two 2-story academic wings that span from the existing lower field partially into the upper field. The building's main entry access point would be from a gathering plaza where there would be plantings, welcoming benches, and security/ safety features incorporated into the design. From the main entry, the building would have a central area with shared spaces and 2 academic wings. One academic wing to the west would house Pre K on the ground floor and Grade 2 on the upper floor while the 2-story academic wing to the east would house Grade 1 ad Kindergarten. This division allows public access (after hours) to the central community spaces while being able to secure access to the classroom wings.

The academic wings have optimal solar orientation for the classrooms. The academic wing configurations would organize the grades into neighborhoods, with support services distributed throughout to support the educational program provided by the district. The central shared spaces of the building would house the larger program elements of the gym, cafeteria, and media center.

Due to proximity to the existing building, the construction would need to be completed in phases. The siting of this option is challenging with the sloping site and also interferes with community access to the upper field. Due to these challenges, it was determined that this concept does not merit further evaluation.

This option was ultimately not pursued as the Preferred Solution for the following reasons:

- Proximity to wetlands
- Potentially poor soil conditions due to organics
- Limited opportunity for future expansion
- Challenging community access to upper field
- Proximity to existing building may be disruptive to occupants
- Construction interferes with existing septic system



OPTION 4.1: NEW CONSTRUCTION AT WHITCOMB FIELD (ALTERNATIVE SITE)

No additional analysis of this option has been done since the Preliminary Design Program. It was not selected to be pursued into the Preferred Schematic Report for the following reasons:

- Demolition of existing Shaker Lane School not reimbursable by MSBA
- Groundwater PFAS issues
- Airborne particulates from nearby 495
- Field currently used for Russell ES recess & community sports on weekends
- Potential impacts to local traffic patterns
- Only one way in/out without adding connection
- No opportunity to install geothermal system
- Limited extended access to nature due to wetlands
- Limited opportunity for future expansion

This option summary has been adapted from the Preliminary Design Program; for the original complete evaluation, refer to the PDP.

Option 4.1 constructs a new building to replace the existing Shaker Lane Elementary School. The new construction would be located at Whitcomb Field, joining the Russell Street Elementary School and Littleton Middle School campus. Applicable to all of the New Building Options (Options 3.1 – 4.1) a new Shaker Lane Elementary School would be designed in accordance with all current building codes and accessibility requirements and would allow the opportunity to fully incorporate energy-efficiencies and educational programming initiatives, while fully supporting the District goals for 21st Century learning.

The proposed organization of the building would be to create a 2-story building that has a central entrance along the east side. The new drive aisle would allow for ample bus queuing and vehicular access assisted by traffic calming features. The buildings' main entry access point would be from a gathering plaza where there would be plantings, welcoming benches, and security/ safety features incorporated into the design. From the main entry, the building would be divided into two separate wings: a classroom academic wing to the east, and a shared spaces wing to the west. This division allows public access (after hours) to community spaces while being able to secure access to the classroom wing.

The academic wing is oriented to allow optimal southern exposure for the classrooms. The two-story configuration would organize the grades into neighborhoods, with support services distributed throughout to support the Educational Program provided by the District. The shared spaces wing of the building would house the larger program elements of the gym, cafeteria, arts, and media center.

This site is separate from the existing Shaker Lane School, so the demolition of the existing building would not be reimbursable. The construction of the new school would take the place of an existing field that could not be replaced elsewhere on the site. This field is currently used by Russell ES and the surrounding community. The field also borders a brook and wetlands and often experiences flooding. The extents of the wetlands are not known. Due to these challenges, it was determined that this concept does not merit further evaluation.



1.5 Summary of District's Preferred Solution

The SBC established evaluation criteria to aid in selecting the preferred option. Each member of the Design & Site Selection Subcommittee rated each option and the final tally indicated that Option 3.1 was preferred. Option 2.1 came in second, and it was determined that the main difference between the two options was the more desirable site organization made possible by locating the new building at the upper field location. The add/reno Option 2.1 came in last with a comparatively low score. The Subcommittee recommended Option 3.2 to the SBC, then the SBC voted to select this option to move forward into Schematic Design.

The new elementary school will be designed with appropriate spaces in line with MSBA square foot guidelines and the District's specific needs, to serve the Littleton elementary school community of 435 students in grades K-2 and 48-60 students in Pre-K.

Option 3.1 became the District's Preferred Solution for the following reasons:

- Space program:
  - Will meet MSBA guidelines
  - Will meet educational plan & modern teaching methods
- Building & playgrounds are accessible
- New building systems & envelope meet sustainability goals
- Opportunity to install geothermal and/or photovoltaic systems
- Improved access and safety by placing community amenities and access towards the front of the site and placing student play areas to the rear of the school building and protected from site traffic.
- New building to meet the needs of the district
- Improved community access to public fields & indoor spaces
- Parts of existing septic system have potential for reuse
- Opportunity for extensive access to nature/green space/outdoor learning
- Minimal disruption to building occupants during construction



1.6 MSBA PDP Review & Response

The District received MSBA review comments on the Preliminary Design Program submission on October 28, 2024. The District addressed the MSBA comments and returned the response on November 8, 2024. For the District's complete response to the MSBA's PDP review comments, refer to Appendix 6/1.6 – MSBA PDP Review & Response.

2 EVALUATION OF EXISTING CONDITIONS

2.1 Narrative of Changes 25
2.2 Updated Evaluation of Existing Conditions 26
2.3 Climate Resilience 28

2.1 Narrative of Changes

WETLANDS

July 9, 2024, a Wetland Scientist identified wetland resources on and near the site. Wetlands have expanded in recent decades, and updated 50′ and 100′ buffers have been identified. This determination required a reconfiguration of Option 3.2 to lie outside of the new wetland buffers.

See below for the updated civil survey documenting the new 100′ buffer location.

The options under consideration were refined to have no disturbance inside the 50′ buffer, and to keep the building footprint outside of the 100′ buffer.

SEPTIC

The design team continued to explore multiple options for a septic leaching field location. The existing system has been serving the school since 1998 and utilizes a leaching field located nearly half a mile away from the campus. When the system was first put in place, soil testing throughout the site failed to identify a workable location, so the school had to resort to the off-site leaching field. The existing system is expected to perform for only another twenty years before the soil is considered exhausted.

Consulting with the Board of Health, the design team identified several potential scenarios:

1. **Use the existing leaching field's reserve area** – not ideal due to wetland proximity.
2. **Extend the municipal septic sewer** – not ideal due to capacity limitations and logistics of extending the sewer line approximately 2 miles.
3. **Conduct further soil testing on site to identify previously undiscovered areas of suitable soils** – highly advantageous for logistics and permitting.

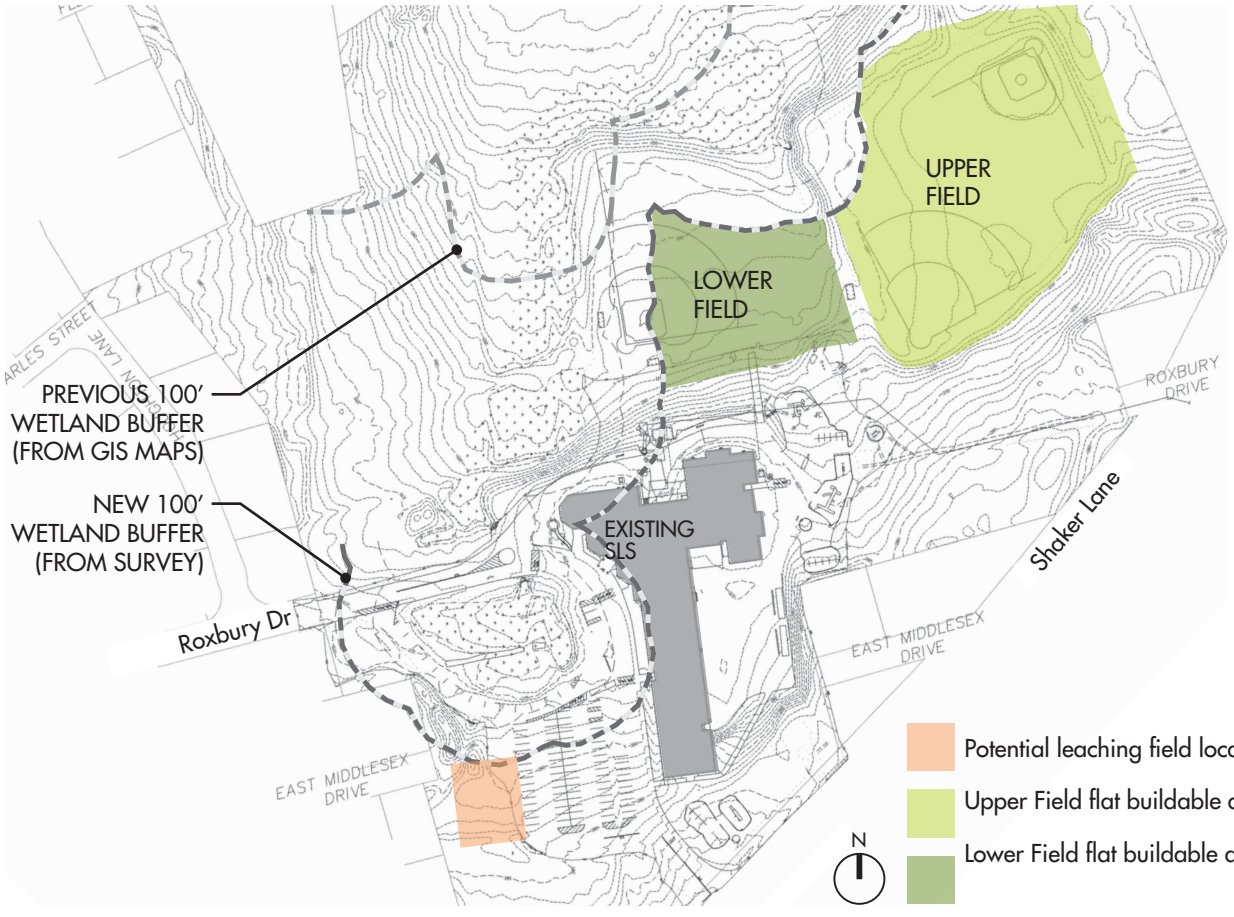
To date, soil testing has identified a potential location on-site for a new leaching field and reserve area. Additional tests will be conducted in the spring as current drought conditions are affecting results.

PROGRAM

For changes made to the programmatic requirements, refer to the Educational Program (Section 4.1) and the updated Space Summary Template (Section 4.3).

GEOTECHNICAL

Refer to the Geotechnical Memorandum and Test Pit Observation Memorandum in Appendix 6/2.1 for an updated analysis of the existing site conditions for considerations of the proposed new Shaker Lane School.



2.2 Updated Evaluation of Existing Conditions

The existing campus site plan and existing Shaker Lane floor plans can be found on the following pages. For existing conditions evaluations, please refer to the PDP Section 4 – Evaluation of Existing Conditions.

Subsequent to the submission of the Preliminary Design Program, an exploratory analysis was conducted by GeoEngineers through test pits on the Shaker Lane campus to determine the feasibility of placing a new septic system leaching field on site to replace the aging system located nearly a half mile away.

Refer to appendix 6/2.1 for updated evaluation results.

We anticipate that the following investigations will be conducted prior to the completion of the Schematic Design phase:

- Environmental Assessments
- Geotechnical Analysis
- Utility Analysis
- Hydrant Flow Test
- Geo-Environmental Analysis



EXISTING FACILITY FLOOR PLANS

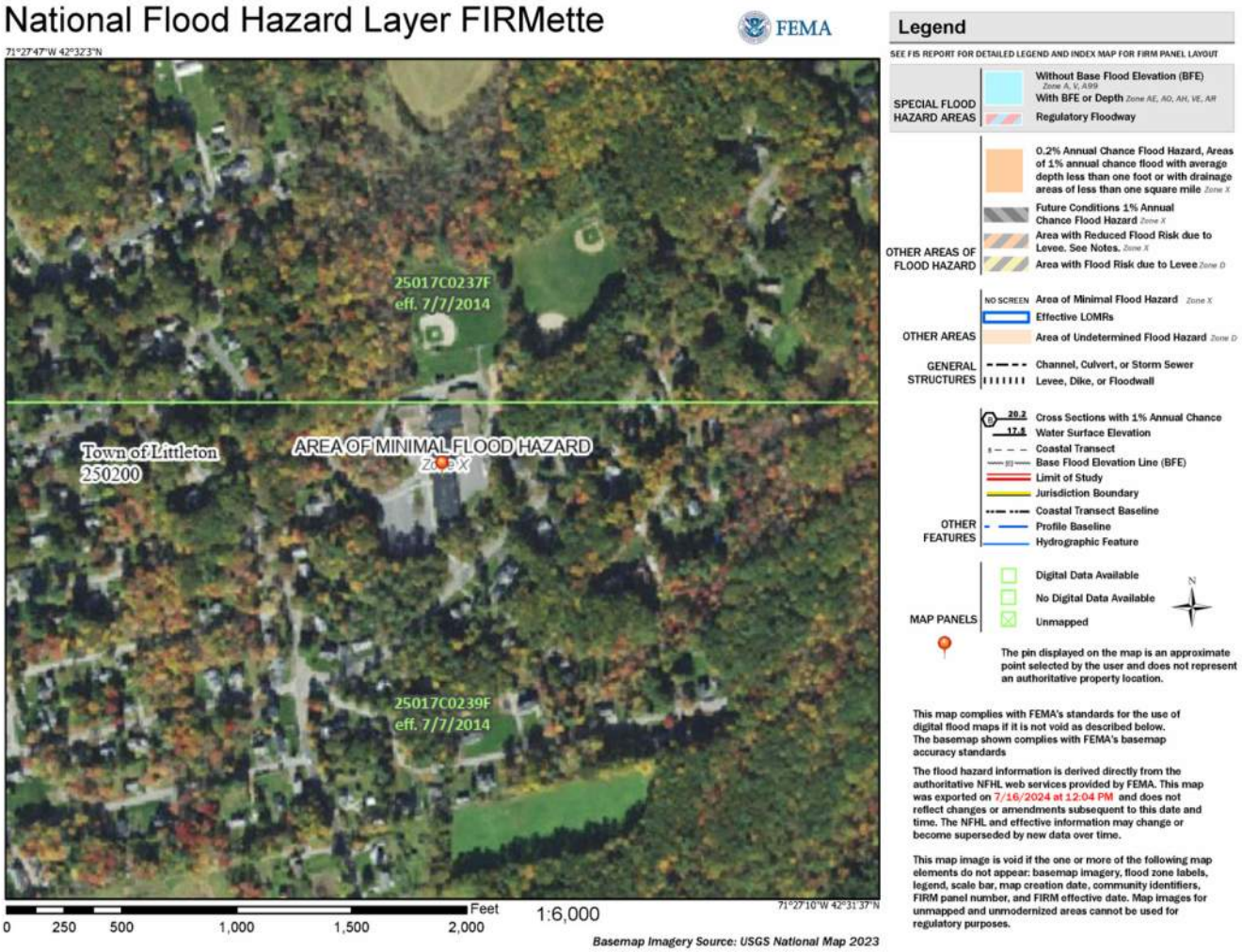


2.3 Climate Resilience

In accordance with the updated 2024 MSBA Guidelines, the design team and district performed a written risk assessment/ evaluation for environmental hazards specific to the site.

The site is not within a FEMA Floodplain, per The FEMA Flood Insurance Rate Map (see figure below). The property is located in Zone X, defined as an area outside the 500-year flood plain with less than 0.2% annual probability of flooding. Annual Probability of Flooding of Less than one percent.

The design team also utilized Risk Assessment, Resilient Mass Action Team (RMAT)'s Climate Resilience Design Standards Tool in analyzing climate impact and risk at the site. Please see Appendix 6/2.3 – RMAT Form for the full report.



3 FINAL EVALUATION OF ALTERNATIVES

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Option Development Timeline

JUNE 2024

June 18, 2024: SBC Meeting
2 potential properties comprising 6 options were discussed for the project:

- Option 1: Code Upgrade
- Option 2.1: Add/Reno East
- Option 2.2: Add/Reno North
- Option 3.1: New at Upper Field
- Option 3.2: New at Lower Field
- Option 4.1: New at Whitcomb Field

Evaluation criteria were established.

JULY 2024

62 Town-owned properties were evaluated for suitability regarding acreage, accessibility, location, proximity to wetlands, and availability for use. No additional potential locations were identified.

July 10, 2024: Design & Site Selection Subcommittee Meeting
The 6 options were discussed and evaluated. 3 options were selected to recommend to the SBC to move forward into PSR: Options 2.1, 3.1 & 3.2.

July 17, 2024: SBC Meeting
The SBC voted to accept the 3 recommended options from the Subcommittee.

AUGUST - SEPTEMBER 2024

The 3 options were further developed in conjunction with site investigations including wetland flagging, septic system evaluation, and soil testing.

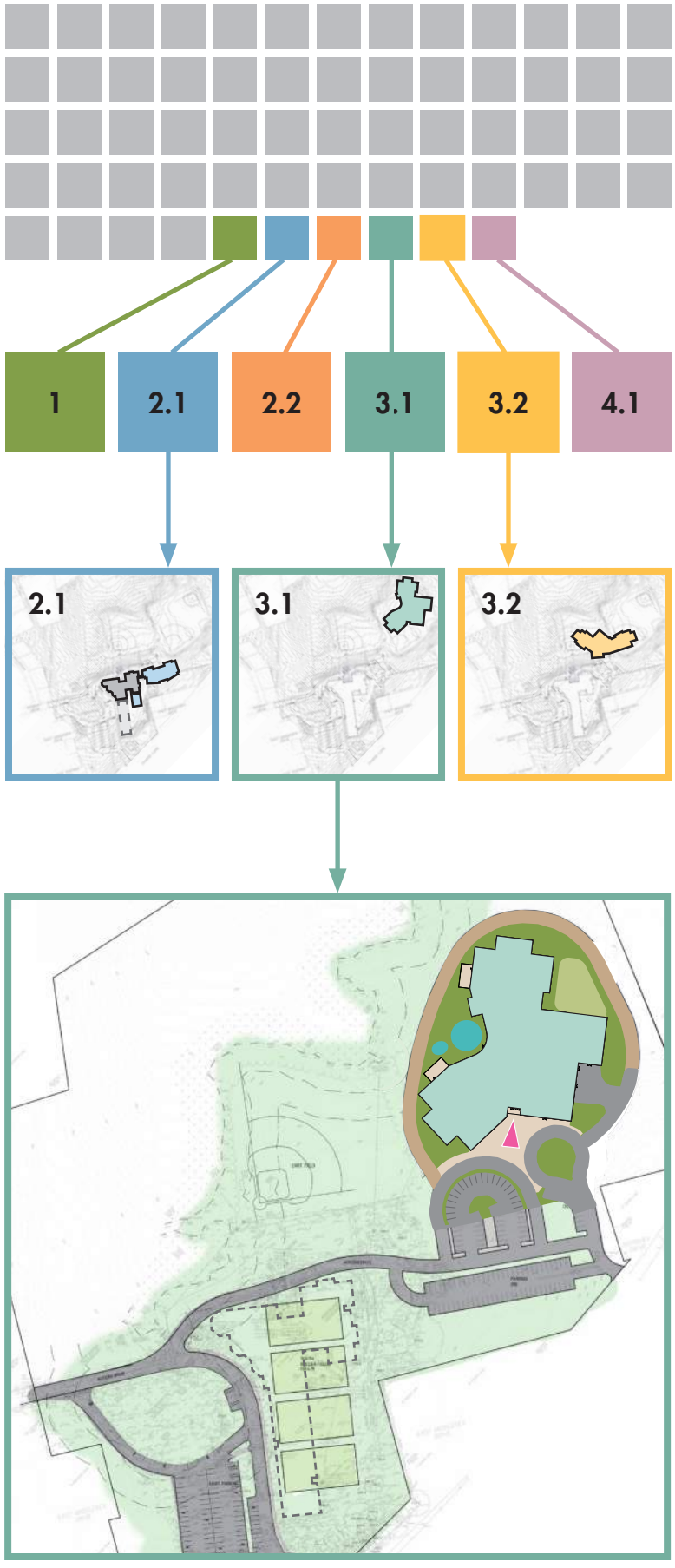
OCTOBER 2024

Project updates including building design and cost estimated were presented at SBC meetings, joint meetings with the Select Board, Finance Committee and School Committee, and at a Special Town Meeting.

NOVEMBER 2024

The Design & Site Subcommittee evaluated the 3 options using criteria established by the SBC. Option 3.1 was selected as the preferred option to move forward into Schematic Design.

November 13, 2024: SBC Meeting
The SBC voted to accept the recommended Option 3.1 from the Subcommittee.



Evaluation Criteria

The SBC established evaluation criteria to aid in selecting the preferred option. Each member of the Design & Site Selection Subcommittee rated each option based their decisions on their knowledge of the District's needs and values as well as on feedback from community outreach efforts. The final tally indicated that Option 3.1 was preferred. Option 2.1 came in second, and it was determined that the main difference between the two options was the more desirable site organization made possible by locating the new building at the upper field location. The add/reno Option 2.1 came in last with a comparatively low score. The Subcommittee recommended Option 3.2 to the SBC, then the SBC voted to select this option to move forward into Schematic Design.

Project costs were estimated for each option, and the results factored into the SBC's decision-making process.

The new elementary school will be designed with appropriate spaces in line with MSBA square foot guidelines and the District's specific needs, to serve the Littleton elementary school community of 435 students in grades K-2 and 48-60 students in Pre-K.

EVALUATION CRITERIA

Totals	177	381	371
	OPTION 2.1 Reno/Add: East	OPTION 3.1 New: Upper Field	OPTION 3.2 New: Lower Field
Site	40	82	75
Adequate buildable area	6	14	12
Parking & vehicle queueing safe/efficient/contained on site	6	14	12
Safe pedestrian access	8	13	13
Optimizes outdoor program & play spaces	7	14	12
Extended access to undeveloped nature / green spaces	7	14	13
Efficient use of site / integration into site	6	13	13
Cost/Schedule/Construction	30	70	67
Maximizes MSBA reimbursement items	6	14	14
Construction schedule	6	14	14
Complexity of phasing	5	14	14
Impact to educational program/facilities during construction	6	14	13
Impact to abutters during construction	7	14	12
Sustainability	44	111	110
Ability to readily meet energy code	5	14	14
Ease of facility maintenance	6	14	14
Potential for geothermal system	5	14	14
Good solar orientation in academic wing	7	14	13
Effort required to become solar panel-ready	5	14	14
Ability to support future expansion	6	13	13
Potential to achieve LEED Silver	5	14	14
Potential to achieve Net Zero	5	14	14
Community/Neighborhood	25	53	53
Affords community use of playgrounds/fields	7	14	14
Affords community use of building (controlled access)	6	14	14
Local traffic impacts	5	12	12
Building mass & scale impacts on abutters/neighborhood	7	13	13
General	38	65	66
Likely successful debt exclusion vote	8	10	11
Geographic location in the district	11	14	14
Permitting complexity	9	13	13
Ability to fully meet the district's educational program	5	14	14
Flexibility to adapt to future changes in teaching methods	5	14	14

Overview of Options

OPTION 1: CODE UPGRADE

The Code Upgrade option focuses on repairs and modifications required for compliance with current building and accessibility codes. Despite appearances, the building requires myriad upgrades to meet code requirements. Because of the extensive nature of the work, little of the existing building would remain untouched. The upgrade work will snowball into a significant replacement of finishes and other elements.

Due to the square footage of the building, the lack of code compliant fire walls, and no sprinkler system, in order to bring the building in compliance with construction classification, a sprinkler system must be added, and a compliance alternative must be approved by the building official and the Board of Building Regulations and Standards (BBRS).

Assuming approval is attained, the code upgrade option would further require: structural upgrades for reinforcement and seismic resistance, mechanical system upgrades to provide fresh air and exhaust, envelope upgrades to meet energy code requirements, and installation of new fire protection / alarm systems. Meeting accessibility regulations will require significant modifications to doors, hardware, bathrooms, stairs, and site elements including new curb cuts and grading. The extent of work required to bring the building into compliance would trigger additional work under the building code and may include new plumbing fixtures, as well as other elements.

The replacement with new construction of the demolished section of the building, and a code upgraded school building, would still leave the District with a building which does not support the required educational program, configurations, adjacencies, and sizes. A majority of the existing spaces would remain undersized, inefficient, and inadequate based on the schools programmatic needs and MSBA standards. Furthermore, many program areas needed for successful delivery of the Education Plan, would remain unaccounted for in the existing facility. Additionally, the building would not be able to accommodate the additional projected student enrollment.

The scope of work required in this option would be widespread throughout the building and site. Currently there is no identified temporary swing space available, in the Town of Littleton, for either a whole or partial relocation of the school population during construction. Temporary modular classrooms for swing space would be required and would entail substantial additional costs. Since this Code Upgrade option does not address the programmatic deficiencies, would be costly for code and systems upgrades, and incurs additional swing space costs, it was determined that this concept has no merit to evaluate further. The cost and further study of this option will not be included with the Preferred Schematic Report.

Advantages:

- Building & playground are accessible
- Fire protection improves life safety
- Additional toilet rooms
- Improved envelope reduces operational costs and improves occupant thermal comfort
- Opportunity to install central air conditioning
- Minimal changes to procedures & operations
- Opportunity to install geothermal and/or photovoltaic systems
- Opportunity to reconfigure vehicular circulation

Disadvantages:

- Space program:
  - Will not meet MSBA guidelines
  - Will not meet educational plan or modern teaching methods
  - Will be reduced to accommodate additional toilets, envelope thickness, elevator, etc.
- High costs for:
  - Installation/upgrades to fire protection
  - Upgrade envelope (doors, windows, roof, exterior walls)
  - Additional plumbing fixtures
  - Full-sized elevator
- Impacts to building occupants during construction, will require complex phasing and potentially swing space/modulars



OPTION 2.1: ADDITION / RENOVATION

As was noted in the PDP, this Addition/Renovation option had many disadvantages relative to the new construction options. Significantly, the immediate site did not provide opportunities for improved traffic flow which would have been strained by additional construction related traffic, proximity related issues to abutters, high costs for required upgrades, and a layout which could not optimally support the educational program.

The site conditions have remained the same in the PSR. The plans have been revised to improve educational delivery and experience, and to have a beneficial cost effect.

PSR study led to the following design modifications:

- The admin and medical programs were combined into a single program suite which flanks the primary entrance to the building.
- Special Ed spaces were more evenly spread throughout the academic areas of the building, providing each classroom direct access to a shared Small Group room.
- The configuration and footprint of the academic suite wing was modified to allow for better access to the outdoors, increase distance to property lines and abutters and simplify the connection to the existing structure.

Although the plan layouts of this option have been improved since the PDP, ideal proximities and adjacencies to support the Educational Program, cannot be achieved without significantly more demolition, construction, and cost. Site constraints severely limit student access to play and outdoor learning, as well as preclude the ability to improve traffic flow. This option is not preferred for the following reasons:

- Constrained to existing footprint and building layout of renovated areas
- Renovated areas have high costs for:
- Installation/upgrades to fire protection
- Upgrade envelope (doors, windows, roof, exterior walls)
- Additional plumbing fixtures
- Reduces community access to play fields & reduces size of lower field
- Impacts to building occupants during construction, will require complex phasing
- 3 story building not desirable
- Construction interferes with existing septic system



OPTION 3.1: NEW CONSTRUCTION AT UPPER FIELD

As was noted in the PDP, this new construction option had many advantages and few disadvantages. Throughout the PSR phase, the design was developed and refined such that the disadvantages were reduced or eliminated, and many more advantages were created. Plan and site revisions significantly improved educational delivery and experience, and preliminary cost estimates indicate this option has become more beneficial to the district from the design presented in PDP.

PSR study led to the following design modifications:

- The main entry to the building has been shifted to face more due west, directly facing the main approach to the school.
- A large central gathering space has been created which directly spills out onto the outdoor learning/ play space.
- The publicly accessible cafeteria, and gymnasium, are all located near the main entry, and the private areas of the school are easily locked during after hours or during security events.
- A protected play courtyard between the academic wings provides easy access to outdoor learning areas away from vehicular circulation and site access.
- Grades are organized around individual 'neighborhood dens', with each grade having their own den, dedicated support spaces, and all classrooms are oriented for easy access and spill out capability.
- The cafeteria and gymnasium share access to the stage to provide flexible presentation and assembly space, especially for whole-school gatherings.
- The library has been located centrally to the academic programming to allow for diverse access and flexible use for spill out to the central feature stair and gathering area.

The plan layouts of this option have been significantly improved since the PDP. All iterations can be seen in the presentation materials in Section 5.1 – Certified SBC Meeting Information & Presentation Materials.

Option 3.1 became the District's Preferred Solution, and will be carried forward into Module 4 – Schematic Design. Refer to Section 4 – Preferred Solution.



OPTION 3.2: NEW CONSTRUCTION AT LOWER FIELD

As was noted in the PDP, this option had many advantages. Of most significance this option can be constructed while the existing Shaker Lane School remains functional, and the building organization and plans support the Educational Plan. For these and other reasons, this option was carried into the PSR phase for further study.

The site conditions for this option have changed the design approach from PDP. An updated civil survey conducted by design consultant, Samiotes, found that the wetlands adjacent to the lower field were more extensive that previously indicated on government maps. This increase in area, along with their setbacks (50' and 100'), reduced the available building area on the lower field of site A.

To accommodate the modified available building area the configuration and location of option 3.2 has changed from PDP. The footprint of the building has been adjusted to utilize the available area within the setback boundary and restrictive zones of the site. This configuration will satisfy the educational plan of the district, but will require more extensive site planning and grading to accommodate the proposed design within the existing topography.

The basic form of the 2-story building is a curved spine which connects two academic wings to a central communal and shared space core. The building's entry is along the southwestern side of the spine, off of a community lobby. The gym and cafeteria are located directly off the central community lobby. The gathering stair in a secondary gathering space can be used as a learning space, presentation space or overflow space for surrounding program such as the cafeteria and media center. The academic wings can be secured to prevent public access when community spaces are being used after hours. The academic wings are oriented to allow optimal daylight exposure for the classrooms. Each grade level 'owns' its own wing with 'Neighborhood Dens' becoming the focal point at the end of each wing. Special Education and support spaces are distributed throughout in support of the Educational Program.

The indoor/outdoor relationship is maximized by virtue of the building form. The enveloped outdoor play areas created by the radiating academic wings, provide ample opportunities for diverse outdoor classrooms, quiet gathering, and play in protected areas. The building's adjacency to the wetlands simultaneously allows for easy access to nature exploration, and for unstructured play.

Although there was much that the Committee appreciated about this scheme, the disadvantages outweighed the advantages, thereby resulting in the dismissal of this option in the PSR phase. The major disadvantages are:

- Challenging community access to upper field
- Proximity to existing building may be disruptive to occupants
- Proximity to wetlands and a high subsurface water table.



3.1 Prospective Site Analysis

OPTION 1: CODE UPGRADE

WARNER LARSON
Landscape Architects

Refer to Appendix 6/3.1 – Landscape Assessment of Options for full consultant report.

All existing pedestrian sidewalks and walkways that are not accessible will be upgraded to meet ADA and MAAB accessibility requirements. New additional walkways and sidewalks will be provided to allow access to the athletic fields, including detectable warning panels and curb ramps. Entrances to the building which currently do not meet ADA or MAAB accessibility standards will be updated to meet current requirements.

Accessibility within play areas will also be improved by providing new accessible surfacing, removing plastic barriers, and providing accessible entrances and connections to existing pathways. Play equipment that is in poor condition will be removed and new play equipment will be installed in its place. In areas where fencing around play areas is incomplete, new fencing will be provided to ensure play areas are properly enclosed.

Athletic fields will be improved by completing perimeter fencing that is currently incomplete. Fencing that is in poor or declining condition will be replaced. Accessible pathways to and between athletic fields and to associated structures such as the concession stand will be provided. Furnishings at athletic fields (such as benches) that are in poor or declining condition will be replaced. Additional, new site furnishings and accessible paved gathering areas may be provided where possible.



OPTION 2.1: ADD/RENO

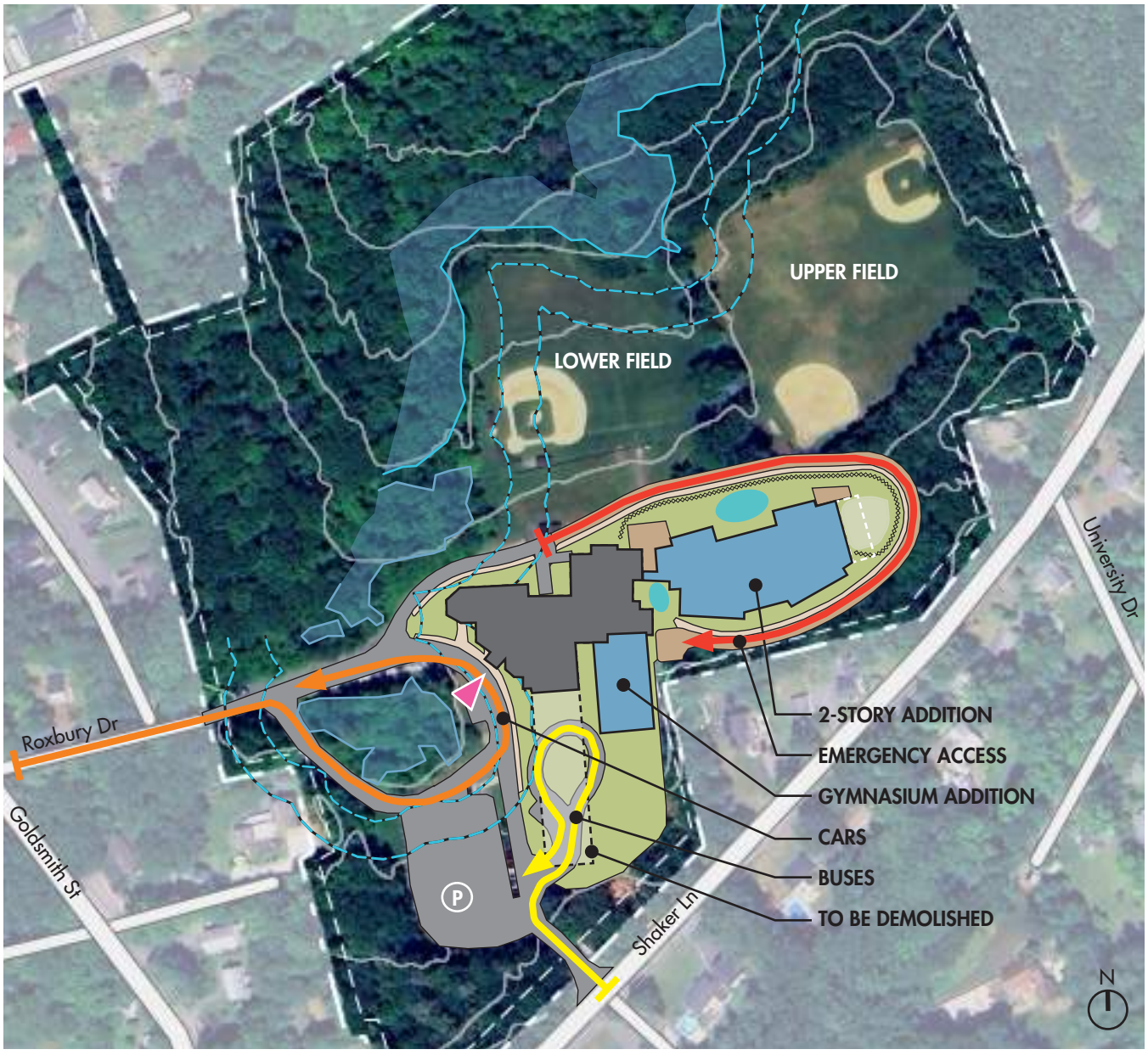
Option 2.1: Addition/Renovation SLS was analyzed for prospective parking, vehicular circulation, fire access, and areas of interest in site design.

Design was guided by programmatic requirements, existing site conditions/topography as well as access to means of egress.

Outdoor learning and play areas are consolidated to the north of the addition, with easy access to the remainder of the site. Pre-K play is protected to the south of the building. The upper and lower fields remain accessible to SLS and the broader Littleton community. An accessible path can be created from the school to the playing fields.

The safety of vehicular circulation is improved with the creation of a dedicated bus loop, but neighborhood congestion would continue to be an issue.

The area at the academic addition has extensive ledge and some slope, which would entail extensive retaining walls. The property line is in tight proximity, so an emergency access road would not entirely circle the building, which is not ideal. This option was not preferred.



OPTION 3.1: NEW CONSTRUCTION AT UPPER FIELD

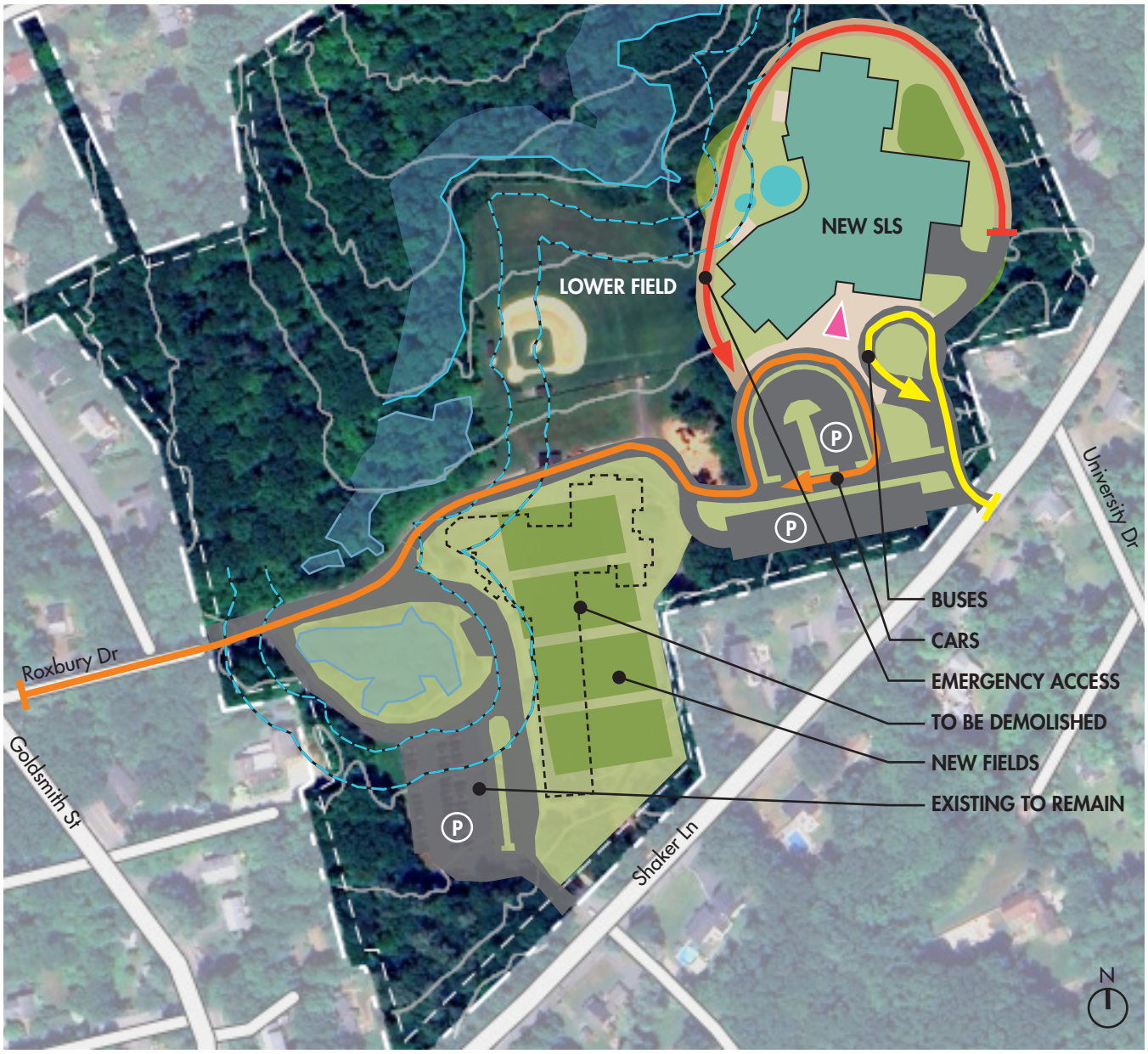
Option 3.1: New construction at upper field was analyzed for prospective parking, vehicular circulation, fire access, and areas of interest in site design.

Design was guided by programmatic requirements, existing site conditions/topography as well as access to means of egress.

Outdoor learning and play areas are separated from vehicular traffic and safely contained to the north and west of the new building. The lower field and new field spaces will be available to SLS and the broader Littleton community, creating a well-organized site organization.

A lengthened drive aisle removes congestion from the neighborhood, and a new access point into the site improves access, safety, and traffic flow. An emergency access drive completely circles the building.

The property setbacks, wetlands buffers, and potential location of a septic leaching field limit the buildable area, so further study is needed to orient the building for solar orientation. This is the Preferred Solution.



OPTION 3.2: NEW CONSTRUCTION AT LOWER FIELD

Option 3.2: New construction at the lower field was analyzed for prospective parking, vehicular circulation, fire access, and areas of interest in site design.

Design was guided by programmatic requirements, existing site conditions/topography as well as access to means of egress.

Outdoor learning and play areas are separated from vehicular traffic and safely contained to the north of the new building. While the upper field will be available to SLS and the broader Littleton community, vehicular access is difficult and the quantity of baseball/softball fields is reduced from three to one. New fields to the south would replace the existing building after demolition.

A lengthened drive aisle removes congestion from the neighborhood, and a new access point into the site improves access, safety, and traffic flow. An emergency access drive completely circles the building.

The wetlands buffers, significantly limit the buildable area, causing the building to encrouch upon the upper field and to cause some impacts to the exisgint SLS during construction. This option was not preferred.

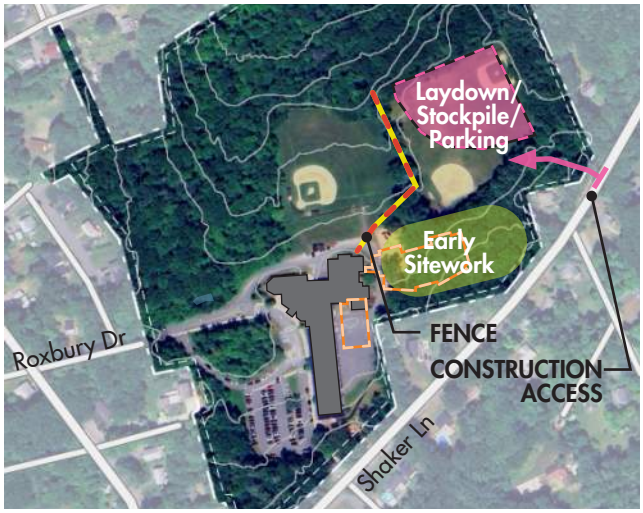


3.2 Evaluation of Construction Impact

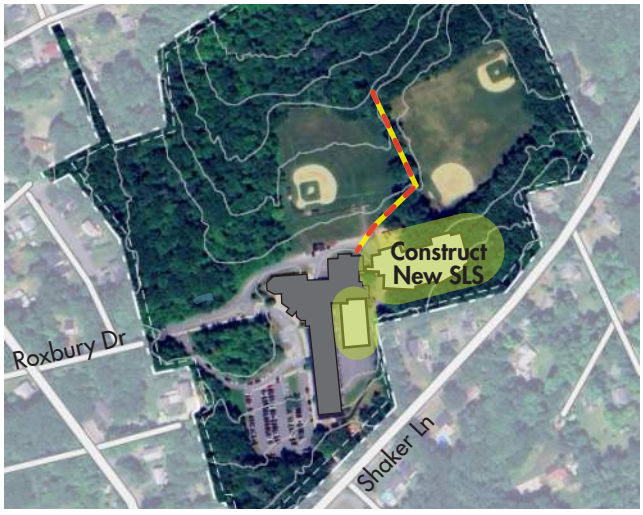
SGA reviewed construction impacts on school/campus operations and potential measures [at a conceptual level] that could be implemented to address said impacts as well as analysis of potential phasing for each option.

OPTION 2.1 – ADDITION / RENOVATION

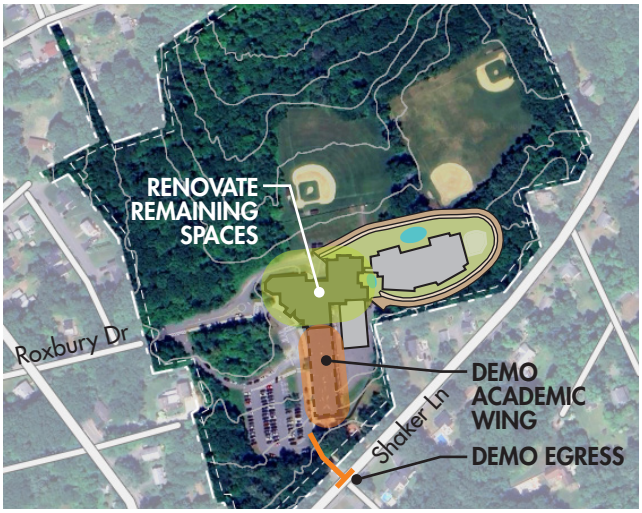
The first activity for Option 2.1 to be implemented on-site would be the planning of the district to consolidate learning spaces within the existing building in anticipation of demolition and renovation work. A laydown area would be designated on the lower field for storage of construction materials as well as ongoing construction work. The area of the site designated for the new academic wing and gymnasium construction would need to be fenced off in anticipation of demolition work during the summer term of 2027.



The second significant activity would be demolition and the start of a new addition adjacent to the existing Shaker Lane School. This could also start in early Fall 2027 and would take approximately fourteen [14] months to complete resulting in occupancy for August of 2028.



The phasing of the interior renovations would be planned to create minimal disruption to the day-to-day functions of Shaker Lane Elementary. This involves planning major work and interruptions of building systems to occur when the building is not occupied. Students and staff affected by the phases of renovation would need to be consolidated to other areas of the school building which will involve careful planning by the district and design team.

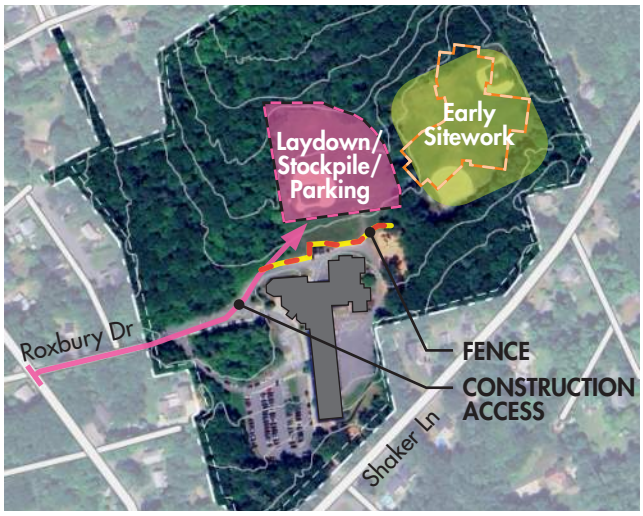


Once the renovation work has been completed, the playground areas will be upgraded/renovated. In parallel, the construction laydown area will be cleared out and the play field will be restored for community use.

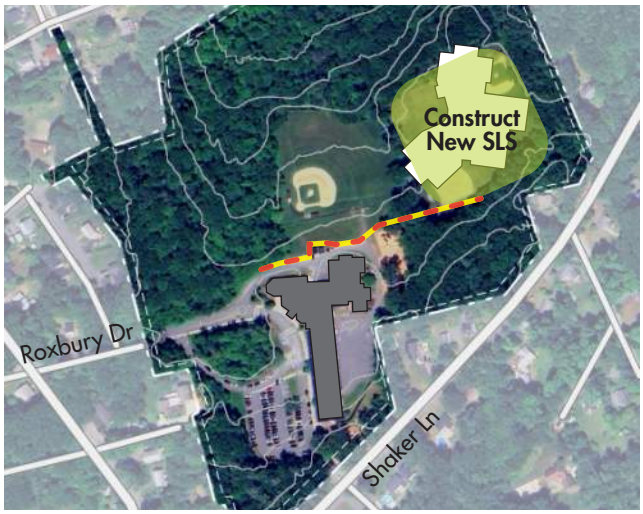


OPTION 3.1 – NEW CONSTRUCTION ON UPPER FIELD

The first activity that could be performed would be an early mobilization by the Construction Manager in Spring of 2027. This would consist of construction site fencing, erosion control, temp. electric, and mobilization of the CM management trailer complex. Early utility work would be desired, however and required to be further studied.



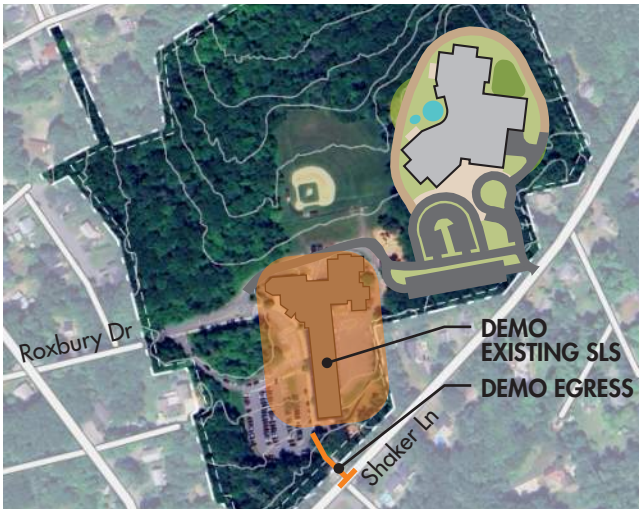
The second significant activity would be the start of construction on the new school facility. This activity would start in the summer of 2027 and would take approximately fourteen [14] months to complete resulting in a move-in for August of 2028.



Interim sitework, site improvements, and drive aisle work would be accomplished in a phased approach, with the work closest to the existing Shaker Lane School occurring during the summer of 2027 and 2028.



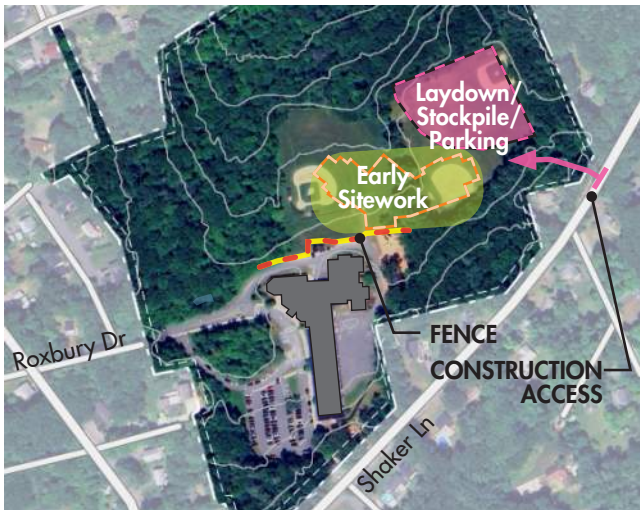
In late August or early September of 2028, demolition operations of the existing Shaker Lane School would commence and be completed in late November of 2028. Due to the timing of this activity and New England weather, the new play fields and plantings would be completed in the Spring of 2029.



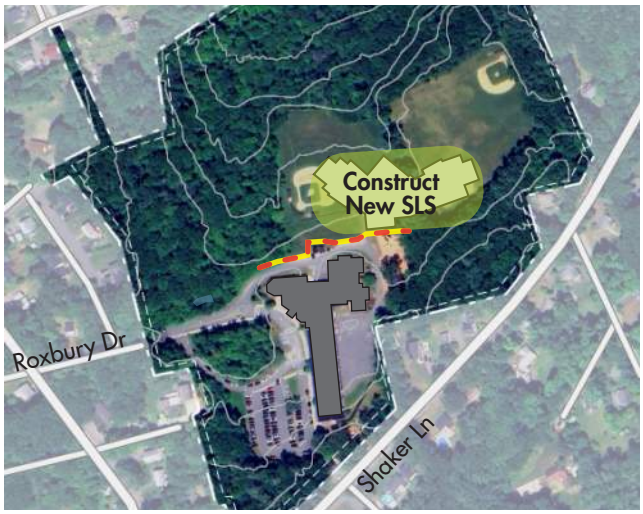


OPTION 3.2 – NEW CONSTRUCTION ON LOWER FIELD

The first activity that could be performed would be an early mobilization by the Construction Manager in Spring of 2027. This would consist of construction site fencing, erosion control, temp. electric, and mobilization of the CM management trailer complex. Early utility work would be desired, however and required to be further studied.



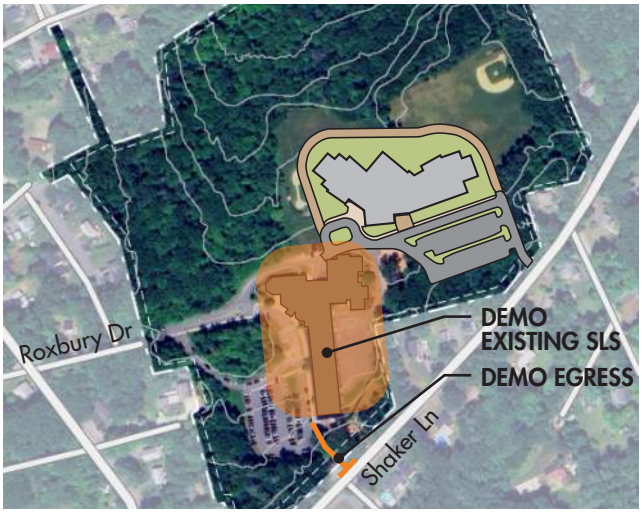
The second significant activity would be the start of construction on the new school facility. This activity would start in the summer of 2027 and would take approximately fourteen [14] months to complete resulting in a move-in for August of 2028.



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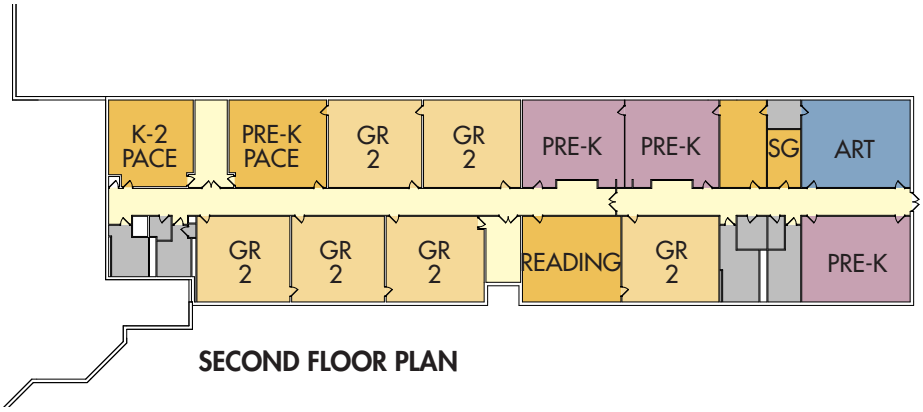
In late August or early September of 2028, demolition operations of the existing Shaker Lane School would commence and be completed in late November of 2028. Due to the timing of this activity and New England weather, the new play fields and plantings would be completed in the Spring of 2029.



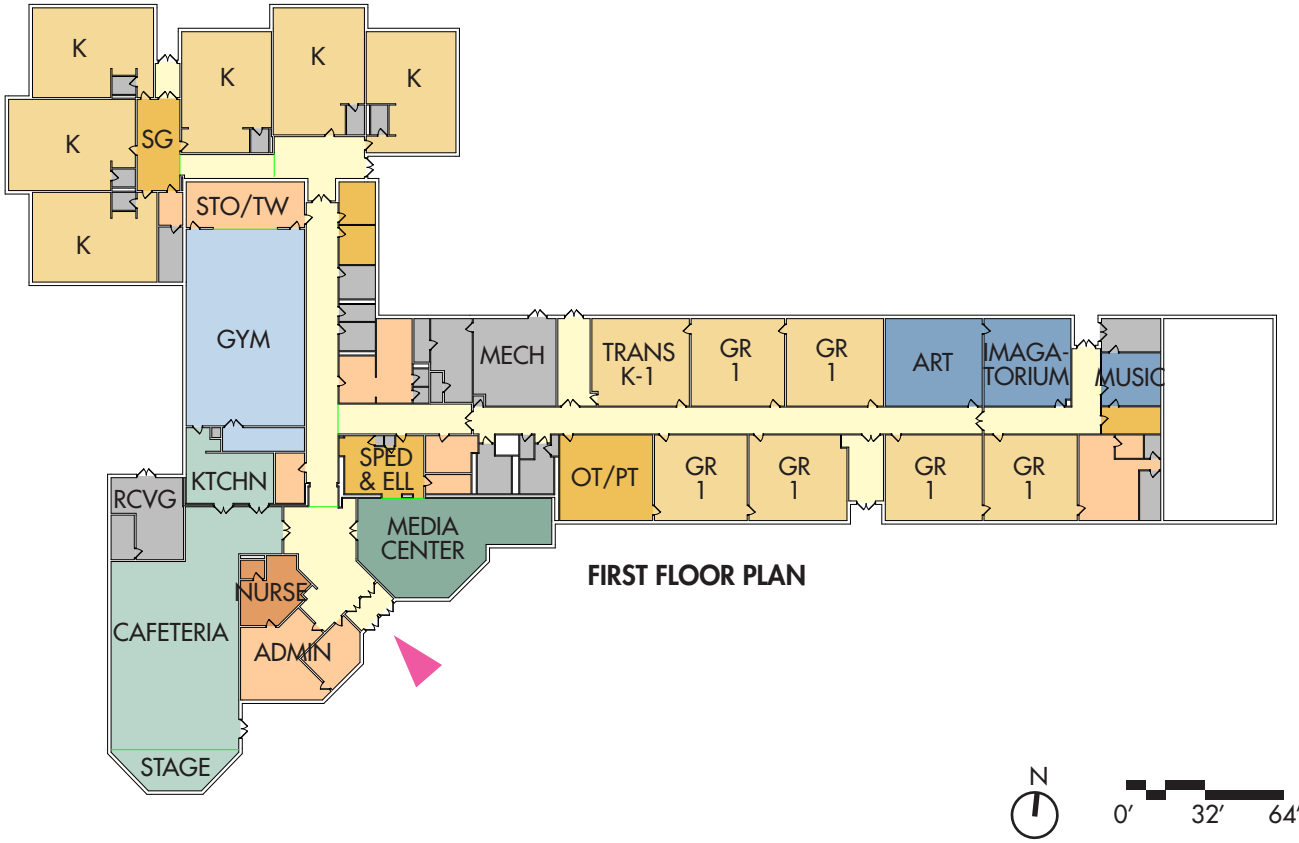


3.3 Conceptual Drawings

OPTION 1: CODE UPGRADE



SECOND FLOOR PLAN



FIRST FLOOR PLAN

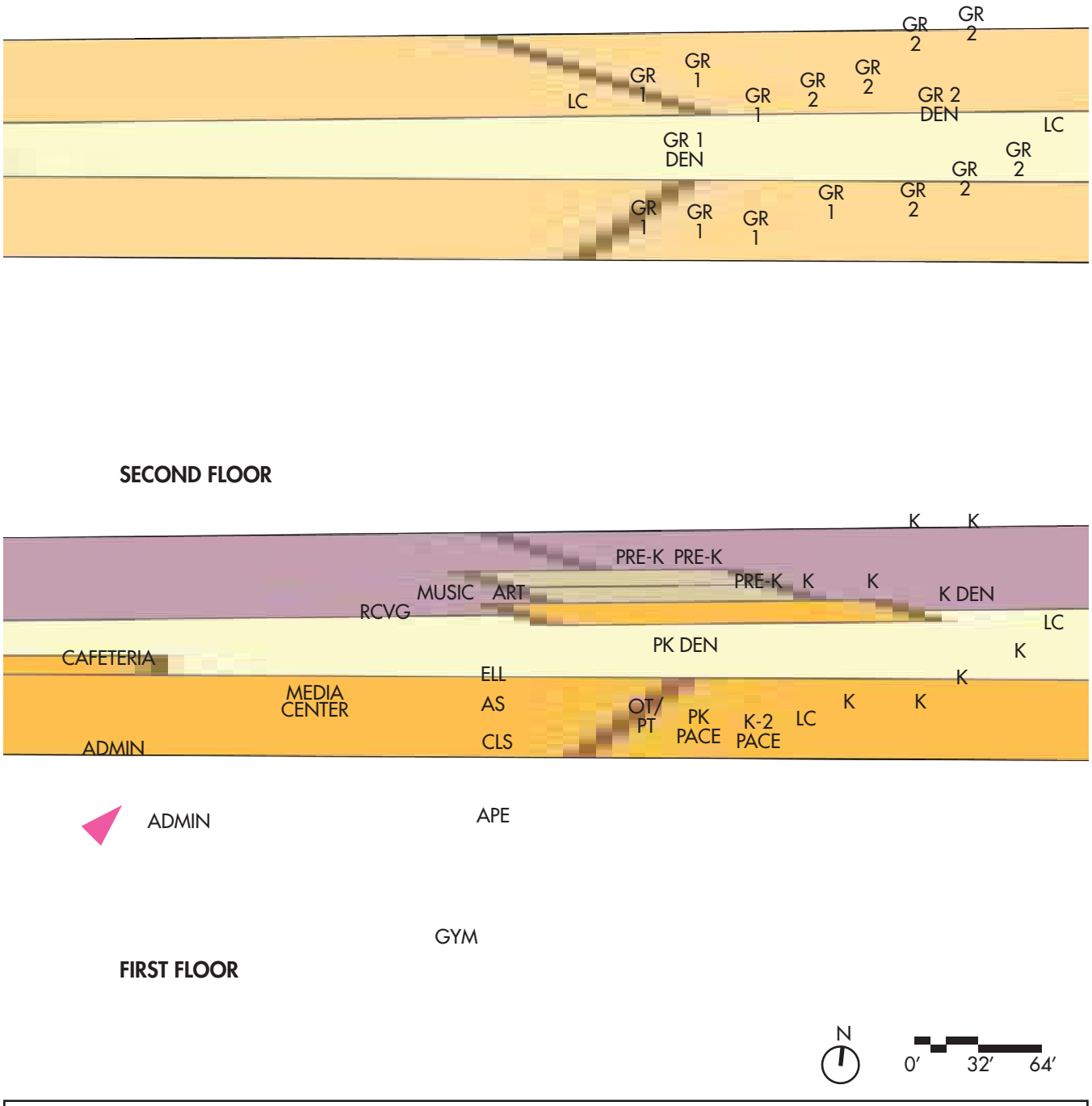
ABBREVIATION KEY

APE	ADAPTIVE PHYSICAL EDUCATION
AS	ACADEMIC SUITE
CLS	CLINICAL SUITE
DEN	EXTENDED LEARNING DEN
ELL	ENGLISH LANGUAGE LEARNERS
GR	GRADE
K	KINDERGARTEN
LC	LEARNING CENTER
LS	LEARNING STAIR
OT/PT	OCCUPATIONAL THERAPY / PHYSICAL THERAPY
PACE	PERSONALIZED ACADEMIC & COMPREHENSIVE EDUCATION
PRE-K	PRE-KINDERGARTEN
RCVG	RECEIVING
SG	SMALL GROUP

LEGEND

- CORE ACADEMIC
- SPECIAL EDUCATION
- MEDIA CENTER
- ART / MUSIC
- GYMNASIUM
- KITCHEN / CAFETERIA
- ADMINISTRATION
- BUILDING SERVICES
- CIRCULATION

OPTION 2.1: ADD/RENO



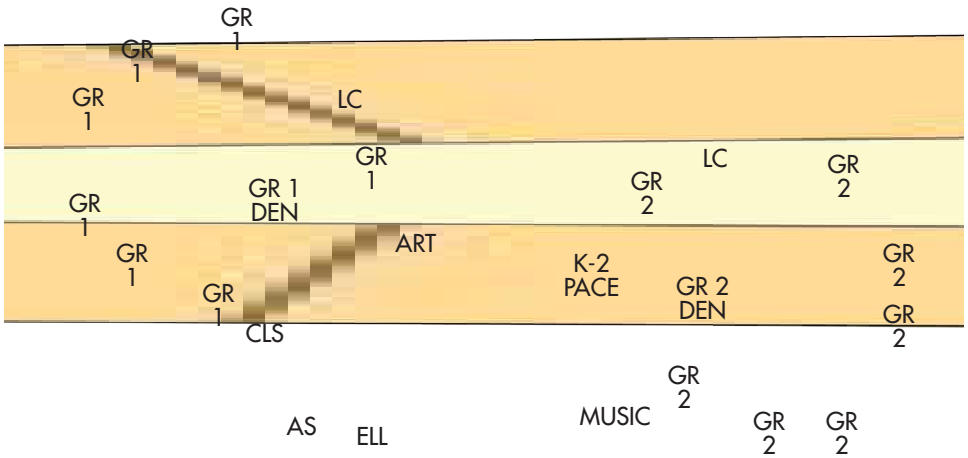
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OT/PT	OCCUPATIONAL THERAPY / PHYSICAL THERAPY
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PRE-K	PRE-KINDERGARTEN
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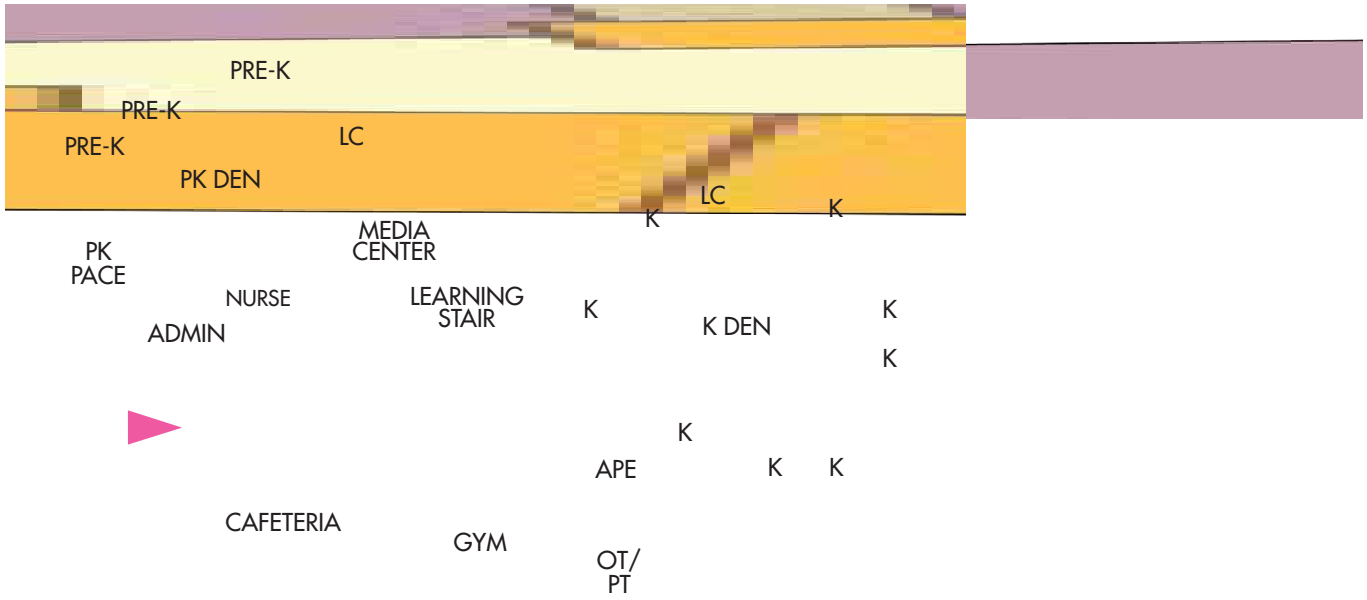
LEGEND

- CORE ACADEMIC
- SPECIAL EDUCATION
- MEDIA CENTER
- ART / MUSIC
- GYMNASIUM
- KITCHEN / CAFETERIA
- ADMINISTRATION
- BUILDING SERVICES
- CIRCULATION

OPTION 3.1: NEW CONSTRUCTION UPPER FIELD



SECOND FLOOR



FIRST FLOOR

N

0′ 32′ 64′

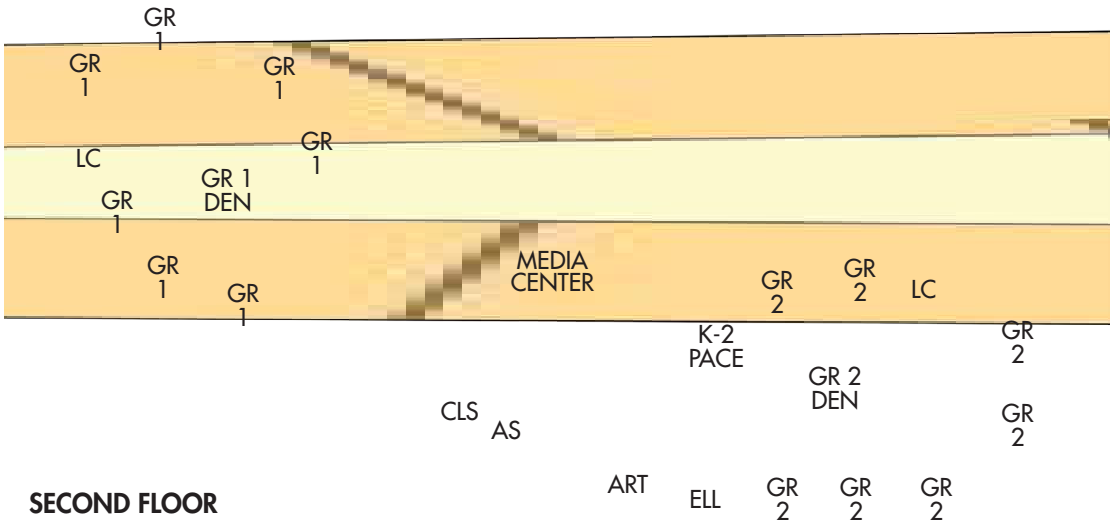
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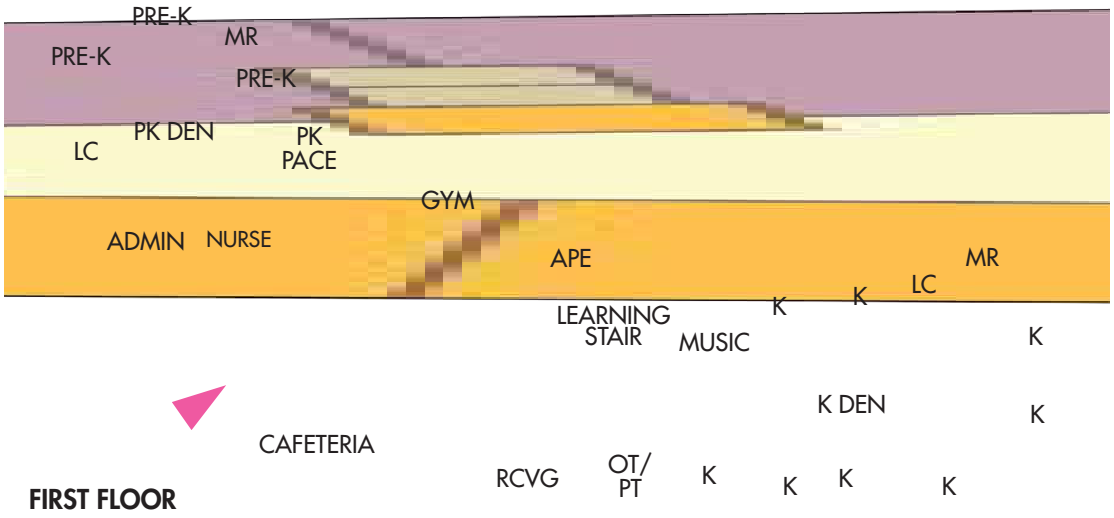
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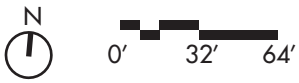
LEGEND

- CORE ACADEMIC
- SPECIAL EDUCATION
- MEDIA CENTER
- ART / MUSIC
- GYMNASIUM
- KITCHEN / CAFETERIA
- ADMINISTRATION
- BUILDING SERVICES
- CIRCULATION

OPTION 3.2: NEW CONSTRUCTION LOWER FIELD







ABBREVIATION KEY

APE	ADAPTIVE PHYSICAL EDUCATION
AS	ACADEMIC SUITE
CLS	CLINICAL SUITE
DEN	EXTENDED LEARNING DEN
ELL	ENGLISH LANGUAGE LEARNERS
GR	GRADE
K	KINDERGARTEN
LC	LEARNING CENTER
LS	LEARNING STAIR
OT/PT	OCCUPATIONAL THERAPY / PHYSICAL THERAPY
PACE	PERSONALIZED ACADEMIC & COMPREHENSIVE EDUCATION
PRE-K	PRE-KINDERGARTEN
RCVG	RECEIVING
SG	SMALL GROUP

LEGEND

- CORE ACADEMIC
- SPECIAL EDUCATION
- MEDIA CENTER
- ART / MUSIC
- GYMNASIUM
- KITCHEN / CAFETERIA
- ADMINISTRATION
- BUILDING SERVICES
- CIRCULATION

3.4 Structural Systems

FOLEY BUHL ROBERTS & ASSOCIATES

Structural Engineers

Refer to Appendix 6/3.4 – Structural Report for full consultant report on Options 2.1, 3.1 and 3.2.

PROPOSED OPTIONS

Option 1: Code Upgrade

Refer to Appendix 6/3.4 – PDP Structural Report for information on this option.

This option would include repairs to the original building and the 1998 addition, along with upgrades to address non-conforming code conditions (including ADA issues). The facility would continue to be used as an elementary school. The only changes in function or modifications to the current spaces would occur to accommodate additional toilets, a full-size elevator, and increased envelope thickness.

Option 2.1: Add/Reno

This option would include demolition and removal of the existing classroom wing of the 1959/1962 original building and three of the classrooms from the 1998 addition. A new Gymnasium would be constructed to the south of the existing structure, and a new, two-story Academic Wing would be constructed to the east of the existing structure. The original gymnasium space and the 1998 addition would be fully renovated and programmatically reconfigured. The completed facility would be approximately 94,850 GSF in area, including 25,850 GSF of renovated existing building space. The option would accommodate 435 students in Grades K through 2 and 48-60 students in Pre-K.

Option 3.1: New Construction at Upper Field

This option would include construction of a new, two-story building to the northeast of the existing school building, at the current Upper Field site. A one-story, centrally located Community Wing with a double-height Gymnasium would be situated to the east of a two-story Academic Wing. The existing Shaker Lane School would remain open during construction, then the building (including the original 1959/1962 structure and the 1998 additions) would be demolished to make way for athletic fields. The completed facility would be approximately 97,757 GSF in area, accommodating 435 students in Grades K through 2 and an additional 48-60 students in Pre-K.

Option 3.2: New Construction at Lower Field

This option would include construction of a new, two-story building to the north of the existing school building, at the current Lower Field site. A central Community Wing with a double-height Gymnasium would be surrounded to the north and south by Academic Wings. The existing Shaker Lane School would remain open during construction, then the building (including the original 1959/1962 structure and the 1998 additions) would be demolished to make way for athletic fields. The completed facility would be approximately 97,757 GSF in area, accommodating 435 students in Grades K through 2 and an additional 48-60 students in Pre-K.

BASIS OF DESIGN - NEW CONSTRUCTION

The basis of the structural design for new construction (addition in Option 2.1 and new buildings in Options 3.1 & 3.2) is described in this section.

Codes and Design Standards

Building Code: Massachusetts State Building Code (780 CMR) - Tenth Edition.

- Concrete: ACI 318 and ACI 301; latest editions.
- Masonry: ACI 530 and ACI 530.1; latest editions.
- Structural Steel: AISC "Specification for Structural Steel Buildings" and AISC "Code of Standard Practice".
- Steel Deck: Steel Deck Institute (SDI); Referenced Standards.

Design Loads/Parameters

Live Loads:

- Classrooms (with partition allowance): 65 PSF
- Upper Floor Corridors: 80 PSF
- Open plan areas (including green space/outdoor play areas): 100 PSF
- Stairs and First Floor Corridors: 100 PSF
- Mechanical Areas: 150 PSF

Snow Loads (Littleton):

- Basic Ground Snow Load: 50 PSF
- Minimum Flat Roof Snow Load: 35 PSF

Wind Loads (Littleton):

- Wind Speed (Ultimate): 126 MPH

Seismic Parameters (Littleton):

- Spectral Response - Short Periods: SS = 0.320g
- Spectral Response - 1-Second Periods: S1= 0.072g
- Risk Category: III
- Seismic Design Category: B (Preliminary)
- Site Class: D (Preliminary)
- Structural System: Building Frame System
- Lateral Load Resisting System: Steel Braced Frames (Not Specifically Detailed for Seismic Resistance)
- Response Modification Factor (R): 3.0
- System Overstrength Factor (W0): 3.0
- Deflection Amplification Factor (Cd): 3.0

Foundations
With reference to the aforementioned geotechnical memorandum, it appears that foundations for new construction can be conventional, shallow spread footings (i.e., individual spread footings at columns and continuous footings at foundation walls), bearing directly on natural soils or on compacted structural fill. An allowable bearing capacity of one and a half (1.5) tons per square foot (3.0 KSF) has been assumed in the preparation of this report. All unsuitable fill below the building footprint (and beyond) will need to be removed and replaced with compacted structural fill. The USGS maps show shallow bedrock in the vicinity of the site. If encountered, bedrock should be removed at least 5 feet below the proposed finished floor elevation to allow for construction of the footings. Footings should not bear directly on bedrock.

Construction Classification
The construction classifications for the various options have not been determined at this time. Type IIA Construction (Noncombustible, Protected) has been assumed for all new construction in the preparation of this report (to be confirmed). Floor construction (except slabs on steel deck) and roof construction require applied fireproofing to achieve the required fire resistance rating. A fire wall may be needed for Renovation/Addition Option 2.1, as the remaining sections of the existing building are not fire protected (to be further reviewed). In all options, the new construction will be fully sprinklered.

Sustainable Design Considerations
Sustainable design considerations will be incorporated in the building design; it is intended that the new construction be designed to LEED standards.

STRUCTURAL SYSTEMS DESCRIPTION

Structural systems for new construction in all options (addition in Options 2.1 and new buildings in Options 3.1 & 3.2) are described in this section. The anticipated scope of structural work in the existing building (Option 2.1) is described in the Section V below.

Structural Bays/Spans
Structural bays/spans will vary; however, the typical structural bay will be square or rectangular, approximately 750 square feet to 900 square feet in area. Roof construction over the Gymnasium in each option will clear span the space below. It is assumed that strategically located columns will be acceptable in the Cafetorium space.

Story Heights/Floor Elevations
Typical story heights will be approximately 14 feet. Refer to the preliminary Architectural Drawings for additional information.

Foundations
Foundation construction can be conventional, shallow spread footings (i.e., individual spread footings at columns and continuous footings at foundation walls), bearing directly on natural soils or on compacted structural fill. The preliminary foundation design is based on an allowable bearing capacity of 3.0 kips per square foot (1.5 tons per square foot).

Drainage
Groundwater elevations are unknown at this time. Dewatering during construction may be required. Pending confirmation by the Geotechnical Engineer, the need for perimeter foundation drainage and underslab drainage is not anticipated.

Lowest Level Floor Construction
Typically a 5" thick concrete slab on grade, reinforced with welded wire fabric. Slabs on grade will be underlain by a heavy-duty vapor barrier, 2" of rigid insulation at the building perimeter and a 6" minimum layer of imported, compacted gravel fill. Saw cut control joints (1¼" deep) will be provided in each direction along each column line. Full depth isolation joints will be constructed around columns.

Upper Level Floor Construction
Composite structural steel framing: 3½" thick (minimum), normal weight concrete topping slab on a 2" deep, 18 gauge, composite type, galvanized steel floor deck (5½" minimum total slab thickness), reinforced with welded wire fabric, spanning to composite wide flange steel beams. Steel beams span to composite wide flange steel girders that are supported by wide flange steel columns or HSS (tube) steel columns. All composite steel beams and girders will be unshored. Composite action will be achieved by field welding ¾" diameter x 4" long headed shear studs through the deck, to the top flanges of the beams and girders. To avoid compromising composite action, conduit or other, similar embedded items should not be placed in the concrete slab on steel deck construction. Slabs on composite steel floor deck will be placed at the required elevation, adding concrete to compensate for the deflection of the (unshored) steel framing

(assume an approximate average of ¾" additional concrete required over the bay area).

Roof Construction
Typical roof construction consists of a 1½" deep, 18 gauge, Type WR galvanized steel roof deck spanning to wide flange steel beams. Steel beams are typically supported by wide flange steel girders, which span to wide flange steel columns or HSS (tube) steel columns.

Steel roof deck over the Gymnasium will be cellular acoustic type, 3" deep; 20/20 gauge (Galvanized). Steel deck typically spans to steel purlins, which are supported by clear spanning steel beams and wide flange steel columns.

Exposed steel roof framing over the Gymnasium will be classified as Exposed to View Structural Steel (E.V.S.S.). All E.V.S.S. will be surface prepped and shop painted with a primer that is compatible with the finished paint. Primary roof structural members over the Gymnasium that are exposed to view may require intumescent paint to achieve the required fire resistance rating (to be determined).

Roof drainage will be achieved by tapered insulation; roof construction will be level.

Concrete slabs on composite steel deck will be provided below rooftop mechanical units, for acoustic reasons. Screens will be provided around rooftop equipment for acoustic and aesthetic purposes.

Steel Framing Connections
Type 2 simple framing connections (shear only); double clip angles typically; moment connections where necessary.

Columns
Typical columns will be HSS (tube) steel sections.

Lateral Force Resisting System
Lateral (wind and seismic) forces will be resisted by steel bracing, for reasons of economy, stiffness, reduced structural depth and smaller column sizes. Bracing members will be square or rectangular HSS sections. Brace configurations may include chevrons, inverted chevrons ("V"), or single diagonals in short bays, as required by architectural considerations. The bases of all braced frames will be tied together below the lowest level slab on grade with 2'-0" x 2'-0" reinforced concrete grade beams.

Expansion (Seismic) Joints
The new construction in Option 2.1 will be separated from the existing building by expansion joints. New construction Options 3.1 and 3.2 will likely need one (1) internal expansion joint. Fire walls may be needed to allow Type IIB Construction (noncombustible, unprotected).

Elevator Shafts
New elevator shafts will be 8" thick, 100% solid grouted, reinforced concrete masonry unit (CMU) construction, supported on 12" thick reinforced concrete elevator pit walls and a 2'-0" thick reinforced concrete elevator pit mat. Provide a sump pit in the mat and waterproof all interior surfaces.

Exterior Walls
Exterior walls will typically be masonry veneer (cavity wall construction), with areas of glazed curtainwall and architectural panels. A galvanized, light gauge steel stud backup wall (16 gauge minimum thickness) will be constructed at masonry veneer areas. Vertical slip joints will be provided in the metal stud backup system at each level. Intermediate, HSS Steel girts will be provided at the two-story gymnasium walls, to laterally support the wall construction at mid-height.

ANTICIPATED STRUCTURAL WORK - EXISTING BUILDING (OPTION 2.1 ONLY)

Renovations, alterations, repairs, and additions to existing buildings in Massachusetts are governed by the provisions of the Massachusetts State Building Code (MSBC; 780 CMR - 9th Edition) and the Existing Building Code of Massachusetts (EBCM; 780 CMR - 9th Edition, Chapter 34.00). These documents are based on amended versions of the 2015 International Building Code (IBC) and the 2015 International Existing Building Code (IEBC), respectively.

For Option 2.1, Section 104.2.2.1 of the EBCM will require that the existing Shaker Lane School building be investigated and evaluated in sufficient detail as to ascertain the effects of any proposed work on the structural systems (both gravity load supporting elements and lateral force (wind and seismic) resisting elements). The EBCM defines three (3) compliance methods for the repair, alteration, change of occupancy, addition, or relocation of an existing building. The method of compliance is chosen by the Design Team (based on the project scope and cost considerations) and cannot be combined with other methods.

The Work Area Method of Compliance has been assumed in this report. The new construction in Option 2.1 will be structurally separated from the original Shaker Lane School building by an expansion joint.

The scope of structurally related work required for the renovation of the existing Shaker Lane School building is outlined in FBRA's July 18, 2024 Existing Conditions Structural Report. Refer to that report for a summary of structurally related repairs and deficiencies that would need to be addressed in this Option. The preliminary cost estimate should include allowances for those items noted. In addition to the items listed in the Existing Conditions Structural Report, a full renovation of the

existing Shaker Lane School in Option 2.1 would be classified as a Level 3 Alteration if more than 50% of the building floor area is reconfigured. Assuming that relatively significant structural alterations would be required to properly reconfigure and upgrade the building, the following additional structural scope would be required:

- A seismic retrofit of the building would be required, which may include reinforcing existing braced frames, adding new braced frames (with new foundations), and adding new reinforced masonry shear walls (with new foundations). The preliminary cost estimate should carry an allowance of $10.00/SF for this work (based on the gross floor area of the building).
- Sections 302.8.1 and 907.4.5 of the EBCM would require that masonry walls be anchored to roof construction. Preliminary estimates should include the cost of installing periodically spaced steel clip angles with adhesive anchors to anchor masonry walls to floor and roof framing. Preliminary cost estimates should include an allowance for 12" long steel clip angles with four (4) adhesive anchors spaced no further than 4'-0" o.c. at the floor and roof levels. Cantilevering masonry chimneys and masonry parapets would also need to be evaluated and reinforced/braced, if required.
- Infill of miscellaneous floor and roof openings, as may be required. Preliminary cost estimates should include an allowance to infill miscellaneous floor and roof openings with matching construction.
- Miscellaneous new floor and roof openings, as may be necessary to accommodate Architectural and/or MEP/FP requirements. Preliminary cost estimates should include an allowance to provide miscellaneous floor and roof openings.
- Supports for new MEP/FP equipment. Preliminary cost estimates should carry an allowance for miscellaneous supports/reinforcing related to new MEP/FP equipment.
- Trenching and repair of lowest level slabs on grade. Preliminary cost estimates should carry an allowance for trenching and slab repair to accommodate new sub-slab plumbing and utilities.

SAMIOTES

Environmental Permitting & Civil Engineer
Refer to Appendix 6/3.5 – Civil Assessment for full consultant report.

OPTION 1: CODE UPGRADE

Refer to Appendix 6/3.5 – PDP Civil Assessment for information on this option.

This option includes upgrades to the existing school building to better sustain accessibility and safety. Capital I improvements revolve around fire protection, utility services, accessibility, HVAC, potential geothermal and/or photovoltaic systems, vehicle circulation, and finishes throughout the existing building.

Stormwater Management
- Cleaning of all drainage structures and pipe network
- Condition assessment of existing drainage system
- Additional stormwater management measures may be requested per the Town of Littleton to meet the current Massachusetts Stormwater management standards. To the extent practicable. This may include capturing roof stormwater, installation of additional stormwater collection structures and/or water quality units, utilization of low impact development (LID) elements, etc.

Sewer
The Existing Sewage disposal system will remain, assuming it passes a MassDEP Title V septic system evaluation.

Water
- A dedicated connection for fire protection to the building is recommended and possibly a fire loop main with hydrants located no more than 500 ft. apart as required by the Littleton Fire Department.
- A flow test will be required.

Parking
Parking capacity on site would need to be evaluated and increased as required by the Littleton Planning Board. Including ADA/Van accessible spaces as required ADA/MAAB. Review and update all ADA accessible ramps and access where needed to comply.

Hardscape
- Asphalt to the east of the existing building will likely need full depth replacement where failure is occurring.
- Emergency Vehicle access – Evaluate fire truck turning radii and width for updated fire emergency (Fire) vehicles as required.
- Car and School Bus Drop off areas – Evaluate vehicular accessibility and capacity.

Wetland
Permitting as required by the Littleton Conversation Commission for any improvements above that may impact adjacent resources area (Bordering Vegetated Wetlands and Buffer Zones)

OPTION 2.1: ADD/RENO

This option includes renovating portions of the existing building and campus and constructing an addition on adjacent property to the east. With this renovation and addition alternative, it may be possible to reuse the majority of the existing utilities. Please see the below recommendations and impacts for this project alternative:

Stormwater Management
- Cleaning of all drainage structures and pipe network included in the existing car loop and existing lower parking area
- Condition assessment of all portions of existing drainage system to be reused
- Re-grade impervious areas for proper drainage and tributary areas to existing and proposed stormwater structures
- Provide foundation drainage for the proposed additions / new buildings
- Capture / route roof storm water to existing and proposed stormwater systems
- Installation of additional stormwater structures (assume 10 catch basins (CBs), 8 drainage manholes (DMHs), 3 water quality units (WQUs with membrane), 1,500 LF of drain lines, 300 LF of roof drain lines)
- Due to an increase in impervious area, a stormwater recharge system will need to have approximately 18,000 CF of storage

- Utilization of rain gardens and Low Impact Design elements
- Additional stormwater management measures and structures may be requested by the Town of Littleton to meet or exceed the current Massachusetts Stormwater management standards.

Electric Service
- The existing campus electric service may remain depending on the potential increase in electrical loads. At minimum, it is possible a new transformer will be required.
- Refer to the electrical facility assessment section for further in-depth analysis of the building's electrical system and requirements.

Gas Service
- The existing campus gas service will remain.
- Refer to the plumbing facility assessment section for further in-depth analysis of the building's gas service and capacity.

Sewer
- The Sewage Disposal I/A treatment System (SDS) components and a portion of the on-site force main may need to be reconfigured as proposed additions are planned at their current locations. The relocation of any SDS component may require construction phasing to maintain and protect existing functionality. The sewage disposal leaching field (off-site) may be able to remain assuming the SDS capacity can be confirmed to meet any updated flow from the proposed improvements as required by The Town of Littleton Board of Health and DEP. It should be noted that a new SDS with I/A treatment may be required depending on the increase in anticipated capacity (i.e. students/staff).
- After a second round of exploratory testing was performed in October of 2024, a potential area was identified for a new on-site septic system (see Overview Sanitary Sewage section). This area's viability is planned to be confirmed with formal testing as witnessed by the appropriate BOH agents and procedures in the Spring of 2025. It also may be beneficial to incorporate the existing I/A system components in any new design to increase effluent quality for recharge in the soil. These options will be further explored once the Preferred Schematic Design is approved.
- If a new SDS can be located on-site (with or without I/A requirements), sizing would be anticipated as outlined below:
  - Daily Flow = (540 students+80 admin) x 8 gallons per day/person = 4,960 GPD
  - System sizing = 4,960 GPD / 0.60 (LTAR – Assume Class II soil type <10 mpi (to be confirming with future on-site soil testing) = 8,267 SF leaching area required.
- System Design:
  - 2-5,500 gallon tanks in series
  - 1-5,500 gallon pump / dosing chamber, including duplex pumps, equipment, wiring, etc.
  - 1-5,000 gallon grease trap
  - 3 manholes
  - Assume 6" PVC gravity flow to pump chamber – 100 LF
  - 3"+ PVC force main to leaching area – 200 LF
  - Leaching area – Assume 2'x2'x100' trench – 600 SF of storage per trench
  - Assume 14 trenches – 600' SF/trench x 14 trenches = 8,400 SF leaching area

Water
- It is assumed a new 8" service for fire protection and 4" domestic service for the building will be required.
- Provide upgrade to 8"CLDI water main loop (approx. 2,000 LF) with hydrants located no more than 500 ft. apart as required by the Littleton Fire Department (assume 3 hydrants, 10 water valves) may be required.
- A flow test will be required.
- Refer to the plumbing facility assessment section for further in-depth analysis of the building's domestic and fire protection service requirements and capacity.

Wetland
Permitting as required by the Littleton Conservation Commission for any improvements above that may impact adjacent resources area (Bordering Vegetated Wetlands and Buffer Zones)

OPTION 3.1: NEW CONSTRUCTION AT UPPER FIELD (PREFERRED OPTION)

This option includes demolishing the existing Shaker Lane Elementary School building and constructing a new Elementary school in the northeast (upper) field location of the site. At the school building's old location, one large field would contain multiple youth soccer fields. This layout would require several new utility connections / piping and structures. Please see the below recommendations and impacts for this project alternative.

Stormwater Management
- Cleaning of all drainage structures and pipe network included in the existing car loop and existing lower parking area
- Condition assessment of all portions of existing drainage system to be reused
- Re-grade impervious areas for proper drainage and tributary areas to existing and proposed stormwater structures
- Provide foundation drainage for the proposed school building
- Capture / route roof storm water to proposed stormwater systems

- Installation of additional stormwater structures (assume 21 CBs, 18 DMHs, 5 WQUs, 3,000 LF of drain lines, 400 LF of roof drain lines)
- Due to an increase in impervious area, a stormwater recharge system will need to have approximately 30,000 CF of storage
- Utilization of rain gardens and Low Impact Design elements
- Additional stormwater management measures and structures may be requested by the Town of Littleton to meet or exceed the current Massachusetts Stormwater management standards.

Electric Service
- A new underground electric service will need to be provided for the upper field location (approx. 750') and it is expected that a new transformer and generator will be required.
- Refer to the electrical facility assessment section for further in-depth analysis of the building's electrical system and requirements.

Gas Service
- A new underground gas service will need to be provided for the upper field location (approx. 750').
- Refer to the plumbing facility assessment section for further in-depth analysis of the building's gas service and capacity.

Sewer
See potential SDS options, updates, and calculations as described in Option 2.1.

Water
- It is assumed a new 8" service for fire protection and 4" domestic service to the building is recommended.
- A 8"CLDI fire loop main (approx. 2,500 LF) with hydrants located no more than 500 ft. apart as required by the Littleton Fire Department (assume 4 hydrants, 13 water valves) may be required.
- A flow test will be required.
- Refer to the plumbing facility assessment section for further in-depth analysis of the building's domestic and fire protection service requirements and capacity.

Wetland
Permitting as required by the Littleton Conversation Commission for any improvements above that may impact adjacent resources area (Bordering Vegetated Wetlands and Buffer Zones)

OPTION 3.2: NEW CONSTRUCTION AT LOWER FIELD

This option includes demolishing the existing Shaker Lane Elementary School building and constructing a new Elementary school in the northeast (upper) field location and north (lower) field location of the site. At the school building's old location, one large field would contain multiple youth soccer fields. This layout would require several new utility connections / piping and structures. Please see the below recommendations and impacts for this project alternative.

Stormwater Management
- Cleaning of all drainage structures and pipe network included in the existing car loop and existing lower parking area
- Condition assessment of all portions of existing drainage system to be reused
- Re-grade impervious areas for proper drainage and tributary areas to existing and proposed stormwater structures
- Provide foundation drainage for the proposed school buildings
- Capture / route roof storm water to proposed stormwater systems
- Installation of additional stormwater structures (assume 15 CBs, 11 DMHs, 5 WQUs, 3,000 LF of drain lines, 300 LF of roof drain lines)
- Due to an increase in impervious area, a stormwater recharge system will need to have approximately 24,000 CF of storage
- Utilization of rain gardens and Low Impact Design elements
- Additional stormwater management measures and structures may be requested by the Town of Littleton to meet or exceed the current Massachusetts Stormwater management standards.

Electric Service
- A new underground electric service will need to be provided from Roxbury Drive for the lower field location (approx. 500') and it is expected that a new transformer and generator will be required.
- Refer to the electrical facility assessment section for further in-depth analysis of the building's electrical system and requirements.

Gas Service
- A new underground gas service will need to be provided from Roxbury Drive for the lower field location (approx. 500').
- Refer to the plumbing facility assessment section for further in-depth analysis of the building's gas service and capacity.

Sewer
See potential SDS options, updates, and calculations as described in Option 2.1.

Water
- It is assumed a new 8" service for fire protection and 4" domestic service for the building will be required.
- A 8"CLDI fire loop main (approx. 1,800 LF) with hydrants located no more than 500 ft. apart as

required by the Littleton Fire Department (assume 4 hydrants, 13 water valves) may be required.
- A flow test will be required.
- Refer to the plumbing facility assessment section for further in-depth analysis of the building's domestic and fire protection service requirements and capacity.

Wetland
Permitting as required by the Littleton Conservation Commission for any improvements above that may impact adjacent resources area (Bordering Vegetated Wetlands and Buffer Zones)

3.6 Building Systems

GGD CONSULTING ENGINEERS

Mechanical & Electrical Engineer

Refer to Appendix 6/3.6 – HVAC Report and Electrical Systems Report for full consultant reports.

OPTION 1: CODE UPGRADE HVAC & ELECTRICAL SYSTEMS

Refer to Appendix 6/3.6 – PDP Mechanical & Electrical Assessment for the full report on this option.

While the building HVAC systems appear to have been well maintained throughout the years, the highest cost elements of the existing HVAC system have exceeded their expected useful service life and operate based on outdated technology. Additionally, the current HVAC system does not meet the requirements of the current energy code and will require updating. Based on this, we recommend that the building HVAC system is replaced in its entirety as part of any baseline code building upgrades.

The existing electrical power infrastructure and distribution equipment is in fair condition and suitable to accommodate minor renovations to the existing building, however, the service may not be adequately sized to accommodate major load increases via upgrading and adding new major HVAC equipment.

The baseline code upgrades recommendations for the HVAC system is a complete system upgrade. To determine if the existing service is adequately sized to accommodate the new loads, the proposed added/replaced HVAC system loads would be compared to the school's existing baseline peak demand to determine if there is sufficient spare capacity.

HVAC SYSTEMS

The following is the HVAC system narrative, which defines the scope of work and capacities of the HVAC system as well as the Basis of Design. The HVAC systems shall be designed and constructed for LEED for Schools v4 where indicated on this narrative.

CODES

All work installed under Division 230000 shall comply with the Commonwealth of Massachusetts Adopted Building Codes (IBC, IMC, IECC latest Adopted Editions with MA amendments), and all local, county, and federal codes, laws, statutes, and authorities having jurisdiction.

DESIGN INTENT

The work of Division 230000 is described within the narrative report. The HVAC project scope of work shall consist of providing new HVAC equipment and systems as described here within. All new work shall consist of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Heating, Ventilating and Air Conditioning work and all incidental items thereto, including commissioning and testing.

The HVAC narrative below provides a summary of four new HVAC systems which shall be studied as part of a life cycle cost analysis (LCCA) performed during schematic design.

BASIS OF DESIGN: (MA CODE)

Project weather and Code temperature values are listed herein based on weather data values as determined from ASHRAE weather data tables and the International Energy Conservation Code.

- Outside: Winter 2.6 deg. F, Summer 91 deg. F DB 74 deg. F WB
- Inside: 70 deg. F +/- 2 deg. F for Heating, 75 deg. F +/- 2 deg. F (55% RH) for all Air-conditioned areas (Administration, Nurses Office, Guidance, Cafeteria, Classrooms, Teacher Support, Gym).

Unoccupied temperature setback will be provided (55 deg. F heating (adj.), 85 deg. F cooling (adj.).

Outside air shall be provided at rates in accordance with ASHRAE Standard 62.1 and the International Mechanical Code (latest adopted editions) as a minimum. All occupied areas will be designed to maintain 800 PPM carbon dioxide maximum.

HVAC SYSTEM OPTIONS

As part of a life cycle cost analysis (LCCA), different HVAC systems shall be compared against a code compliant baseline system to determine the system with the greatest savings over a 50 year study period.

By comparison of each option to the baseline system, the option with the greatest total life-cycle savings is generally recommended. To further enhance controllability and overall system performance, additional options should be considered that will enhance year-round temperature control and comfort at a possible marginal increase in capital cost. The following HVAC systems are proposed to be studied as part of the life cycle cost analysis (LCCA) during the Schematic Design phase of the project.

Existing Building (Option 2.1: Add/Reno only)

Heating Plant
The existing boilers, storage tanks, and associated fuel oil/gas supply systems at all site options will be demolished in entirety.

Controls
The existing controls systems will be demolished in entirety.

Unit Ventilators, Air Handlers, & Terminal Heating Equipment
All air handling, ventilating, and terminal heating equipment has met or exceeded expected service lifetimes. Additionally, the existing systems will not meet requirements of the Massachusetts Stretch Energy Code. For these reasons, as a part of the Addition and Renovation Option, the existing HVAC systems will be demolished in entirety.

Air Distribution Systems
In general, the majority of existing supply, return and exhaust air ductwork distribution system is nearing or beyond its expected service life. Therefore, all existing supply, return and exhaust ductwork shall be replaced. New ductwork shall be constructed and installed in accordance with SMACNA and IMC requirements. All new supply and return air ductwork shall be insulated per IMC code requirements. All new kitchen exhaust fans shall be provided with new fire-wrapped carbon steel or stainless steel grease ductwork.

Piping Systems
All existing piping for hot water distribution shall be demolished.

Demolition
All existing to be removed HVAC equipment and systems that are no longer required shall be demolished and removed. All existing refrigerant from removed AC equipment shall be legally reclaimed and suspected asbestos containing materials shall be tested and disposed of in an appropriate and lawful manner.

Phasing
All demolition and new work shall be done in a phased manner in accordance with Architect's proposed phasing plan.

HVAC SYSTEM BASELINE OPTION

Massachusetts Opt-in Stretch Energy Code Compliant Building & HVAC System

General
Partially recirculating variable air volume (VAV) air handling units (AHU) with hot water and chilled water coils shall be provided for heating, ventilating, and air conditioning the building. The AHUs shall be provided with an energy recovery section capable of a minimum 75% enthalpy recovery ratio. Exhaust fans shall be provided for janitor's closets, and utility rooms. Air source heat pump AC units shall be provided for IT Server Rooms, Electric rooms and elevator machine rooms.

Central Heating and Cooling Plant
Hydronic heating and cooling for the building shall be provided by a high-efficiency air source heat recovery heat pump chiller/heater plant that includes the following:

- Add/Reno Option: Twelve (12) modular air source to water heat pump chillers with simultaneous heating and cooling and a capacity of 30 tons each. An additional heat pump chiller/heater or a supplemental 450 kw backup electric boiler shall be included to inject heat into the hot water heating loop when ambient conditions limit the output capacity of the air-source heat pump chiller.
- Lower Field New Construction Option:Fourteen (14) modular air source to water heat pump chillers with simultaneous heating and cooling and a capacity of 30 tons each. An additional heat pump chiller/heater or a supplemental 550 kw backup electric boiler shall be included to inject heat into the hot water heating loop when ambient conditions limit the output capacity of the air-source heat pump chiller.
- Upper Field New Construction Option:Fifteen (15) modular air source to water heat pump chillers with simultaneous heating and cooling and a capacity of 30 tons each. An additional heat pump chiller/heater or a supplemental 550 kw backup electric boiler shall be included to inject heat into the hot water heating loop when ambient conditions limit the output capacity of the air-source heat pump chiller.

One (1) of the chiller modules will be redundant for heating/cooling backup purposes. The air-source heat pump chiller units will be grade mounted and shall be capable of providing 130°F heating hot water at a 5°F ambient temperature condition. A large outdoor location for the air-cooled heat pump chillers will be required. Provide pre-insulated underground piping from heating/cooling plant to an indoor mechanical room.

A mechanical room shall be provided for the associated hot water and chilled water pumps and hydronic accessories. The heat pump chiller plant will supply heating hot water and chilled water throughout the building via a four-pipe fiberglass insulated schedule 40 black steel and copper piping system.

A primary hot water pump array (Quantity of 4 pumps in the array with one redundant pump) with variable frequency drives will be provided and will modulate speed to maintain a minimum flow to the heat pump chiller. A secondary hot water pump array (Quantity of 4 pumps in the array with one redundant pump) with variable frequency drives will be provided for meeting the variable flow needs of the hot water system distribution throughout the building. A plate & frame heat exchanger installed within the mechanical room shall be provided to separate the primary and secondary piping loops. In addition to pumps, new hot water accessories including air separators, expansion tanks, and buffer tanks shall be provided.

A primary chilled water pump array (Quantity of 4 pumps in the array with one redundant pump) with variable frequency drives will be provided and will modulate speed to maintain a minimum flow to the heat pump chiller. A secondary chilled water pump array (Quantity of 4 pumps in the array with one redundant pump) with variable frequency drives will be provided for meeting the variable flow needs of the chilled water system distribution throughout the building. A plate & frame heat exchanger installed within the mechanical room shall be provided to separate the primary and secondary piping loops. In addition to pumps, new hot water accessories including air separators, expansion tanks, and buffer tanks shall be provided.

The heat pump chiller plant will distribute between 45°F and 55°F chilled water to the roof mounted air handling units located throughout the building. The chilled water distribution piping will be of the fiberglass insulated schedule 40 type and will be separate from the hot water distribution piping system.

Ventilation air handling equipment
It is proposed that a new recirculating air-conditioning system with VAV control be installed to provide air-conditioning and ventilation to the occupied areas of the building.

New recirculating rooftop air handling units with supply and return air fans, VFDs, energy recovery wheels, hot water heating (and reheat) coils with modulating valve, chilled water cooling coil, economizer capability, and MERV 14 filtration will be provided to serve a new fully air-conditioned system. Different building rooms and zones shall be provided with a variable volume (VAV) terminal box with combination temperature, humidity, and CO2 sensor controls. The controls will reduce outside air as allowed maintaining a maximum of 800 PPM while providing sufficient ventilation to meet the required heating or cooling load of the spaces served. As VAV boxes modulate, the supply and return air fans associated Variable Frequency Drives (VFD) of the rooftop units will adjust the fan speed based on system static pressure, reducing the energy consumed by the fans. Each room (or zone) shall be provided with ceiling mounted supply air diffusers. Classrooms will typically be provided with four individual diffusers between 200 and 250 CFM each (depending on room size). Return air will be drawn back to the units by ceiling return air registers located within the rooms and will be routed back to the rooftop unit by a galvanized sheet metal return air ductwork distribution system. New ductwork shall be constructed and installed in accordance with SMACNA and IMC requirements. All new supply and return air ductwork shall be insulated per IMC code requirements (R-8). All new Kitchen exhaust fans shall be provided with new Fire-wrapped carbon steel or insulated stainless steel grease ductwork.

Exhaust Air Fan Systems
Code required exhaust for the majority of building areas, including toilet rooms, shall be provided through the localized energy recovery ventilation (ERV) systems.

Dedicated exhaust air fan systems shall be provided for Kitchen exhaust air (if provided) and Janitor's closet areas.

Terminal Heating Equipment
New hot water radiant heating panels or fin tube radiation shall be provided for perimeter heating of all restrooms with exterior exposure heating loads. Hot water radiation heating equipment shall be provided for all corridors, entryways. Hot water unit heaters shall be provided for all utility rooms.

HVAC SYSTEM OPTION 1 - AIR SOURCE VARIABLE REFRIGERANT FLOW (VRF)

General
Air source VRF (variable refrigerant flow) heat recovery heat pump units shall be connected to a combination of indoor ducted and ductless VRF indoor air handling units. Packaged Dedicated Outdoor Air System (DOAS) Air-Source Heat Pump Rooftop Units with minimum 75% eff. Energy recovery ventilation (ERV) and back-up electric heat shall provide the ventilation requirements for the majority of building areas. Backup heating shall be provided in areas of the building with extensive exterior exposures via perimeter electric resistance radiant heating panels. Exhaust fans would be provided for janitor's closets, and utility rooms. Air source heat pump AC units shall be provided for IT Server Rooms, Electric rooms and elevator machine rooms.

Central Heating and Cooling Plant
Under this option, a high-efficiency Air Source Variable Refrigerant Flow (VRF) heat recovery system shall provide simultaneous heating and cooling capabilities to all regularly occupied spaces via a combination of fan coil, ductless wall and/or ductless ceiling cassette type VRF terminal air handling units. Air conditioning will be generated by outdoor roof mounted heat recovery type air source heat pump condensing units that shall be connected to indoor air handling units or terminal heating and cooling units. The outdoor VRF heat pump condensing units will be sized and located according to AHU and terminal equipment zones capacity requirements and VRF system piping length limitations. Therefore, multiple clusters of VRF outdoor heat pump condensing units shall be required. The HVAC terminal VRF systems (excluding the RTU loads) shall have the following total estimated capacities (based on the peak indoor space heating loads):

- Option 2.1: 120 Tons (80 Indoor Units)
- Option 3.1: 140 Tons (90 Indoor Units)
- Option 3.2: 145 Tons (90 Indoor Units)

Air Handling (HVAC) Ventilation Systems
Ventilation shall be provided to building areas generally via rooftop mounted 100% outdoor air (DOAS) air handling units as described below. Air handling units shall be provided with packaged cooling/heating coils connected to high efficiency air source heat pump units and supplemental electric heating coils. The DOAS units shall be provided with MERV 14 filters, heat pump cooling/heating coil section (split air source heat pump condensers for indoor air handling units where applicable), supply and exhaust fans with variable frequency drives or EC motors, supplemental electric heating coils, enthalpy recovery wheel, and a sensible reheat wheel or modulating hot gas re-heat coil for dehumidification. The DOAS units shall provide ventilation air to each occupied building area through a fiberglass insulated galvanized sheet-metal distribution system. Airflow from each space will be returned through a separate galvanized sheet-metal return air system back to the air handling units where it will pass through an enthalpy recovery wheel which will transfer heat from the exhaust air stream to the outside air intake stream for preheating or vice-versa for pre-cooling. The DOAS system distribution shall include variable air volume terminal boxes equipped with CO2 demand ventilation controls that will control the amount of ventilation airflow to each space. The units will operate at reduced capacity during the unoccupied periods if unoccupied space set points are not maintained.

New ductwork shall be constructed and installed in accordance with SMACNA and IMC requirements. All new supply and return air ductwork shall be insulated per IMC code requirements. All new Kitchen exhaust fans shall be provided with new Fire-wrapped carbon steel or insulated stainless steel grease ductwork.

Exhaust Air Fan Systems
Code required exhaust for the majority of building areas, including toilet rooms, shall be provided through the DOAS systems throughout the building.

Dedicated exhaust air fan systems shall be provided for Kitchen exhaust air (if provided) and Janitor's closet areas.

Terminal Heating & Cooling Equipment
Heating for Entryways, Storage Rooms, Toilet Rooms, Janitor Closets, etc and support areas will be generated by a combination of electric unit heaters, convectors, radiant panels, and fin tube radiation.

Split system AC heat pump units
Provide new ductless split system high efficiency heat pump AC units to serve Elevator machine rooms, and IT and MDF Server rooms.

HVAC SYSTEM OPTION 2

Air Source Heat Pump Chiller/Heater with Classroom Displacement Ventilation

Central Heating and Cooling Plant
Heating and cooling for building areas shall be provided by a high-efficiency air source heat recovery heat pump chiller/heater plant that includes ten (10) modular air source to water heat pump chillers with simultaneous heating and cooling and a capacity of 30 tons each. An additional heat pump chiller/heater or a supplemental 350 kw backup electric boiler shall be included to inject heat into the hot water heating loop when ambient conditions limit the output capacity of the air-source heat pump chiller.

Ventilation air handling equipment
It is proposed that a new air-conditioning displacement ventilation system be installed to provide air-conditioning and ventilation to the occupied areas of the building.

New recirculating rooftop air handling units with supply and return air fans, VFDs, energy recovery wheels, hot water heating (and reheat) coils with modulating valve, chilled water cooling coil, economizer capability, and MERV 14 filtration will be provided to serve a new full air conditioning displacement ventilation system. Different building rooms and zones shall be provided with a variable volume (VAV) terminal box with combination temperature, humidity, and CO2 sensor controls. The controls will reduce outside air as allowed maintaining a maximum of 800 PPM while providing sufficient ventilation to meet the required heating or cooling load of the spaces served. As VAV boxes modulate, Variable Frequency Drives (VFD) associated with the supply and return air fans of the

rooftop units will adjust the fan speed based on system static pressure, reducing the energy consumed by the fans. Each room (or zone) shall be provided with low wall or floor mounted supply air displacement diffusers. Classrooms will typically be provided with two individual wall mounted displacement diffusing units between 250 and 400 CFM each (depending on room size). Return air will be drawn back to the units by ceiling return air registers located within the rooms and will be routed back to the rooftop unit by a galvanized sheet metal return air ductwork distribution system. Supplemental ceiling mounted chilled/hot water radiant panels will be provided along exterior walls that shall be interlocked with space enthalpy sensors that shall modulate the control valve of the terminal cooling coil closed when the space enthalpy is above dewpoint conditions.

Air Distribution Systems
The building areas are to be served by a fully air-conditioned variable volume displacement ventilation air distribution system with supplemental chilled water radiant cooling and heating panel system.

New ductwork shall be constructed and installed in accordance with SMACNA and IMC requirements. All new supply and return air ductwork shall be insulated per IMC code requirements (R-8). All new Kitchen exhaust fans shall be provided with new Fire-wrappedcarbon steel or insulated stainless steel grease ductwork.

Exhaust Air Fan Systems
Code required exhaust for the majority of building areas, including toilet rooms, shall be provided through the DOAS systems throughout the building.

Dedicated exhaust air fan systems shall be provided for Kitchen exhaust air (if provided) and Janitor's closet areas.

Terminal Heating & Cooling Equipment:
Provide new hot and chilled water radiant heating and cooling panels for the perimeter heating and cooling for all fully air conditioned areas (eg. Admin Offices, Guidance, Nurse's suite, cafeteria) of the building. Classrooms shall be provided with hot water radiant heating panels. New hot water radiant heating panels or fin tube radiation shall be provided for perimeter heating of all restrooms with exterior exposure heating loads. Hot water radiation heating equipment shall be provided for all corridors, entryways. Hot water unit heaters shall be provided for all utility rooms.

Split system AC heat pump units
New ductless split system high efficiency heat pump AC units will be installed to serve Elevator machine rooms, and IT and MDF Server rooms.

HVAC SYSTEM OPTION 3

Geothermal Closed Loop Heat Recovery Heat Pump Displacement Ventilation System.

General
A central geothermal ground source water to water heat recovery heat pump chiller plant shall be provided to generate hot water and chilled water for building air handling unit and terminal heating/cooling equipment. Central (indoor or rooftop) hot water and chilled water air handling units with minimum 75% efficient Energy recovery ventilation (ERV) providing Displacement Ventilation to terminal VAV units w/ CO2 DCV (demand control ventilation) and terminal hot water and chilled water dual-temp perimeter passive radiant heating/cooling panels. Exhaust fans would be provided for janitor's closets, and utility rooms. Ground source heat pump AC units shall be provided for IT Server Rooms, Electric rooms and elevator machine rooms.

Geothermal Heating and Cooling Plant
Heating and cooling for the entire building at each site option will be capable of being provided via a high-efficiency ground-source heating and cooling plant including a modular water to water simultaneous heating/cooling heat recovery heat pump chiller plant that includes the following quantities of chiller modules:

- Option 2.1: Six (6) 50 nominal ton modules, with two (2) of the modules for heating/cooling backup purposes. The heat pump heat recovery chillers will be provided with ground source condenser water from approximately (54) closed loop type vertical ground source geothermal wells.
- Option 3.1:Seven (7) 50 nominal ton modules, with two (2) of the modules for heating/cooling backup purposes. The heat pump heat recovery chillers will be provided with ground source condenser water from approximately (66) closed loop type vertical ground source geothermal wells.
- Option 3.2: Seven (7) 50 nominal ton modules, with two (2) of the modules for heating/cooling backup purposes. The heat pump heat recovery chillers will be provided with ground source condenser water from approximately (66) closed loop type vertical ground source geothermal wells.

In each site option, the heat pump chiller units will be located in a Mechanical Room and in an Add/Reno option, the size of the existing mechanical room will likely need to increase. The geothermal wells will be approximately 550 feet deep and spaced a minimum of 20-25' apart from one another, based on a capacity of 4 tons/well. The final well quantity, depth and distances shall be determined by the geothermal design consultant.

Primary and standby base-mounted geothermal water pumps with variable frequency drives (which will control down to maintain a minimum flow to the heat pump chillers) will be provided for overall variable flow condenser water system distribution. In addition to pumps, new geothermal water accessories including air separators, filters, and expansion tanks shall be provided.

Split system AC heat pump units
Provide new ductless water source split system high efficiency heat pump AC units to serve Elevator machine rooms, and IT and MDF Server rooms.

Domestic hot water
DHW heating systems shall be pre-heated by the building hot water heating loop and a ground source heat pump system shall be utilized to provide additional heating of DHW heating. The DHW storage tank heat exchangers and heat pumps shall be by Plumbing and a geothermal to DHW pre-heat heat exchanger shall be provided by HVAC.

Aside from what is described above under this section HVAC System Option 3, the system is identical to the one described under section HVAC System Option 2.

COMMON REQUIREMENTS FOR ALL HVAC OPTIONS

Lobby, Corridor, and Entry Way Heating
New hot water convectors, cabinet unit heaters, and fin tube radiation heating equipment shall be installed to provide heating to building entry way and stairwell areas. Corridors shall be ventilated from adjacent air handling unit systems. Main Corridor and Lobby areas shall be heated and dehumidified by the displacement ventilation systems. For HVAC Option 1 VRF System – Electric terminal heating equipment shall be provided.

Utility Areas
Utility areas will be provided with exhaust air fan systems for ventilation and will typically be heated with horizontal type ceiling suspended hot water or electric unit heaters.

The Main Electric Rooms and IDF rooms will be air conditioned by high efficiency ductless AC cooling units. Geothermal HVAC options shall use hydronic based heat pumps or fan coil units.

Testing, Adjusting, Balancing & Commissioning
All new HVAC systems shall be tested, adjusted, balanced and commissioned as part of the scope.

Automatic Temperature Controls Building Energy Management System
A new DDC (direct digital control) Automatic Temperature Control and Building Energy Management System shall be installed to control and monitor building HVAC systems. Energy metering shall be installed to monitor the energy usage of building HVAC systems and utilities (electric, water). The new DDC/ATC system shall be a BACNet open protocol system that is capable of being integrated into the Town Wide Central energy management system.

ADD-RENO PROJECT ADDITIONAL HVAC SCOPE

- Demolish and remove all existing HVAC systems and equipment.
- Cap and make safe any existing natural gas main.
- Blank off & seal all existing unit ventilator outdoor air intake grilles. The building envelope shall be upgraded by others in each of these locations to maintain code-required thermal heat transfer resistance.

ELECTRICAL SYSTEMS

The following is the Electrical Systems narrative, which defines the scope of work and capacities of the Power, Lighting and Fire Alarm systems additionally, information has been provided regarding the Basis of Design for each system noted. The Electrical Systems shall be designed and constructed in accordance with LEED for Schools V4 where indicated on this narrative.

Based on the proposed areas for renovation and new construction options, proposed HVAC system options, and existing condition of the current systems, the system narratives will apply to all three design options unless otherwise noted.

CODES

All work installed under Section 260000 shall comply with the Massachusetts State Building Code and all local, county, and federal codes, laws, statutes, and authorities having jurisdiction.

DESIGN INTENT

The work of Section 260000 is as described in this Narrative. All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Electrical work and all items incidental thereto, including commissioning and testing.

Design Parameters:

- High Voltage: 277/480 volt
- Low Voltage: 120/208 Volt
- Phase: 3 Phase

- Amperage: 2,000 Amps with 2,500 Amp rated bussing

SEQUENCE OF OPERATIONS & INTERACTIONS

Classroom and Corridor lighting will be controlled via "addressable relays", which is achieved through programming networked controls. The control of the relays will be by automatic means, such as an occupancy sensor in each classroom. The system will have a BacNet gateway and will be interfaced with the BMS control system for schedule functions. The controllability shall be in conformance with associated LEED credit in indoor environmental quality.

Automatic control of receptacles based on occupancy will be provided for at least 50% of the receptacles installed in private offices, open offices, conference rooms, rooms used primarily for printing and/ or copying functions, break rooms, individual workstations, and classrooms. Controlled receptacles will be marked per NEC 406.3 (E).

Exterior lighting will be controlled by photocell "ON" and "scheduled" for "OFF" operation. The parking area lighting will be controlled by "zones" with dimmable capability. Exterior lights will be addressable and dimmable. Fixtures will be designed and programmed to turn on at dusk utilizing photo sensor input. Fixture shall be turned off based on scheduled preference typically 5AM-6AM. Fixture output shall be scheduled to be reduced by 50% after 12AM. Additional schedule functionality shall be provided based on end user input.

Emergency and Exit lighting will be run through life safety panels to be "ON "during normal power conditions, as well as, power outage conditions. The emergency lighting system will have control so that lights are "ON" only when building is occupied with the exception of buildings exit signs which shall remain always on.

DESCRIPTION OF THE SYSTEMS

Utilities

- The new/renovated building will be supplied with utility power from the utility company Littleton Municipal Light Department. The new service will be fed via underground primary duct bank to a pad mounted utility company owned liquid filled transformer.
- The service electrical transformer will be furnished, installed, owned and maintained by Littleton Municipal Light Department, and it will be located adjacent to the building as shown on the civil drawings. The transformer will be pad-mounted type with a primary voltage of 13.8 kV and a secondary voltage of 480Y/277 volts. The transformer will be sized by the utility company based on the load data provided by the Design team.
- Concrete pad and grounding grid for the pad-mounted transformer is provided by the Contractor per the Littleton Municipal Light Department standards.
- Concrete encased duct bank of the two 4" PVC conduits will be provided by the Electrical Contractor for the primary feeder installation from the utility riser pole to the pad mounted transformer. Pre-cast concrete manholes 12' x 9' will be provided by the Contractor to facilitate the primary cables field installation at the request of the utility company. The duct bank routing is shown on the civil drawings.
- Utility company will provide primary feeder cable from utility riser pole to pad mounted transformer and terminate the feeder cable on both ends.
- Transformer secondary feeder of the copper conductors will be installed underground in the duct bank of five 4" PVC conduits from the pad-mounted transformer to the main electrical switchboard located in the main electrical room.
- The secondary feeder and terminations at the switchboard side will be provided by the Electrical Contractor, and terminated at the transformer side by Littleton Municipal Light Department.
- The Littleton Municipal Light Department metering CTs will be installed at the transformer spades. The meter will be located at the transformer per the direction of the utility company.
- Telephone, Cable TV, and City Fiber will be fed underground into the building's Main Distribution Frame/Head End Room.

Electrical Distribution System

- Service ratings for the Main Building are designed for an all electric building with hight efficiency lighting, mechanical, and misc. electrical systems as outlined in the load tables below. The service capacity will be sized for 2,000 amperes at 277/480 volt, 3Æ, 4wire with 100% rated main breaker. The main buss will be sized at 2,500 amperes and will have an available space provision at the end of the gear to accommodate a future grid connected photovoltaic array. The switchboard will be furnished with a service entrance transient voltage surge protection device (SPD) rated 240 kA and digital metering unit to monitor voltage, current, power factor, demand kW and with a data communication port for interface with BMS. Main switchboard's short circuit rating shall be coordinated with the utility companies available short circuit capacity, but it is estimated to be 65 KAIC.
- Copper conductors shall be utilized for all branch circuit and feeder wiring. Aluminum conductors will be allowed for all feeders 100 amperes or over excluding the secondary service conductors.
- The building connected electrical load estimate is based on the preliminary building systems design:

	Option 2.1	Options 3.1 & 3.2
Load Type	**KVA**	
HVAC Loads	759.0	784.0
Elevator	30.0	30.0
Exterior Lighting	5.0	5.0
Interior Lighting	48.0	50.0
General Power	190.0	196.0
Kitchen	150.0	150.0
Theatrical Lighting	15.0	15.0
Plumbing/Fire Protection	200.0	200.0
EV Car Charging	50.0	50.0
Total Connected Load	**1447.0**	**1480.0**

- Electrical power distribution equipment will be installed in the main electrical room that will also contain a 2 hour rated emergency electric room for life safety electrical switchgear, and in remote electrical closets distributed to each wing / functional core.

Interior Lighting System

- The intent of the lighting design is to provide a visual environment for the students and faculty that is supportive of the educational activities within the building. The lighting system will be designed in compliance with the applicable Energy Code and be eligible for the Utility company rebate program.
- Interior lighting illumination levels will meet the IES recommended values for applicable activity type, be in compliance with the IECC 2021 energy allowances and LEED for Schools control requirements.
- Classroom lighting fixtures will consist of recessed/ surface mounted direct/indirect luminaries with integral LED source and electronic dimmable drivers. The fixtures will be pre-wired for continuous dimming control where natural daylight is available and also for multi-level switching. Two daylight dimming zones will be provided in each classroom.
- Office lighting fixtures will consist of recessed/ surface mounted direct only LED luminaries and electronic drivers for dual-level switching. Offices on the perimeter with windows will have daylight dimming where lighting within the daylight zone exceeds 150W. In general, lighting power density will be 20-40% less than IECC 2021. The power density reduction relates to associated LEED credit in energy and atmosphere.
- Lighting levels will be approximately 30 foot candles in classrooms and offices. The daylight dimming foot-candle level will be in compliance with associated LEED credit in indoor environment quality.
- Gymnasium lighting will be comprised of direct/ indirect fixtures with integral LED source and electronic drivers. The fixtures will be provided with poly carbonate lensing. The light level will be designed for approximately 50 foot candles. Multi-levelswitching will be provided.
- Daylight dimming will be provided within 15 feet of skylights or glazing where lighting within the daylight zone exceeds 150W. Daylight dimming controls will be similar in operation to classrooms.
- Corridor lighting will be comprised of recessed mounted linear fixtures with integral LED source and electronic drivers. The Corridor light level will be designed for approximately 20-foot candles. Corridor lighting will be controlled via time schedules during normal business hours and set to occupancy control thereafter.
- Cafeteria lighting will be a combination of pendant mounted fixtures with direct only and direct/indirect distribution types. All fixtures shall be provided with integral LED source and electronic drivers. The light levels will be designed for approximately 30 foot candles.
- Stage theatrical lights with connector strips and a dimming system will be provided for performances.
- Kitchen and Servery lighting will consist of recessed 2'x2' and 2'x4' acrylic lensed gasketed troffers with aluminum frame doors, integral LED source, electronic drivers and NSF rated for food preparation areas. Light levels will be approximately 50 foot candles.
- Each area will be locally switched and designed for multi-level controls. Each Classroom, Office space, and Toilet room will have occupancy sensors to turn lights off when unoccupied. Occupancy sensors will be set to vacancy mode where required by Energy Code.
- Daylight dimming sensors will be installed in each room where natural light is available for continuous dimming of light fixtures. The control system will be in accordance with associated LEED credit in indoor environmental quality when lighting within the daylight zone exceeds 150W threshold.
- The entire school will be controlled with an automatic lighting control system for programming of interior and exterior lights "on and off". Lighting control system will be interfaced with BMS system, and will be demand response capable in accordance with associated LEED credit in Energy and atmosphere.

Emergency Stand-by System

- An exterior 300 kW, 375 kVA diesel fired generator, with sound attenuated enclosures will provide emergency power. Light fixtures and LED Exit signs will be installed to serve all egress areas such as Corridors, Intervening Spaces, Toilets, Stairs, and Exit discharge exterior doors. The Administration area lighting will be connected to the emergency power.

- The generator power system has been sized to support emergency (life safety), and optional standby building loads. The life safety branch of the emergency system will be provided with a manual transfer switch on the emergency line side of the transfer switch in compliance with NEC 700.3(F)
- All Exit signs and emergency lighting in key areas are fed by Life Safety Emergency Power (required by code).
- Fire Alarm System
- Optional Standby Equipment: Heat Pumps; MDF and IDF Cooling units, Refrigeration (Kitchen/ Nurse), strategically located receptacles in administration area, equipment within the Head End and IDF rooms (paging/intercom system, security system, telephone system, network electronics, servers, clock system, Building Management System)
- Standby power loads (heating system heat pumps, telephone/data closets and associated A/C equipment, communication systems (telephone and public address systems) , Building BMS system control panels, kitchen refrigeration equipment, lighting and power in the Nurse/Medical area, security system equipment)

Metering

- Measurement devices shall be installed to monitor the electrical energy use for each of the following separately: total electrical energy and sub-metering in accordance with ASHRAE 90.1 paragraph 8.4.3
- Recording and Reporting: the electrical energy usage for all loads listed above shall be recorded a minimum of every 15 minutes and reported at least hourly, daily, monthly, and annually. The system shall be capable of maintaining all data collected for a minimum of 36 months.

Site Lighting System

- Fixtures for area lighting will be pole mounted cut-off 'LED' luminaries in the parking area and roadways. Pole heights will be 16 feet. The exterior lighting will be connected to the automatic lighting control system for photocell "ON" and timed "OFF" operation. The site lighting fixtures will be dark sky compliant. The illumination level will be 0.5fc for parking areas in accordance with Illuminating Engineering Society. Lighting will be designed in accordance with associated LEED credit in sustainable sites.
- Building perimeter fixtures will be 'LED' wall mounted cut-off over exterior doors for Exit discharge.

Wiring Devices

- Each classroom will have a minimum of (2) duplex receptacles per teaching wall and (2) double duplex receptacles on dedicated circuits at classroom computer workstations. The teacher's workstation will have a double duplex receptacle also on a dedicated circuit.
- Office areas will generally have (1) duplex outlet per wall. At each workstation a double duplex receptacle will be provided.
- Corridors will have a cleaning receptacle at approximately 25-40 foot intervals.
- Exterior weatherproof receptacles with lockable enclosures will be installed at exterior doors.
- A system of computer grade panelboards with double neutrals and surge protective devices will be provided for receptacle circuits.

Fire Alarm System

- A fire alarm and detection with mass notification system will be provided with 60 hours battery back-up standby, 15 minutes of alarm. The system will be of the addressable type where each device will be identified at the control panel and remote annunciator by device type and location to facilitate search for origin of alarms.
- Smoke detectors will be provided in open areas, corridors, stairwells and other egress ways.
- The sprinkler system will be supervised for water flow and tampering with valves.
- Speaker/strobes with white and amber colored strobes will be provided in egress ways, classrooms, assembly spaces, open areas, and other large spaces. Strobe only units will be provided in single toilets and conference rooms. Amber strobes will be initiated during a mass notification event in which a different district message will be played over the speakers.
- The system will be remotely connected to automatically report alarms to the Fire Department via a digitized master box.
- The generator status panel will be located at the Fire Alarm Control Panel.

Uninterruptible Power Supply (UPS):

- A 15KW 120/208V three (3) phase centralized UPS systems will be provided with seven minutes of battery back-up.
- The system will provide conditioned power to sensitive electronic loads, telecommunication systems, bridge over power interruptions of short duration and allow an orderly shutdown of servers and communication systems during a prolonged power outage.
- The UPS system will also be connected to the stand-by generator.

Lightning Protector System:

The lighting protection system will be provided with the following equipment: lighting protection air terminals, down conductors, grounds, Transient Voltage Surge Suppression

Renewable Energy System Provisions:

- Electrical provisions will be made for a roof mounted and exterior solar canopy renewable energy system for a grid connected photovoltaic PV system intended to reduce the facilities demand for power.
- Conduit provisions for canopy PV systems that will be metered separately.

Level 2 AC Dual Electric Vehicle Charging Equipment. (EVSE)

Provide provisions for dual port EVSE stations fed with 40 ampere feeders back to a EVSE panel for at least 10% of parking spaces per Massachusetts stretch energy code. Two protective bollards will be installed at each charging station.

Two-Way Communications System:

A Two-Way Communications System will be provided at the elevator lobbies that do not have grade access. Area of rescue assistance call boxes will be provided at Elevator Lobbies with no grade access. The call boxes connect to a main panel located adjacent to the Fire Alarm annunciator panel.

Distribution Antennae System (DAS):

A public safety radio distributed antenna system (DAS) which consists of bi-directional amplifiers (BDA), donor antennas, coverage antennas, coax cable, coax connectors, splitters, combiners and couplers. These devices will be used as part of a system for in-building public safety 2-way radio system communication.

VAV INTERNATIONAL, INC

Plumbing & Fire Protection Engineers

Refer to Appendix 8/6.4 – Plumbing & Fire Protection Assessment of Options for the full consultant report.

OPTION 1: CODE UPGRADE PLUMBING & FIRE PROTECTION SYSTEMS

Refer to Appendix 6/3.6 – PDP Plumbing Assessment and Appendix 6/3.6 – PDP Fire Protection Assessment fpr the full reports on this option.

Plumbing

Majority of pipes are past their useful life and in poor condition. We recommend replacing all cold, hot, waste and vent piping in the building.

Domestic hot water for the building is served from a 100 Gallon, 150 MBG High-efficiency gas-fired domestic water heater that was installed in 2015. Hot water heater is in good condition and still has 9 Years of useful life.

Gas meter is located on the outside of the building and serves domestic hot water heater, boilers, kitchen, and generator.

High Lead content was found in the cold-water system. Filters are being provided at the drinking fountains. Bubblers at classrooms are not being used.

Sanitary service runs to a septic system on site.

Roof drainage is via roof drains. Some water ponding was observed. Plumbing fixtures are older high flow fixtures. We recommend replacing all plumbing fixture with new low flow fixtures.

Kitchen has code required grease trap for 3-bay sink but not the dishwasher.

Could not confirm if the kitchen hood gas shut-off valve was interlocked with the Ansul system and co detector as required per 248 CMR.

Fire Protection

Existing building does not have a Fire Suppression system. Per current building codes a building over 7,500 sq ft require a fully automatic sprinkler system in compliance with NFPA 13. The existing building does not meet the current codes and any additions or renovations would trigger the need to install a new Fire Suppression system throughout the building in compliance with NFPA 13. CMR.

PLUMBING SYSTEMS

Plumbing Fixtures

- Number of plumbing fixtures will be added in the facility to accommodate student population in accordance with 248 CMR Para. 10.10 Table 1.
- Plumbing fixtures will be equipped with water conserving features, such as manual flush valves and flow restricting aerators.
  - Water Closet: 1.28 gpf High Efficiency Toilet, 1.28 gpf manual flush valve.
  - Urinals: 0.125 gpf Ultra High Efficiency urinal with manual flush valve.
  - Lavatory: Delta metering faucet with temperature mixing valve, 0.35 gpm flow restricting aerator.
- Water closets and urinals will be commercial vitreous china, wall hung (ADA compliant). Lavatories will be wall-mounted china. Each floor includes a janitor's closet with a mop service basin, if chemical dispenser will be attached to water supply, a code required BFP will be required, Toilet cores on each floor will include a drinking water fountain with a high-low handicapped accessible configuration and a bottle filling station. Toilet and mechanical rooms will have a floor drain with a trap primer. Hose bibs will be provided in each multi-stall bathroom and mechanical room. Roof Hydrants will be provided on the roof.
- Classrooms will have 2 self-rimming stainless-steel sinks w/ 0.5gpm gooseneck faucets w/ aerator.
- Drinking fountain will be dual height with bottle filler. Elkay, Hasley Taylor or Oasis.
- Plumbing connections will be provided to each kitchen appliance requiring plumbing.
- Any art room and STE room sinks will be provided with in-line solids interceptor.
- Exterior non-freeze wall hydrants will be provided on all sides of the school building.

Domestic Water Distribution

- Recommend New 4" domestic water supply line and will enter the water room. A Reduced Pressure Backflow Preventer will be provided to the main domestic water supply to protect the service (per

the DEP regulation 310 CMR 22). The domestic water distribution will incorporate water meter at main line and few branch piping to monitor the water usage on various levels such as boiler room, water heater and irrigation system if one is being provided. Boiler water feed, make-up, and any other mechanical take-offs will branch off through a reduced pressure-principle backflow preventer. Extend domestic cold water to all fixtures as req'd.

- The domestic cold-water piping inside the building will be distributed in "L" type copper tube with wrought or cast copper fittings. Potable water will meet both the NSF 61 and NSF 372 standards for the lead-free Safe Drinking Water Act. The piping will be insulated to prevent condensation.
- Domestic hot water tank can be re-used, recommend adding another tank for redundancy. Recommend replacing, circulators, mixing valves and all piping due to age. Extend domestic hot water to all fixtures as required.
- The water heater will supply hot water to classroom fixtures and kitchen appliances. The domestic hot water distribution system will have a recirculation system including but not limited to pump, aqua-stat and automatic thermostatic mixing valves. Piping will extend to each fixture with no dead leg more than 12 feet in length. There will be one temperature hot water supply / recirculation system in the building. Commercial kitchens no longer require 140-degree water to 3-bay sink and dishwasher. The system will operate at 120°F and will serve all plumbing fixtures including commercial kitchen, kitchen sinks and appliances, as well as the custodian room sinks, lavatories and classroom sinks. Faucets will reduce the temperature to 105°F at the public lavatories and classroom sinks via associated mixing valves.
- Domestic hot water will be distributed in "L" type copper tube with wrought or cast copper fittings. Hot water (HW), and re-circulating (HWR) piping will be insulated as required by the Energy Code.

Sanitary Waste

- Recommend new sanitary and vent piping.
- Recommend a dedicated 4" grease waste line will be installed to collect grease laden waste water from the new Kitchen appliances and fixtures. An interior grease trap will service fixtures that require one, such as dishwashers and the 3-bay sink. The grease line will then exit the building and will be connected to an exterior grease trap outside the building provided under the site. A dedicated 4" chamber vent will be provided and will run back to building and terminate independently through the roof. For culinary sinks, 3-bay sink, grease troughs and dishwasher an interior grease trap will be provided at the source.
- Above ground sanitary drainage will be piped in cast iron with "no-hub" joints (3" or larger). Piping smaller than 3 inches will be piped in copper. Piping below floor shall be weight cast iron hub and spigot type.

Rain Water Drainage

- Recommend all new storm piping.
- Roof Drain system will carry rainwater away from the flat roof of the new building with conventional primary roof drains. Overflow drains will be provided and run independently from the primary drains. Overflow piping will spill to daylight via wall scuppers. Rainwater piping and the system will be sized to handle a rainfall rate of 4 inches per hour, with a total runoff from the main roof and the roof deck of just under 1 cubic foot per second. The storm system will be installed in cast iron piping with all horizontal piping insulated to prevent condensation. The storm system will exit the building in multiple locations.

FIRE PROTECTION SYSTEMS

Sprinklers

- Building will be served from a new 6" fire service line from the street. Cross connection control shall be provided by use a supervised double check valve assembly backflow preventer on the fire service as it enters the building in a dedicated sprinkler room. A sprinkler riser with alarm check valve will be provided to meet the pressure and flow requirements of the sprinkler system.
- The entire building shall be protected throughout with a wet automatic fire suppression system. A fire department connection will be provided outside the sprinkler room. Additional locations, size and type will be determined by Littleton Fire Department This system shall be designed in accordance with NFPA Standard
- 13, 2013, the Massachusetts State Building Code, 10th Edition and the City of Littleton Fire Department requirements.
- Sprinklers shall be supplied from the standpipe. Floor control valve stations, consisting of a monitored shut-off valve, flow switch and an Inspector's test valve and sight glass, shall be provided at each floor take-off from the standpipe system. This shall report sprinkler flow to the fire alarm system on a floor-by-floor basis.
- Sprinkler heads in electrical and mechanical rooms shall be standard response, 212oF temperature

listing. Sprinklers in all other areas shall be quick response heads.

Standpipes

- Standpipes shall be supplied in all required egress stairs. Standpipes would be designed in accordance with NFPA Standard 14, 2014, and Littleton Fire Department requirements. Standpipes shall be located in each required egress stairway. Additionally, fdvs shall be located so that no part of the building is more than 200 feet from a standpipe valve. Each standpipe shall be equipped with a 2 1/2" fire department hose valve with 1 1/2" reducer at the stair floor landing. These shall be in recessed cabinets. Because the building is not a high rise, there is no minimum pressure requirement for the standpipes.

Fire Protection Systems

- Standpipes & sprinklers shall be supplied from a dedicated water service, entering the building in the sprinkler room. The building service shall be equipped with a wet main alarm riser check valve, located at the service entrance. From there, this line would run to each stairway, and then up through the stairways as standpipes. Fire protection piping shall be schedule 40 piping with threaded fittings for any piping sized 2" and less. For sizes over 2", schedule 10 piping with roll grooved fittings and couplings shall be used. All valves controlling the flow of water shall be equipped with supervisory devices that report to the Fire Alarm system. Kitchen hood will be protected with a dry agent "Ansul R-102" packaged hood suppression system.
- Maximum sf per zone will be 50,000 SF.
- Mechanical rooms, Kitchen and storage rooms shall be hydraulically calculated in accordance with NFPA 13 (2013 Edition) for an Ordinary Hazard Group I occupancy. The system shall be capable of providing a discharge density of 0.15 GPM/sf over a hydraulically remote area of 1500 SF and include an outside hose stream allowance of 250 GPM.
- Classrooms, offices, and remaining areas shall be hydraulically calculated in accordance with NFPA 13 (2013 Edition) for a Light Hazard occupancy. The system shall be capable of providing a discharge density of 0.1 GPM/sf over a hydraulically remote area of 1500 SF and include an outside hose stream allowance of 100 GPM.
- A flow test would be required to determine if a fire pump is required.

3.7 Proposed Budget & Cost Estimate

TTH prepared three (3) Uniformat II, Level 1 construction estimates based on three conceptual designs prepared by Studio G Architects. In addition, PM&C, a consultant to Studio G Architects, prepared three (3) estimates for designs prepared by Studio G Architects. The table below summarizes the Total Project Cost (TPC) and reimbursable analysis for each PSR option. The full detailed TPC and accompanying estimates can be found in Appendix 6/3.7 – Cost Estimates and Appendix 6/3.7 – PDP Cost Estimate. Please note that during PSR, the net square footage was reduced in the new construction options, resulting in a gross square footage reduction to 97,232gsf. It was determined that because the estimates costs of all three options under consideration were so close together that it was not a significant factor in the deciding the Preferred Option. The Code Upgrade option is included for price comparison purposes.



Estimated cost data from PM&C and TTH estimates, based on December 2024 information.

		OPTION 1 Code Upgrade	OPTION 2.1 Addition/ Renovation	OPTION 3.1 New Construction Upper Field	OPTION 3.2 New Construction Lower Field
Estimated Square Footage		62,000 sf	94,950 sf	97,232 sf	97,232 sf
Estimated Construction Cost / SF	DBB	$ 592.90	$ 809.91	$ 841.20	$ 831.03
	CMR	$ 627.47	$ 858.50	$ 891.67	$ 880.89
Estimated Construction Cost	DBB	$ 36.8M	$ 76.8M	$ 81.8M	$ 80.8M
	CMR	$ 39.0M	$ 81.4M	$ 86.7M	$ 85.7M
Estimated Soft Costs (based on DBB)		$ 7.3M	$ 15.4M	$ 16.4M	$ 16.2M
Estimated Total Project Cost	DBB	$ 44.1M	$ 92.2M	$ 98.2M	$ 97.0M
	CMR	$ 46.3M	$ 96.8M	$ 103.1M	$ 101.8M
Estimated Potential MSBA Reimbursement		**~$13.2M – 15.5M**	**~$27.7M – 32.3M**	**~$29.3M – 34.2M**	**~$29.0M – 33.8M**

3.8 Permitting Requirements & Approval Schedule

Littleton School District is proposing to construct a new elementary school to be located on the existing Shaker School campus in Littleton, MA. Since Options 2.1, 3.1 and 3.2 are all located adjacent to one another in close proximity, this section outlines the anticipated environmental permitting and other approvals that may be needed regardless of design selection.

Refer to appendix 3.5 - Civil Assessment for permitting timelines.

Refer to Appendix 6/3.8 – Town of Littleton Permitting for a document titled "Commercial Construction Application Checklist." Refer to Appendix 6/3.8 – Permitting Memorandum for additional details for the civil permitting process. Refer to Appendix 6/3.8 – MHC Project Notification Form Response for the Massachusetts Historical Commission response to the submitted Project Notification Form.

The Littleton Commercial Construction Checklist provides an overview of permitting documents required in Littleton. The town offers prospective applicants the opportunity to meet with various Town officials responsible for designating land use. This is a private, informational meeting in the pre-application stage, which can be helpful in determining the project specific steps for meeting all permitting requirements. We anticipate starting this process in the Design Development phase.

We anticipate that the project may need to engage with the following entities:

STATE

Massachusetts Environmental Protection Act (MEPA)
Requires state agencies to evaluate the environmental impact of all projects or activities undertaken by state agencies, or private projects seeking state funding or permits.

Prior to beginning construction, the project site will require to develop a Stormwater Pollution Prevention Plan SWPPP and filing an ENOI with the EPA by the site operator.

At this point however, it appears MEPA permitting will not be required, due to the fact that the project location does not seem to trigger thresholds such as (not an exclusive list):

- Direct alteration of 50 or more acres of land.
- Creation of ten or more acres of impervious area.
- Alteration requiring a variance in accordance with the Wetlands Protection Act.
- New withdrawal or Expansion in withdrawal of: 2,500,000 or more gpd from a surface water source

Hazardous Waste Management Act
May be required from the federal Environmental Protection Agency or state Department of Environmental Protection if any wastes generated by the project are hazardous, depending on the types of quantities generated, reviewed by the Littleton Fire Department.

Massachusetts Historical Commission (MHC)
The Project Notification Form (PNF) was submitted to the MHC for this project during PDP phase on July 29, 2024. MHC reviewed the PNF and indicated that the existing Shaker Lane School is neither included in MHC's Inventory of Historic and Archaeological Assets, nor listed in the National and State Registers of Historic places. No further review by the MHC is required. See Appendix 6 / 3.8 - MHC Project Notification Form Response for the letter as such from MHC dated August 23, 2024.

Wetlands Protection Act
Requires a landowner to obtain a permit (Order of Conditions or Determination of Applicability) from the local Conservation Commission prior to doing any work within 200 ft. of perennial streams or 100 ft. of wetlands or the 100-year floodplain.

TOWN OF LITTLETON

Littleton Conservation Commission and DEP
Any work within 100' of Bordering Vegetated Wetlands (BVW) will require approval from the Littleton Conservation Commission with a review by DEP. Due to wetland resource areas located on and adjacent to the site, any new construction will require approval from the Littleton Conservation Commission and DEP at a minimum.

Town of Littleton permiting requirements are outlined on the following page.

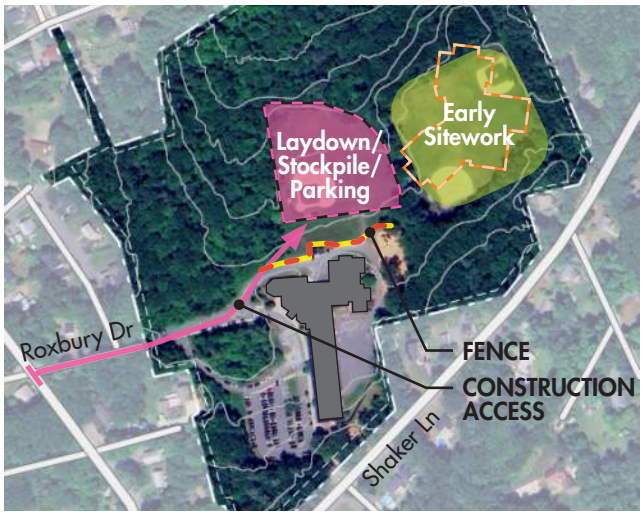
Town of Littleton Permit Required	Permitting Authority	Anticipated Filing Date	Duration (Approximation)
Wetlands	Littleton Conservation Commission & DEP	During Design Development phase	1-2 Months ENF, 4-6 Months Notice of Intent
Littleton Water Connection, Fire Flow test, Water Extension	Planning Board	During Design Development phase	4-6 Months
Hazardous Materials	Fire Department	During Design Development phase	30-60 Days
Site Plan Review, Special Permit, Sign Permit as part of Site Plan review	Planning Board	During Design Development phase	45-120 Days
Earth Removal	Board of Selectman	During Design Development phase	60-120 Days
Zoning Appeals, Special Permit, Variance	Zoning Board of Appeals	During Design Development phase	60-120 Days
Kitchen facility review	Board of Health	During Construction Administration phase	3-4 Months
Stormwater Pollution Plans (SWPPP)	National Pollution Discharge Elimination System (NPDES)/ Stormwater Pollution Plans (SWPPP)	2 weeks prior to Construction	14 Days by GC, prior to commencing construction
Building Permits (C of O, Electrical, Fire Alarm/ Suppression, Gas, Plumbing)	Building Department	Construction Administration	Varies

3.9 Proposed Design & Construction Schedule

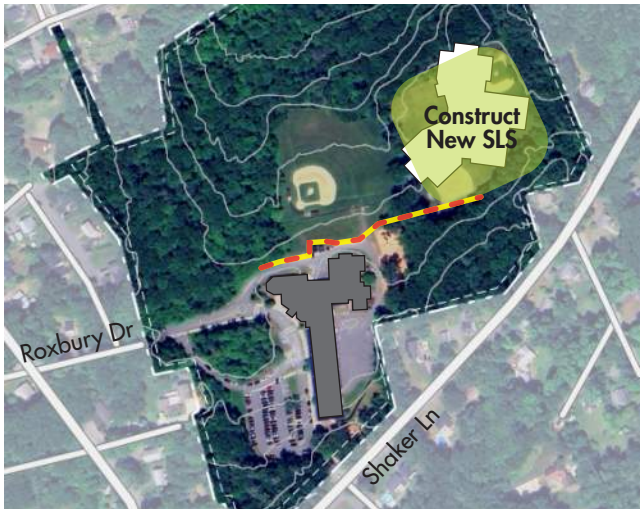
TTH, working with Studio G Architects, developed a proposed design and construction schedule, which can be found in Section 4.7 – Updated Project Schedule. The proposed phasing and construction impacts for the Preferred Solution Option 3.1 are as follows:

PHASING

Phase 1: Spring 2027
The existing SLS remains in operation. Early site mobilization of construction site fencing, erosion control, temp. electric, and mobilization of the CM management trailer complex. Early utility work would be desired, however and required to be further studied.



Phase 2 (start of building construction): Late spring/ early summer 2027
The existing SLS remains in operation. Foundations, superstructure [steel erection - decking], u/g electric and plumbing, SOFP, exterior enclosure, roofing, MEP FP rough, interior finishes, MEP FP finishes, commissioning, building flush out, PL, and technology & furnishings.

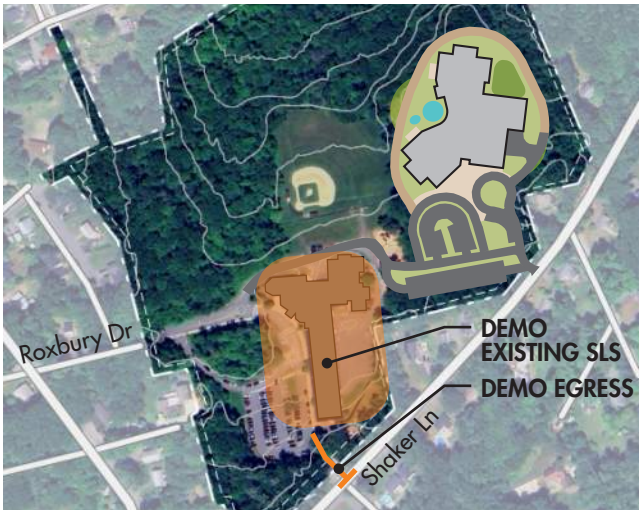


Phase 3 (Interim): Summers of 2027 and 2028
The existing SLS remains in operation. Interim sitework, site improvements, and roadway work will be performed as not to interfere with school operations.



Building occupancy: August 2028

Phase 4: Fall of 2028
After the new Shaker Lane School reaches substantial completion and has been occupied, demolition operations will commence of the existing Shaker Lane School. The critical path activity for school operations is to allow for a functional bus and student drop off & pick up to occur for the beginning of the 2028/2029 school year. Further study of this is required during the schematic design phase as well as during the CM pre-construction phase as the project moves forward.



Phase 5: Early Spring of 2029
Due to the timing of the start and completion of demolition operations, coupled with New England weather, it is anticipated that the planting season will be missed. that said, in the early spring of 2029, completion of the new play fields and plantings will be completed at the site of the demolished Shaker Lane School.



The on-site construction phasing will be accomplished with the following anticipated design packages:

Package 1
Site enabling, earthwork (utilities, and temp electric)

Package 2 (combined with MSBA 60%)
Superstructure set (steel, concrete, below grade waterproofing, SOFP, Elevator).

Package 3 (combined with msba 90%)
Envelope, MEPs, remaining file trades

Package 4 (Combined with 100% record)
All remaining scopes/trades

For additional details relating to the MSBA packages/ deliverables, design packages, CM procurement, trade pre-qualification, bidding, scope awards and a conceptual construction schedule, please refer to Section 4.7 – Updated Project Schedule.

Additional logistical items to study during the Schematic Design Phase: Staff/parent/trade parking, site grading, emergency egress from existing school, deliveries, unobstructed fire/police site egress, other.

3.10 MSBA Summary of Preliminary Design Pricing

Please refer to the summary of preliminary estimated costs below for project budget information related to the Code Upgrade option, and the three (3) options deemed viable by the SBC at the beginning of the PSR phase. The table highlights (in green) Option 3.1: New Construction Upper Field as the Preferred Solution.

Please note this pricing is relevant to the options as they stood in October 2024 when the estimating was conducted and does nt reflect the reductions in net square footage that occurred as the design progressed. Refer to Section 4.6 – Total Project Budget for detailed pricing information.

MSBA Preliminary Design Pricing Table
Littleton - Shaker Lane ES
12/17/2024

	Total Proposed Gross Square Footage	Square Footage of Renovated Space & Cost Per Square Foot	Square Footage of New Construction & Cost Per Square Foot	Cost of Site Work, Bldg Demo, Haz Mat, Etc.	Estimated Total Construction & Cost Per Square Foot	Estimated Total Project Cost
Option 1 Code Upgrade	62,000 sf	62,000 sf	0.00 sf	$1,930,000	$ 36,766,000	$44,119,200
		$561.87 /sf	$0.00 /sf		$ 593.00 /sf	
Option 2.1 (add/reno)	94,850 sf	30,200 sf	64,650 sf	$7,212,982	$ 76,819,992	$92,183,990
		$467.03 /sf	$504.78 /sf		$ 809.91 /sf	
Option 3.1 New* **	97,232 sf	0.00 sf	97,232 sf	$11,769,060	$ 81,791,610	$98,149,932
		$0.00 /sf	$720.16 /sf		$ 841.20 /sf	
Option 3.2 New	97,232 sf	0.00 sf	97,232 sf	$11,062,044	$ 80,802,758	$96,963,310
		$0.00 /sf	$717.26 /sf		$ 831.03 /sf	

* Marked Up Construction Costs
** Does not include Construction Contingency
*** **District's Preferred Schematic**

4 PREFERRED SOLUTION

4.1	Educational Program – Clean Copy	78
4.2	Preferred Solution Space Summary	136
4.3	Preliminary LEED-Scorecard	142
Sustainability Narrative		145
4.4	Conceptual Floor Plans of Preferred Solution	146
4.5	Site Plan of Preferred Solution	147
4.6	Total Project Budget & Local Funding	150
4.7	Updated Project Schedule	153

The District's preferred solution is Option 3.1, which evolved over the course of the Module 3 phase. The design enrollment for the Shaker Lane School project is 435 students in grades K-2 and 48-60 students in Pre-K. Using the Initial Space Summary template from the PDP, this version was refined based upon further development of the District's Educational Program, as well as extensive ongoing discussions with key administration members of the school and the Littleton School District.

Option 3.1 constructs a new building to replace the existing Shaker Lane School, located behind the existing elementary school at the upper field location and would be built while the existing school remained occupied. A new SLS would be designed in accordance with current building codes and accessibility requirements and would allow the opportunity to fully incorporate energy-efficiencies and educational programming initiatives, while fully supporting the District goals for 21st Century learning (applicable to all of the New Building Options 3.1-3.2). New construction would offer the least disruption to the school community since the elementary school would remain occupied during construction.

The new 2-story school is set back relative to the site and primary entrance, but still in view upon entering the campus. Separation of the bus and car drop-off route results in lessening congestion on the main campus drive and backup onto Shaker Lane and Roxbury Drive. Ample queuing is available as children are dropped off at the central gathering plaza in front of the southwest-facing entry. Plantings and benches support a welcoming feel, while security and safety features are invisibly or subtly integrated into the design. Play areas are protected by the new building and minimal concealed fencing. Outdoor learning areas are concentrated behind the school and within the protected courtyard, away from campus vehicular traffic to create an insular protected learning environment for the school community.

The building is organized such that spaces which may be used by the public are immediately accessed from the entry lobby; specifically, the Cafeteria and Gymnasium. An administration suite is located adjacent to the entry for easy monitoring, and the Media Center is prominently located to complete the spaces at the heart of the school.

Beyond the lobby and central gathering space are two 2-story academic wings, which can be locked off from public access. The wings are oriented for maximum solar exposure. Grade levels are organized into distinct neighborhoods, each including classrooms, a shared den neighborhood, dedicated Special Education rooms, and a variety of support spaces.

A partially enclosed play area lies between the two academic wings, providing sheltered space for outdoor classrooms and gathering. Natural play and exploration occurs at the perimeter of the building. The edges of the site are heavily wooded, providing a valuable resource for field trip opportunities and outdoor classrooms completely immersed in nature.

This option became the District's preferred solution for the following reasons:

- Space program:
  - Will meet MSBA guidelines
  - Will meet educational plan & modern teaching methods
- Building & playgrounds are accessible
- New building systems & envelope meet sustainability goals
- Opportunity to install geothermal and/or photovoltaic systems
- Improved pedestrian & vehicular circulation
- New building to meet the needs of the district
- Improved community access to public fields & indoor spaces
- Opportunity for extensive access to nature/green space/outdoor learning
- Minimal disruption to building occupants during construction

UPDATES SINCE THE PDP

In response to the space refinements and the updates to the district"s Educational Program revisions, the design of the building was modified in the following ways:

Core Academics
Classrooms were reduced to the MSBA minimum of 1,100sf for Kindergarten and 900sf for grades 1-2.

Special Education
The PACE classroom was reduced to 1,100 sf.

Pre-Kindergarten
Classrooms were reduced to the MSBA minimum of 1,100sf. Several spaces were recategorized into this category suh as the Pre-K PACE, (also reduced to 1,100sf) and the Pre-K Small group rooms.

Other categories
Dining & Food service, Medical, and Administration & Guidance were brought into alignment with the MSBA guidelines. Several rooms were moved to non-programmed such as OT/PT/APE storage, kitchenette, and mother's room.

The overall conceptual layout and key adjacencies were not modified, but the building was refined and developed to improve organization and circulation.

Refer to Appendix 6/4.1 – Educational Program: Red-Lined Version

Littleton Public Schools

Educational Plan

Shaker Lane Elementary School Project



MODULE 3: PRELIMINARY DESIGN PROGRAM

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Shaker Lane Elementary School Education Program

As of August 14, 2024

INTRODUCTION

EDUCATIONAL VISIONING PROCESS

District Visioning Team

The district completed a series of school tours, observation days, visioning sessions, and programming meetings with Educational Planner Mike Pirollo and Educational Consultant Paul White from MLP Integrated Design, along with Studio G Architect as part of the visioning effort for the Shaker Lane School building project. Over 40 stakeholders participated, including parents, community members, school committee members, staff, and school and district administrators.

Anna Dyadko	Adjustment Counselor
Kerryn Fitzpatrick	Administrative Assistant
Rebecca Deacon	Assistant Principal
Katie Sapp	BCBA
Steve Mark	Business Manager
Lyn Snow	Director of Student Services
Elizabeth Steele	Director of Teaching and Learning
Sharon Kampersal	ELL Teacher
Jillian Anderson	Executive Assistant
Allyson Bullock	Grade 1 Teacher
Jessica Dussi	Grade 1 Teacher
Karen Giles	Grade 1 Teacher
Maggie Munnelly	Grade 1 Teacher
Rebecca Roper	Grade 1 Teacher
Casey Ward	Grade 2 Teacher
Cheryl Pratt	Grade 2 Teacher
Shayna Garlisi	Grade 2 Teacher
Vanessa Holm	Grade 2 Teacher
Julie Lord	Instructional Tech Coordinator
Raina Sturtz	Integrated Preschool Teacher
Katie Linehan	K-2 PACE SPED
Heidi MacGregor	K-5 STEM Integration Specialist

Kelli Harte	Kindergarten Teacher
Michelle Barth	Kindergarten Teacher
Michelle Hurley	Kindergarten Teacher
Kris Hevenor	Library Tutor
Beth Moore	Math Interventionist
Mary Ethier	Occupational Therapist
Kari Eckley	Parent & SEPAC Representative
Rebecca Craven	Parent & SEPAC Representative
Tasha Clark	Parent, PTA, Substitute Teacher
Mark Bentley	Physical Education Teacher
Melissa Sloan	Preschool PACE SPED
Kristen Mamos	Preschool SPED Teacher
Michelle Kane	Principal
Rebecca Mawn	Reading Specialist
Jeanine Wood	School Committee Member
Danya Sciar	School Psychologist
Alli Gilman	Special Ed Administrator
Rosaria Cochis	Special Education Teacher
Haley Lowney	SPED
Crystal Hutchins	Speech Language Pathologist
Sherri Susser	Speech Language Pathologist
Kelly Clenchy	Superintendent of Schools
Perry Kenney	Unified Arts Teacher

Highlighted names indicate District representatives primarily responsible for developing this educational program.

Shaker Lane Elementary School Education Program

As of August 14, 2024

Goals, Priorities, and Guiding Educational Principles

Through the visioning sessions, constituents determined the following as our Overarching Goals and Priorities, as well as our Guiding Educational Principles. A safe and secure environment is a primary requirement of any school within the Littleton Public Schools. Our guiding principles drive the design patterns to support our philosophy on teaching and learning. The design patterns stem from the identified design features including a welcoming and child centered design, community engagement, flexible and varied spaces, classroom neighborhoods, quiet spaces, breakout and collaborative spaces, inclusive learning spaces, appropriate teacher spaces, indoor/outdoor connections, hallway learning, display and exhibition, centralized dining with flexible spaces, branding, and history and storytelling.

Overarching Goals and Priorities

- A Developmentally- and Socially-Emotionally-Responsive School
- Happy Kids Learning through Hands-On Learning, Agency, and Play
- Flexibility to Support Academic Break-Out and Future Growth
- Supporting Community, Connection, and Collaboration
- Inclusion, Accessibility, and Efficiency in a Universally-Designed Building
- Embracing the Outside-Inside Connection
- Opportunities and Space for Professional Growth and Work
- Building as School and Community Resource

Guiding Educational Principles

- Inclusion of closing circles as a part of dismissal – establishing a strong sense of community
- Learning as a flexible, fluid experience that embeds play
- With end goals in sight, students have choice and autonomy in how to get there; learning is shown in different outcomes and tangible product
- Sustained work on collaborative, child-led projects
- Arrival includes basic needs being met (safety, belonging, community, and play)
- Importance of student choice, including during lunch and at recess
- Inclusion of “down time” choices based on students knowing what they need
- Inclusion of co-teaching (vertical, horizontal, and across disciplines)
- Through this project, we will define what play looks like in all forms
- Embedding thoughtful and purposeful transitions
- Inclusion of outdoor learning and experiences

Shaker Lane Elementary School Education Program

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As we closed out our visioning sessions with staff and community representatives, we outlined the vision of The Future Shaker Lane below:

THE FUTURE SHAKER LANE	
Child Development • Learning through fun, hands-on experience/play • Need big and small movement opportunities, activity • Consistency, rules, routines, repetition, predictability, structure • Increase student talk time, decrease teacher talk time • Giving opportunities to teach/lead/model	**Collaboration, Inclusion, and Play** • Allow more opportunities for choice and exploration • Play and connections to learning, interests, strengths • Incorporating purposeful and intentional play/learning • Communal space accessible to all • Meeting students where they are at
Social-Emotional Wellness • Sense of belonging and community • Sensory experiences in common spaces/entry points • Break spaces all throughout the school and not isolated • Student choice around self-regulation • More natural spaces throughout the building to serve variety of proactive/reactive regulation needs	**Empowering Learners** • Choice of learning experiences, modes of engagement • Student choice, voice, autonomy • Provide support needed • Value all learning styles • Opportunities to showcase work

Community and collaboration are the building blocks of Shaker Lane and that was reiterated time and time again throughout our visioning process. Throughout our Educational Program you will notice the language of several collaborative learning spaces that meet our philosophy. The following are definitions of these collaborative spaces.

- ***Den Learning Space*** - This space refers to the desire of a common learning area that is created in the middle of each grade level PreK - 2. All classrooms within the grade level will have access to this shared space throughout the school day as it is designed to be a spill out area beyond the traditional classroom walls. Additionally, dens may act as the classroom itself, where teachers gather students from one or multiple classes to do a direct instruction mini-lesson before students spill into different classrooms within the grade level. Den Learning Spaces at the heart of each grade level will provide the opportunity for classrooms to collaborate and co-teach lessons, provide a space for presentations to multiple classrooms at one time, and create a communal location for cross grade level activities to take place. These large Den Learning Spaces will also allow for service providers to provide small group services in an extended classroom setting.
    - In terms of staffing and scheduling, the den learning spaces are intended to be shared throughout the day, allowing teachers to work collaboratively to determine when portions of or the whole den space may be “reserved” for a multi-class activity or when students can spill out from multiple classes because a specific lesson or activity is not planned for that day. There is no staff member that owns this space, which is intentional as it will encourage grade level staff and specialists to intentionally plan in ways they haven’t before when only teaching in siloed classrooms.
    - Each Den Learning Space will have a shared Google Calendar to reserve various zones within the den throughout the school day. As all classrooms are adjacent to this space, supervision will be provided by the classroom teachers.

  - The Den Learning Space allows multiple classrooms to gather for a collaborative experience that our current building design does not offer and a larger general classroom would also not offer. Currently, our grade levels combine into a small classroom limiting activities and experiential learning that would be capitalized upon in the Den Learning Space. Such learning that could be enhanced in the Dens include science experiments through our FOSS program, STEM projects, and other tactile and kinesthetic experiences encouraged by our curriculum.
  - A large shared Den Learning Space would allow for pooling of teacher resources to save space and money. These resources include large or costly educational materials such as book collections, dramatic play modules, STEM equipment, water exploration apparatus, and gross motor gear.
  - In terms of supervision and visibility, we envision a direct connection between classrooms and the den space so classroom teachers and specialists will have a full view of students working in these large spaces. As the project progresses, we will work closely with the design team to decide on the type of visual and spatial connections classrooms have with the den space.
- ***Small Group Learning Space*** - As the design of Shaker Lane will incorporate 8 classrooms for Kindergarten (one of which includes Transitional) and 7 classrooms for grades 1 and 2, a small classroom/small group learning space between classrooms is desired. This shared space will be utilized for small group services by our special education staff and math interventionists. Providing support for students that is close to their classroom will allow for students to efficiently receive services in their classroom environment. This space also allows for students in adjoining classrooms to be serviced at the same time while remaining next to their learning environment to quickly return and remain informed on any teacher information. Should privacy be needed in these small group learning spaces, doors and shade-type coverings will be easily accessible.
- ***Clinical Suite*** - Our special education team collaborates frequently throughout the day. As the earliest level of intervention in Littleton, our PreK-2 service providers work together to develop Individual Education Programs (IEPs) and goals for students. The creation of a Clinical Suite allowing for a central communal space for our Speech & Language Pathologists, BCBA, School Psychologist, contracted specialists, and Special Education Administrator would create a supportive and collaborative environment where service providers can discuss goals, objectives, and benchmarks in developing IEPs. The design of this space should include comfortable seating and work stations as well as allow for space to include itinerant specialists who provide consultation to building staff throughout the year (orientation, vision, and mobility specialist, adaptive physical education consultant, speech and language augmentation specialist). A small group room connected to the Clinical Suite would be utilized by our services providers for evaluating students. In addition to a small group room, a small conference room connected to this suite would provide a gathering space where staff could meet and discuss programming as well as provide a location for Student Success Team meetings (SST). Positioning this suite on the second floor would provide a central location for staff to quickly access students across grade levels.

The Littleton Public School District is a high-performing school district that places an emphasis on academic achievement, social-emotional learning, universal design for teaching and learning (UDL), multi-tiered systems of support for all learners (MTSS) as well as diversity, equity, inclusion, and belonging (DEIB). Our continued commitment to analyzing student achievement data to inform curriculum and support targeted individualized instruction within our classrooms remains a priority for our school district. From year to year, our administrators and educators consistently focus on data analysis to monitor individual student and sub-group academic growth. Data from the 2023 Massachusetts Comprehensive Assessment System provides evidence that our district continues to grow significantly toward achievement targets and that our student achievement aligns with that of

other high-performing school districts within the state. Our administration and educators continue to be involved in detailed and extensive data analyses of MCAS results and incorporate key findings when preparing students for the next MCAS administration. We are incredibly excited for the opportunity to re-envision educational opportunities at our Prek-2 Shaker Lane School and are grateful for the opportunity to explore a building project that aligns with our district mission, vision, strategic goals, and philosophy that will provide a 21st-century learning experience for our youngest learners.

The Littleton Public Schools' **MISSION** is to foster a community of learners who strive for excellence and prepare each student to be a successful, contributing citizen in a global society. As a district, we commit to evolving together as a diverse community through education, accountability, and compassion.

OUR CORE VALUES: In order to achieve our vision and mission, Littleton Public Schools administration faculty, staff, and students will model and advance the following values:

Respect **Integrity** **Accountability** **Responsibility**

OUR VISION: The vision is a guiding statement that the Littleton Public Schools use as the basis for all strategic planning, policy, and budget decisions. The Littleton Public Schools:

- Promotes high academic standards for staff & students.
- Challenges all students to achieve their full potential.
- Prepare students to be life-long learners, critical thinkers enabling them to become contributing citizens.
- Maintains a commitment to continuous improvement of student achievement through the offering of school programs that are diverse & challenging.
- Communicates a clear set of standards regarding what students should know and be able to do at the end of each grade.
- Provides continued support to our staffs to enhance instructional strategies that promote student learning.
- Strives to meet each individual student's needs while considering that cognitive, social, physical, and emotional development varies.
- Promotes an inclusive culture and climate that honors diversity and equity, models respect, responsibility, integrity and accountability.
- Continues to encourage staff professional growth by providing the tools, support, and resources to be successful.
- Provides support to teachers and administrators in using data to assess and inspire their own skills and effectiveness.
- Includes the community as an active and contributing partner in the education and schooling of each child.
- Provides frequent communication between our schools and community regarding opportunities, accomplishments and progress of educational goals.
- Continues to foster a partnership of students, teachers, support staff, administrators, and the community, excelling at what they do and acting with strong conviction and deep commitment to bring about a higher quality of education within our schools.

OUR BELIEFS:

- The purpose of education is to enable students to become self-reliant learners and productive, responsible citizens in a complex and challenging world.
- Everyone has the right to learn in a safe and secure environment.
- Education is the shared responsibility of our schools, students, their families, and the community.
- All students can achieve at high levels and learn at different rates and in different ways.

- Teachers are the most important factor in student achievement within the school.
- All students have abilities and talents worthy of recognition.
- Student achievement is not solely the result of student ability.
- Literacy and numeracy are the foundations upon which learning is built.

We have recently reviewed our strategic plan with our staff, community, and school committee and have developed a new strategic plan (2028) that consists of five standards: **Curriculum/ Instruction/ Assessment, Professional Development, Community, Engagement/Communication, Climate/Culture, and Technology.** Our school SIPs and educator, and administrator goals align with our strategic plan which acts as a green print as we continue to enhance learning opportunities for students and staff. Our strategic plan is also utilized as a key driver in the formation of the district's budget. Below, please find a summary table listing our district's goals within each standard.

DISTRICT STRATEGIC PLAN 2023-2028 STANDARDS AND GOALS

	STANDARD #1: Curriculum/ Instruction/ Assessment **Align and enhance curriculum, instruction and assessment to continually improve student achievement.**	**STANDARD #2: Professional Development** **Provide staff with a variety of professional development opportunities that are connected to the district Strategic Plan and Individual School Improvement Plans.**	**STANDARD #3: Community Engagement/ Communication** **Preserve and enhance communication strategies between a the school district and its constituents**	**STANDARD #4: Climate/Culture** **Foster a respectful and responsive culture that provides a safe, secure learning and work environment.**	**STANDARD #5: Technology** **Preserve and enhance the integration and utilization of technology for students and staff PK-12.**
GOAL #1	Implement standards-based Pk-12 curriculum that is aligned with State Frameworks and is well articulated vertically and horizontally.	Offer a comprehensive professional development program for all staff which includes district programs and site-based programs, college courses, workshops and/or conferences.	Effectively communicate the district's core values, vision, mission, and beliefs within the Community	Review, maintain and modify protocols and procedures that provide all students and staff with a safe and secure learning and work environment	Align school and district-based technology planning with current state, national and international technology Standards
GOAL #2	Develop and implement a five-year curriculum review cycle to enhance and/or refine curriculum, Pk-5 and 6-12.	Establish and sustain partnerships with higher education and professional organizations to provide expanded learning opportunities for staff and students.	Creatively and effectively utilize technology and media to communicate with all LPS constituents.	Ensure the district and schools are free from discrimination and harassment and support Student wellness.	Continue to improve staff/administrative utilization and integration of technology.
GOAL #3	Use multiple forms of data to measure and evaluate student achievement.	Foster a culture of professional learning aligned with State Guidelines that promotes growth and innovation.	Strengthen partnerships with business, civic organizations and community members at large.	Review and revise the District Maintenance Plan	Continue to improve student utilization and integration of technology for college and career readiness.
GOAL #4	Identify and implement effective instructional practices to support the academic achievement and social-emotional skills of diverse learners.			Continue to support the district's energy and environmental conservation initiatives.	Provide all staff and students with appropriate access to technology

GOAL #5	Implement a comprehensive multi-tiered system of support that equitably supports all students.			Formalize a comprehensive staff recruitment, selection, and retention program.	

21st-Century Learning Goals: The Littleton Public Schools are committed to the development of the whole child with an emphasis on ensuring that our students are future-ready; the 21st-century skill sets we modified from the original lists to incorporate areas of focus gleaned from the visioning sessions.

Communication and Collaboration
Teamwork
Communication Skills
Community Connections
Digital Literacy

Passion and Engagement
Ownership for Learning
Self-directed learning
Active Engagement
Prioritizing and Managing Time

Social and Emotional Intelligence
Empathy and Caring
Cultural Awareness
Global Awareness
Citizenship and Ethics
Kindness and Inclusion

Creativity and Entrepreneurship
Curiosity and Innovation
Flexible Learning
Inventive Thinking
Imagination and Play
Active Engagement

Problem Solving
Critical Thinking
Problem Solving
Analytic Thinking

Agility and Adaptability
Perseverance
Open Mindset, Flexible Thinking
Self- Awareness, Risk-taking

Portrait of A Learner: Our district is currently in the process of developing a Portrait of a Learner which will reflect key qualities and attributes that align with our district's mission statement. As we think about the design and space requirements for a reimagined Shaker Lane School, a portrait of a learner will continue to help guide our decisions in the design and space requirements that are necessary to provide a 21st-century learner experience for our students.

Shaker Lane School Mission: ***We are building a safe, caring, and ready-to-learn community.*** This mission statement was the result of a year-long building-wide effort in defining our beliefs at Shaker Lane. This mission along with the long-standing core values of H.E.A.R.T. are at the foundation of all our decisions.

H is for Honesty in one's actions and words.
E stands for Effort in both one's work and play.
A is for Acceptance of the likeness and differences in everyone in our community.
R stands for Respect for learning, for oneself, for others, and for our environment.
T stands for Taking responsibility for what you do and say and for each other.

Through direct teaching and modeling, along with constant visual and verbal reminders throughout our school community, it is our hope that these core values become embedded in our culture. They are a

clear representation of what we believe in as a school community. H.E.A.R.T. sets high expectations for learning and behavior for both students and faculty.

GRADE & SCHOOL CONFIGURATION POLICIES

Current

The Shaker Lane School educates students in grades PreK through Grade 2. There is currently one full-time preschool classroom, two half-day preschool classrooms, six kindergarten classrooms, one transitional classroom, six first-grade classrooms, and six second-grade classrooms. The table below accounts for the students in each grade level during the 2023 - 2024 school year.

PreK	48	Grade 1	126
Kindergarten & Transitional	136	Grade 2	136

Proposed

There are no proposed grade configurations outside of our current model.

CLASS SIZE POLICIES

Current

The district does not have a policy that governs class size. Research indicates that class size is an important factor in a well articulated educational program and will, whenever possible be subject to space availability and all other educational considerations , to ensure that class size creates effective learning environments for students and staff. The desirable range for class size shall be between 18-22 students. Currently, our Kindergarten classrooms are all at 20 students per teacher. Our transitional classroom has 13 students, which is typical for this classroom. The transitional class is purposefully created for students that are not yet ready to meet the rigorous standards of grade 1, but ready to be challenged beyond a second year of kindergarten. For the purposes of reporting to the Department of Elementary and Secondary Education, students in the transitional classroom are reported as Kindergarten students. Our grade one classrooms range between 19-21 students. Our second grade classrooms range between 21-22 students per teacher. The addition of another classroom to each grade should help create and maintain class sizes within the specified range.

Proposed

The proposed grade configuration for the new/renovated Shaker Lane School allows for one additional classroom in kindergarten, grade 1, and grade 2. An additional classroom at the K, grade 1, and grade 2 levels, will allow for the growth of the community as well as smaller class sizes. The Town of Littleton is expecting to significantly increase its population with the proposed addition of 700+ apartments at the prior, now vacant, IBM building. The influx of residents may lead to overcrowded classrooms where an additional classroom will be needed.

The MSBA guidelines call for more general classrooms that the existing school currently has, so these "additional" classrooms are still within the MSBA guidelines, with the exception of one more classroom so that first and second grade can have equal quantities of classrooms (14 total vs the MSBA guideline of 13).

SCHOOL SCHEDULING METHOD

Current

Creating an effective building schedule is a complex task that involves balancing various priorities and constraints. The time on learning schedule is overseen by the building principal and assistant principal. Creation of the schedule is managed by the assistant principal in collaboration with the school's Leadership Team to other staff members. Grade levels are grouped into two cohorts of three educators to allow for some common planning time.

Priority Scheduling Blocks:	**Intervention Blocks:**	**Challenges and Constraints:**
• High priority curricula of math, literacy, science, and social studies are scheduled first to allow for some crossover time amongst the six grade level classrooms to maximize intervention services. • Alignment of academic blocks across three grade-level classrooms to maximize support staff time.	• Five 30-minute intervention blocks per week for each grade level. • Ensure students receive related services (Academic, Speech, OT, PT) without missing new academic instruction.	• Math Interventionist and Literacy Specialists sharing one space for instruction makes it difficult with scheduling and instruction of different core subjects. • Special Education Teacher and ELL Teacher sharing one space makes it very challenging to schedule and service students in a space that is potentially overstimulating.

Balancing these elements requires careful planning and often creative solutions to ensure that all students and staff have the resources and time they need for effective teaching and learning. Below is the allotted time on learning per subject area.

ELA/ Reading/ Writing	The ELA block is 75 minutes a day in Kindergarten/Transitional and 90 minutes a day in Grades 1 & 2. Reading and writing take place within this ELA block time. Phonics is scheduled for 30 minutes across K-2 classrooms.
Math	Mathematics is 65 minutes a day in Kindergarten/Transitional and 70-75 minutes a day in Grades 1 & 2.
Science	Science is taught for 40 minutes a week in Kindergarten and 50-60 minutes in Grades 1 & 2. Teachers have the opportunities to teach science twice a week or can alternate science and social studies instruction within units (month by month, for example) to provide time for projects and experiments without teaching on alternating days.
Social Studies	Social Studies is taught for 40 minutes a week in Kindergarten and 50-60 minutes in Grades 1 & 2. Teachers have the opportunities to teach science twice a week or can alternate science and social studies instruction within units (month by month, for example) to provide time for projects and experiments without teaching on alternating days.
Unified Arts	Each grade level, K-2, has one period of Unified Arts each day for 45 minutes. Unified Arts consists of one period a week of Art, Music, Physical Education, Library, and SEL.

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Lunch/ Recess	Recess and lunch are scheduled for a combined 40 minute block. Students have a 20 minute recess followed by a 20 minute lunch. Each grade level has their own recess and lunch periods. On early release days, families have the option to order a bag lunch.
Social-Emotional Learning	Second Step SEL curriculum is taught once a week for 20 minutes in Kindergarten and 25-30 minutes in Grades 1 & 2. At times throughout the year, SEL classroom instruction may vary if students are engaged in their trimester SEL block as their Unified Arts.

2024-2025 Shaker Lane School Schedule

	Kindergarten	Kindergarten	Transitional	Transitional	1st Grade	1st Grade	2nd Grade	2nd Grade
	Barth Furbus Harte	Hurley Duarte Bell	M, Tu, Th, F	W	Dussi Roper Munnelly	Bullock Vachan Giles	Madyda Pratt Warnock	Ward Holm Garlisi
8:45	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival
	8:40 - 8:55	8:40 - 8:55	8:40 - 8:55	8:40 - 8:55	8:40 - 8:55	8:40 - 8:55	8:40 - 8:55	8:40 - 8:55
	8:55 - 9:10	8:55 - 9:10	8:55 - 9:10	8:55 - 9:10	8:55 - 9:10	8:55 - 9:10	8:55 - 9:10	8:55 - 9:10
9:00	Morning Mtg	Morning Mtg	Morning Mtg	Morning Mtg	Morning Mtg	Morning Mtg	Morning Mtg	Morning Mtg
	15min	15min	15min	15min	15min	15min	15min	15min
	9:10 - 10:25	9:10 - 10:25	9:10 - 10:25	9:10 - 10:25	9:10 - 9:35	9:10 - 10:20	9:10 - 10:40	9:10 - 9:40
9:15	ELA	ELA	ELA	ELA	Science	Math	ELA	FUNdations
	75 min	75 min	75 min	75 min	SS/SEL	70 min	90 min	30 min
					20 min			
9:30								
					9:35 - 10:20			
					Special			9:40-11:10
9:45					45 min			ELA
								90 min
10:00								
10:15								
					10:20 - 11:35	10:20-11:05		
	10:25 - 10:55	10:25 - 10:55	10:25 - 10:55	10:25 - 10:55	Math	Special		
10:30	AM break	AM break	AM break	AM break	75 min	45 min		
	30 min	30 min	30 min	30 min				
							10:40 - 11:10	
10:45							FUNdations	
							30 min	
	10:55 - 12:00	10:55 - 12:00	10:55 - 12:00	10:55 - 11:35				
11:00	Math	Math	Math	Math				
	65 min	65 min	65 min	40 min		11:10 - 11:35		
						WIN	11:10 - 11:55	11:10 - 12:25
11:15						30 min	Special	Math
							45 min	75 min
11:30								
				11:35 - 11:55	11:35 - 11:55	11:35 - 11:55		
				Recess	Recess	Recess		
11:45				20 min	20 min	20 min		
				11:55 - 12:15	11:55 - 12:15	11:55 - 12:15	11:55 - 12:25	
12:00	12:00 - 12:20	12:00 - 12:20	12:00 - 12:20	Lunch	Lunch	Lunch	WIN	
	Recess	Recess	Recess	20 min	20 min	20 min	30 min	
	20 min	20 min	20 min					

We are building a safe, caring, and ready to learn community.

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12:15				12:15 - 1:00	12:15 - 1:45	12:15 - 12:45		
	12:20 - 12:40	12:20 - 12:40	12:20 - 12:40	Special	ELA	FUNdations		
	Lunch	Lunch	Lunch	45 min	90 min	30 min	12:25 - 12:45	12:25 - 12:45
12:30	20 min	20 min	20 min				Recess	Recess
							20 min	20 min
	12:40 - 1:00	12:40 - 1:00	12:40 - 1:00					
12:45	Science/	Science/	Science/			12:45 - 2:15	12:45 - 1:05	12:45 - 1:05
	SS/SEL	SS/SEL	SS/SEL			ELA	Lunch	Lunch
	20 min	20 min	20 min			90 min	20 min	20 min
1:00	1:00 - 1:45	1:00 - 1:30	1:00 - 1:30	1:00 - 1:25				
	Special	FUNdations	FUNdations	Math (con't)			1:05 - 2:15	1:05 - 1:30
	45 min	30 min	30 min	25 min			Math	Science/
1:15							70 min	SS/SEL
								25 min
				1:25 - 1:55				
1:30		1:30 - 1:45	1:30 - 1:45	WIN				1:30 - 2:00
		WIN	WIN	30 min				WIN
		15 min	15 min					30 min
1:45	1:45 - 2:15	1:45 - 2:30	1:45 - 2:30		1:45 - 2:00			
	FUNdations	Special	Special		PM Break			
	30 min	45 min	45 min	1:55 - 2:25				
2:00				FUNdations	2:00 - 2:30			2:00 - 2:15
				30 min	FUNdations			Closing
								Circle
					30 min			15 min
2:15	2:15 - 2:45					2:15 - 2:45	2:15 - 2:30	2:15 - 2:30
	WIN					Science/	PM break	PM break
	30 min			2:25 - 2:45		SS/SEL	15 min	15 min
2:30		2:30 - 2:45	2:30 - 2:45	Science/	2:30 - 3:00	30 min	2:30 - 3:00	2:30 - 3:15
		WIN (con't)	WIN (con't)	SS/SEL	WIN		Science/	Special
		15 min	15 min	20 min	30 min		SS/SEL	45 min
2:45	2:45 - 3:00	2:45 - 3:00	2:45 - 3:00	2:45 - 3:00		2:45 - 3:00	30 min	
	Choice	Choice	Choice	Choice		PM break		
	15 min	15 min	15 min	15 min		15 min		
3:00	3:00 - 3:20	3:00 - 3:20	3:00 - 3:20	3:00 - 3:20	3:00 - 3:20	3:00 - 3:20	3:00 - 3:20	
	Closing Circle	Closing Circle	Closing Circle	Closing Circle	Closing Circle	Closing Circle	Closing Circle	
	Dismissal	Dismissal	Dismissal	Dismissal	Dismissal	Dismissal	Dismissal	
3:15	20 min	20 min	20 min	20 min	20 min	20 min	20 min	3:15 - 3:20 Dismissal

Proposed

Time on learning minutes for core academics are expected to remain the same in either building design, however, collaborative learning opportunities would be enhanced with a Den Learning Space located in each grade level. These large gathering spaces would allow for cross classroom experiences that focus on a Universal Design for Learning approach that our district has been focused on for the past three years. In a true UDL fashion, these shared learning spaces will reduce barriers to learning since they will be shared by all grade level educators, STEM Specialist and other educators to provide intervention and services to students. As students use these spaces they will be supervised by the educators facilitating the activity, whether it be the STEM Specialist or the classroom teachers for example. This space will allow for educators to facilitate varied learning experiences and now open those learning experiences not only to the students in their class, but to students in other classes that would benefit from that type of learning. For example, during a literacy lesson, one educator could

facilitate an activity using our Fundations white boards, while another an activity with book writing, and yet another writing letters with manipulatives. When these educators extend their activities into the Den Learning Space, then students from other classes can select which activity is best for their learning.

METHODOLOGIES AND STRUCTURE

Administrative and Academic Organization

Current

The heart of Shaker Lane is focused around community and collaboration. Each K-2 grade level team consists of six classroom teachers. At each grade level there is a special education teacher who provides support both in and out of the classroom. Common planning time amongst all of grade level staff members takes place once a week. These meetings enhance collaboration, inquiry, and reflection among teachers.

Currently there are six classrooms in Kindergarten, Grade 1 and Grade 2, as well as one Transitional classroom. Currently, each grade level is split into two cohorts of three, allowing for three classroom teachers to have common planning time together, five days a week for 45 minutes, while the students attend their unified arts. The Transitional classroom attends Unified Arts at the same time as Kindergarten. During these smaller meetings, teachers work together to improve teaching and learning in their cohorts. Should another classroom be added to each of the grade levels, K-2 in the future, we still see a configuration of cohorts continuing to exist. The configuration of the cohorts will depend on staffing, budget, and student service needs.

There is a principal-led 60-minute meeting once a month to review student data in addition to a 60-minute staff meeting that is utilized for PD, staff training, and other data review meetings.
The school faces a challenge with very limited common meeting space for grade-level meetings, professional development workshops, or school-wide meetings. Meetings typically occur in classrooms due to the lack of dedicated meeting areas. Each grade level team is supported by special education, reading and math interventionists, and ELL teachers. However, there is a significant need for more break-out space for support teachers to meet with students.

Administratively, the school has both a principal and an assistant principal, each with designated office space. Their offices are separated by a hallway making it somewhat challenging to collaborate easily. Two administrative assistants share an office connected to the principal creating ease of collaboration when needed. The medical suite is connected to the administrative assistant office, providing the school nurse with additional support when necessary. The guidance office is located away from the main offices making it challenging to work closely to support students in need. There is a full-time school psychologist and BCBA located at Shaker Lane that are in proximity of each other.
Overall, the school has very limited common meeting space outside of the library which is insufficient for professional development or whole-staff meetings.

Staff Personnel	Current	Proposed
Principal	1	1
Assistant Principal	1	1
Administrative Assistant	2	2

Special Education Administrator	.5	.5
Nurse	1	1
School Adjustment Counselor	1	1
School Psychologist	1	1
BCBA	1	1
Teacher - K & Transitional	7	8
Teacher - Gr 1	6	7
Teacher - Gr 2	6	7

Proposed

Walking through the front doors of Shaker Lane should feel warm and inviting. We pride ourselves in collaboration amongst all our constituents. This should be reflected the moment you enter Shaker Lane with an open and inviting main office. Administrative Assistants should be visible to all who enter the building as the first point of contact. Having the principal and assistant principal's offices located near this area is essential for both operational efficiency and safety. Additionally, it allows the administrators to be more engaged with students, which is ideal for creating a welcoming and supportive school environment.

The nurse is a central part of the office administration and must be located adjacent to this space. Proximity facilitates immediate communication between the nurse and administrative staff, ensuring timely response to emergencies or urgent requests. In the nurse's absence, administrative staff can easily monitor the nurse's line or handle basic inquiries, minimizing disruptions to operations. The nurse's space must be accessible to students via the hallway as well as staff through the main office to ensure both children and adults can conveniently gain entry in a timely manner.

In a collaborative building like Shaker Lane, having a shared office space as defined in the Introduction as the Clinical Suite is desired (see Section 16 for additional information). This group of staff includes those who work together to support students, create IEPs, and collaborate on treatment plans. Currently, these individuals are scattered throughout the building, which can hinder effective collaboration and communication. A dedicated shared office space for clinical staff would provide several benefits:

- **Improved Collaboration:** Bringing clinical staff together in one space would facilitate easier and more frequent collaboration, allowing for more cohesive and comprehensive support for students.
- **Efficient Communication:** Proximity would enhance communication among clinical staff, leading to quicker and more coordinated responses to student needs.
- **Enhanced Workflow:** A shared office space would streamline the workflow for creating IEPs and treatment plans, making the process more efficient and effective.
- **Supportive Environment:** Being in a common space would foster a sense of community and support among clinical staff, contributing to a more positive and productive work environment.

Curriculum Delivery Methods and Practices

Current

At Shaker Lane, the shared commitment to Universal Design for Learning (UDL) drives the creation of inclusive and supportive learning environments. UDL principles ensure that lessons are designed to cater to a diverse range of student needs, promoting accessibility and engagement for all learners.

Our current method of curriculum delivery is primarily based in individual classrooms with some aspects of academics taking place in our outdoor classroom. There are limited spaces for classrooms to combine for shared learning experiences and other cross-grade level or school-wide meetings. Some cross-grade level experiences occur through a reading experience with Grade 2 and Kindergarten classrooms. In this instance, a Kindergarten classroom and Grade 2 classroom combine to have a shared reading lesson that matches students up with a peer from another classroom. Two classrooms squeeze into one room to have this shared experience. Other cross grade level experiences have included showcasing student work to other grade levels where the same room constraints are present. Grade-level In-house presentations are currently set up in a classroom displacing that class to others while the grade level rotates through the room.

Each grade level team is supported by special education teacher and shared reading and math interventionists and ELL teachers support across the three grade levels. There is limited break-out space for support teachers to meet with students, which includes significant travel throughout the building taking away from instructional support time. To address these challenges, the school community creatively repurposes existing spaces, using hallways, closets, and shared offices for instructional purposes.

Proposed

Current classroom spaces are not designed for the collaborative, differentiated instruction model employed at Shaker Lane. Teachers and support staff often face challenges in finding appropriate spaces for small group work and individualized instruction. As the school plans for future renovations or new construction, incorporating flexible, multipurpose learning spaces will be crucial. These spaces titled *Den Learning Space*, *Small Group Learning Space*, and *Clinical Suite* are listed and defined in the introduction and will continue to be referred to in subsequent sections.

Creating multiple designated whole group teaching areas within the classroom for specific subjects enhances instructional efficiency and organization. Having multiple dedicated spaces for different subjects helps to maintain a structured and organized learning environment. Students can more easily transition between subjects when there are clear visual cues and designated areas. By keeping materials specific to each subject in their designated area, teachers can save time on setup and cleanup. Creating visually appealing and well-organized learning spaces can contribute to increased student interest and participation.

The idea of large Den Learning Spaces located in each grade level, would foster collaborative learning experiences by providing flexible, open areas within hallways or common areas. These spaces can accommodate multiple classes, promoting both same-grade and cross-grade learning interactions. By

incorporating these spaces, we could create a dynamic learning environment that supports various instructional activities without disrupting classroom learning and promotes integration amongst classrooms. Examples of use for this space are as follows:

- Whole group and small group lessons that involve multiple classrooms
- Break out groups for students to work together from different classrooms increasing community and collaboration
- Cross discipline instruction from Unified Art Specialists, STEM Integration Specialist, Interventionists, other support staff
- Large in-house presentations from outside agencies
- Cross grade level learning experiences in this large gathering area could include cooperative learning activities and interdisciplinary projects fostering a sense of community and collaboration among students of different ages

In terms of adjacencies, first and second grade should be stacked vertically above kindergarten and preschool, with stairs connecting the Dens to facilitate these interactions.

English Language Arts/Literacy

Current

Shaker Lane recently adopted Great Minds Wit and Wisdom's comprehensive English Language Arts curriculum. After an extensive exploration of several ELA curriculums, this program best aligned with the vision statement from the Curriculum Review Committee:

We believe that all students can achieve at high levels through access to evidenced-based, universally-designed, data-informed, and structured instructional tools and practices.

We believe access to diverse literature positively impacts children as readers and as people and that students of all races, genders, religions, languages, abilities, interests, and beliefs should have the opportunities to have affirmative literary experiences.

These fundamental shared beliefs guide our engagement of students in English Language Arts classrooms. Students develop the necessary skills in reading, writing, speaking, and listening that are the foundations for creative and purposeful expression in language. To develop rich vocabulary and promote comprehension, students engage with high-quality, complex text and participate in writing and discussions anchored in evidence from the text. Students apply these skills while reading independently and see themselves as readers and writers who persevere in the face of challenging work.

This knowledge based program will be part of the foundation of building successful readers, writers, and communicators. Our already existing phonics program, Fundations, along with decodable texts, Geodes, will complement our new ELA program. Through this new program, staff will lead students through Modules that have focus questions to deepen their knowledge on a variety of topics. Writing is embedded in the Wit and Wisdom program as an integral approach to learning.

Proposed

The ongoing adoption of the Wit and Wisdom curriculum will shift the focus toward a knowledge-based approach. This new program emphasizes collaborative conversations, and a new, larger Den learning space is desired to facilitate these opportunities. For example, it will allow for gathering multiple classrooms to discuss topics that have been previously introduced in the individual classrooms, provide whole group and small group instruction across classrooms and enhance collaborative learning experiences. These opportunities align with our philosophy of community and collaboration.

Our redesigned Shaker Lane School will have eight classrooms for Kindergarten, First Grade, and Second Grade. Integrating a small group learning space between traditional classrooms is a desire.

In all learning spaces we want to continue to reduce barriers to learning by offering varied seating options to promote student collaboration ranging from shareable desks, variable table designs, and flexible seating choices such as large pillows, couches, bean bags, stools, etc. This is a current practice that we want to add to and enhance in our new environment. These types of varied seating options have proven to add to student comfort and productivity.

Mathematics

Current

Shaker Lane aims to build a strong foundation in mathematical knowledge while also empowering students to think critically and apply that knowledge in real-world scenarios. Through the guidance of the Massachusetts State Frameworks, students are given the tools to become mathematically proficient. Through their study of mathematics, students are instructed upon the domains of operations and algebraic thinking, numbers and operations in base ten and fractions, measurement and data, and geometry.

In our mathematics classrooms, we strive to build confident mathematically proficient students by using real world applications in order to empower and prepare students to apply mathematics flexibly as they develop their future path. In our classrooms, we believe in:

- **Student-Centered Learning:** Students take ownership to acquire and demonstrate skills through choice, teacher support, collaboration, and inquiry. Students see themselves as capable problem-finders and problem-solvers who do computations, persevere through challenging questions, reason abstractly and quantitatively and communicate their ideas.
- **Connected Learning:** Students learn the hows and whys of math by treating new concepts as extensions of what our students have learned in previous units and grades. Our students develop a concrete and conceptual understanding of key mathematical concepts, including how and why topics are connected and how and why they can apply multiple skills to the problems they tackle in class and in the real world.
- **Deeper Learning:** Students achieve deeper learning in carefully selected core topics. Deeper learning allows for multiple experiences to build math confidence and competence in order to prepare each student to succeed in a changing world.

The district utilizes the *HMH Into Math* program to help students build problem solving skills and apply knowledge to higher-level mathematics. Each lesson has a Learning Objective that is shared with

students and begins with a whole group warm up activity titled *Spark Your Learning*. Through this activation warm up, teachers guide students through an interactive question where they explain, illustrate, and share their thinking. This collaborative experience prepares students for more in-depth learning. Students learn together in the *Build Understanding* part of the lesson followed by *On Your Own* independent learning that reinforces the concepts introduced in the lesson. Differentiated small group instructional plans are provided to target students at their level of learning. While these groups are taking place, students are engaged in independent or partner activities. These activities are grounded in the UDL framework and can range from prior learning experiences that students have mastered or continued work on an introduced concept.

Proposed

In our third year of *HMH Into Math*, staff have become confident in the program structure and are seeking more collaboration during instructional periods. In a large spill out Den Learning Space, a number of learning experiences could take place to enhance learning. This could range from the following:

- Classrooms can combine for multiple parts of the mathematics lesson. This could be a short mini-lesson and then break out into classroom and Den Learning Space for further instruction or classroom mini-lessons with the Den Learning Space utilized for cross classroom work.
- Den Learning Spaces would allow for a collaborative experience that could include multiple classrooms receiving whole group instruction from two teachers. They could facilitate a mini-lesson in this space and then break out within the Den Learning Space and their classrooms for independent and group work.
- Our math interventionist would have the ability to support multiple students across different classrooms in this space increasing productivity. The proximity of these Den Learning Spaces would also allow for flexibility of staff to pull students in a flexible model.

Small Group Learning Spaces built into classrooms would provide a location for efficient support from our interventionists as well as other special education supports. Students would be able to receive support within their classroom setting allowing for any teacher directions to be heard, provide a sense of belonging to their classroom while receiving support, and minimize travel time to one location within the building as is our current configuration.

Science

Current

Shaker Lane currently utilizes the *Full Option Science System (FOSS)* that focuses on students as active investigators. Lessons are aligned with the Massachusetts State Frameworks integrating physical, earth and life sciences into the classroom. The *FOSS* curriculum is designed as a laddered series of experiences that cumulatively develop student knowledge and scientific thinking across all three dimensions. This approach ensures that students build a comprehensive understanding of science through hands-on investigations, critical thinking, and real-world applications. The *FOSS* curriculum will continue to be the curriculum of choice moving forward for Shaker Lane.

Grade level teachers share 2 *FOSS* kits amongst 6 classrooms. This is challenging with regard to planning and instruction where staff need to coordinate when they will be utilizing specific materials with

their classroom. The opportunity to be in sync with lesson instruction is nonexistent. Even with the proposed addition of a classroom, the teachers will continue to share 2 *FOSS* kits amongst themselves, with no additional kits needed to be ordered.

The K-5 STEM Integration Specialist is instrumental in fostering a comprehensive STEAM (Science, Technology, Engineering, Arts, and Mathematics) education. By embedding STEM practices across all content areas, including literacy and social studies, this role significantly enhances student learning and critical thinking skills. Currently, students have the opportunity to visit what we call the Imagatorium to work on projects. The Imagatorium is a classroom where students can visit when they are actively working on a STEM project. While the Imagatorium provides an exceptional dedicated space for immersive STEAM experiences, the specialist's primary focus is on empowering teachers to integrate STEAM elements into their daily instruction. This approach ensures that students develop a deep understanding of STEAM concepts through authentic, real-world connections. Due to this philosophy, we advocate that STEM can and should be embedded throughout a student's day and experience at Shaker Lane School. Thus, we have included more information about our STEM program in the Instructional Technology section.

Proposed

Den Learning Spaces designed for collaboration and instruction offer a multitude of benefits for both teachers and students. The shared space allows teachers to team-teach Science lessons, combining their expertise and pedagogical approaches leading to more dynamic and engaging learning experiences for students. Teachers can utilize the Dens for collaborative lesson planning and sharing best practices fostering a community of learning and innovation among the staff. These dens can be designated areas for ongoing experiments, allowing students to observe, record data, and collaborate on drawing conclusions. This fosters a hands-on, inquiry-based learning approach. The collaborative environment encourages students to share their knowledge and observations, leading to deeper understanding and richer learning experiences.

Breaking down our Imagatorium space and dispersing it into each Den Learning Space will allow for all classrooms to access this makerspace learning style quickly and collaboratively. Currently, the Imagatorium is a destination that one classroom attends at a time. By incorporating the Imagatorium into the Den Learning Spaces multiple classrooms will be able to access this space at the same time increasing collaboration amongst grade level students and staff. For example, two classrooms could work collaboratively on a STEM project in the Den Learning Space. There would be a large area for whole group instruction to take place and then breakout areas within the Den Learning Space that can be easily supervised by our STEM Integration Specialist and classroom teachers. Once in this space, a designated area where Imagatorium creations could be displayed will be collaboratively decided upon by each grade level.

Den Learning Spaces should be flexible spaces that can house common materials and technology, eliminating the need for duplication and streamlining access for teachers across different classrooms. An area in the Den Learning Space should be outfitted with a sink, counter/shelf space to store science experiments, and electrical outlets. Consideration of additional sinks will be discussed throughout the planning project. The space can accommodate flexible student groupings for differentiated instruction based on student learning preferences and needs. The students should be able to easily access any

materials needed for a project and seamlessly transport those materials to any space throughout the den to work either on the floor or table tops. There will be enough space and materials for multiple classrooms to spread out and complete a STEM project individually or together.

Social Studies

Currently in grades K and 1, students learn social studies standards through trade books that allow for discussions and relevant hands-on activities. Grade 2 students use the TCI curriculum. Across the grades at Shaker Lane, students learn about leadership, citizenship, communities and map skills through hands-on activities. At Shaker Lane social studies instruction takes place during 20-30 minute blocks of time. Most teachers alternate between science units and social studies units during the course of the school year.

Proposed

Den Learning Spaces will allow students to collaboratively learn about the social studies standards, and more importantly learn to live out the social studies standards by being good citizens in a shared community. In the Dens, students will have opportunities to take on leadership roles outside of their classrooms since they will be working in mixed groupings.

Our new literacy curriculum will also lend itself to more social studies exposure and deeper learning as it is a knowledge-building curriculum. Various social studies topics will be embedded into the literacy curriculum allowing us to further our UDL practices and encourage more cross curricular projects in a project-based learning model.

Having direct shared access to the trade books will be of critical importance for our social studies learning at the future Shaker Lane. The Dens will allow for the further sharing of these books as well as a larger community in which to engage as good citizens.

World Languages

Current

Shaker Lane does not currently offer any world languages.

Proposed

No changes are proposed at this time. Time outside of dedicated academics are devoted to social-emotional development notably our Second Step Curriculum and Choice Time.

Academic Support Programming Spaces (e.g., EL academic coaches, etc.) i.

Current

Shaker Lane currently has one math interventionist supporting students in grades one and two. Students are evaluated for intervention through three methods: 1:1 interviews, *HMH Into Math* Growth Measure scores, and teacher recommendation. Students who qualify for services are supported by our math interventionist in a push in model and pull out model when needed. The math interventionist moves between multiple classrooms throughout the day to support students. At times the math

interventionist does 1:1 interviews or screening assessments in the hallway outside of classrooms. This can be very distracting for the student since other classes and individuals are moving through the hallways at all times.

Shaker Lane has two reading specialists supporting students across grades K-2. These staff members play integral parts in assessing students, analyzing reports, and providing intervention services. Our reading specialists collaborate daily discussing teaching practices and student performance. Throughout the day, reading specialists can be seen supporting students and providing consultation to staff during their preparation times.

Both math interventionists and reading specialists share a learning space where they support students. The location of this one space impacts learning time as students have to travel throughout the building to receive services.

Proposed
Providing a dedicated Academic Suite for our Math Interventionist and Reading Specialists would provide a shared space for these individuals to plan and design interventions for students. Located adjacent to this Academic Suite would be a small room for intervention purposes. We currently have two Reading Specialists and one Math Interventionist. These three staff members would share the Academic Suite for small group instruction as well as the small room adjacent to this suite for more private instruction as needed. This small group space would be scheduled and staffed by the interventionists. Examples of instruction in this space include remediation of skills and an extension of learned skills by students. Oftentimes this instruction includes manipulatives with which learners engage. Positioning this suite on the second floor would provide a central location for staff to quickly access students across grade levels.

Intervention staff could also potentially utilize the Den Learning Spaces and Small Group Learning Spaces at times throughout the year. When interventionists are providing in-class support to classrooms, these spaces would allow quick access and support students without disrupting the flow of the main lesson. This minimizes wasted time in travel and setup. Students from shared classrooms could be supported in the Small Group Learning Space maximizing delivery of services. Intervention either in the classroom as a push in model or in the small group rooms between two classrooms for pull out minimizes disruption for both the student receiving support and their classmates. This can help maintain a focused learning environment for everyone. Having intervention specialists readily available within classrooms and Den Learning Spaces can facilitate smoother communication and collaboration between the specialist and classroom teacher regarding student progress and support strategies.

English Learner Education Programs

Multilingual Learners
As the demographics of Massachusetts continue to shift, with a growing population of multilingual learners, the need for equitable and adequate space for these students becomes increasingly critical. In small districts experiencing rapid diversification, the disproportionate impact on existing infrastructure is particularly pronounced.

To ensure that multilingual learners receive educational opportunities commensurate with their peers in general education, it is imperative that school facilities provide appropriate space for specialized instruction, small group support, and collaborative learning environments. Currently, the Shaker Lane School struggles to accommodate the growing number of multilingual learners within existing classroom structures, which can lead to overcrowding, inadequate resources, and compromised educational outcomes.

By investing in appropriate space for multilingual learners, the Massachusetts School Building Authority can contribute to creating inclusive and equitable learning environments that empower students from diverse linguistic backgrounds to reach their full potential.

Current

Currently, the model supporting our multi-lingual learners in grades PK-2 is a combined push-in and pull-out model. With the lack of adequate learning spaces, the pull-out English Language Education services are delivered in a shared space.

English Learners (EL) are students who are not proficient in speaking English and are developing language acquisition skills to better access the current curriculum. This is done through consultation with teachers, as well as both a push in and pull out model of instruction. Teachers identify possible ELs based on home language surveys. The WIDA Screener is given to students who speak and understand a language or languages other than English. Qualified students receive comprehensive English language development instruction in all language domains: listening, speaking, reading, and writing. Students at all levels of English proficiency receive instruction that is rooted in researched based methods and uses a variety of resources. Students are given many and varied opportunities to hear, speak, read, and write English.

Proposed

Dedicated space for multilingual learners is essential to:

- **Facilitate effective instruction:** Provide specialized learning environments tailored to the unique needs of multilingual students.
- **Support language acquisition:** Create spaces for small group and individualized language instruction.
- **Foster cultural competence:** Cultivate environments that celebrate diversity and promote cross-cultural understanding.
- **Promote collaboration:** Enable effective collaboration among teachers, students, and families.
- **Enhance student achievement:** Provide the necessary resources and conditions for multilingual learners to succeed academically.

Design changes needed in a new Elementary School to support and enhance this programming include the following:

- (1) half-sized classroom
- Flexible seating to allow for individualized learning and collaboration
- Technology and space for small groups, 1:1 and station work commensurate with general education classrooms
- Easy access to whiteboards in a variety of areas to support instruction

The district has carefully considered the need for dedicated space to support English Language Learners/Multilingual Learners (ELLs/MLLs). An MLL classroom is essential to provide effective and equitable instruction for our growing MLL population. This dedicated space will allow for specialized instruction tailored to the unique needs of MLL students. It will provide a quiet and focused environment for small group and individual instruction, promoting language acquisition and academic achievement. The classroom will serve as a resource center, equipped with language learning materials, technology, and other tools to support MLL students. This will empower students to engage in learning and participate in collaborative activities. This learning space will be designed to accommodate various learning preferences and activities, including small group instruction, one-on-one tutoring, and project-based learning. By providing a dedicated MLL classroom and adequate staffing, we are committed to creating a welcoming and inclusive learning environment for all students, regardless of their language background.

To ensure optimal utilization of this space, we propose the following scheduling and staffing plan:

- Core Instruction: During core instructional time, the MLL classroom will be used for small group instruction, led by certified ELL teachers. These sessions will focus on language development, literacy, and content area instruction.
- Intervention and Enrichment: After core instruction, the classroom will be used for targeted intervention and enrichment activities, such as small group tutoring, language labs, and cultural clubs.
- Flexible Use: The classroom can also be used for other purposes, such as parent-teacher conferences, MLL student meetings, ACCESS testing, screening and evaluations.
- To support the MLL program, the district currently employs two full-time ELL teachers.

Student Guidance and Support Services (e.g., social support, METCO, after-school programs, anti-bullying programs, etc.)

Current

Shaker Lane currently has one school adjustment counselor, one school psychologist and one BCBA (Board Certified Behavior Analyst).

The school psychologist is an integral piece of the referral process for special education. This person conducts all psychoeducational evaluations to determine eligibility for special education services. When a student has been determined eligible for special education services, direct services in the form of school based counseling, social skills instruction or other clinical services may be a component of the student's Individualized Education Program (IEP) service delivery. In the case that a student requires clinical services or support as part of their IEP, the school psychologist would provide direct services to both individuals and/or small groups of students to work on IEP goals.

The school adjustment counselor provides services to both special education and general education students. The school adjustment counselor is also Shaker Lane's Special Education 504 Coordinator, determining whether a students' disability qualifies he/she for specific accommodations that are in addition to the DCAP (District Curriculum Accommodation Plan) and is determined to be eligible for a 504 Accommodation Plan. These meetings typically take place in the conference room due to the number of individuals involved in such a meeting. On a daily basis, the school adjustment counselor

ultimately supports the entire school population by responding to support calls during the school day in all grade levels, running snack and lunch social groups, providing scheduled one on one counseling sessions as well as handling “pop up” social/emotional situations that come up.

The Board Certified Behavior Analyst (BCBA) plays a crucial role in promoting positive behavior, academic success, social-emotional development and addressing behavioral challenges and enhancing learning opportunities for students with complex needs. The BCBA at the Shaker Lane School primarily provides ongoing behavioral support and consultative services to students with disabilities who have behavioral goals on their IEPs. Additionally, the BCBA conducts functional behavior assessments and assists the evaluation teams with other relevant assessments, while also collecting, reviewing and analyzing behavioral data. The BCBA provides consultation services to parents and families as well as staff who directly work with the children on IEPs. The BCBA may also be accessed for general consultation for community peer students who are displaying a wide range of behaviors.

The school adjustment counselor is the only provider that currently has a space large enough to accommodate both her office and student working spaces. The school psychologist and the BCBA have offices in storage space/closets. All three office spaces do not have exterior windows. The adjustment counselor’s space has one interior window on the door.

The school psychologist has to find alternative space to hold her group sessions as her office space is too small. In addition, the school psychologist provides students with art therapy. She utilizes the art room or the Imagatorium space for these projects. She uses storage space down the hall from her office or her home for storage of materials for art therapy purposes.

Proposed
The School Adjustment Counselor should have a large space located near the administrative offices. This space should provide a calming and supportive environment for students while also giving the School Adjustment Counselor a private area to complete administrative tasks and make phone calls. It should be outfitted with a sink for art projects, varied and comfortable furniture for students, and other tools that support student regulation. The thoughtful design of this space will help ensure that it meets the needs of both the students and the counselor.

Please note, additional support service providers including our BCBA and School Psychologist are addressed in the Clinical Suite in Section 16.

TEACHER PLANNING

Current
K-2 teachers have a 45-minute prep period each day. This time takes place when students are attending their unified arts class. On early release days, the planning block is 35 minutes in duration.

The current setup at Shaker Lane presents significant challenges for teacher workspace and related needs:

- A copier and other necessary resources for teachers are located on a stage, which is separated by a curtain from the physical education area. This arrangement is far from ideal as it compromises privacy and creates distractions. This also does not allow for stage use in any other capacity.
- Another copier is located on a landing at the top of the stairs on the second floor, which is not a dedicated or private workspace.
- The lack of teacher workspace creates an isolated environment for staff where they are not able to gather in a shared space.

Proposed

In order to increase productivity, each floor must have dedicated workrooms, equipped with necessary resources such as copiers, printers, and office supplies. These workrooms should provide a quiet and comfortable environment for teachers to plan, collaborate, and complete their tasks.

Locating teacher workrooms near classrooms will minimize time spent traveling back and forth, allowing teachers to maximize their planning and preparation time. With flexibility in mind, these workspaces can also be used for multiple purposes, such as individual work, small group meetings, collaborative planning and professional development sessions, which include movable furniture to accommodate different needs and configurations.

Creating dedicated and well-equipped workspaces for teachers, Shaker Lane can significantly enhance their productivity, satisfaction, collaboration and overall effectiveness in delivering high-quality education to students.

PROFESSIONAL DEVELOPMENT

Current

Littleton Public Schools is committed to providing effective, ongoing, embedded, and meaningful professional development to our staff. Professional Development (PD) within Littleton Public Schools takes many forms including:

- 10 early release days throughout the school year to work across the district, within buildings, or within departments.
- Half of the early release days provided throughout the school year are faculty-led sessions in which educators can personalize their professional development.
- A full day of professional learning in the fall.
- Opportunities to attend professional conferences and workshops offered outside of the district.
- Opportunities to participate in graduate level courses offered by many colleges, universities and educational organizations.
- An induction and mentoring program for educators new to Littleton Public Schools.
- Opportunities to observe colleagues in their professional spaces.
- Many other specific training sessions.

Over the past three years, we have focused professional development opportunities on the topic of Universal Design for Learning (UDL). As a district we have studied the UDL Framework and how we

can apply it to our daily practice. This knowledge will support upcoming shifts required to transition to a new building that will allow for more collaboration and reduce barriers.

Additionally, we have offered professional development in the curricular areas of writing, math and soon literacy. A major emphasis during these PD sessions has been collaboration with colleagues. We continue to emphasize collaboration among colleagues and grade level teams with the intention of this collaboration further continuing to students.

Within current district structures, we feel confident that we will be able to start to support teaching and learning adjustments that will be required in transitioning to an updated learning space.

Proposed

Education has changed drastically since our current Shaker Lane School was built. Therefore, we recognize that we have an opportunity to adjust our teaching and learning practices to align more effectively with an updated learning environment. We recognize the importance of supporting staff in building a collaborative and inclusive culture in the new environment. A major aim is to increase collaboration among staff to have a more effective impact on all students. This will require teaching staff how to use new spaces, such as the Den Learning Spaces.

As of now we have discussed and are planning for further partnership with MLP Integrated Design, the educational planning and consultant team who lead the visioning efforts and can work to ensure teachers are fully prepared to implement that vision, particularly in terms of teaching and learning practices. This partnership will be multi-year in order to build opportunities for staff to connect and collaborate in different configurations with varied educational purposes such as community building, social emotional, and academic. We will plan for professional development to be an iterative process that will allow us to maximize best practices in a more collaborative and reduced barriers environment. In collaboration with MLP Integrated Design we are already planning and running professional learning for our educators to adapt teaching and learning practices to prepare for and better utilize a newly designed facility. Currently, we have two educators and their classes at each grade level partnering to create a collaborative learning experience for their students. In Kindergarten the educators will offer varied learning experiences during choice time, while in grades 1 and 2, educators will offer varied ways to offer and participate in morning meetings. The purpose of this current and focused professional learning is to begin to develop thought partners and strategies of how we can utilize common collaborative learning spaces that will be prevalent in a newly designed facility. The plan is for this professional learning to expand to other educators within each grade level and to expand into other areas of the school day particularly into curricular collaboration.

As we implement a new literacy curriculum this year, it is an opportune time for us to consider and learn how we can develop cross-classroom and cross-curricular experiences for and with our students. These opportunities will continue to expand and be enhanced through our commitment to on-going professional development that has already begun and will continue past the opening of a newly designed school building. Whenever we add or change curriculum such as we are doing now with literacy, we consider how we can generate new collaborations, applications, and approaches within the curriculum and with other curricula already in place.

Once we have moved into a newly designed learning space, our educators will be able to see the benefits of the professional development and will be able to continue to model for each other and for other educators in our district the approach to collaborative teaching and learning. Using this workshop model beyond the move-in date will allow all learners to benefit from a full understanding of how we can utilize the new space while actually being in the new space.

As we continue to progress forward, we would like to participate and create model lessons and spaces with furniture and materials that will help our educators to learn and understand how they can optimize learning in collaborative spaces.

PRE-KINDERGARTEN (e.g., Special Education only, tuition programs, locations, full day, half day, if applicable)

Current

Shaker Lane currently offers one full-day Integrated Pre-K classroom, two half-day Integrated Pre-K classrooms, and one full-day PACE (Personalized Academic & Comprehensive Education) Pre-K classroom. The Integrated Pre-K and PACE programs currently take place Monday - Thursday from 9:00 am - 2:30 pm and Friday from 9:00 am - 11:30 am. The two morning half-day programs take place Monday - Thursday from 9:00 am - 11:30 am and Fridays from 9:00 am - 11:30 am. The two afternoon programs take place Monday - Thursday from 12:00 pm - 2:30 pm. All students eat snack in their classrooms and for students that are present all day, eat lunch within their classrooms.Enrollment of PreK is 48 as seen on the chart on the Grade and School Configuration Policies section.

Teachers currently instruct in their classrooms for the entire length of the Pre-K school day. Within each classroom, there are designated areas for whole group instruction, dramatic play, sand/water table, blocks etc. The students also eat lunch within the classroom at the same tables they work at. At times two preschool classrooms combine for choice time among the two half-day classrooms.This gives the students an opportunity to play with a larger number of peers. Students in the PACE classroom integrate into the integrated Pre-K classrooms based on their individualized ability level. Students in the PACE classroom also participate in a 30-minute adaptive physical education class each week. The only time our preschool students are outside of the classroom is for their outdoor recess time and to utilize bathrooms.

The preschool team at Shaker Lane holds regular meetings on Friday afternoons to discuss various topics related to supporting students. These meetings are crucial for collaboration, planning, and addressing specific needs within the preschool program and include but are not limited to arena evaluations, IEP meetings, student consults, and curriculum and program planning.

Proposed

While the current plan does not explicitly request additional classrooms for Pre-Kindergarten, Littleton Public Schools acknowledges the evolving landscape of early childhood education in Massachusetts. We are aware of the increasing demand for public school pre-kindergarten programs and the growing complexity of needs among children aged 3-5.

Therefore, while the current proposal maintains its focus on providing a high-quality, comprehensive Pre-Kindergarten program within the existing design, we remain committed to flexibility and adaptability as the needs of our community evolve. We will continue to monitor enrollment trends, emerging educational standards, and best practices in early childhood education to ensure that our program remains responsive to the needs of our youngest learners.

We are confident that the proposed design, with its emphasis on creating flexible and adaptable learning spaces, can accommodate potential future growth and changes in our Pre-Kindergarten program. We will work closely with educators and community partners to refine our program and ensure that it meets the evolving needs of our students.

The current number of Pre-K classrooms is 3, and the proposed number of Pre-K classrooms is 3. There are no immediate planned changes to the curriculum, but 3 properly-designed general classrooms is adequate to accommodate future flexibility. The current and expected future enrollment is 48, but 3 classrooms provides flexibility to accommodate additional students in the future.

While we understand that our proposal for a Pre-Kindergarten Den Learning Space exceeds MSBA guidelines, we believe this collaborative, centrally located area is essential to promote student and staff collaboration. By providing a dedicated, flexible learning space, we can create a more dynamic, engaging, and developmentally appropriate early childhood learning environment that will benefit our youngest learners for years to come.

The Pre-K Den Learning Space will be utilized to accommodate multiple classroom gatherings for meetings, large group instruction such as story time, read-alouds, science experiments, performances, and art projects, as well as special events and celebrations. This Den Learning Space should include access to water and sand for sensory play, a dramatic play area, and soft flooring for movement. Moving towards a more collaborative approach for students at this level will develop their skills when they transition to kindergarten.

The flexible learning space will be supervised by qualified early childhood educators, including teachers and teaching assistants. The staffing ratio will align with state and local regulations to ensure the safety and well-being of all children.

Create a safe and easily accessible playground that connects directly to the building's exit to enhance the safety and convenience for students at Shaker Lane. This design will ensure that students can go directly from the building to the playground without needing to navigate through gates or other barriers. Direct access from the building to the playground minimizes the risk of students wandering off or encountering traffic, increases safety, and ensures that staff can easily supervise students as they transition between the building and the playground.

KINDERGARTEN (e.g., full day, half day, locations, if applicable)

Current

Shaker Lane offers a full-day kindergarten. There are six kindergarten classrooms that are all supported by a full-time Educational Support Professional (ESP). The seventh classroom, transitional, that is reported to DESE as having kindergarten students, does not have an ESP.

The current curriculum in kindergarten incorporates ELA which includes writing, phonics and phonemic awareness, Math, Science, Social Studies, and a Unified Arts block consisting of Art, Music, Physical Education, Library, and SEL.

Proposed
To ensure the best learning environment for our young learners, large spacious classrooms that allow for a variety of activities, including group work, individual tasks, and physical activities are desired. Rooms that provide natural bright light, multiple teaching areas, and a calming space will enhance teacher instruction and student learning.

Shaker Lane's scheduling model prioritizes collaboration among classroom teachers, interventionists, and special educators to support all students within an inclusive environment. The new design for Shaker Lane aims to enhance this approach by integrating smaller learning spaces for focused and targeted instruction that are within the kindergarten classrooms. By integrating strategically placed small learning spaces within each classroom, Shaker Lane can ensure that all students receive the support they need in a conducive and inclusive environment, optimizing learning opportunities and enhancing overall educational outcomes. These spaces can also be utilized for students who require a quieter environment for concentration, such as those with sensory sensitivities or attention difficulties.

Redesigning the Shaker Lane School with a Den Learning Space would create a learning neighborhood fostering interconnected learning communities to enhance the educational experience for all students. This layout would create an inclusive, dynamic, and collaborative environment where teachers can easily co-teach and plan interdisciplinary projects.

LUNCH PROGRAMS (e.g., number of servings, District kitchen, full-service kitchens, warming kitchens, etc.)

Current
The lunch program consists of three lunch seatings; K/T, Grade 1, and Grade 2 with five minutes in between lunch sessions. Each lunch session seats approximately 120 students. Our full-day Pre-K students are also eligible for hot lunch but they eat in their classroom. Students have a 20-minute lunch block. The cafeteria has one main entrance and exit, with an additional set of exit doors to the outside in the back of the cafeteria, as well as an exit on the loading dock.

Shaker Lane prepares free daily breakfast bags, in accordance with the Federal Breakfast Program for any student who wishes to have one. These are prepared by the cafeteria staff and sent home by the classroom teacher at the end of each school day for the following morning's breakfast at home.

Shaker Lane has its own full-service kitchen, currently staffed by four personnel, one of which is the supervisor. All food is prepared in-house and made fresh daily. All food and beverages are consistent

with the School Lunch Program national guidelines. There is one serving station with one entrance and one exit. This serving station is not being used currently due to its insufficiency.

This school year, the staff created stations for students to pick up a variety of ordered items. Once the food is prepared it is moved from the food preparation/kitchen area to make it more streamlined for the students once they enter the cafeteria. This was in response to students not having enough time to eat their lunch as the lines were taking too long to serve the food.

Many students choose to get school lunch as there are multiple options offered on a daily basis, including the hot lunch of the day, pizza, bagels, salad, and PBJ. As a school that participates in the National School Lunch Program, all students enjoy a tasty, nutritious lunch daily at no cost to their families. Free breakfast is also provided to all students at schools as we participate in the School Breakfast Program. Staff are also eligible to order lunch on a daily basis for a small cost.

The kitchen has limited space (warming trays/ovens) to keep meals warm. The kitchen staff are prepping food trays prior to the students coming into the cafeteria so that they don't have to wait, which tends to let the food cool before eating. Since there is only one serving station, the cafeteria staff is unable to serve food to each student as they pass by.

The current kitchen space is small and shared by four staff. Storage of food items is limited within the kitchen area. Many food items are stored out back on the "loading dock," making supplies less accessible to cafeteria staff for food prep.

The cafeteria eating space itself is a large open area with a stage at one end and many windows for natural light and brightness. Round foldable portable tables, with attached seats, can be moved for cleaning and presentation purposes. The tables are not conducive to any child in need of a wheelchair or with physical impairments such as needing a seat back for support. Mini split AC units were installed a few years ago for temperature control. There is also an audio system and a small TV mounted on the wall to view presentations.

Currently, we have provided two different seating options for children who need a quieter space for lunch, due to overstimulation. One long table is at the entrance of the cafeteria, around the corner from the main seating area. The other is outside the doors of the cafeteria all together.

The cafeteria is located on the first floor in the main lobby area and is accessible to all, including a ramp to the stage.

LPS has partnered with some local farms to provide fresh food, farm to table, options for students.

The bathrooms, when needed, are located outside of the cafeteria and down the hallway creating a safety concern with supervision of students.

The cafeteria houses one drink/ bottle refilling station.

Proposed

In the proposed building, the number of lunch servings is expected to be three. We do not foresee intermingling the three different grade levels for lunch seatings. At this time, the students will continue to have a 20 minute lunch eating session. There is a dedicated lunch block for every grade level in a single school day that is outlined in the daily schedule in the prior section. This lunch block is highly coordinated and cross referenced with the Unified Arts Schedule and the K-2 Academic schedule to accommodate the best and least disruptive flow to the school day.

Improve egress in and out of the cafeteria by creating more than one accessible entrance and exit inside the school building. Our current configuration has one egress in the building and one that goes outside the building. We do not use the egress to the outside other than emergency situations as students have to walk around the building to regain access to the cafeteria. Multiple entrances and egresses within the school building will allow for a maximizing student transitions in and out of the cafeteria and a quicker and safer exit in emergency situations.

With a variety of students who have sensory needs, we want to incorporate an environment where these students can access the cafeteria in an integrated manner. Improve lighting and acoustics to provide a more sensory friendly environment for all students. Including many sensory-supportive options for students is imperative; noise reduction measures, proper audio/visual equipment for size of space. We currently have students who sit outside the cafeteria, in the main office, or in the principal's or assistant principal's office for a quieter setting.

The creation of a Quiet Cafe would provide support for students to be within the cafeteria during the lunch time, but in a space that feels safe and less stimulating for them. The quiet cafe can be a small room attached to the larger cafeteria with a wall of windows. This allows students to see and feel like they are part of the cafeteria, while in a sensory-supportive environment that is better for them. The glass wall allows this space to be supervised by staff who are monitoring lunch periods. Modifications such as these will allow students who are experiencing difficulty in the larger cafeteria setting to be part of the group with the intent to integrate into the larger cafeteria space over time.

Embedding an additional smaller Quiet Cafe within the larger cafeteria space will also allow our School Adjustment Counselor to hold "lunch bunch" sessions in the intended dining area. Currently, lunch bunch takes place in the School Adjustment Counselor's office. This arrangement will allow the School Adjustment Counselor to hold these sessions in a more natural dining environment, rather than in the counselor's office.

Locating the cafeteria adjacent or close to the outdoor play area to reduce transition time would be optimal. Currently, staff on duty take away recess minutes to allow for a 5 minute transition into the school for lunch. Having the cafeteria located next to the outdoor space will provide students more time to consume their lunch and keep their whole playing time.

Provide areas for alternative seating to accommodate students with a variety of needs. This includes but is not limited to alternative seating for students with physical disabilities/wheelchairs, back-supported seats, standing options, and smaller breakout spaces within the cafeteria for students with social/emotional/behavioral needs. Seating arrangements with separate chairs and tables are

desired. Currently, our tables do not provide equitable access for students with varying disabilities due to the fact that the seats are attached to the tables.

Lightweight tables and chairs that can be moved easily for cleaning and storage purposes. Currently, our chairs and tables are attached and are very heavy to move.

Include bathrooms and large hand washing stations within the cafeteria itself. This will improve supervision of students utilizing these areas as well as being able to monitor the number of students increasing safety. Currently, our bathrooms are located down the hall from the cafeteria which does not allow for proper supervision of students.

Self-contained industrial style kitchen with multiple stoves, ovens, freezers, refrigerators, warming stations, dishwashers (reusable trays and silverware), deep sinks etc.
Some of our current kitchen appliances are old and small to accommodate the number of students we are trying to prepare meals for as well as clean up after.

Ample storage for all kitchen supplies. Currently, most of our kitchen supplies are stored on the loading dock, outside of the kitchen space on shelves near an exit door. Kitchen supplies need to be closer to the kitchen for accessiblitly and flow of food preparation.

Office space for cafeteria supervisor within the cafeteria/kitchen space to include lockers for storage of personal items. Staff currently leave their personal items on a table in the cafeteria cooking space and the supervisor has a small table to sit at the front of the cafeteria.

An outdoor dining area for students attached to the cafeteria with sliding glass doors to extend the space will provide a calm and quiet setting for students. Having a location in nature will provide an alternative visible setting for students while still providing continuity and supervision. Currently, we do not have an outdoor dining space.

An outdoor dining option for staff with picnic table style seating would further collaborative time for staff in a non-academic setting.

Our redesigned cafeteria must provide two serving stations with their own designated entrance and exit for students. Student waiting time in lines will be decreased as well as congestion. This will allow for students to move quickly through two lines increasing their time to have lunch and socialize.

TECHNOLOGY INSTRUCTION POLICIES AND PROGRAM REQUIREMENTS (e.g., labs, in the classroom, Media Center, required infrastructure, etc.)

Current
Littleton Public Schools acknowledges the critical role that technology plays in the education of all learners, adults and students, alike. Shaker Lane has a robust infrastructure and network that allows all staff members and students to use devices anywhere at all times. All staff members have either a MacBook or Chromebook device. We use G-Suite for Education and our staff are adept in enhancing teaching and learning by using Google Documents, Slides, Sheets, and Drives.

Our district wide 1:1 program expanded significantly over the past couple of years. Pre-K classes have access to a set of iPads. All Kindergarten and grade 1 students have access to iPads for use during the school day. Each classroom has a charging cart for the iPads that currently is stationed in the hallway outside of the classroom. All grade 2 students are assigned a Chromebook for use during the school day. Each grade 2 classroom shares a charging cart for the Chromebooks that is also currently stationed in the hallway outside of the classroom.

Our teaching staff transitioned from MacBooks to touchscreen Chromebooks. This transition has allowed us to pair these devices nicely with our ClearTouch Interactive Panels that can be found in all general education classrooms. The interactive panels have allowed students and teachers to engage with lessons and virtual manipulatives better. In addition to the ClearTouch Interactive Panels, our educators have document cameras that connect to the panels to allow for projected images of books, workbooks, or objects. Our educators have responded favorably to the interactive panels and utilize them in a way that engages our students.

Instructional technology within our district is supported by our Technology Team which includes an Instructional Technology Coordinator, a Technology Systems Coordinator, an IT Systems Specialist, and two Technology Specialists. In addition to this Technology Team, Shaker Lane has a Technology Teacher Leader. The Technology Teacher Leader is a stipend position to assist teachers, primarily through peer-to-peer coaching and modeling of best practices, to integrate technology into instruction and their professional practice. Professional Development opportunities are timely and relevant for instructional technology. The Technology Teacher Leader will offer before or after-school sessions on various topics. Our STEM Integration Specialist and Instructional Technology Coordinator will also offer PD opportunities for staff on pertinent topics including for example the use of interactive panels and AI technology.

Technology is integrated into daily practice at Shaker Lane School. Our STEM program is also an integrated approach within our elementary schools. We have a K-5 STEM Integration Specialist who collaborates with all other educators to create and facilitate lessons for students in all grades at Shaker Lane School. Each classroom completes three digital citizenship lessons at the beginning of each school year. Additionally, each trimester all classes complete at least one STEM project that centers around the Engineering Design Process. Our STEM Integration Specialist also collaborates with Unified Arts Educators to integrate STEM into SEL lessons and more. Currently, we have a shared classroom that hosts our makerspace as well as other UA classes as needed. Our maker-space is called the Imagatorium. This space holds a charging cart for small programmable robots and iPads, a lego wall, a green screen, a wind tunnel, a laser cutter, as well as various creation tools such as cardboard, tape, fasteners and other such supplies.

Proposed

As a district, we believe strongly in the integration of educational technology to enhance and support the teaching and learning for all. We will continue with the 1:1 program, which will require a continued robust network and infrastructure. Students utilize the devices at school only at this time. Devices are left in carts or storage spaces within the school overnight to charge for each school day. If there is a request or a need, a student can bring a device home, however, this is not frequent at this time. Many

students are able to access a device at home and through communication with families, we are able to ensure that all have access to internet at home. The Littleton Public Schools strives to ensure the protection of our students' privacy while encouraging innovative uses of technology to support teaching and learning. We maintain a thorough vetting process whenever we engage with third party vendors to ensure student data privacy. Littleton Public Schools works with The Education Cooperative (TEC) to facilitate the execution of data privacy agreements with all vendors.

Further, for iPads (PK, K, T, Grade 1) we utilize:
JAMF MDM: We utilize JAMF as a Mobile Device Management (MDM) solution to centrally manage and distribute licensed applications to iPads. This ensures that all apps are deployed with valid licenses and are accessible to students

For Chromebooks (Grade 2) we utilize:
Web-based Applications: The majority of applications used in Grade 2 are web-based, eliminating the need for individual device licensing.

Rostering for Licensed Access: We roster students for licensed access to specific web-based applications.

We envision a STEM-rich learning environment where students explore, innovate, and problem-solve across all grade levels. To achieve this, we propose designing our Den Learning Spaces into dynamic hubs for STEM integration. This means taking our current Imagatorium and dispersing it into each grade level's learning den. These grade-level Imagatorium learning zones will serve as the cornerstone of our STEM initiative, fostering curiosity, creativity, and collaboration.

- **Flexible Learning Spaces**: Areas for brainstorming, designing, building, and showcasing student work will foster creativity and critical thinking.
- **Essential Equipment**: Sinks, storage, charging stations, and durable furniture will provide the infrastructure necessary for experimentation and project-based learning.
- **Technology Integration**: Green screen walls and an Interactive Screen with a small stage area will enable students to showcase.

To illustrate the potential of STEM integration, we present the following sample projects that are currently part of our STEM program that will take place in the grade level Imagatorium zone:

- **Storytelling with Robots**: Combining coding, language arts, and technology.
- **Three Little Pigs: Paper and Wood Exploration**: Integrating engineering, science, and math through design, construction and simulation (Wind Tunnel)
- **Lego Wind Car Challenge:** Exploring physics and engineering principles through a hands-on challenge.
- **Simple Machines at the Zoo**: Applying science concepts to real-world scenarios.
- **Robot Team Building**: Fostering collaboration and problem-solving through robotics.

Successful STEM projects thrive on collaboration between teachers and our STEM specialist who will utilize a shared google calendar to schedule, use and supervise this learning zone. A properly designed

space will facilitate teamwork, allowing projects to continue even in the absence of the specialist. When students are collaborating on STEM projects they are either supervised by the STEM specialist or classroom educator. STEM projects are integrated into the curriculum, thus the collaboration between educators allows for scheduling of this space for students. This fosters a more sustainable and impactful STEM program.

The Den Learning Spaces would be a perfect environment for our K-5 STEM Integration Specialist to maximize impact on students. Having dedicated Den Learning Spaces allows the K-5 STEM Integration Specialist to work with multiple classrooms concurrently. This eliminates the need to travel between classrooms or to the Imagatorium and set up materials repeatedly, freeing up valuable time to work more with students. The space can be configured to accommodate different group sizes and project needs. The K-5 STEM Integration Specialist can work with small groups for focused instruction or larger groups for collaborative activities. Beyond these advantages, Den Learning Spaces can foster collaborative experiences between the K-5 STEM Integration Specialist and classroom teachers through teamwork and shared expertise.

For effective STEM integration into the Den Learning Spaces we require a designated area to park two charging carts for our programmable robots and iPads. Storage for building materials and in-progress projects is essential as most projects are works in progress for a week or two. The learning space should be open and easily adaptable to various project needs. This means having tables and seating options that are easy to reconfigure or move out of the way for floor-based work. As previously mentioned, sinks will be essential equipment for this space. Sinks at an age-appropriate student height and spread apart in the physical area will be essential.

Additionally, a presentation space or stage area would be beneficial. This presentation space could also function as a projection screen with green screen capabilities. In order for learners of all ages and hearing abilities to fully benefit from all that we have shared, we will consider what assistive listening technology can be utilized in each classroom and learning space.

In accordance with the MSBA's recommendation for best practices for K-12 STEM Learning Spaces, the general classrooms will be equipped with sinks and other recommended amenities. The Imagatorium spaces are specifically for deeply imbedded, collaborative, multi-classroom STEM projects and curriculum that goes beyond the general classrooms' capabilities. The space summary for these spaces has not been modified in the updated version.

To further expand STEM learning opportunities, we propose integrating outdoor education. Outdoor learning spaces will provide students with hands-on experiences in natural environments, fostering scientific inquiry and observation. Another proposed change would be a separate STEM specialist preparation and fabrication space titled The Creation Station. This space would be supervised and only utilized by the STEM specialist and other staff members trained to use the equipment. This space will be primarily used by STEM specialists for fabrication, resource creation and lesson planning. This space will be viewable to students to allow students to see how their projects and ideas are created by use of the tools within this space. This space would be equipped with fabrication tools (Laser Cutter, 3D printer, etc) and would showcase these advanced manufacturing technologies, inspiring students to envision the possibilities for their projects. The Creation Station will give students who are passing by

an opportunity to observe how various machines work to create projects. However, it will not be a space where scheduled times are designated for students or staff, other than the STEM Integration Specialist. The machines include a laser cutter and 3D printer, which are not suitable for student use, so a room with provisions for safe, supervised student observation will allow this key part of project manufacturing and production to be meaningfully included in the STEM curriculum. The space summary for these spaces has not been modified in the updated version.

Ongoing professional development will continue for technology. PD opportunities will include before/after school sessions, during school support, as well as peer and tech specialist coaching. Considering the building process is a few years out, many instructional technology changes will take place between now and then. Thus some form of digital display or smart technology will be determined for all educational spaces. This will require professional development for all staff to ensure proper and effective use of such technology.

MEDIA CENTER/LIBRARY

Current

Currently, our library is configured as a traditional model with students having access to just books as a resource. Our library is staffed by a .8 library tutor who provides a weekly 45-minute unified arts session to K-2 students. During this block of time, the library tutor begins by reading students a story, followed by a short activity/conversation about the book, then provides time for students to select a book, and ends with students reading their book or working on a puzzle or coloring page.

The library is widely utilized by staff before, during, and after the school day when it is available. Staff utilize this location to hold meetings such as IEP, SST, parent, PD, leadership, and others. This space is also a location for meetings amongst the larger Shaker Lane Community which includes School Council, PTA, District PLCs, and family presentations. This is a highly desired location for meetings to take place.

The Littleton community also utilizes this space for both afterschool and the evening purposes. Some of the organizations that make use of this space are Boy Scouts, Girl Scouts, and Parks & Recreation.

Proposed

As part of our visioning process, Littleton staff explored several newly constructed educational environments to observe effective practices firsthand. Beyond these tours, we reviewed various library media models, from traditional enclosed spaces to those fully integrated within the school. Each discussion helped shape our vision for the future of library media. We noticed that the library experience has evolved from a distinct destination to an integral part of everyday academic life. Modern library/media experiences now include book collections, spaces for creative activities, and presentation areas not only in one library destination but also within grade level team areas.

With this in mind, Shaker Lane is looking to create a more integrated library/media experience where the Media Center remains mostly a destination but is located in such a way that it is physically connected to other programs (e.g., art, grade-level neighborhoods) to support a more collaborative, interdisciplinary approach to education. Currently, our library sits alone at the main entrance of the

building. We envision relocating it to a more academically central location, between grade level learning communities and adjoining other collaborative spaces.This new space should offer movable book stacks and comfortable, adaptable seating for various activities and group sizes, encouraging students to explore and work together in a relaxed environment. The library will continue to be staffed throughout the week to provide a Unified Arts experience for K-2 students for 45 minute sessions. This staff member will collaborate with grade level teachers in order to gather library media materials that support the current curriculum theme. To support this staff member's skills related to curriculum, he/she is offered and encouraged to attend all district PD as well as other trainings that are found to be applicable to this position. This staff member will be instrumental in dispersing the media materials throughout the Den Learning Spaces on the movable stacks.

A key theme that surfaced early in our visioning was the idea of a hybrid media model, extending beyond the typical weekly library visit. This hybrid model would include both a weekly visit by each class to the media center to engage in a planned lesson in conjunction with positioning resources close to students and teachers to access when needed or wanted, making media and literacy central and accessible to all within our school environment. In such a hybrid model the library media center will be a destination and a traveling destination for students to access books more easily and closely to their learning spaces. Additionally, students will be able to use the library media center as a place to collaboratively learn, create and have experiential learning experiences that will deepen learning for all. We aim for students to interact with books and other media resources daily as they navigate their learning communities and the school, passing by books and student projects in progress. We are already engaging in this endeavor by creating diverse libraries within each classroom which include posting information and showcasing books in hallways for families to view as they visit our building. These posters highlight a targeted diversity reading which includes the theme of the book, highlights important vocabulary to review with children, the rationale on why it is important to read it to your child and other supporting topics that can be discussed to further learn about the topic of the book. Our Literacy Promotion Group is focused on families reading to their children highlighting events such as The Masked Reader and our annual Book Swap. Our goal is to build a culture of literacy and inquiry that lives throughout every space at Shaker Lane immersing students in a rich literacy environment. Our visioning sessions emphasized the importance of making physical books easily accessible to students throughout the building. Our vision is to maintain the majority of our allocated media square footage (equivalent to a large classroom size) for a central media space that can serve as the home base for our media staff and continue to support media as a unified art. The remaining portion of our allowable media square footage will be disbursed as satellite media areas within the Den Learning Space of each grade level neighborhood. We will include movable bookshelves to distribute books conveniently across different areas. In our Den Learning Spaces, media resources could be placed at the entrances, enabling students to access them as needed for cross-disciplinary lessons. A Media Center/Library that is academically embedded in Shaker Lane, with a central location and satellite capabilities, will offer a space for media activities and seamless access to materials, blurring the lines between the library and learning neighborhoods.

As we refine the design, ensuring clear lines of sight and smooth transitions between classrooms and extended learning areas is crucial. This will allow teachers to comfortably send students beyond traditional classroom walls to access resources. Ultimately, teachers and support staff will collaborate with media specialists and tech integrators to create numerous cross-disciplinary learning opportunities.

Throughout the day, the library media center would be utilized in a number of ways. Students engaged in their Unified Arts lesson would receive their read aloud in this setting while also selecting literature to take home. With a centralized location connected to other programs, students could engage in multi-disciplinary learning. For example, students participating in library and art could have an interdisciplinary experience where they collaborate together on a project across the two or more curriculum areas. Coordination and collaboration on these lessons can enhance classroom instruction creating a deeper learning experience for students.

Due to the high use of the library media center during the school day for structured library lessons, collaborative and experiential learning, the space will typically be closed to the public during non-school hours to preserve the on-going learning in that space. Library media center use during non-school hours could be scheduled for special circumstances through the district's scheduling platform with approval from district administration.

VISUAL ARTS PROGRAMS (e.g., in-classroom, specialized area, etc.)

Current

At Shaker Lane School, all students in kindergarten through second grade attend weekly art classes, currently this is 381 students. There are 25 art periods per academic cycle. Students travel from their classroom to the art room for a 45-minute art class instructed by a MA DESE licensed educator. Our elementary art program follows the MA 2019 Arts Framework and places emphasis on the Ten Guiding Principles for Effective Arts Education. Art class is intended to teach and demonstrate that all students can be artists. Our aim is for students to be excited to try new ideas and experiment with materials and mediums in each art class. Literature plays a key role in art as well. Art history, techniques, and expression is learned by reading books in art class.

Proposed

To continue to develop artists at Shaker Lane, a dedicated art classroom will be required. While being accessible, welcoming, innovative and inspiring, this art space should include:

- Two sinks
- Several durable workspace tables
- Flexible and varied seating options
- Significant storage and space for supplies and materials
- Multiple zones to facilitate direct instruction and demonstrations, large-scale projects, group work, and stations
- Ample storage for student work
- Outdoor access to allow for environmental art as well as opportunities to use the landscape for potential projects
- Space to hang instructional visuals and exemplars
- Opportunity to expand to digital and graphic art

Currently in art, students already complete non-kiln 3D art. Such projects include creating 3D scenes of food, nature, and abstract art by using items found in the environment, modeling clay, and paper. In addition to the art room, a kiln room will be needed that also contains large open shelves for drying student work. For the safety of everyone it is essential that the kiln room can be secured and have a

window or external “in-use” light. Additionally, the storage for art will also need to be secure and appropriately ventilated for toxic and hazardous materials and include an accessible file of safety data sheets. Lastly, many dedicated spaces to showcase both 2D and 3D student artwork throughout the building will be important.

PERFORMING ARTS PROGRAMS (e.g., music, dance, drama theater, in-classroom, specialized area)

Current

All students in grades K through second participate in a weekly 45 minute music class. This class is instructed by a MA DESE licensed educator. Like our art program, our elementary music program follows the MA 2019 Arts Framework and places emphasis on the Ten Guiding Principles for Effective Arts Education. In grades K through two, students have access to a general music class in which they learn about singing, rhythm, and movement.

Adequate space for music class is very difficult at Shaker Lane School. Currently, students travel from their classroom to another space where music class takes place. Music class occurs on the stage in the cafeteria, in the Imagatorium, or in the library. The space in which the class occurs depends on what other classes are being taught at the same time. The materials for music class are stored in either the art room or the Imagatorium at this time. The teacher is required to travel with necessary materials to meet the class at the designated location.

Proposed

To properly develop musicians and a love for music at Shaker Lane, a dedicated space is required for music class. In addition to a warm and welcoming space, this classroom should have the following:

- Proper soundproofing so as not to negatively impact other surrounding spaces
- Location close to the stage to allow for performance practice
- Wide doors for moving instruments and equipment in and out as needed
- Location on the ground floor to be able to move instruments and equipment in and out
- Storage space for instruments and materials
- Various learning zones to allow for small and whole-group instruction

Any instruments used at Shaker Lane School will be shared and non-wind instruments. The music educator will educate students how proper sanitization of shared instruments like other shared educational materials may be needed. This would require having sanitary wipes to clean any shared instruments.

PHYSICAL EDUCATION PROGRAMS

Current

The physical education program within Shaker Lane provides students with the knowledge, skills, and opportunity to develop their physical, mental, and social well being. PE classes are designed to teach movement, team building, and social skills to provide all students a strong foundation for healthy and active lives. All kindergarten through grade two students have a 45 minute PE class per week. Our PE

classes are taught by a MA DESE licensed educator who is currently transitioning to use the recently released 2023 Comprehensive Health and Physical Education Framework.

Students travel from their classroom to the gymnasium for class. Depending on the weather, the PE class may then go outside for class. If the class goes outside, they typically facilitate class on the grass field behind the school.

Just this year we were able to add two rolling basketball hoops to our Shaker Lane gymnasium. This enhanced our students' ability to practice very specific shooting and target aiming skills. While this is wonderful, it does not provide enough opportunity for all students, thus we are still using tape to place squares on the wall to mimic a basketball hoop for students.

Our PE educator also offers adaptive PE classes to allow access to physical education for all students. Currently, these classes are small and can range from two to six students. Having these classes in the large gymnasium is very overwhelming and overstimulating for these students.

Proposed

In order to effectively offer physical education classes at Shaker Lane, we will require a gymnasium that has the following:

- Six basketball hoops
- Designated area for visual instruction (whiteboard and digital display technology)
- Large scale projection capability and sound for school assemblies, presentations, etc.
- Designated are for instructional visuals
- Adequate storage space for equipment
- Lines and wayfinders on the floor to support PE units
- Quality sound system
- Adequate electrical outlets
- Storage container outside or ability to easily bring materials between inside and outside
- An office space for our PE educator to design and plan lessons
- Be of a sufficient size to allow for expanded community use

The need for an Adapted Physical Education (APE) space would be a huge benefit to all of the students in the PACE programs. Without a dedicated adaptive PE space, students with disabilities often experience limited access to appropriate equipment and facilities, difficulty participating in mainstream PE activities, feelings of isolation and exclusion, and reduced opportunities for physical activity and skill development. The creation of an APE space would include the following:

- **Enhanced Accessibility:** A dedicated space allows for the implementation of specialized equipment, adaptive technology, and modifications necessary to accommodate diverse needs.
- **Improved Inclusion:** By creating a welcoming and inclusive environment, students with disabilities can feel valued and supported, fostering a sense of belonging.
- **Individualized Instruction:** An adaptive PE space enables teachers to provide tailored instruction and support, maximizing student progress and achievement.
- **Health and Wellness:** Regular physical activity is crucial for overall health, and an adaptive PE space empowers students with disabilities to develop lifelong healthy habits.

- **Skill Development:** Through specialized activities and equipment, students can acquire essential motor skills, coordination, and balance, leading to increased independence.

Physical education provides opportunities for social interaction and cooperation, fostering friendships and teamwork among students with diverse abilities. The addition of a second smaller gymnasium, used primarily as an APE classroom, would be less stimulating for students of all abilities. APE class sizes can be anywhere from two to six students. A smaller, less overwhelming, less stimulating environment can help each individual child feel more comfortable in the space. This space will be attached to the gymnasium for easy access between the main gymnasium and the APE classroom. As we currently run APE in the large gymnasium, acoustics and overstimulating sensory input hinders students from accessing this program.

The PACE programs currently provide whole class gross motor groups multiple times each week that currently occur inside the classroom which presents a multitude of limitations and safety concerns as well as inefficiencies with set up/break down of activities (obstacle courses, etc.). Our Pre-K classrooms have approximately 10 students who participate in APE 40 - 45 minutes per week. Our Physical Education Teacher consults with the district's Adaptive Physical Education Consultant to create experiences that are modified to meet the needs of students in our PACE classrooms. Limitations in the large gym setting are acoustics, sensory issues, and scheduling with other classrooms. A smaller APE space attached to the larger gymnasium would be utilized as a more age appropriate learning area for certain activities and games in their integrated Pre-K PE class.

By having this additional APE classroom space adjoining the gymnasium we can have a space that is utilized by every student in the school whether they are in a PACE, Pre-K, Kindergarten, 1st grade or 2nd grade class. Locating the gym, OT/PT room, and APE room adjacent to one another with the potential of opening spaces up to one another is our vision to allow for levels of differentiation and collaboration within physical education for all students. The connections of these three spaces would also allow for sharing of materials amongst the two spaces. Creating a storage space adjacent to the APE room would provide a location for materials to be utilized by the physical education teacher and the OT & PT service providers in an efficient manner.

Another proposed change to the PE program is to start introducing preschool classes to physical education. This will mean having our PE educator create appropriate and accessible lessons for our youngest learners, which will be more effective and impactful with an Adapted Physical Education space.

SPECIAL EDUCATION PROGRAMS (e.g., in-house, collaborative, facility restrictions)

Current

Littleton Public Schools adheres to federal and state laws and regulations that guarantee the rights of all students access to general education curriculum. Littleton Public Schools emphasizes a particular focus on the inclusion of students with disabilities in all aspects of school life, including educational programming for students in the least restrictive environment to the fullest extent possible. This is actualized through the development of a well articulated continuum of services and supports that includes development and ongoing expansion of in-district programming & supports including:

- **Inclusion** Special Education Services & Support: Direct, individualized 1:1 and small group specialized instruction
- **Moderate Special Education** Services & Support: Increased opportunities for delivery of specialized instruction in a pull-out setting
- **Therapeutic Learning Space (TLS)**: Direct, individualized 1:1 and small group behavioral support and academic support
- **Specialized, Substantially Separate Programs:**
  - Personalized Academic and Comprehensive Education Program (PACE) Grades PK- Age 22
  - Language Based Learning Disabilities (LBLD)
  Grades 3-8
- **Related Therapies, Assessment, Evaluation, Counseling and Consultation:**
  - In-District Staff: Speech and Language Pathology (SLP), Occupational Therapy (OT/COTA), Physical Therapy (PT/PTA), School Psychologist, Board Certified Behavior Analyst (BCBA).
  - Contracted Services: Assistive Technology (AT), Augmentative and Alternative Communication (AAC), Teacher of the Visually Impaired (TVI), Orientation and Mobility (O&M), Teacher of the Deaf (TOD), Adaptive Physical Education Consultant (APE), Clinical Consultation

Special Education services at the elementary level include inclusion models, partial inclusion models, and substantially separate programming. Service models include 1:1, small group, and whole class instruction.

Current deficiencies include the lack of adaptable and flexible learning spaces to meet the changing needs of our student population and limited appropriate spaces for staff offices and meeting spaces.

- The PACE Programs lack proper space for lessons to support the learning and generalization of life skills, including hygiene, cooking, cleaning, and toileting.
- Multiple special education and/or related therapies staff are required to share rooms or are relegated to inadequately sized spaces due to the lack of available space. This means that multiple and varied lessons can be going on in the same space, creating a loud learning environment and inflexibility with the setup of the learning space to meet the needs of the students.
- Special education and related therapies spaces are not within proximity or adjacent to programs or where the service needs are higher or within the general education learning areas.
- There is a lack of dedicated office/collaborative space for special education staff and related service providers to meet with staff and/or parents and test students.
- There is a lack of office space for the Elementary Special Education Administrator to meet with parents and staff. A dedicated special education team meeting space is inconsistent.
- Learning centers and program rooms lack access to the same technologies as the general education classrooms.
- The current school does not provide the appropriate space to facilitate Adaptive Physical Education and gross motor activities for students.

Provision of the high quality programming is contingent upon the availability of multiple spaces that can be used flexibly throughout the day and provide state of the art accessibility, assistive technology, and pedagogical resources. At this time, spaces for specialized services are shared amongst multiple

service providers or are utilizing small, confined inadequately sized spaces without access to natural light, which can impact the efficiency of services and creates a level of noise that can impact students' abilities to remain focused on their specialized instruction, impacting the learning and progression of skills. While Littleton Public Schools provides all necessary equipment for individual student needs, the District relies on less efficient portable sound-field systems for amplification and fabric light coverings for dimming. Not all special education learning spaces include the same technology access as the general education classrooms do. There are limitations to accessibility for students requiring wheelchairs or with physical impairments impacting mobility in regards to areas of the buildings in which their general education peers are able to access. Examples of this include limited bathroom access, inefficient access to the stage, and limited access to outdoor play spaces.

Special education services are provided to eligible students and are designed to remediate deficit areas, support the development of new skills, and allow students to gain the skills to access the general education curriculum in the least restrictive environment possible. The services and staffing are allocated annually based on the service delivery needs identified on the Individual Education Programs (IEPs) of the special education population being served. 18% of elementary students K-5 are identified as Students with Disabilities (SWDs) requiring an Individual Education Program (IEP). Of the number of students identified as needing special education services, only 2% require an out of district (OOD) placement.

Inclusion

The majority of students that receive Special Education services receive them as a combination of pull out and within the general education classroom setting, as outlined by each student's Individual Education Program (IEP). Inclusion supports are provided by special education teachers, teaching assistants, and related therapies staff (e.g. OT, SLP). With well-designed classroom spaces and alternative, acoustically diverse small group and breakout spaces adjacent and accessible from the classrooms and learning community, the district will be able to increase the level of inclusion that our students with disabilities can access.

Design needs for the inclusion special education program would be:

- Small group rooms between grade level classrooms to provide instructional options within a collaborative teaching model and instructional support model
- Open breakout space within learning neighborhoods so support small groups that may not require acoustic separation
- Flexible learning spaces within the classroom and outside the classroom for direct instruction and support in 1:1 and small group options
- Learning Centers within proximity to grade levels to limit transition time between general education and special education services for pull out model

Moderate Special Education

Special education teachers support students with a variety of disabilities within an inclusive model of learning. Students with disabilities, as defined by their Individual Education Programs may receive special education support within the general education classroom or within the learning center. Services

within the general education classroom may include collaborative teaching between the general educator and special educator and/or specific instructional support and generalization of taught skills. Services with the special education teacher includes specialized instruction in the areas of reading, written language, math, organization and executive function skills. Instructional models include 1:1 and small group. Educational Support Professionals (ESP) may also provide support to students within the general education classroom.
Design needs for Special Education rooms would be:

- One half-sized Learning Center (resource room) space per neighborhood for tier 3 interventions and additional supports
- Flexible space to accommodate small group testing (ie: MCAS)
- Adjacent space for assessments
- Access to same technologies as general education classrooms
- Adjustable lighting

Therapeutic Learning Space
The Therapeutic Learning Space (TLS) is a sensory friendly therapeutic space, addressing the emotional, behavioral and learning needs of students who present with an emotional impairment and accompanying behaviors and social challenges and have a specific need for access to a separate space identified in their Individualized Education Program. While we have created sensory spaces throughout the building, this level of support is needed for students who require additional support.

The Therapeutic Learning Space provides a soothing environment for students to receive therapeutic and behavioral supports and to engage in academic growth while supporting emotional needs, a student breakout space, as well as inclusion opportunities with space to process and gain support.

Design needs for the special education Therapeutic Learning Space would be:

- Centrally located between grade level teams
- Connected calming space for students to de-escalate, as needed, and rejoin class
- Acoustics need to be considered to limit noise disruptions to adjacent learning spaces
- Close proximity to counseling

Specialized, Substantially Separate Program
Personalized Academic Comprehensive Education Program (PACE)
The PACE Program is a district program that supports students across all grades at Shaker Lane (PreK through grade 2). This program is a substantially separate highly individualized intensive learning program with the ability to include students for specials, activities as well as other learning opportunities with the general education grade level classroom, as outlined within each student's Individual Education Programs. The Personalized Academic Comprehensive Education Program provides a highly individualized and modified curriculum for students with Autism spectrum disorders, developmental disability, intellectual impairment, and social communication impairments. In addition, students in this program exhibit significant impairment in some or all of the following areas:

- verbal communication
- social interaction and pragmatic skills
- comprehension

- functional academics
- behavioral and emotional regulation
- adaptive daily living skills
- ability to acquire new skills

The program utilizes a multi-disciplinary approach to enhance communication, socialization and sensory integration. Visual symbols and augmentative communication are used throughout the classroom to assist students in understanding of classroom activities, schedules and rules. Emphasis on behavioral-based methodologies (i.e. discrete trial, applied behavioral analysis, multi-sensory, etc) and the development/strengthening of functional skills are integral components of the program. Low student-to-teacher staff ratios maximize the learning of new skills and reinforces appropriate behaviors. Students are integrated into the general education setting on an individual basis as determined by the team. Students practice activities of daily living, hygiene, access and mobility, and travel training. Opportunities for inclusion should be beneficial, meaningful, and tolerated by the student. A District BCBA, School Psychologist, Occupational therapist, Physical therapist, and Speech and Language pathologist provide direct services in addition to consultative support to the program regularly. Contracted services providers consult to the program on a regular basis and/or provide direct instruction, as outlined in student IEPs, in the areas of Orientation and Mobility, Teacher of the Visually Impaired, Augmentative and Alternative Communication (AAC), Assistive Technology (AT) and Adaptive Physical Education (APE).

Design needs for the PACE program would be:

- See Proposed Program Space Description below
    - Two classrooms to split the students based on level of need and in accordance with DESE age requirements; movable acoustic partitions to allow for the rooms to be divided into smaller spaces as appropriate for individual/dyad teaching and whole program activities. Include multiple partitioned spaces for 1:1 programs and discrete trial work.
    - Adjacent small group room to create divided 1:1 discrete trial areas.
    - Acoustics need to be considered for sensory, hearing impairment, and language processing.
- Flexible classroom space and furniture
    - Space designed for flexibility in seating and table options, and to include academic instruction, 1:1 discrete trial areas, small group instruction, and morning meeting/movement space
- Each classroom can support up to 10 students and up to 8 staff.
- Restrooms for toileting needs.
- Calming space for students to de-escalate, take breaks and regroup to rejoin the class.
- Proximity to related therapies (OT, PT, SLP).
- Access to an outdoor, enclosed or fenced-in shaded/covered area for movement, play and outdoor learning opportunities.
- Dedicated sensory room accessed from within the PACE Program

Related Therapies, Assessment, Evaluation, Counseling and Consultation:

Speech
Speech and Language services are designed to facilitate growth in the areas of communication and language skills including speech sounds, language and literacy, social communication, pragmatic skills, cognitive communication, stuttering, and voice. Speech and Language services are pivotal to supporting all of our students with Language and Communication needs, including our students participating in district programs. Speech and Language Pathologists provide services to include consultation with school staff and parents, screenings and evaluations, and direct services. Direct services include whole class language instruction within classrooms, small group services, and 1:1 instruction. Small group and 1:1 services may take place within the program classroom, general education classroom, or embedded small group rooms within learning neighborhoods to support interventions in close proximity to students. Co-treats may also take place with other service providers such as the school counselor for social skills and pragmatics and the Occupational Therapist for communication, language and literacy, and comprehension.

Occupational Therapy and Physical Therapy
Occupational Therapy (OT) services are designed to provide support in the areas of sensory and motor development, manipulation and hand use, visual-perceptual skills, motor planning and coordination, daily living skills, work skills, organization, and the use of assistive technology and adaptive equipment.

The Physical Therapy (PT) services are designed to provide support in the areas of motor development, manipulation and hand use, motor planning/coordination, and implementation and supported use of adaptive equipment. These therapies aid students in movement (gait and balance), flexibility, muscle strengthening, and range of motion.

As reflected in the physical education section, an alternative smaller movement space (APE Space) should be considered a “must have” in the new building to support adaptive PE and additional OT/PT services for Special Education in addition to the school community as a whole. In terms of ideal location and adjacency, the movement space would be adjacent and visually connected to the larger gym so that students who struggle in larger group settings would have a smaller space to engage in the same physical activities in a smaller, quiet setting. Students who struggle with indoor recess or social interactions at recess could also benefit from access to this space. This space would benefit from having a mini-trampoline, and possibly sensory stimuli on the walls but should be separate from a “sensory room”.

OT/PT could also support Adaptive Physical Education (APE) and would need access to the gym or similar space to include a variety of equipment to meet the needs of our students. Swings with adaptable seating and positioning and other suspension equipment along with cushioned flooring to accommodate activities of stretching, yoga, and potential for falls.

School Psychologist
School psychologists currently provide individual and small group counseling services, conduct psychological evaluations and provide consultation to special education staff and general education staff, as needed.

Assistive Technology
Assistive technology services directly assist with the selection, acquisition or use of technology devices such as: equipment or product system (software) that can be used to increase, maintain, or improve the functional capabilities of a student with disabilities. Currently, AT evaluations and services are contracted.

Design needs for Assistive Technology would include space to store and control devices as needed or to meet with students or teaching assistants to collaborate and provide instruction in new programs or tools.

Applied Behavior Analysis Services
Individualized programming for children with Autism Spectrum Disorders using the principles of applied behavior analysis to increase skill acquisition and decrease maladaptive behaviors is provided within the Personalized Academic Comprehensive Education program (PACE). The district's Board Certified Behavior Analyst (BCBA) regularly consults with our Integrated Preschool Program, Special Education Teachers, and classroom teachers to provide strategies for behaviors, support with behavior plans, review of data, individual programs development, and training for teaching staff and teaching assistants.

Design needs for ABA Services will need space to meet with staff to discuss individual students and review data, meet with parents, as needed, for consultation. Proximity to the PACE Program and the Therapeutic Learning Space will be especially important as these programs are the main focus of the services.

Contracted Services
Assistive Technology (AT), Augmentative and Alternative Communication (AAC), Teacher of the Visually Impaired (TVI), Orientation and Mobility (O&M), and Adaptive Physical Education Consultant (APE) all provide clinical consultation.
Students with disabilities at the Shaker Lane School require a comprehensive array of specialized services to maximize their academic and developmental potential. To effectively deliver these critical services, the district engages with contracted service providers, including Assistive Technology (AT) specialists, Augmentative and Alternative Communication (AAC) experts, Teachers of the Visually Impaired (TVI), Orientation and Mobility (O&M) specialists, Adaptive Physical Education Consultants (APE), and Clinical Consultants, which necessitates adequate and appropriate workspace.
Currently, the Shaker Lane School faces challenges in providing dedicated space for these essential professionals. Shared spaces, often overcrowded and lacking necessary equipment, compromise the quality and efficiency of service delivery. A lack of private consultation rooms hinders confidential student assessments, goal-setting, and parent conferences. Moreover, the absence of specialized equipment storage and preparation areas impacts service provider productivity and the overall effectiveness of interventions.

Dedicated space for contracted service providers is essential to:

- Enhance service delivery: Provide a conducive environment for focused consultations, assessments, and interventions.

- Improve student outcomes: Facilitate timely and effective implementation of specialized services.
- Optimize resource utilization: Ensure efficient use of equipment and materials.
- Support professional collaboration: Create opportunities for interdisciplinary teamwork.
- Maintain confidentiality: Protect sensitive student information.

Providing dedicated space for contracted service providers can significantly contribute to improving educational outcomes for students with disabilities, fostering a more inclusive learning environment, and optimizing the utilization of specialized expertise.

Program	Number of rooms	Students per class	Total students	Number of FTE staff
Preschool PACE Program	1	5	5	1.0
Integrated Preschool Program	3	5-16	48	3.0
Special Education K-2	4	1-6	69	4.0
K-2 PACE program	1	6	6	1.0
English Learner Education Program	Shared space	1-6	12	2.0
Speech/Language	2	1-4	76	2.0
Occupational Therapy	Shared space with PT	1-4	32	1.8
Physical Therapy	Shared space with OT	1-4	12	.8 (district)
School Psychologist	1	1-6	All students	1.0
Counseling (Adjustment Counselor)	1	1-6	All students	1.0
BCBA	1	–	27	1.0
Other (Contracted Service Providers): TVI, TODHH, O&M, AAC, AT, APE	0	1-2	10	Per diem

*information based on the 2023-2024 school year, total numbers fluctuate throughout the school year.

Currently the facilities and classrooms for students accessing services are not adequate to maximize inclusion throughout the life of the schools. Students with mobility challenges have difficulty accessing school facilities and navigating the building. For example, for students with wheelchairs or walkers, it is very difficult for the student and a staff member to fit in the lift at the same time. If a student requires their wheelchair to be guided by a staff member, it may mean that the student and staff have to exit the building and walk around the outside to access a different floor. The hallways can be loud and crowded throughout the day, which can be difficult for students with vision and/or mobility challenges to navigate. Although DESE did not identify formal findings through the review process, the district has had to reconfigure multiple spaces throughout the school year to meet requirements.

Ensuring Access

The current facilities and classrooms for eligible students do not maximize their inclusion into the life of the school. The current configuration does not provide fluid opportunities for providing students with within class direct instruction with an efficient return to whole group instruction. While eligible students do have access to all school facilities including, but not limited to, those areas necessary to implement the student's IEP, crucial minutes are lost with transitioning students to and from therapy spaces. Resource rooms and separate classrooms for students in the current configuration can be counterproductive to learning for students who may require specialized equipment, distraction free environments and/or individual spaces for direct instruction (ABA-based teaching sessions, individual or small group reading tutorials). The current configuration is not conducive to universal design as it relates to optimizing acoustics and lighting treatments in order to remove physical communication barriers for students who are visually impaired, deaf or hearing impaired.

Ensuring Equity
The facilities and classrooms serving only students with disabilities are currently not equal in all physical respects to the average standards of general education facilities and classrooms

Proposed
There are no new programs proposed as part of the design plan. However, the proposed design plans take into account that the needs of students with disabilities are becoming more complex and with the proper accommodations, supports and services are able to be successfully integrated into their community school. In addition, the district's substantially separate programs are growing and are housed in increasingly inadequate spaces, limiting our capacity to serve students. Currently, the spaces for our substantially separate programs are not adequate for space and meeting the needs of our most disabled students.

A new or renovated facility would support dedicated space for student services and Special Education and a more effective positioning of rooms used for the delivery of services to students throughout the school. The District's goal for its future educational program is to create instructional spaces for special education that are designed into or adjoining grade level classrooms whenever possible. When separate pull out spaces are required, they should be physically distributed throughout the building.

The proposed spaces allow for required ADA specifications and support Universal Design for Learning through flexibilities within the learning environment that are not currently available.

Program	Number of rooms	Students per class	Total students	Number of FTE staff
Preschool PACE Program	1	10	10	4.0
Integrated Preschool Program	3	5-16	48	6.8
Special Education K-2	4	1-6	69	4.0
K-2 PACE program	1	10	10	4.0
English Learner Education Program	1	1-6	16	2.0
Speech/Language	Clinical	1-4	76	2.0

	suite			
Occupational Therapy	1 (shared with PT)	1-4	32	1.8
Physical Therapy	1 (shared with OT)	1-4	12	.8 (district)
School Psychologist	Clinical Suite	1-6	All students	1.0
Counseling (Adjustment Counselor)	1	1-6	All students	1.0
BCBA	Clinical Suite	–	25	1.0
Other (Contracted Service Providers): TVI, TODHH, O&M, AAC, AT, APE	Clinical Suite	1-2	12	Per diem

Collaboration amongst service providers is paramount to ensuring Individual Education Programs (IEPs) are accurate and well developed for each child. To create an environment where this can take place, we are proposing a Clinical Suite Model for specific staff (BCBA, School Psychologist, SLP, Special Education Administrator). We are looking to create a space where enhanced collaboration amongst service providers is possible as well as servicing students and the many other administrative responsibilities can be completed.

- **Clinical Suite:** A common area with comfortable seating and workstations where service providers can come together to discuss student progress, strategies, and interventions. This area should be equipped with technology to facilitate easy access to student data and resources. The suite would serve as the home base for these staff, where each provider would have a dedicated desk space with appropriate storage for testing kits, materials, etc. Co-locating related services staff will allow for collaboration and deeper conversations about students given how often this group of staff share the same students on their caseload. Attached to the clinical suite would be two flexible small group rooms for confidential meetings, testing, or working with students in a more private setting. It is important to note that though students may meet staff in these small group spaces, the ultimate goal would be for staff to push into classrooms and learning neighborhoods to minimize student travel time and maximize the inclusion of students.

- **Small Learning Area:** A dedicated space where service providers can work with students individually or in small groups will be attached to the Clinical Suite. This area should be flexible, with moveable furniture and various learning tools and resources to support diverse needs.

- **Conference Room:** A small conference room for IEP meetings, team meetings, Student Success Meetings (SST), and consultations with parents and other stakeholders. This room should have a large table, comfortable seating, and necessary technology for virtual meetings and presentations.

- **Storage and Resources:** Adequate storage for materials, resources, and student files. This can include cabinets, shelves, and secure storage solutions for sensitive information.

By implementing this suite model, service providers can work more efficiently and collaboratively, leading to better outcomes for students with IEPs.

A separate space will be needed for our occupational therapist, the certified occupational therapist assistant and the physical therapist. This space will have a multi-purpose use that is large enough for equipment such as climbing structures and a swing, mats on the floor for exercises, and space for students to work at tables. In addition to a space to support students, this room should be outfitted with teacher workstations to complete administrative responsibilities related to IEP development.

VOCATIONS & TECHNOLOGY PROGRAMS

Non-Chapter 74 Programming (e.g., vocational, technical, enrichment, STEM/STEAM, project-based programming) : Please see our Technology Instruction Policies and Program Requirements section above for information regarding our STEM/STEAM programming.

Chapter 74 Programming : Not applicable.

TRANSPORTATION POLICIES

Current
Student transportation to and from school is provided by bus or parent/guardian vehicle. Families have the opportunity to register for bus transportation services each year. Seven bus routes are offered during a.m. and p.m. drop-off and pick-up times. Parent drop-off and pick-up are located on the road closest to the cafeteria. Buses utilize the other access road to the school and pick-up and drop-off occurs on the road directly in front of the school building. The administration and staff have done an excellent job of creating pick-up and drop-off locations within a very congested area.

Proposed
The district would keep the current transportation system in place but would prefer a greater separation between vehicles and buses, which would allow for a safer and less congested area than we currently have.

During the 2018-2019 school year, we partnered with Safe Routes to School to develop our current arrival and dismissal pattern. At that time, car rider drop off was located in the Shaker Lane School parking lot. This posed not only an issue with cars trying to park but also the safety of students moving through a parking lot on their own as well as crossing in front of the bus lane. Our current arrival and dismissal procedures were an improvement but still pose safety and timeliness concerns.

Due to the car rider line being located in front of the bus line, this poses a safety issue during arrival and dismissal. At the start of the school day, car rider students unload at the sidewalk and walk across

the front driveway passing in front of buses. Multiple staff are on duty to ensure student safety which involves stopping buses from departing or holding students on one side of the crosswalk until it is safe to cross. At the end of the school day, students move in the reverse direction across the crosswalk into their cars. Buses are often ready to begin departing which leads to staff having to halt dismissal for car riders. Arrival and dismissal accounts for all staff to be on duty to ensure students are safe. The development of two separate car rider and bus lanes would promote a safer arrival and dismissal for students, decrease traffic back up, and create a more timely dismissal of students.

FUNCTIONAL & SPATIAL RELATIONSHIPS

We envision our Prek-2 school to be organized into grade level neighborhoods with Den Space adjacent to classrooms as well as four small group rooms between classrooms. Each grade level neighborhood would also house a grade level special education office. The media center, cafeteria and gymnasium would be centralized around each grade level neighborhood. There would be collaborative meeting spaces located between the administrative offices and the clinical suite which would be used for larger group meetings.

As students move throughout the building, opportunities to engage in sensory activities should be embedded in all spaces. This would include tactile experiences that students can engage with as they walk the halls, small cut out spaces for students to sit, and visually stimulating graphics to guide students to locations throughout the building. As a PreK-2 building, sensory opportunities must be built school-wide to help support student regulation throughout the school day.

Outdoor classrooms would also be integrated into the learning environment. A stage for performances would be located in the cafeteria and have the centralized space located in the center of the school.

Littleton Public Schools enjoy a high parent/guardian participation rate within its schools, with high levels of participation at the Shaker Lane School. The stage needs to be located in a location that allows for large and small audiences, the cafeteria would house larger audiences, the centralized space would be designed for smaller audiences.Our school design is specifically driven by our guiding principles and include:

Every community has a history and we view this building project as a way to engage our youngest learners in establishing an understanding of the communities history and develop the foundation to establish a sense of pride for their community. We can also provide opportunities to make learning more visible with plexiglass walls that allow our students to see the building at work, whether it be the Heating and Cooling System as well as other areas that allow students to learn about energy conservation.

Other areas that align with our guiding principles include:

- Ample parking to accommodate increased attendance at school and community events
- Traffic flow patterns that are safe and intuitive for users
- Separate entrances for busses and car traffic to maximize student and staff safety
- Separate points of entrance for Prek, K and grades one and two to promote small grade level communities

- Outdoor/Green Spaces that are easily accessible by grade level neighborhoods
- Developmentally appropriate Play Structures
- Opportunities to promote intergenerational collaboration

The Educational Program for Shaker Lane has been collaboratively developed by school, district, and town constituents through multiple meetings, visioning sessions, and school site visits. This process has allowed us to reflect on current practices and identify opportunities for enhancement through a redesigned building. Below is a concise summary of our vision for a reimagined Shaker Lane School that has been interwoven throughout the educational plan.

Guiding Principles	Design Patterns
1. Purposeful Innovation ● Adaptability and Flexibility ● Extended Learning- The World is Your Classroom ● Varied Spaces ● Embedded Technology	● Flexible and Varied Spaces ● Variety/Options ● Agile Classrooms ● Den Learning Spaces ○ Directly Adjacent to Classrooms ○ Spaces Separate from Hallway traffic ● Media Space as Gathering Hub-auxiliary spaces as needed ● Extended Learning Spaces ● Informal and Formal Collaboration areas for staff and students
2. Educating the Whole Child ● Developmentally Appropriate ● Inquiry-Based and Real-World Learning ● Curiosity and Discovery ● Joy and Play (defining play) ● Learning as a flexible fluid experience that embeds play ● With end goals in sight, students have choice and autonomy to accomplish goals ● Learning is shown in different outcomes and tangible products ● Child led projects ● Student Choice ● Inclusion of unstructured time choices based on student awareness of needs ● Inclusion of Outdoor learning and experiences	● Display and Exhibition ● Screens in Lobby with Upcoming Events ● Visible Learning ● Quiet Spaces within classrooms and throughout the school ● Learning Nooks/sensory spaces ● Breakout and Collaborative Spaces ● Small Group Learning Spaces (between classrooms) ● Developmentally, socially and emotionally responsive school ● Happy Students learning through Hands on Learning, Agency and Play ● Inclusive Learning Spaces ● Push in Special Education/ Separate spaces when appropriate (small working group spaces) ● Creation-Station incorporated into the media center
3. Learning Communities ● Small School Feel, Large School Pride ● Inclusive and Equitable Learning Practices ● Collaboration and Connections ● Warm, Welcoming and Child-Scaled	● Grade Level Neighborhoods ● Den Learning Spaces/ Small working group spaces within each Grade Level Neighborhood ● Welcoming Entry ● Child Scaled- designed for students

● Neighborhoods and Learning Corridors ● Inclusion of co-teaching (vertical, horizontal, cross discipline) ● Thoughtful and Purposeful Transitions	● Distributed Dining ● Branding and Identity ○ Zones by Color ● Flexibility to Support Academic Breakout and Future Growth ● Inclusion, Accessibility, and Efficiency in a Universally Designed Building ● Design includes spaces for Tigers Den (afterschool program) ● Incorporation of preschool into the school design ● Importance of Choice during Lunch and Recess
4. Sustainability and High Performance ● Practical and Efficient ● Energy Efficient Systems ● Student centered building ● Abundant Natural Light	● Connection to Nature ● Natural Light ● Opportunities for students to understand operations of energy efficiency systems
5. Community Connections ● School as Community Collaborator and Resource ● Intergenerational – Connecting Kids, Families, Adults and Seniors ● Reflecting Town History – Historic ● References and Aesthetic	● Community Engagement, Connection and Collaboration ● Building as a school and community resource ● Family Resource Space ● Community Spaces ● Community Access ● Safety and Security ○ Office to View Arrival and Dismissal ○ Security Systems o Welcoming Internal and External Design ● History and Storytelling
6. Outdoor Connections ● School Connections to Natural Environment ● Age Appropriate Outdoor Play and Learning ● Outdoor Gardens ● Safe Drop-Off and Pick-Up	● Outdoor Learning ● Outdoor Gardens ● Engaged Outdoor Play ● Embracing the Outside/Inside Connection

SECURITY & VISUAL ACCESS REQUIREMENTS

Security features shall include:

- Inner lockdown options incorporated into the building design
- One entrance for Prek, k and grades one and two
- Security screener for all visitors

- Security cameras located throughout the school to monitor all common and administrative areas and hallways throughout the building as well as entrance and exit cameras; external cameras that monitor playgrounds and fields
- Double access doors
- Separate dismissal options
- Separate bus loop for parent drop off/pickup
- Key fob entry system for administration and staff
- Opportunities to communicate with whole building and outside community from each classroom and/or learning space

Indicate the date of the most recent Medical Emergency Response Plan that was submitted to DESE.
Medical Emergency Plans were submitted to DESE on July 14, 2023.

Describe the Physical and Operational requirements (ex. Main entrance design and how it is to function/be managed, classroom and hardware features, visibility, alternative entries, surveillance and lines of sight etc)

- A welcoming and inviting entrance
- Double set of security doors with reception area
- Fob access to entry doors
- External cameras at each entry point.
- Cameras to monitor playgrounds, fields and parking lot
- Security cameras located throughout the school to monitor all common and administrative areas and hallways throughout the building as well as entrance and exit cameras

TYPICAL DAY & WEEK IN THE LIFE OF A STUDENT

Activity or Subject	Program Details and Educational Benefit
Morning Meeting 15 min	All classrooms take part in a Morning Meeting each day. This communal classroom gathering allows the teacher the ability to check in with students, gives students the opportunity to greet their classmates, and sets the stage for outlining the day and what will be accomplished. During this time, a team building activity takes place, creating stronger classroom bonds amongst students and their teacher.
ELA/Literacy 105 - 120 min	The ELA/Literacy block consists of up to 90 minutes of core programming which includes writing, 30 minutes of phonics, and phonemic awareness programming.
Mathematics 65 - 75 min	The math block consists of whole group and small group instruction. At times, the Math Interventionist will support classroom instruction in a co-teach model and to support students on her caseload.
Snack/Break 15 min	At the primary level, students need time to socialize in an unstructured environment. Breaks from academic work allow students to relax and recharge, reducing stress and improving focus when they return to their academics.

Shaker Lane Elementary School Education Program

As of August 14, 2024

Social Studies 2x per week 40 - 60 min	Social Studies takes place two times a week and alternates with our Science instruction. Teachers focus on the state standards of history and social science frameworks.
Science 2x per week 40 - 60 min	Science takes place on the opposite days of Social Studies, two times a week. Lessons are hands-on and focus on Physical, Earth and Life Sciences.
WINN (What I Need Now) 30 min	During this 30 min block, students are engaged in educational support tailored to their needs. This may include support from interventionists/special educators, specialized instruction by the classroom teacher, or other individualized needs. This is a dedicated time where students are given the intervention needed to continue to
Unified Arts 45 min	Each student engages in a 45 minute Unified Arts block each day ranging from Art, Music, Physical Education, Library, or Social-Emotional Learning lesson. These sessions are vital for fostering well-rounded development, enabling students to explore and develop skills beyond core academics.
Recess/Lunch 20 min each	K-2 students' daily schedule includes a 20-minute recess followed by a 20-minute lunch. These periods are structured to allow an entire grade level to participate together, providing valuable opportunities for students to interact with peers outside of their immediate classroom environment. We pride ourselves in community building where interacting with a broader group of peers helps students develop social skills and build relationships across the grade level.
Social Emotional Learning 1x per week 20 - 30 min	Shaker Lane utilizes the Second Step Elementary Program to support the social-emotional development of students. Students receive a directed lesson once a week by their classroom teacher. Integrating this program into our weekly instruction supports the social-emotional growth of our students to help prepare them for success both in and out of the classroom.

Throughout the week students may engage in a variety of other events and activities. This could include a school-wide Community Meeting, in-house presentation or a field trip. Students also visit our Imagatorium and work with our K-5 STEM Integration Specialist. The Imagatorium is a specialized space designed to foster creativity, collaboration, and STEM learning. Here, students have access to various resources and tools that allow them to explore and experiment with different concepts.

4.2 Preferred Solution Space Summary

The design enrollment for the Shaker Lane School project is 435 students in grades K-2 and 48-60 students in Pre-K. Using the Initial Space Summary template from the PDP, this version was refined based upon further development of the District's Educational Program, as well as extensive ongoing discussions with key administration members of the school and the Littleton School District.

This square footage chart summarizes the differences between the MSBA Guidelines, the square footages at the time of the PDP submission, and net square footages outlined in this PSR. The PSR adjustments were made based on MSBA PDP review and decisions made by the SBC and the District.

ROOM TYPE	MSBA GUIDELINES	PDP	Δ PDP V. MSBA	COMMENTS	PSR	Δ PSR V. MSBA	COMMENTS
Core Academics	21,950	28,450	+6,500	• Additional 950sf classroom • Academic Suite • Creation Station & dispersed Imagatorium • Den Learning Spaces	27,450	+5,500	• Additional 900sf classroom • Academic Suite • Creation Station & dispersed Imagatorium • Den Learning Spaces • ELL classroom
Special Education	4,530	11,960	+7,430	• 1 Learning Center per grade K-2 • Small Group Rooms throughout • ELL classroom • OT/PT & Adaptive PE • Therapeutic Learning Center • Clinical Suite with Conference Room • SPED Admin Office & Conference Room	8,500	+3,970	• 1 Learning Center per grade K-2 • Small Group Rooms throughout • OT/PT & Adaptive PE • Therapeutic Learning Center • Clinical Suite with Conference Room • SPED Admin Office & Conference Room
Arts & Music	2,575	2,575	—		2,575	—	
Health & Physical Education	6,300	6,300	—		6,300	—	
Media Center	2,628	2,628	—		2,628	—	
Dining & Food Service	6,552	6,943	+391	• Staff Lunch Room for 25-30 teachers	6,552	—	
Medical	510	650	+140	• Second Toilet with Changing Table • Isolation Room	510	—	
Administration & Guidance	2,151	2,410	259	• One Teacher Work Room per floor	2,151	—	
Custodial & Maintenance	2,035	2,035	—		2,035	—	
Other	0	5,160	+5,160	• Three Pre-K classrooms • Pre-K Den Learning Space • Mother's Room • Admin Kitchenette	6,120	+6,120	• 3 Pre-K classrooms with toilets • Pre-K Special Ed classroom with toilet (PACE) • Pre-K Small Group Learning Space • Pre-K Den Learning Space
Net SF Subtotal	49,231	69,111	+19,880		64,821	+15,590	
Gross SF Total	**73,845**	**103,667**	**+29,822**		**97,232**	**+23,387**	

Littleton Public Schools SHAKER LANE SCHOOL	EXISTING CONDITIONS			PROPOSED PROGRAM				VARIATION TO MSBA GUIDELINES			MSBA GUIDELINES (DO NOT MODIFY) (Refer to Educational Facility Planning for additional information)			
ROOM TYPE	ROOM NFA[1]	# OF ROOMS	AREA TOTALS	ROOM NFA[1]	# OF ROOMS	AREA TOTALS	COMMENTS	ROOM NFA[1]	# OF ROOMS	AREA TOTALS	ROOM NFA[1]	# OF ROOMS	AREA TOTALS	COMMENTS
CORE ACADEMIC SPACES			**21,113**			**27,450**				**5,500**			**21,950**	STE Guidelines Policy
Kindergarten Classroom with Toilet	1,200	4	4,800	1,100	8	8,800	60sf toilets; 2 sinks min; 1,100sf min	-100	0	-800	1,200	8	9,600	1,100 NSF (minimum size) - 1,300 NSF (maximum size); Minimum of (2) sinks required per Kindergarten Classroom
Kindergarten Classroom with Toilet	1,300	2	2,600					0	0	0				
General Classroom (Grades 1-2)	950	7	6,650	900	14	12,600	2 sinks min; 900sf min	-50	1	250	950	13	12,350	900 NSF (minimum size) - 1,000 NSF (maximum size); Minimum of (2) sinks required per General Classroom
General Classroom (Grades 1-2)	900	6	5,400					0	0	0				
Reading Specialist Office w/ small group area	438	1	438					0	0	0				
Math Interventionist Office w/ small group area	272	1	272					0	0	0				
Academic Suite (for 6-8 service providers including two Reading Specialists & two Math Interventionists)				500	1	500	Include Small Group Learning Space (SPED)	500	1	500				
Maker Space (Imagatorium)	850	1	850	250	3	750	Imbedded in Dens K-2; conform to MSBA guidelines for STE spaces	250	3	750				
Maker Space (Creation Station)				100	1	100	Houses equipment (3d print, laser cutter, etc)	100	1	100				
Den Learning Space				1,400	3	4,200	One per grade K-2; include sink(s)	1,400	3	4,200				
ELL Classroom	103	1	103	500	1	500	Shared by two specialists	500	1	500				
SPECIAL EDUCATION			**4,021**			**8,500**				**3,970**			**4,530**	SPED spaces require DESE review and approval
Self-Contained Special Education Classroom (K-2 PACE)	950	1	950	1,100	1	1,100	Serves students in K-2; 2 sinks min; 1,100sf min	150	-2	-1,750	950	3	2,850	900 NSF (minimum size) - 1,300 NSF; equal to the size of the proposed General Classrooms that serve the same student population.
Self-Contained Special Education Toilet Room				80	1	80	In K-2 PACE room	20	-2	-100	60	3	180	
Resource Room (Learning Center)	457	1	457	500	3	1,500	One per grade level K-2	0	1	500	500	2	1,000	1/2 size of a General Classroom
Small Group Learning Space				120	15	1,800	Four per grade K-2, two in Clinical Suite, one in Academic Suite	-380	14	1,300	500	1	500	1/2 size of a General Classroom
SPED Classroom w/o toilet	800	1	800					0	0	0				
SLP Office	195	2	390					0	0	0				
School Psychologist Office	180	1	180					0	0	0				
BCBA Office	110	1	110					0	0	0				
SPED Office	160	1	160					0	0	0				
SPED Administrator Office	74	1	74	150	1	150		150	1	150				
OT/PT Room	900	1	900	1,200	1	1,200		1,200	1	1,200				
Adaptive PE (APE)				1,500	1	1,500		1,500	1	1,500				
Therapeutic Learning Center				120	1	120		120	1	120				
Clinical Suite (for 6-8 service providers including two SLPs, Psychologist, BCBA, and two Student Support Specialists)				500	1	500	Include sink; include 2 Small Group Learning Spaces (SPED)	500	1	500				
Clinical Suite Conference Room				200	1	200	To fit up to 12 people	200	1	200				
SPED Conference Room				350	1	350	To fit up to 20 people	350	1	350				
ART & MUSIC			**1,305**			**2,575**				**0**			**2,575**	
Art Classroom (25 seats)	952	1	952	1,000	1	1,000		0	0	0	1,000	1	1,000	Assumed schedule: 2 times per week per student
Art Workroom with Storage and Kiln				150	1	150		0	0	0	150	1	150	
Music Classroom / Large Group (25-50 seats)	353	1	353	1,200	1	1,200		0	0	0	1,200	1	1,200	Assumed schedule: 2 times per week per student
Music Practice / Ensemble				75	3	225		0	0	0	75	3	225	
HEALTH & PHYSICAL EDUCATION			**2,828**			**6,300**				**0**			**6,300**	Excess Physical Education Spaces Policy
Gymnasium	2,611	1	2,611	6,000	1	6,000		0	0	0	6,000	1	6,000	
Gym Storeroom	217	1	217	180	1	180		30	0	30	150	1	150	
Health Instructor's Office ~~with Shower and Toilet~~				120	1	120	Toilet room for students under OTHER	-30	0	-30	150	1	150	
MEDIA CENTER			**1,614**			**2,628**				**0**			**2,628**	
Media Center / Reading Room	1,614	1	1,614	1,878	1	1,878		-750	0	-750	2,628	1	2,628	
Librarian Office				150	1	150		150	1	150				
Den Media Center Satellites				200	3	600	One per grade level K-2	200	3	600				
DINING & FOOD SERVICE			**4,802**			**6,552**				**0**			**6,552**	
Cafeteria / Dining	3,254	1	3,254	2,652	1	2,652		-611	0	-611	3,263	1	3,263	Based on 2 lunch seatings - 15 NSF per seat
Small Quiet Café				120	1	120	for 6-8	120	1	120				
Large Quiet Café				200	1	200	for 10-12	200	1	200				
Stage	429	1	429	1,000	1	1,000		0	0	0	1,000	1	1,000	
Chair / Table / Equipment Storage			0	345	1	345		0	0	0	345	1	345	
Kitchen	585	1	585	1,735	1	1,735		0	0	0	1,735	1	1,735	1,600 NSF for first 300 students + 1 NSF per additional student
Staff Lunch Room	534	1	534	500	1	500	For 25-30 teachers	291	0	291	209	1	209	20 NSF per student

1 INTRODUCTION
2 EVALUATION OF EXISTING CONDITIONS
3 FINAL EVALUATION OF ALTERNATIVES
4 PREFERRED SOLUTION
5 LOCAL ACTIONS & APPROVALS
6 APPENDIX

Littleton Public Schools SHAKER LANE SCHOOL	EXISTING CONDITIONS			PROPOSED PROGRAM				VARIATION TO MSBA GUIDELINES			MSBA GUIDELINES (DO NOT MODIFY) (Refer to Educational Facility Planning for additional information)			
ROOM TYPE	ROOM NFA[1]	# OF ROOMS	AREA TOTALS	ROOM NFA[1]	# OF ROOMS	AREA TOTALS	COMMENTS	ROOM NFA[1]	# OF ROOMS	AREA TOTALS	ROOM NFA[1]	# OF ROOMS	AREA TOTALS	COMMENTS
MEDICAL			**428**			**510**				**0**			**510**	
Medical Suite Toilet	50	1	50	60	1	60	Include 80sf Toilet under Other	0	0	0	60	1	60	
Nurses' Office / Waiting Room	378	1	378	250	1	250		0	0	0	250	1	250	
Examination Room / Resting				200	1	200	Open room with cubicles	100	-1	0	100	2	200	
ADMINISTRATION & GUIDANCE			**1,296**			**2,151**				**0**			**2,151**	
General Office / Waiting Room with Toilet	652	1	652	368	1	368		0	0	0	368	1	368	
Teachers' Mail and Time Room				203	1	203	Includes 1st floor Teacher Work Room	103	0	103	100	1	100	
Copy Room				150	1	150	Adjacent to 1st floor Teacher Work Room	0	0	0	150	1	150	
Records Room				110	1	110		0	0	0	110	1	110	
Principal's Office with Conference Area	278	1	278	250	1	250		-125	0	-125	375	1	375	
Principal's Secretary / Waiting (Conference)				0	0	0	Incorporated into Principal/VP Offices	-125	-1	-125	125	1	125	
Assistant Principal's Office with Conference Area	164	1	164	250	1	250		130	1	250	120	0	-	
Supervisory / Spare Office				120	1	120	Two desks	0	0	0	120	1	120	
Conference Room				250	1	250		0	0	0	250	1	250	
Guidance Office (Adjustment Counselor)	202	1	202	250	1	250	Treatment sessions for up to 6 students	100	0	100	150	1	150	
Guidance Storeroom				0	0	0	Incorporated into Guidance Office	-35	-1	-35	35	1	35	
Teachers' Work Room				200	1	200	Located on 2nd floor	-168	0	-168	368	1	368	
CUSTODIAL & MAINTENANCE			**715**			**2,035**				**0**			**2,035**	
Custodian's Office	77	1	77	150	1	150		0	0	0	150	1	150	
Custodian's Workshop				375	1	375		0	0	0	375	1	375	
Custodian's Storage				375	1	375		0	0	0	375	1	375	
Recycling Room / Trash				400	1	400		0	0	0	400	1	400	
Receiving and General Supply	534	1	534	245	1	245		0	0	0	245	1	245	
Storeroom				290	1	290		0	0	0	290	1	290	
Network / Telecom Room	104	1	104	200	1	200		0	0	0	200	1	200	
PRE-K (OTHER)			**2,900**			**6,120**				**6,120**			**0**	
Pre-Kindergarten Classroom with Toilet				1,100	3	3,300	Toilets sized for changing tables; 2 sinks min; 1,100sf min	-100	3	3,300	1,200	0	-	1,100 NSF (minimum size) - 1,300 NSF (maximum size)
Pre-Kindergarten Classroom w/o Toilet	1,050	1	1,050					0	0	0				
Pre-Kindergarten Classroom w/o Toilet	950	1	950					0	0	0				
Pre-Kindergarten Classroom w/o Toilet	900	1	900					0	0	0				
Pre-K Den Learning Space				1,400	1	1,400	Core Academic space similar to K-2 Den Learning Spaces	1,400	1	1,400				
Self-Contained Special Education Classroom (Pre-K PACE)				1,100	1	1,100	Serves Special Education students in Pre-K; 2 sinks min; 1,100sf min	1,100	1	1,100				
Self-Contained Special Education Toilet Room				80	1	80	In Pre-K PACE room; include changing table	80	1	80				
Pre-K Small Group Learning Space				120	2	240	Serves Special Education students in Pre-K	120	2	240				
Total Building Net Floor Area (NFA)			**41,022**			**64,821**				**15,590**			**49,231**	**Total Building Net Floor Area (NFA)**
NON-PROGRAMMED SPACES	% of GFA		**13,215**	% of GFA		**32,411**	Complete during SD							
Unoccupied MEP / FP Spaces	1.5%		952	0.0%										
Unoccupied Closets, Supply Rooms, and Storage Rooms	3.2%		1,962	0.0%										
Toilet Rooms	2.4%		1,504	0.0%			Include at Gym, Admin (w/ shower)							
Circulation (corridors, stairs, ramps and elevators)	14.2%		8,797	0.0%										
Remaining[3]	12.7%		7,868	33.3%		32,411								
Total Building Gross Floor Area (GFA)[2]			**62,105**			**97,232**				**23,387**			**73,845**	**Total Building Gross Floor Area (GFA)[2]**
Grossing Factor (GFA / NFA)			**1.51**			**1.50**							**1.50**	**Grossing Factor (GFA / NFA)**

[1] **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.

[2] **Total Building Gross Floor Area (GFA)** Includes the entire building gross square footage measured from the outside face of exterior walls.

[3] **Remaining** Includes exterior walls, interior partitions, chases, and other areas not listed above. Do not calculate this area, it is assumed to equal the difference between the Total Building Gross Floor Area and area not accounted for above.

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 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.

Signature of Principal Architect: _____ **Name of Architecture Firm:** Studio G Architects

Name of Principal Architect: Gail Sullivan, FAIA **Date:** December 6, 2024

# of Grades	3	**435**	**Total Enrollment**
K	1	**145**	Kindergarten Enrollment
Grade 1	1	**290**	Lower Elementary School Enrollment (Grades 1-2)
Grade 2	1	**0**	Upper Elementary School Enrollment (Grades 3-6)

The proposed Space Summary template has been adjusted to reflect the revised Educational Program. Category area totals are consistent with the MSBA Guidelines except the following:

CORE ACADEMIC SPACES

- One additional general classroom is required to accommodate seven classrooms in both Grade 1 and 2, for a total of 14 general classrooms, each at 900sf. This is a request for 900 net square feet over the MSBA Guidelines. **This additional space was previously approved by the MSBA during the review of the PDP. Please note that during PSR the decision was made to reduce all classrooms to the MSBA minimums.**
- "Den Learning Spaces" are common learning areas for each grade level K-2. These three 1,400sf communal spaces would support a wide variety of collaborative, integrated, multi-class, cross grade level, co-teaching, and interdisciplinary activities. The Dens would be the heart of each grade level neighborhood, sized to accommodate all students in a grade level for in-house "field trips" and other special hands-on enrichment activities for each grade level. The Dens would also allow for service providers to push-in and provide small group services in an extended classroom setting. **This is a request for 4,200 net square feet over MSBA Guidelines.**
- A dedicated 500sf Academic Suite for Math Interventionists and Reading Specialists would provide a shared space for these individuals to plan and design interventions for students. The suite would house hoteling-style workstations in an open office concept, with central collaboration and work space. Rather than individual offices, a suite would allow for future flexibility and growth, constant collaboration among student support specialists, and better support for providing push-in interventions. **This is a request for 500 net square feet over the MSBA Guidelines.**
- The existing Shaker Lane School has an 850sf "Imagatorium," home to a well-established STEM program. The proposed program would disperse the Imagatorium throughout the grade level Dens, allocating 250sf for each grade K-2. A small 100sf "Creation Station" would house fabrication equipment such as a laser cutter and 3D printers, to be used only by STEM specialists but available for viewing so students can see how their projects are created using the tools in the space. **This is a request for 850 net square feet over the MSBA Guidelines**.
- A dedicated 500sf half-sized ELL Classroom is required to provide effective instruction to English Language Learners. **This is a request for 500 net square feet over the MSBA Guidelines.**

The total additional Core Academic Spaces requirements amount to a request for 5,500 net square feet over the MSBA guidelines.

SPECIAL EDUCATION

- The Shaker Lane School requires one 1,100sf self-contained special education classroom (referred to as PACE rooms) for students in grades K-2, sized the same as the Kindergarten core academic classrooms. **This is a request for 1,750sf *below* the MSBA guidelines.**
- Given the ages of the SLS students, the K-2 PACE classroom should have a toilet room sized to accommodate a changing table at 80sf each. **This is a request for 100 net square feet *below* the MSBA Guidelines.**
- The District's push-in model of intervention requires dedicated Special Education support spaces in each grade level neighborhood. Shaker Lane school requires one 500sf Resource Room (referred to as "Learning Centers") in each grade K-2. **This is a request for 1,000 net square feet over the MSBA Guidelines.**
- 120sf Small Group Rooms (referred to as Small Group Learning Spaces) shared between classrooms will be utilized for small group services by our special education staff and math interventionists; five in Kindergarten and four per grades 1-2. Providing support for students close to their classroom will allow them to efficiently receive services in their classroom environment. This space also allows for students in adjoining classrooms to be serviced at the same time while remaining next to their learning environment to quickly return and remain informed on any teacher information. Another Small Group Learning Space would be connected to the Academic Suite, and another to the Clinical Suite, for a total of 15 rooms. **This is a request for 1,300 net square feet over the MSBA Guidelines.**
- A dedicated 500sf Clinical Suite for Speech & Language Pathologists, BCBA, School Psychologist, and contracted specialists would create a supportive and collaborative environment where service providers can discuss goals, objectives, and benchmarks in developing IEPs. The suite would house hoteling-style workstations in an open office concept, with central collaboration and work space. Rather than individual offices, a suite would allow for future flexibility and growth and constant collaboration, resulting in better outcomes for students with IEPs. **This is a request for 500 net square feet over the MSBA Guidelines.**
- A 150sf office for the Special Education Administrator would be incorporated into the Clinical Suite. **This is a request for 150 net square feet over the MSBA Guidelines.**

- A 200sf conference room connected to the Clinical Suite would provide meeting space for staff to discuss programming, and a location for Student Success Team (SST) meetings. **This is a request for 200 net square feet over the MSBA Guidelines.**
- The Occupational Therapy and Physical Therapy programs provide direct therapy to students in small group settings, using specialized equipment such as trampolines, swings, obstacle courses, and more. This equipment requires a dedicated OT/PT space to provide a controlled setting for safety and proper instruction. **This is a request for 1,200 net square feet over the MSBA Guidelines.**
- Students with sensitivities to sound and over-stimulation, as well as students with a need for enhanced accessibility require an Adaptive Physical Education (APE) space. The Shaker Lane School already has an APE program provided by the physical education teacher. This dedicated 1,500sf APE room would implement specialized equipment , adaptive technology, individualized instruction, and development of essential skills such as gross motor, coordination and balance. **This is a request for 1,500 net square feet over the MSBA Guidelines.**
- The Therapeutic Learning Space (TLS) is a 150sf sensory-friendly space to address emotional, behavioral and learning needs of students who present with an emotional impairment and accompanying behaviors and social challenges, and who have a specific need for access to a separate space identified in their Individualized Education Program. This therapeutic level of support is needed for students who require additional support beyond the sensory spaces throughout the building. The TLS provides a soothing environment for students to receive therapeutic and behavioral supports and to engage in academic growth while supporting emotional needs. **This is a request for 120 net square feet over the MSBA Guidelines.**
- Parents frequently visit the school to attend IEP and 504 meetings with the Special Education team. These meetings can have up to 20 people at a time, so a 350sf dedicated SPED Conference Room is required near the main entry. **This is a request for 350 net square feet over the MSBA Guidelines.**

The total additional Special Education requirements amount to a request for 3,970 net square feet over the MSBA guidelines.

ART & MUSIC

This category is consistent with MSBA Guidelines.

HEALTH & PHYSICAL EDUCATION

- The gymnasium requires as much storage as possible, and a toilet with shower in the office is not required. 30sf are subtracted from the Health Instructor's office and added to the Gym Storeroom. A student toilet room adjacent to the gymnasium will be counted in the grossing factor. **This variation results in no net change to the MSBA Guidelines.**

MEDIA CENTER

- Shaker Lane school will have a central 1,878sf Media Center with a 150sf office to serve as a home base for media staff and continue to support media as a unified art. 600sf will be equally dispersed as satellite media areas among the Den Learning Centers for Kindergarten through Grade 2 (200sf each). A Media Center/Library that is academically embedded with a central location and satellite capabilities will offer a space for media activities and seamless access to materials, blurring the lines between the library and learning neighborhoods. **This variation results in no net change to the MSBA Guidelines.**

These variations result in no net change in square footage from the MSBA Guidelines.

DINING & FOOD SERVICE

- The creation of a 250sf Quiet Cafe would provide support for students to be within the cafeteria during the lunch time, but in a space that feels safer and less stimulating, a sensory-supportive environment to allow students who are experiencing difficulty in the larger cafeteria setting to be part of the group, with the intent to integrate into the larger cafeteria space over time. An additional smaller 150sf Quiet Cafe will allow the School Adjustment Counselor to hold "lunch bunch" sessions adjacent to the Cafeteria. The 400sf required for these two Quiet Cafe rooms would be carved out of the Cafeteria square footage. **This variation results in no net change to the MSBA Guidelines.**
- Strong relationships among staff improve communication and collaboration, so providing non-academic space to foster relationships is key for both improved outcomes students and job satisfaction for employees. A 500sf Staff Lunch Room is sized for 25-30 people to dine together. Outside of lunchtime, this space would double as an additional meeting and collaboration space. The 291sf required would be carved out of the Cafeteria square footage. **This variation results in no net change to the MSBA Guidelines.**

These variations result in no net change in square footage from the MSBA Guidelines.

MEDICAL

- Rather than two Exam / Resting rooms, Shaker Lane prefers an enclosed 60sf sick room and a 140sf open room with curtained cubicles to help with supervision. **This variation results in no net change to the MSBA Guidelines.**

These variations result in no net change in square footage from the MSBA Guidelines.

ADMINISTRATION & GUIDANCE

- A 250sf Principal's office is sized for small meetings. **This is a request for 125 net square feet *below* the MSBA Guidelines.**
- A teacher workroom on each floor reduces the amount of time teachers have to spend traveling, and increases collaboration among grade level teams. 103sf has been added to the Main and Time Room to add functionality and serve as the first floor teacher's workroom. **This is a request for 103sf over the MSBA Guidelines.**
- A Principal's Secretary / Waiting room is not required. **This is a request for 125 net square feet *below* the MSBA Guidelines.**
- A 250sf Assistant Principal's office is sized for small meetings. **This is a request for 250 net square feet over the MSBA Guidelines.**
- The School Guidance Office (referred to as Adjustment Counselor), needs to accommodate small group meetings of up to 6 students. A 250sf office is required. The 35sf Guidance Storeroom is incorporate into that office. **This is a request for 65 net square feet over the MSBA Guidelines.**
- The second floor requires a 200sf teacher workroom equipped with necessary resources such as copiers, printers, and office supplies. 168sf were removed from this space and reallocated to the Mail and Time room and other admin spaces. **This is a request for 168 net square feet** *below* **the MSBA Guidelines.**

These variations result in no net change in square footage from the MSBA Guidelines.

CUSTODIAL & MAINTENANCE

This category is consistent with MSBA Guidelines.

PRE-K & OTHER

- The Shaker Lane School has a well-established Pre-Kindergarten program and requires three 1,100sf classrooms with a toilet room in each sized to accommodate a changing table. **This is a request for 3,300 net square feet over the MSBA Guidelines.**
- The creation of a safe, sensory, and universally designed 1,400sf Den Learning Space for Pre-K teachers to bring students together for choice time would promote student and staff collaboration. This type of shared space could be utilized by multiple classrooms during a choice time in addition to indoor recess. This Den Learning Space should include access to water and sand for sensory play, a dramatic play area, and soft flooring for movement. Moving towards a more collaborative approach for students at this level will develop their skills when they transition to kindergarten. **This is a request for 1,400 net square feet over the MSBA Guidelines.**
- An 1,100sf self-contained special ed classroom for Pre-K students is required. This is referred to as the Pre-K PACE, similar to the K-2 PACE. **This is a request for 1,100 net square feet over the MSBA Guidelines.**
- Given the age of Pre-K students, the Pre-K PACE classroom should have a toilet room sized to accommodate a changing table at 80sf each. **This is a request for 80 net square feet *below* the MSBA Guidelines.**
- Two 120sf Small Group Rooms (referred to as Small Group Learning Spaces) shared between Pre-K classrooms and the Pre-K PACE room will be utilized for small group services by our special education staff and math interventionists. Providing early intervention support for students close to their classroom will allow them to efficiently receive services in their classroom environment. This space also allows for students in adjoining classrooms to be serviced at the same time while remaining next to their learning environment to quickly return and remain informed on any teacher information. **This is a request for 120 net square feet over the MSBA Guidelines.**

The total additional Pre-K & Other requirements amount to a request for 6,120 net square feet over the MSBA guidelines.

NON-PROGRAMMED SPACE

The Gross Square Footage has been adjusted to 97,232gsf to utilize a 1.5 Grossing Factor (GFA/NFA).

The Green Engineer
Sustainable Design Consulting
www.greenengineer.com

PSR Sustainability Narrative – Shaker Lane Elementary School
Littleton, MA

The Town of Littleton identified sustainability as a high priority for this project with a focus on reducing annual energy consumption, implementing applicable sustainable design and construction practices and promoting health and wellness for the students and occupants. The project is following the MSBA's Green Schools Program, Project Advisory 81, dated June 2023 and intends to pursue a minimum LEED for Schools v4 'Silver' level of certification, including earning three of the seven available points within specific Materials and Resources and Indoor Environmental Quality credits, and meet the minimum energy efficiency requirements per MA DOER Stretch Code requirements. The project team is exploring the feasibility of earning additional reimbursements meeting the MA DOER Opt-In Specialized Code and/or earning an additional two points within the credit categories previously mentioned.

Making sustainable choices for the built environment requires the intentional collaboration of all design disciplines in an integrated process. Additionally, a true integrative process requires input from the client and consultants and considers the needs of the end users, the students, and teachers. To that end, the team plans to hold regular meetings with the design team, to help expand upon on these goals and outline tasks and responsibilities going forward.

The goals for a sustainable project include designing a low impact site and energy-efficient building that serves as an educational tool for staff, students, and visitors. Daylighting and acoustics will be key design elements to improve the interior environmental quality. Sustainable features will be further reviewed as the design develops. To the extent possible, the design team will seek to select building materials and furniture that are low-emitting and have a reduced environmental impact. Per MSBA requirements, the building systems, including the envelope and HVAC systems will be commissioned to ensure they operate efficiently and as designed.

The team will continue to evaluate design options against LEED requirements with the goal of designing and constructing a building that minimizes its impact on the environment, creates an engaging and healthy space for occupants, and reduces operating costs. While the project seeks to achieve certification under LEED for Schools v4, the team's approach is not one of "point chasing" to maximize a LEED score. Rather, LEED will be used as a validation tool to check project performance, but in general will not base design decisions strictly on achieving LEED certification.

Refer to the attached LEED-S v4 scorecard that represents the preliminary assessment against the LEED for Schools v4 requirements. Several credits remain designated as 'Maybe' due to the uncertainty of future design decisions, which is common at this phase of the project.

LEED v4 for BD+C: Schools
Project Checklist

Project Name: Shaker Lane Elementary School
Date: 11/4/2024

Y	?	N			
1			Credit	Integrative Process	1

2	1	12	**Location and Transportation**		**15**
		X	Credit	LEED for Neighborhood Development Location	15
1			Credit	Sensitive Land Protection	1
		2	Credit	High Priority Site	2
		5	Credit	Surrounding Density and Diverse Uses	5
		4	Credit	Access to Quality Transit	4
	1		Credit	Bicycle Facilities	1
		1	Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

8	3	1	**Sustainable Sites**		**12**
Y			Prereq	Construction Activity Pollution Prevention	Required
Y			Prereq	Environmental Site Assessment	Required
1			Credit	Site Assessment	1
	2		Credit	Site Development - Protect or Restore Habitat	2
	1		Credit	Open Space	1
3			Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1
		1	Credit	Site Master Plan	1
1			Credit	Joint Use of Facilities	1

6	2	4	**Water Efficiency**		**12**
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
2			Credit	Outdoor Water Use Reduction	2
3	2	2	Credit	Indoor Water Use Reduction	7
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

17	10	4	**Energy and Atmosphere**		**31**
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
6			Credit	Enhanced Commissioning	6
7	5	4	Credit	Optimize Energy Performance	16
1			Credit	Advanced Energy Metering	1
	2		Credit	Demand Response	2
3	2		Credit	Renewable Energy	5
	1		Credit	Enhanced Refrigerant Management	1

4	7	2	**Materials and Resources**		**13**
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
	3	2	Credit	Building Life-Cycle Impact Reduction	5
1	1		Credit	BPDO - Environmental Product Declarations	2
	2		Credit	BPDO - Sourcing of Raw Materials	2
2			Credit	BPDO - Material Ingredients	2
1	1		Credit	Construction and Demolition Waste Management	2

8	8	0	**Indoor Environmental Quality**		**16**
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
Y			Prereq	Minimum Acoustic Performance	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
3			Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
	2		Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1	1		Credit	Interior Lighting	2
	3		Credit	Daylight	3
	1		Credit	Quality Views	1
	1		Credit	Acoustic Performance	1

6	0	0	**Innovation**		**6**
5			Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

1	3	0	**Regional Priority**		**4**
	1		Credit	Regional Priority: Optimize Energy Performance (RP@8)	1
	1		Credit	Regional Priority: Protect or Restore Habitat (RP@2)	1
1			Credit	Regional Priority: Renewable Energy (RP@2)	1
	1		Credit	Regional Priority: Building Lifecycle Impact Reduction (RP@2)	1

53	34	23	**TOTALS**	Possible Points:	**110**

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

The Brewery 179 Boylston Street Jamaica Plain MA 02130
T 617-524-5558
F 617-524-5544

December 17, 2024

Ms. Robin McElaney
Project Coordinator
Massachusetts School Building Authority
40 Broad Street, Suite 500
Boston, MA 02109

studio G ARCHITECTS

Shaker Lane Elementary School
MSBA #202101580005

Town of Littleton
Shaker Lane Elementary School
Littleton, Massachusetts
Sustainability Document

building sustainable communities

Dear Ms. McElaney:

This is an acknowledgement that the Littleton Public School District has identified a goal of 4% additional reimbursement from the MSBA High Efficiency Green School Program. As their Designer, I have submitted a complete LEEDv4 BD+C for Schools scorecard showing all prerequisites and 53 attempted points, which will meet that goal.

The scope of work for this project will included the construction elements and performance tasks to achieve that goal, and all subsequent documents, including but not limited to, specifications, drawings, and cost estimates will match the scope of work indicated in the submitted scorecard.

Please contact us if you have any questions or concerns.

Sincerely,

Studio G Architects

Gail Sullivan, FAIA
Managing Principal

www.studiogarchitects.com

Sustainability Narrative

BUILDING LOCATION & ORIENTATION

The preferred option is located on the upper field of the existing Shaker Lane School campus.

The form of the school radiates out from a central community core and subsequently has a wide range of solar orientations. The rotation of the building on the site has yet to be finalized as there is still ongoing soil testing to determine the location of the septic leaching field. There has been much difficulty in finding suitable soil conditions on the site so the final location may limit the location of the building footprint. The design team is working to improve the solar orientation of the educational spaces, and the goal is to place openings in the envelope to maximize daylighting and minimize glare

The design of openings will be incorporate passive solar control and create a sense of comfort and reduction of solar glare to interior spaces. See diagram below for building orientation in relation to solar exposure.

BUILDING FORM

The building form of the preferred solution has been designed to have a compact and consolidated footprint. Utilizing program space adjacencies and proximity requirements, the design team has planned an efficient building that will streamline building system and utility design as well as minimizing exterior surface area, saving on energy consumption and reduction of environmental exposure. The construction detailing will aim to utilize accepted design approaches for sustainability which will simplify building assembly and result in a reduction of construction costs.

WINDOW:WALL RATIO

Openings on the exterior will be designed to achieve a window-to-wall ration (WWR) of 20%-30% with no more than 40% on any single area of the building. This will allow for greater thermal enclosure, saving on energy expenditure as well and fostering a creative and efficient design approach to natural daylighting.

ENERGY USE INTENSITY (EUI)

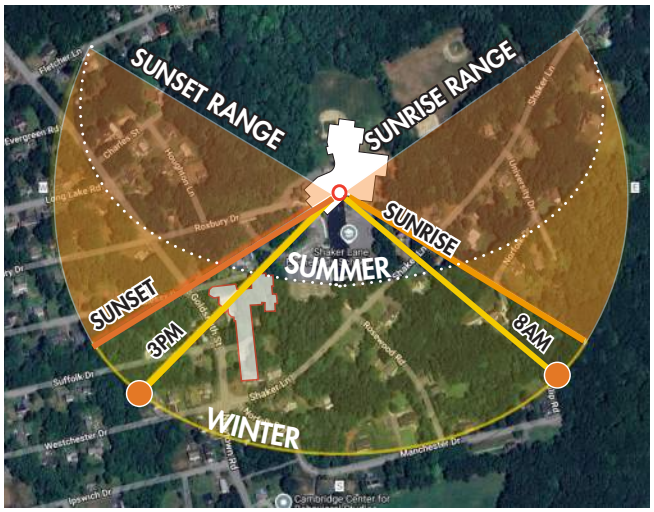
Based upon initial design considerations and an analysis of potential LEED points, the design team is targeting an EUI of 25 or less. See 4.3 – Preliminary LEED Scorecard for the design team's assumed EUI of 25. The design team's consultant, GGD's Mechanical and Electrical design would contribute to low EUI. The design team has a goal to meet Mass Opt-in code requirements with an All-Electric design to minimize the impact of energy consumption and carbon footprint. Ongoing conversations with the district will find ways to maximize energy efficiency.

ENERGY SOURCES

The Littleton School Building Committee has been presented with the benefits and long-term savings of pursuing sustainability goals in the design of the Shaker Lane School. The design team will continue to encourage the pursuit of renewable energy systems to minimize the impact of energy consumption and the carbon footprint of the new facility through feasibility design and be available to answer any questions and provide recommendations as the committee and district should require.

RESILIENT DESIGN

All equipment shall be durable and easy to maintain with proper education provided to the building staff. The HVAC plant will include redundancy and the building will be equipped with an emergency generator that will be sized to operate all required life safety loads, and optional stand-by loads. The optional stand-by loads will include all building communications systems and BMS system, additional lighting and receptacles in strategic locations within administrative area, cafeteria and gymnasium, and the buildings heating plant with enough capacity to maintain temperatures that will prevent damage from freezing pipes.



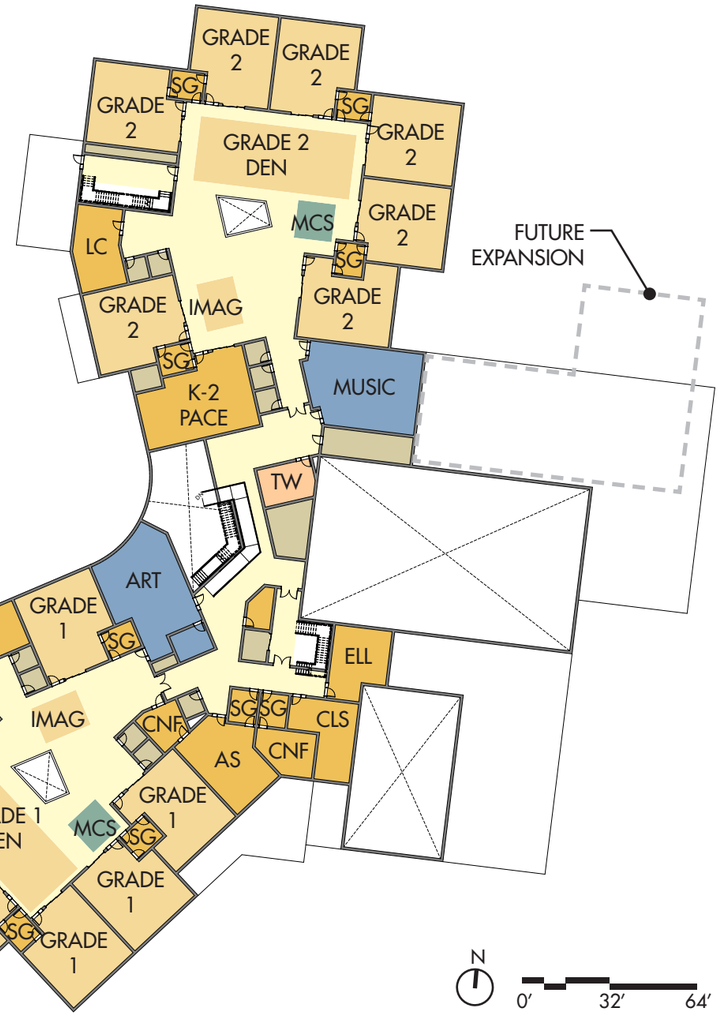
Sunset and Sunrise ranges represent the range over the full year. Sun locations shown for December 21, 2024.

4.4 Conceptual Floor Plans of Preferred Solution



LEGEND

- CORE ACADEMIC
- SPECIAL EDUCATION
- MEDIA CENTER
- ART / MUSIC
- GYMNASIUM
- KITCHEN / CAFETERIA
- ADMINISTRATION
- BUILDING SERVICES
- CIRCULATION



ABBREVIATION KEY

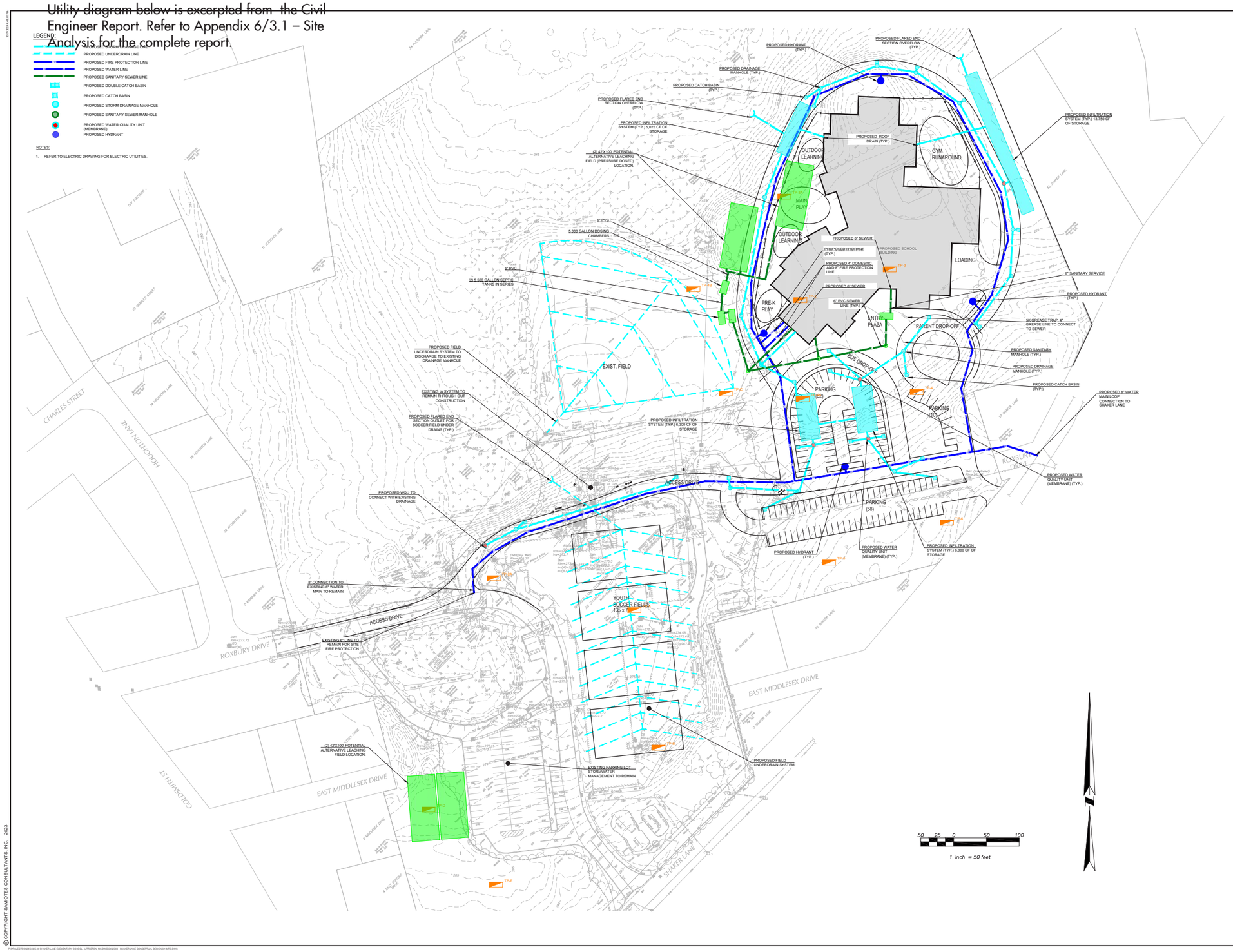
APE	ADAPTIVE PHYSICAL EDUCATION	LC	LEARNING CENTER	PACE	PERSONALIZED ACADEMIC & COMPREHENSIVE EDUCATION
AS	ACADEMIC SUITE	LS	LEARNING STAIR	PRE-K	PRE-KINDERGARTEN
BS	BUILDING SERVICES	MCS	MEDIA CENTER SATELLITE	RCVG	RECEIVING
CLS	CLINICAL SUITE	MR	MUDROOM	SG	SMALL GROUP
CNF	CONFERENCE ROOM	LS	LEARNING STAIR	SL	STAFF LUNCH ROOM
ELL	ENGLISH LANGUAGE LEARNERS	OL	OUTDOOR LEARNING	TW	TEACHER WORKROOM
IMAG	IMAGATORIUM	OT/PT	OCCUPATIONAL THERAPY / PHYSICAL THERAPY		
K	KINDERGARTEN				

4.5 Site Plan of Preferred Solution



UTILITIES DIAGRAM

~~Utility diagram below is excerpted from the Civil Engineer Report. Refer to Appendix 6/3.1 – Site Analysis for the complete report.~~



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Samiotes Consultants Inc.
Civil Engineers • Land Surveyors
20 A Street
Framingham, MA 01701
T 508.877.6688
F 508.877.8349
www.samiotes.com

SHAKER LANE ELEMENTARY SCHOOL
35 SHAKER LANE
LITTLETON, MA 01460

SEAL

REVISION

PSR UTILITIES EXHIBIT

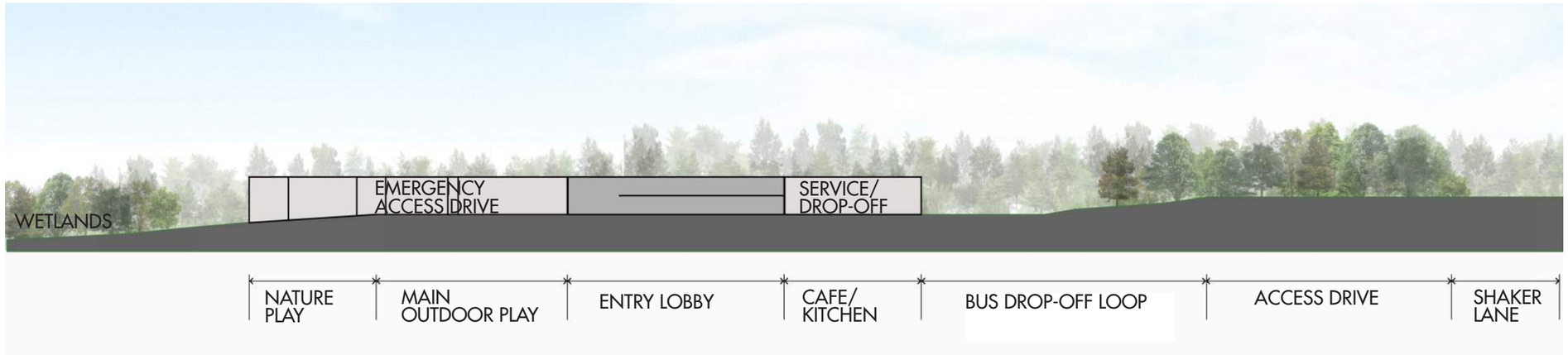
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DATE: 10.04.2024
SCALE: 1"=50'
DRAWN BY: KAH
APPROVED BY: DG

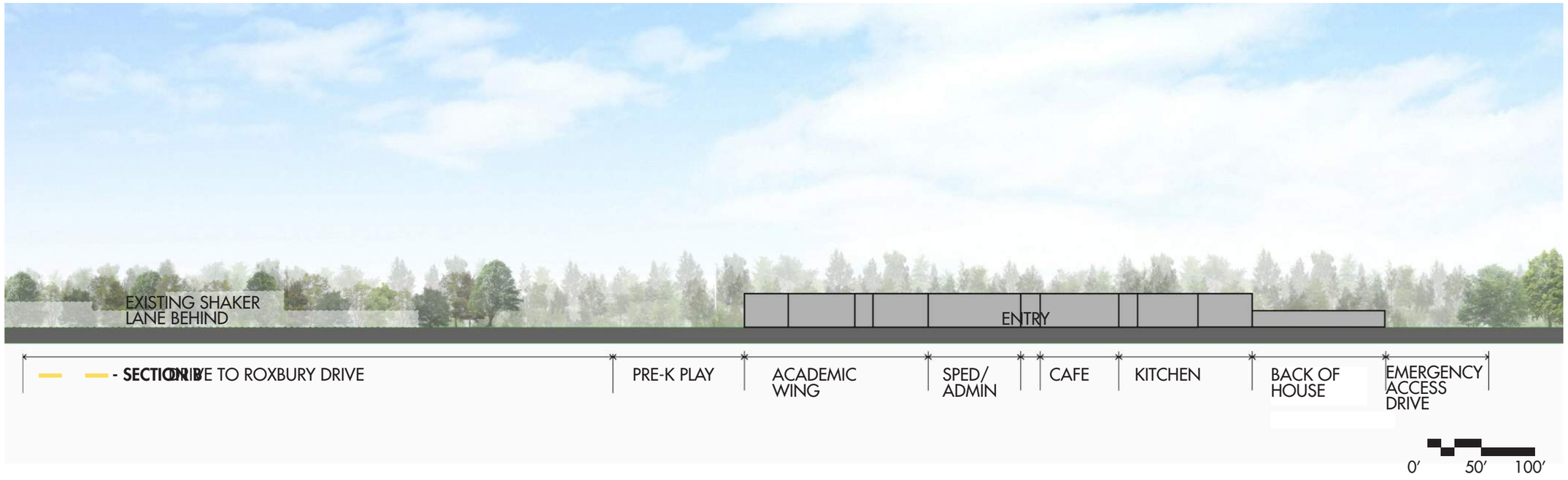
C-1.1

FILE: 54025.00 - SHAKER LANE CONCEPTUAL DESIGN 3.1 REC.DWG

Site Sections







4.6 Total Project Budget & Local Funding

A. ESTIMATED TOTAL CONSTRUCTION COST

Based on the PSR estimate dated October 22, 2024, prepared by PM&C for Option 3.1, which is based on a gross square footage of 97,800, the estimated total construction cost of the preferred Option is $81,944,951 DBB, and $86,861,648 CMR. For a full detail of this estimate, please refer to Appendix 6/3.7 – Cost Estimate.

B. ESTIMATED TOTAL PROJECT COST

Working with the PMC estimate dated October 22, 2024, based on a GSF of 97,800 for Option 3.1, TTH supplemented these costs with various ancillary project costs to develop an estimated total Project cost in the range of $92.2 M - $104.2 M. For a full detail of the preferred option total project budget, please refer to Appendix 6/4.6 – Project Estimate.

C. ESTIMATED FUNDING CAPACITY

Working with SGA, the Building Committee, School District, School Committee, and Town Manager, the Town of Littleton has established an estimated funding capacity or Not-To-Exceed total project budget of $104m. Based on the reimbursement analysis provided by TTH that forecasts MSBA eligible reimbursement resulting in net MSBA and District share values, the Town has assumed an MSBA share of $27.2 M - $34.3 M, with a District share of $59.9 M to $74.7M. An article to allow the Town to extend debt for the Shaker Lane School project will be presented at a Special Town Meeting in October or November of 2025. The vote must pass by two-thirds. Upon successful passage, a debt exclusion vote will take place soon afterwards, most likely in December 2025; the exact date will be determined. That vote must pass by a simple majority. However, the assumed District funding and tax impact are based on a District share of $59.9 - 74.7 M. For the complete tax impact statement, refer to Section 4.6G-Estimated Tax Impact.

D. MUNICIPAL PROJECTS CURRENTLY PLANNED OR IN PROCESS

A summary list of other municipal projects currently planned or in progress can be found within Appendix 6/4.6 – Municipal Projects. A summary of in-progress capital projects from the Appendix is as follows:

- Senior Center (new construction, $19.5M)
  Shattuck Street
  Projected completion date: March 2025
- Indian Hill Music School (renovation, $6.9M)
  36 King Street
  Projected completion date: May 2025
  Renovated facility to host the Littleton School Department administrative staff and the town's PRCE Department

E. DISTRICT'S NOT-TO-EXCEED TOTAL PROJECT BUDGET

Littleton Public Schools (District) and the Massachusetts School, Building Authority (MSBA) have been working collaboratively to formulate a solution to the Districts School Building issues. When the District advertised for the selection of an Owners Project Manager (OPM) and Designer the project cost had an initial range of range $15 million to $75 million of which the estimated construction cost was $19 million to $94 million.

As the project team evaluated the District's existing elementary school facilities and reviewed the educational needs and program, several options were generated as a potential solution. Throughout the Preliminary Design Program (PDP) and Preferred Schematic Report (PSR) the SBC conducted multiple public meetings to review all potential options. On November 19, 2024 the SBC voted on their preferred solution to construct a new elementary school building on the Shaker Lane School site known as Option 3.1.

There are several advantages in selection of the Shaker Lane School site such as being an existing school property with available acreage, ability to construct a new building while school remains in session at the existing Shaker Lane School, and once the existing building is demolished, potential open areas for the Towns use. As part of the Committee's final evaluation and decision to include input from the Community along with information prepared by the OPM and Designer the overall project budget has been amended to approximately $104 million.

F. AUTHORIZATION AND FUNDING PROCESS

Refer to Appendix 6/4.6 - Local Authorization Process for a letter from the Littleton Assistant town Administrator/Director of Finance and Budget, Ryan Ferrara describing the process of authorization and funding for a new Shaker Lane School.

G. ESTIMATED TAX IMPACT

Refer to following table and narrative for the tax impact and debt statement related to the construction of a new Shaker Lane School.

Tax Impact Statement – Shaker Lane Elementary School

Current Excluded Debt

The debt associated with the construction of a new Shaker Lane School would need to pass a debt exclusion vote, currently slated to take place in the Fall of 2025. Currently there are 3 projects with excluded debt outstanding. One bond, for the construction of our Police Station, matures in FY29. A second bond for the construction of the Middle School also matures in FY29. A third bond for the renovation of the Russell Street School matures in FY31. Our estimated timeline for issuing a bond for Shaker Lane would be FY29, so there is very little overlap. The chart below shows the remaining debt service for these projects.

Project	***FY28***	***FY29***	***FY30***	***FY31***
Russell Street School	$281,820	$281,820	$257,420	$247,660
Middle School	$111,400	$109,254	$0.00	$0.00
Police Station	$314,950	$265.600	$0.00	$0.00
Total	***$708,170***	***$664,474***	***$257,420***	***$247,660***

The Town has successfully used a *Debt Exclusion Stabilization Fund* since FY17 to reduce the impact of excluded debt to the taxpayer. Funds are set aside each year and applied to the excluded debt.

Project	***FY28***	***FY29***	***FY30***	***FY31***
Total excluded debt	$708,170	$664,474	$257,420	$247,660
Applied from Debt Exclusion Stabilization Fund	$208,170	$164,474	$257,420	$247,660
Net Excluded Debt	***$500,000***	***$500,000***	***$0.00***	***$0.00***

The current estimated tax impact of this *Net Excluded Debt* for the years shown above is as follows:

	FY28	***FY29***	***FY30***	***FY31***
Impact on tax rate [1]	$0.14	$0.14	$0.00	$0.00
Impact on median home	$108.80	$112.93	$0.00	$0.00

Shaker Lane Project

During construction short term debt would be issued through Bond Anticipation Notes (BANs). A final project bond would be issued after construction, estimated in FY29. Our current assumptions for this debt are based on a recent bond issuance the Town undertook this past month.

- 20-year bond with level principal payments
- An estimated 5% coupon with a net interest cost of approximately 3.5% generating approximately $5 million in premium which will be used to pay down the principal at issuance.
- $74.7 million (estimated net project cost after MSBA reimbursements) less premium, resulting in a $69.7 million bond.
- 1st year total debt service payment of $6,970,000. This payment would decrease each year throughout the term of the debt based on the level principal payment debt structure.

[1] Note: Littleton utilizes a split tax rate where a portion of the residential levy is shifted to the commercial, industrial and personal property tax base (CIP). This reduces the residential rate while increasing the CIP rate. Rates noted it the chart above are computed utilizing the single tax rate.

This bond structure is estimated to add $1,541 to the tax bill of the median home in Littleton, estimated at $806,662 in FY29.

Estimated tax impact	***Without School Project***	***With School Project***
Single Tax Rate	$16.12	$18.03
Inside Proposition 2 ½	$15.98	$15.98
Outside Proposition 2 ½	$ 0.14	$ 2.05
Estimated Residential Tax Bill (median home value)	$13,003	$14,544
Impact of school project Year 1		$1,541
Average annual impact (years 1 – 10)		$1,355
Estimated Split Tax Rate (residential share)	$14.35	$16.05
Inside Proposition 2 ½	$14.23	$14.23
Outside Proposition 2 ½	$ 0.12	$ 1.82
Estimated Residential Tax Bill (median home value)	$11,575	$12,946
Impact of school project Year 1		$1,371
Average annual impact (years 1 – 10)		$1,196

The Town intends to utilize our strategy of reducing the impact of the debt service to the taxpayer through the continued use of the Debt Exclusion Stabilization Fund or a School Building Stabilization Fund, which was established at our FY25 Annual Town Meeting. Slightly over $1.1 million has been deposited into this fund with the intention of depositing $1 million annually through FY29's bond issuance. That roughly $4 million to $5 million can be used to further decrease the bond issuance amount, reducing the above 1st year impact. These funds will be appropriated from the Town's Free Cash position. With continued funding beyond FY29 from our Free Cash position the overall tax impact could be reduced further.

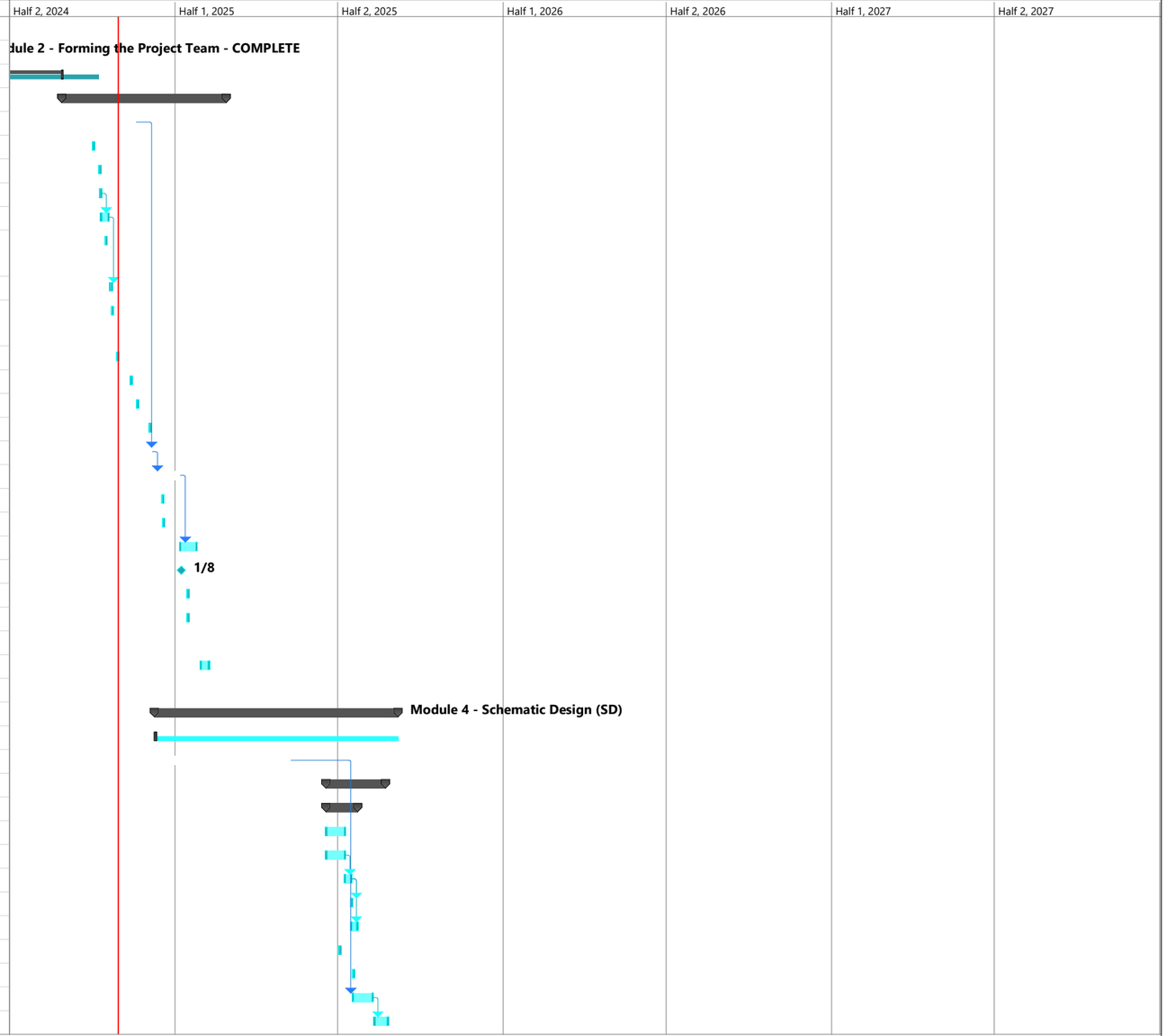
H. CAPITAL BUDGET STATEMENT

Capital Budget Statement spreadsheets detailing expenditures and revenue can be found in Appendix 6/4.6 - Capital Budget Statement. Please note these spreadsheets rely on forecasted utility costs; calculations were performed on assumptions made at the end of Module 3.

Shaker Lane Elementary School Project
OPM Project Milestone Schedule

December 06, 2024

ID	Task Name	Duration	Start	Finish	Predecessors
1	Module 1 - Eligibility Period - COMPLETE	19 days	Wed 6/1/22	Mon 6/27/22	
5	Module 2 - Forming the Project Team - COMPLETE	214 days	Thu 7/27/23	Tue 5/21/24	
27	Module 3.1 Preliminary Design Program (PDP)	52 days	Tue 6/18/24	Wed 8/28/24	**26**
40	**Module 3.2 Preferred Schematic Report (PSR)**	**131 days**	**Wed 8/28/24**	**Wed 2/26/25**	
41	Develop PSR	59 days	Wed 8/28/24	Mon 11/18/24	39
42	**School Building Committee meeting**	1 day	Wed 10/2/24	Wed 10/2/24	
43	Cost estimate information available	1 day	Wed 10/9/24	Wed 10/9/24	
45	Documents for Estimates sent to Estimators	1 day	Thu 10/10/24	Thu 10/10/24	
46	Cost Estimates Production	6 days	Fri 10/11/24	Fri 10/18/24	45
44	**School Building Committee Meeting/Joint Session with Select Board, School Committee, & Finance Committee**	**1 day**	**Wed 10/16/24**	**Wed 10/16/24**	
47	Review / Reconcile Cost Estimates	2 days	Mon 10/21/24	Tue 10/22/24	46
48	**School Building Committee Meeting/Joint Session with Select Board, School Committee, & Finance Committee**	**1 day**	**Wed 10/23/24**	**Wed 10/23/24**	
49	Special Town Meeting	1 day	Tue 10/29/24	Tue 10/29/24	
50	**School Buiulding Committee Meeting and Tour**	**1 day**	**Wed 11/13/24**	**Wed 11/13/24**	
61	**SBC/School Committee Approval of Preferred Schematic Report - PSR**	**1 day**	**Wed 11/20/24**	**Wed 11/20/24**	
54	Sub-Committee meeting (TBD)	1 day	Wed 12/4/24	Wed 12/4/24	
51	**PSR Submittal Date to MSBA (NO fewer than 12 weeks after PDP)**	**1 day**	**Fri 12/6/24**	**Fri 12/6/24**	**41**
52	MSBA Review of PSR (21 days required)	21 days	Mon 12/9/24	Mon 1/6/25	51
56	**School Building Committee Meeting**	**1 day**	**Wed 12/18/24**	**Wed 12/18/24**	
57	Submit PSR to FAS no later than	1 day	Thu 12/19/24	Thu 12/19/24	
60	Address PSR Comments from MSBA (14 days to respond)	14 days	Tue 1/7/25	Fri 1/24/25	52
58	Sub-Committee meeting (TBD)	0 days	Wed 1/8/25	Wed 1/8/25	
53	Facility Assessment Subcommittee (FAS) Meeting January 15	**1 day**	**Wed 1/15/25**	**Wed 1/15/25**	
59	School Building Committee Meeting	**1 day**	**Wed 1/15/25**	**Wed 1/15/25**	
62	Facility Assessment Subcommitte (FAS) Meeting January 29	**1 day**	**Wed 1/29/25**	**Wed 1/29/25**	
63	Address MSBA / FAS comments	7 days	Thu 1/30/25	Fri 2/7/25	
55	**MSBA Board Meeting - Approval of PSR**	**1 day**	**Wed 2/26/25**	**Wed 2/26/25**	
64	**Module 4 - Schematic Design (SD)**	**195 days**	**Mon 12/9/24**	**Fri 9/5/25**	
65	**Schematic Design Introduction Deliverables**	**1 day**	**Tue 12/10/24**	**Tue 12/10/24**	
66	**Final Schematic Design Program**	**110 days**	**Mon 12/9/24**	**Fri 5/9/25**	
67	**DESE REVIEW**	**48 days**	**Wed 6/18/25**	**Fri 8/22/25**	
74	**Project Estimates / Budget**	**25 days**	**Wed 6/18/25**	**Tue 7/22/25**	
75	Designers Construction Estimate	15 days	Wed 6/18/25	Tue 7/8/25	
76	OPM Construction Estimate	15 days	Wed 6/18/25	Tue 7/8/25	
77	Reconcile Estimates	5 days	Wed 7/9/25	Tue 7/15/25	76
78	DBB or CMR review and decision	1 day	Wed 7/16/25	Wed 7/16/25	77
79	Total Project Budget Spreadsheet	5 days	Wed 7/16/25	Tue 7/22/25	77
71	SD Notification email sent to MSBA	1 day	Thu 7/3/25	Thu 7/3/25	
72	**SD Submittal date to MSBA**	**1 day**	**Fri 7/18/25**	**Fri 7/18/25**	
73	MSBA SD Review Complete	16 days	Fri 7/18/25	Fri 8/8/25	66
80	Address MSBA SD Review comments	11 days	Mon 8/11/25	Mon 8/25/25	73



Shaker Lane Elementary School
Date: Wed 10/30/24

Task · Split · Milestone · Summary · Project Summary · Inactive Task · Inactive Milestone · Inactive Summary · Manual Task · Duration-only · Manual Summary Rollup · Manual Summary · Start-only · Finish-only · External Tasks · External Milestone · Deadline · Progress · Manual Progress

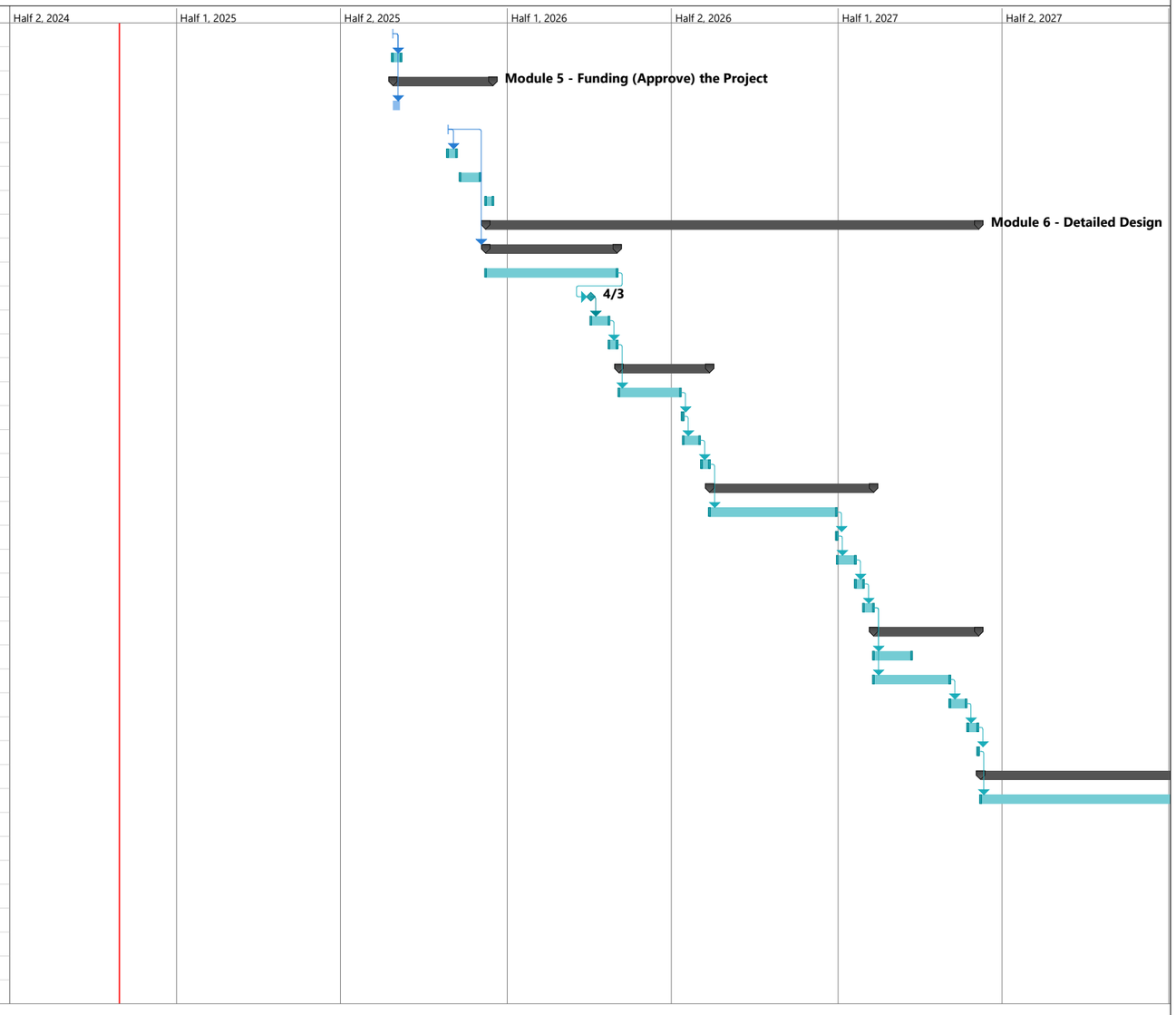
Page 1

Turner & Townsend Heery

Shaker Lane Elementary School Project
OPM Project Milestone Schedule

December 06, 2024

ID	Task Name	Duration	Start	Finish	Predecessors
81	**MSBA Board Approval -PSBA - Project Scope and Budget Amendme**	1 day	Wed 8/27/25	**Wed 8/27/25**	
82	PSBA Agreement Executed	8 days	Wed 8/27/25	Fri 9/5/25	81
83	**Module 5 - Funding (Approve) the Project**	**78 days**	**Thu 8/28/25**	**Mon 12/15/25**	
84	Project Scope and Budget Conference	5 days	Thu 8/28/25	Wed 9/3/25	81
85	**TOWN MEETING - Approval of Funding**	**1 day**	**Mon 10/27/25**	**Mon 10/27/25**	
86	Certification of Votes sent to MSBA	8 days	Mon 10/27/25	Wed 11/5/25	85
87	Project Funding Agreement Sent	16 days	Mon 11/10/25	Mon 12/1/25	
88	Project Funding Agreement Executed	6 days	Mon 12/8/25	Mon 12/15/25	
89	**Module 6 - Detailed Design**	**390 days**	**Mon 12/8/25**	**Fri 6/4/27**	
90	**Design Development**	**105 days**	**Mon 12/8/25**	**Fri 5/1/26**	**85**
91	Design Development	105 days	Mon 12/8/25	Fri 5/1/26	
92	DD Submission Date	0 days	Fri 4/3/26	Fri 4/3/26	91
93	MSBA DD Review	14 days	Fri 4/3/26	Wed 4/22/26	92
94	Address DD Review Comments	7 days	Thu 4/23/26	Fri 5/1/26	93
95	**60% Construction Documents**	**72 days**	**Mon 5/4/26**	**Tue 8/11/26**	
96	60% CD Development	50 days	Mon 5/4/26	Fri 7/10/26	94
97	60% CD Submission Date	1 day	Mon 7/13/26	Mon 7/13/26	96
98	MSBA 60% CD Review	14 days	Tue 7/14/26	Fri 7/31/26	97
99	Address 60% CD Review comments	7 days	Mon 8/3/26	Tue 8/11/26	98
100	**90% Construction Documents**	**129 days**	**Wed 8/12/26**	**Mon 2/8/27**	
101	90% CD Development	100 days	Wed 8/12/26	Tue 12/29/26	99
102	90% CD Submission date	1 day	Wed 12/30/26	Wed 12/30/26	101
103	MSBA 90% CD Review	14 days	Thu 12/31/26	Tue 1/19/27	102
104	Address 90% CD Review Comments	7 days	Wed 1/20/27	Thu 1/28/27	103
105	100% CD documents complete/submitted to BID procurement	7 days	Fri 1/29/27	Mon 2/8/27	104
106	**Bidding / CM Selection**	**84 days**	**Tue 2/9/27**	**Fri 6/4/27**	
107	Filed sub bids due	30 days	Tue 2/9/27	Mon 3/22/27	105
108	CM Bids due	60 days	Tue 2/9/27	Mon 5/3/27	105
109	Bid review	14 days	Tue 5/4/27	Fri 5/21/27	108
110	Bid selection and descoping	9 days	Mon 5/24/27	Thu 6/3/27	109
111	Notice to Proceed	1 day	Fri 6/4/27	Fri 6/4/27	110
112	**Module 7 - Construction**	**383 days**	**Mon 6/7/27**	**Wed 11/22/28**	
113	Construction Phase	320 days	Mon 6/7/27	Fri 8/25/28	111
115	Move-in	21 days	Tue 8/1/28	Tue 8/29/28	
114	Substantial Completion	1 day	Mon 8/28/28	Mon 8/28/28	113
116	Complete Demo of Exisiting Building	60 days	Wed 8/30/28	Tue 11/21/28	115
117	Construction complete	1 day	Wed 11/22/28	Wed 11/22/28	116
118	**Module 8 - Closeout**	**120 days**	**Mon 8/28/28**	**Fri 2/9/29**	
120	**Module 9 - Post Occupancy Evaluation**				
121					
122					



Shaker Lane Elementary School
Date: Wed 10/30/24

Task | Split | Milestone | Summary | Project Summary | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | External Tasks | External Milestone | Deadline | Progress | Manual Progress

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5 LOCAL ACTIONS & APPROVALS

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5.2 Local Actions & Approvals Certification 157
5.3 Approval & Public Notification of School Configuration Changes 157

5.1 Certified SBC Meeting Information & Presentation Materials

The meeting minutes for all Shaker Lane School Building Committee (SLSBC) meetings noted in the Local Action and Approval Certification letter are included in Appendix 6/5.1 – Certified SBC Meeting Information & Presentation Materials.

5.2 Local Actions & Approvals Certification

The attached Local Action and Approval Certification has been executed by Kelly Clenchy, Superintendent of Schools, as well as James Duggan, Chief Executive Officer, and Justin McCarthy, School Committee Chair.

5.3 Approval & Public Notification of School Configuration Changes

There are no planned school configuration changes.

TOWN OF LITTLETON

SELECT BOARD
AND
SCHOOL COMMITTEE

37 SHATTUCK STREET, P.O. BOX 1305
LITTLETON, MASSACHUSETTS 01460
(978) 540-2460

December 06, 2024

Ms. Robin McElaney
Project Coordinator
40 Broad Street
Boston, Massachusetts 02109

Dear Ms. McElaney:

The Town of Littleton's School Building Committee has completed its review of the Feasibility Study Preferred Schematic Design for the Shaker Lane Elementary School project, and on Tuesday, November 19, 2024, the Shaker Lane School Building Committee (SLSBC) 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, will be submitted shortly.

Since the submission of the Preliminary Design Proposal on August 30, 2024, the SLSBC has held seven meetings regarding the proposed project, in compliance with the state Open Meeting Law. These meetings include:

NO.,	DATE	TIME	LOCATION	PURPOSE
1	09/18/24	7pm	Virtual	Building Committee Meeting
2	10/02/24	7pm	Virtual	Building Committee Meeting
3	10/16/24	7pm	Virtual/In Person	Building Committee Meeting/School Committee/Finance Committee/Select Board
4	10/23/24	7pm	Virtual/In Person	Building Committee Meeting/School Committee/Finance Committee/Select Board
5	10/29/24	7pm	Virtual/In Person	Special Town Meeting
6	11/13/24	6pm	Virtual/In Person	Building Committee Meeting/School Tour & Information Session
7	11/19/24	6pm	Virtual/In Person	Building Committee Meeting/School Tour & Information Session

1. The dates and times and locations of each SLSBC meeting, and affiliated meeting are listed above.
2. Meeting minutes are attached including reference to the materials discussed and votes taken at each meeting.
3. All meeting notices were posted per the Town's standard operating procedure through the Town Clerk and posted physically on the notice board, located in the entranceway to Littleton Town Hall and virtually online via the Town of Littleton website.
4. Presentation materials for each meeting, meeting minutes, and summary materials are available on the SLSBC section of the Town of Littleton website for public review at: https://www.littletonma.org/847/Shaker-Lane-Building-Committee

In addition to the SLSBC meetings listed above, the District held two public meetings, which were posted in compliance with the state Open Meeting Law, at which the Project was discussed. These meetings include:

- A joint meeting of the SLSBC, School Committee, Select Board, and Finance Committee regarding prospective plans for the Shaker Lane Elementary School. This meeting took place on 10/16/24 at 7 PM at the Littleton Police Station and was both in-person and hybrid.
- A joint meeting of the SLSBC, School Committee, Select Board, and Finance Committee regarding prospective plans and cost estimates for the Shaker Lane Elementary School. This meeting took place on 10/23/24 at 7 PM at the Littleton Police Station and was both in-person and hybrid.

1. The dates and times and locations of each public outreach meeting is listed above.
2. All meeting notices were posted per the Town's standard operating procedure through the Town Clerk and posted physically on the notice board, located in the entranceway to Littleton Town Hall and virtually online via the Town of Littleton website.
3. Presentation materials for each meeting, meeting minutes, and summary materials are available on the Select Board section of the Town of Littleton website for public review at: https://ma-littleton.civicplus.com/AgendaCenter/Search/?term=&CIDs=32

To the best of my knowledge and belief, each of the meetings listed above complied with the requirements of the Open Meeting Law, N.G.L. c. 30A, §§ 18-25 and 940 CMR 29 et seq.

If you have any questions or require any additional information, please contact Ryan Ferrara, Assistant Town Administrator, Director of Finance and Budget via email at rferrara@littletonma.org, or via telephone at 978-540-2463.

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: James Duggan

Title: Chief Executive Officer

Date: 12/4/2024

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: Kelly Clenchy

Title: Superintendent of Schools

Date: 12/2/2024

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: Justin McCarthy

Title: Chair of the School Committee

Date:

6 APPENDIX

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1.6 MSBA PDP Review & Response

DISTRICTS REPONSES TO THE MSBA
PRELIMINARY DESIGN PROGRAM REVIEW COMMENTS
DRAFT

District: Town of Littleton
School: Shaker Lane Elementary School
Owner's Project Manager: Turner & Townsend Heery, LLC
Designer Firm: Studio G. Architects, Inc.
District Response Date: November 8, 2024

3.1.1 INTRODUCTION

4) The information provided indicates that the estimated total project cost for this project could range from $44-$108 million. For reference, the OPM Request for Services ("RFS") indicated an estimated total project cost range of $10-$80 million, and the Designer RFS indicated an estimated construction cost range of $15-$75 million. Additionally, the information provided in the submittal states:

> *"The projected range was established two years ago and are based on the construction cost and not total project cost. The estimated target budget is likely insufficient based upon initial cost estimates and will need to be re-evaluated as the project moves forward into the Preferred Schematic Report phase".*

In response to these review comments, please provide a narrative that describes how the District and design team intend to maintain the District's project budget through schematic design. Also, provide the District's target total project budget for the proposed project.

Response: The original estimated number carried in the OPM RFS was discussed with the Building Committee and was determined, based on current numbers shown on similar elementary school projects (MSBA information) and the District/Town's concerns of the potential cost, to slightly increase the lower range of the estimate (upgrade only) and reduce the potential new construction range on the Designer RFS. When the Preliminary Design Program was submitted many factors relating to a preferred solution such as: size, scope and location of a potentially add/reno or new elementary school building was still under consideration. Since the PDP submission, the District, OPM and Designer have help multiple public meetings, including a presentation at a Special Town Meeting, and presented updates on the potential costs. Cost information shared at one of the public meetings:

	OPTION 2.1 RENO/ADD: EAST		OPTION 3.1 NEW: UPPER FIELD		OPTION 3.2 NEW: LOWER FIELD	
	PDP	PSR	PDP	PSR	PDP	PSR
Estimated Square Footage	103,000 sf	94,950 sf	103,000 sf	97,307 sf	103,000 sf	97,307 sf
Estimated Construction Cost per Square Foot	$848.26	**$858.50**	$876.74	**$888.16**	$858.67	**$877.08**
Estimated Construction Cost DBB	$87.4M	$76.8M	$90.3M	$81.9M	$88.4M	$80.9M
Estimated Construction Cost CMR	$92.6M	$81.4M	$95.7M	$86.9M	$93.7M	$85.8M
Estimated Soft Costs (based on DBB)	$17.5M	$15.4M	$18.0M	$19.4M	$17.7M	$16.2M
Estimated Total Project Cost Design Bid Build (DBB)	$104.9M	**$92.2M**	$108M	**$98.3M**	$106.1M	**$97.1M**
Construction Manager at Risk (CMR)	$110.1M	**$96.8M**	$114M	$103.2 M	$111.4M	**$102.0M**

Considering factors for Design, Bid, Build (DBB) and Construction Manager at Risk (CMR) the above range of potential total project costs currently is - $92.2 to $103.2 million and that is what the District is targeting for the total project budget for the proposed project currently.

6) In response to these review comments, please provide an updated project schedule that includes an overview of the milestone dates from the Schematic Design phase through project completion and include any required/anticipated permitting reviews and approvals, and site testing and analysis.

Response: Updated project schedule is attached.

3.1.2 EDUCATIONAL PROGRAM

In response to these review comments address the comments below. Additionally, as part of the District's Preferred Schematic Report ("PSR") submittal include (2) copies of the updated educational program, (1) redlined copy and (1) clean copy. The updated educational program must address the comments below, include District updates, provide a Designer response for each component of the educational program, and align with the District's Preferred Schematic. Please acknowledge. Acknowledged.

2) The information provided in the Class Size Policies section of the educational program states the following:

- *"The district does not have a policy that governs class size. Research indicates that class size is an important factor in a well-articulated educational program and will, whenever possible be subject to space availability and all other educational considerations, to ensure that class size creates effective learning environments for students and staff. The desirable range for class size shall be between 18-22 students. The addition of another classroom to each grade should help create and maintain class sizes within the specified range".*
- *"The proposed grade configuration for the new/renovated Shaker Lane School allows for one additional classroom in kindergarten, grade 1, and grade 2. An additional classroom at the K, grade 1, and grade 2 levels, will allow for the growth of the community as well as smaller class sizes".*

In response to these review comments, please describe the current classroom sizes for each grade level and provide additional information about the proposed additional classroom for each grade level. Also, please note and acknowledge that MSBA guidelines are based on 18 students per classroom for kindergarten, and 23 students per classroom for grades 1-2.

Response: Currently, our Kindergarten classrooms are all at 20 students per teacher. Our transitional classroom has 13 students, which is typical for this classroom. The transitional class is purposefully created for students that are not yet ready to meet the rigorous standards of grade 1, but ready to be challenged beyond a second year of kindergarten. For the purposes of reporting to the Department of Elementary and Secondary Education, students in the transitional classroom are reported as Kindergarten students. Our grade one classrooms range between 19-21 students. Our second-grade classrooms range between 21-22 students per teacher.

The Town of Littleton is expecting to significantly increase its population with the proposed addition of 700+ apartments at the prior, now vacant, IBM building. The influx of residents may lead to overcrowded classrooms where an additional classroom will be needed.

The MSBA guidelines call for more general classrooms that the existing school currently has, so these "additional" classrooms are still within the MSBA guidelines, with the exception of one more classroom so that first and second grade can have equal quantities of classrooms (14 total vs the MSBA guideline of 13).

3) The Shaker Lane Elementary School schedule provided on page 33 is not legible to read when embedded in the educational program. In response to these review comments, please provide a copy of the schedule, and as part of the updated educational program provided with the PSR submittal please update the schedule with a more legible copy.

Response: Updated school schedule attached.

4a) The information provided on page 34 states: "Each grade level is split into two cohorts of three". In response to these review comments, please clarify if the "two-cohort" system is currently used in kindergarten as well as in grades 1 and 2. Also, please clarify how this cohort system will change with the addition of another classroom in each grade level.

Response: Currently there are six classrooms in Kindergarten, Grade 1 and Grade 2, as well as one Transitional classroom. Currently, each grade level is split into two cohorts of three, allowing for three classroom teachers to have common planning time together, five days a week for 45 minutes, while the students attend their unified arts. The Transitional classroom attends Unified Arts at the same time as Kindergarten. During these smaller meetings, teachers work together to improve teaching and learning in their cohorts. Should another classroom be added to each of the grade levels, K-2 in the future, we still see a configuration of cohorts continuing to exist. The configuration of the cohorts will depend on staffing, budget, and student service needs.

4b) In response to these review comments, please provide information on how cross-grade level collaboration occurs, if at all based on current conditions, and how it may occur under the proposed Den Learning Spaces model.

Response: Some cross-grade level experiences occur through a reading experience with Grade 2 and Kindergarten classrooms. In this instance, a Kindergarten classroom and Grade 2 classroom combine to have a shared reading lesson that matches students up with a peer from another classroom. Two classrooms squeeze into one room to have this shared experience. Other cross grade level experiences have included showcasing student work to other grade levels where the same room constraints are present.

Cross grade level learning experiences in this large gathering area could include cooperative learning activities and interdisciplinary projects fostering a sense of community and collaboration among students of different ages.

In terms of adjacencies, first and second grade should be stacked vertically above kindergarten and preschool, with stairs connecting the Dens to facilitate these interactions.

4c) The information provided on page 39 indicates that there will be seven (7) classrooms for kindergarten, first grade and second grade. This information is also indicated on page 25 under the Small Group Learning Space section. However, the information provided on the personnel chart on page 35, and within the description of the kindergarten program in section 2.7 of the educational program, proposes eight (8) kindergarten classrooms instead of seven. In response to these review comments, please confirm the correct number of classrooms for each grade and update the information accordingly.

Response: The number of classrooms for each grade level is as follows: 8 for Kindergarten (one of which includes Transitional), 7 for Grade 1, and 7 for Grade 2. (see redlined copy of Ed Plan for more details).

4e) In response to these review comments, please confirm if the Full Option Science System ("FOSS") curriculum will continue to be used in the proposed project. Also, confirm if the additional proposed classroom will require a third FOSS material kit, or indicate that the current number of kits are sufficient.

Additionally, in response to these review comments, provide additional information regarding the "Imagitorium" space. Specifically, describe how this space will be integrated spatially into the Den Learning Space and describe how multiple classes will be able to use the space at the same time.

Furthermore, the information provided on page 42 states the following:

> *"An area in the Den Learning Space should be outfitted with a sink, counter/shelf space to store science experiments, and electrical outlets".*

Please consider including more than one sink and have them spaced apart, if the Den Learning space is large enough to accommodate more sinks.

Response: Confirmed. The *FOSS* curriculum will continue to be the curriculum of choice moving forward for Shaker Lane. Even with the proposed addition of a classroom, the teachers will continue to share 2 *FOSS* kits amongst themselves, with no additional kits needed to be ordered.

For example, two classrooms could work collaboratively on a STEM project in the Den Learning Space. There would be a large area for whole group instruction to take place and then breakout areas within the Den Learning Space that can be easily supervised by our STEM Integration Specialist and classroom teachers. Once in this space, a designated area where Imagatorium creations could be displayed will be collaboratively decided upon by each grade level.

Consideration of additional sinks will be discussed throughout the planning project.

The students should be able to easily access any materials needed for a project and seamlessly transport those materials to any space throughout the den to work either on the floor or tabletops. There will be enough space and materials for multiple classrooms to spread out and complete a STEM project individually or together.

4g) In response to these review comments, please describe the District's plan, if any, for integrating multilingual and multicultural experiences into general classroom activities. This approach could foster collaborative learning among native English speakers and their peers who are non-native English speakers.

Response: The district has carefully considered the need for dedicated space to support English Language Learners/Multilingual Learners (ELLs/MLLs). An MLL classroom is essential to provide effective and equitable instruction for our growing MLL population. This dedicated space will allow for specialized instruction tailored to the unique needs of MLL students. It will provide a quiet and focused environment for small group and individual instruction, promoting language acquisition and academic achievement. The classroom will serve as a resource center, equipped with language learning materials, technology, and other tools to support MLL students. This will empower students to engage in learning and participate in collaborative activities. This learning space will be designed to accommodate various learning preferences and activities, including small group instruction, one-on-one tutoring, and project-based learning. By providing a dedicated MLL classroom and adequate staffing, we are committed to creating a welcoming and inclusive learning environment for all students, regardless of their language background.

To ensure optimal utilization of this space, we propose the following scheduling and staffing plan:

- Core Instruction: During core instructional time, the MLL classroom will be used for small group instruction, led by certified ELL teachers. These sessions will focus on language development, literacy, and content area instruction.
- Intervention and Enrichment: After core instruction, the classroom will be used for targeted intervention and enrichment activities, such as small group tutoring, language labs, and cultural clubs.

- Flexible Use: The classroom can also be used for other purposes, such as parent-teacher conferences, MLL student meetings, ACCESS testing, screening and evaluations.
- To support the MLL program, the district currently employs two full-time ELL teachers.

4i) In response to these review comments, please clarify the designation of students served by each Guidance and Support Staff member and describe if the staff member works exclusively with Special Education students or if they also work with the entire student population as needed.

Response: The school psychologist is an integral piece of the referral process for special education. This person conducts all psychoeducational evaluations to determine eligibility for special education services. When a student has been determined eligible for special education services, direct services in the form of school-based counseling, social skills instruction or other clinical services may be a component of the student's Individualized Education Program (IEP) service delivery. In the case that a student requires clinical services or support as part of their IEP, the school psychologist would provide direct services to both individuals and/or small groups of students to work on IEP goals.

The school adjustment counselor provides services to both special education and general education students. The school adjustment counselor is also Shaker Lane's Special Education 504 Coordinator, determining whether a students' disability qualifies he/she for specific accommodations that are in addition to the DCAP (District Curriculum Accommodation Plan) and is determined to be eligible for a 504 Accommodation Plan. These meetings typically take place in the conference room due to the number of individuals involved in such a meeting. On a daily basis, the school adjustment counselor ultimately supports the entire school population by responding to support calls during the school day in all grade levels, running snack and lunch social groups, providing scheduled one on one counseling sessions as well as handling "pop up" social/emotional situations that come up.

The Board-Certified Behavior Analyst (BCBA) plays a crucial role in promoting positive behavior, academic success, social-emotional development and addressing behavioral challenges and enhancing learning opportunities for students with complex needs. The BCBA at the Shaker Lane School primarily provides ongoing behavioral support and consultative services to students with disabilities who have behavioral goals on their IEPs. Additionally, the BCBA conducts functional behavior assessments and assists the evaluation teams with other relevant assessments, while also collecting, reviewing and analyzing behavioral data. The BCBA provides consultation services to parents and families as well as staff who directly work with the children on IEPs. The BCBA may also be accessed for general consultation for community peer students who are displaying a wide range of behaviors.

6) The information provided as part of the Professional Development section on page 48 indicates that the District will continue to collaborate with MLP Integrated Design, the educational planning and consultant team who lead the visioning efforts and can work to ensure teachers are fully prepared to implement that vision, especially in terms of teaching and learning practices. In response to these review comments, please provide additional information that describes the District's plan to provide professional development opportunities to prepare for a newly designed facility; including how the District is preparing to effectively utilize the renovated or new facility, current and planned preparations before and after the opening of the proposed project.

Additionally, information provided indicates the District's plan to participate and include model lessons and spaces with furniture and materials that will help the educators to learn and understand how they can optimize learning in collaborative spaces. Please note and acknowledge that the MSBA encourages the District to continue to use the workshop model beyond the move-in date to allow teachers to fully learn to use the renovated or new facilities.

Also, as part of the professional development and pre-occupancy workshops, please consider encouraging teachers to use the opportunity to review and consider new curriculum collaborations, applications, and approaches.

Response: In collaboration with MLP Integrated Design we are already planning and running professional learning for our educators to adapt teaching and learning practices to prepare for and better utilize a newly designed facility. Currently, we have two educators and their classes at each grade level partnering to create a collaborative learning experience for their students. In Kindergarten the educators will offer varied learning experiences during choice time, while in grades 1 and 2, educators will offer varied ways to offer and participate in morning meetings. The purpose of this current and focused professional learning is to begin to develop thought partners and strategies of how we can utilize common collaborative learning spaces that will be prevalent in a newly designed facility. The plan is for this professional learning to expand to other educators within each grade level and to expand into other areas of the school day particularly into curricular collaboration.

As we implement a new literacy curriculum this year, it is an opportune time for us to consider and learn how we can develop cross-classroom and cross-curricular experiences for and with our students. These opportunities will continue to expand and be enhanced through our commitment to on-going professional development that has already begun and will continue past the opening of a newly designed school building. Whenever we add or change curriculum such as we are doing now with literacy, we consider how we can generate new collaborations, applications, and approaches within the curriculum and with other curricula already in place.

Once we have moved into a newly designed learning space, our educators will be able to see the benefits of the professional development and will be able to continue to model for each other and for other educators in our district the approach to collaborative teaching and learning. Using this workshop model beyond the move-in date will allow all learners to benefit from a full understanding of how we can utilize the new space while actually being in the new space.

7) The information provided as part of the current Pre-Kindergarten Program section describes the current number of classrooms (total and full-time equivalent), however, the information did not provide the current enrollment of Pre-Kindergarten students. Additionally, the information provided as part of the proposed changes does not describe any changes in the enrollment, the proposed number of classrooms or any changes in the curriculum. In response to these review comments please provide a narrative that describes the proposed curriculum and enrollment of Pre-Kindergarten students and clarify if there are any changes proposed or provide a statement that no changes are being proposed.

Response: While the current plan does not explicitly request additional classrooms for Pre-Kindergarten, Littleton Public Schools acknowledges the evolving landscape of early childhood education in Massachusetts. We are aware of the increasing demand for public school pre-kindergarten programs and the growing complexity of needs among children aged 3-5.

Therefore, while the current proposal maintains its focus on providing a high-quality, comprehensive Pre-Kindergarten program within the existing design, we remain committed to flexibility and adaptability as the needs of our community evolve. We will continue to monitor enrollment trends, emerging educational standards, and best practices in early childhood education to ensure that our program remains responsive to the needs of our youngest learners.

We are confident that the proposed design, with its emphasis on creating flexible and adaptable learning spaces, can accommodate potential future growth and changes in our Pre-Kindergarten program. We will work closely

with educators and community partners to refine our program and ensure that it meets the evolving needs of our students.

The current number of Pre-K classrooms is 3, and the proposed number of Pre-K classrooms is 3. There are no immediate planned changes to the curriculum, but 3 properly-designed general classrooms is adequate to accommodate future flexibility. The current and expected future enrollment is 48, but 3 classrooms provides flexibility to accommodate additional students in the future

9) In response to these review comments, provide additional information that describes the proposed number of lunch servings, how long lunch will be provided on a typical school day, and describe how it is coordinated into the overall schedule. The submittal does not indicate if the programs are to remain the same or change in the proposed project. Also, please note that the MSBA guidelines are based on two lunch servings.

Response: In the proposed building, the number of lunch servings is expected to be three. We do not foresee intermingling the three different grade levels for lunch seatings. At this time, the students will continue to have a 20-minute lunch eating session. There is a dedicated lunch block for every grade level in a single school day that is outlined in the daily schedule in the prior section. This lunch block is highly coordinated and cross referenced with the Unified Arts Schedule and the K-2 Academic schedule to accommodate the best and least disruptive flow to the school day.

10) The MSBA suggests the District consider providing assisted listening technology in each classroom, as well as general use throughout educational spaces within the proposed project for hearing impaired accessibility. Please acknowledge. Acknowledged.

Additionally, in response to these review comments, please provide the following information:

- *Describe the District's plan for students to use their technology devices at home, if any.*
- *If yes, describe whether the District has a regular program to ensure that all students have access to internet at home.*
- *Additionally, please describe any arrangements that are in place to ensure all the devices are properly licensed to use the software required by the curriculum.*

Furthermore, the information provided indicated that the technology is integrated into daily practice and the STEM program is also an integrated approach within the District's schools. The District envisions a STEM-rich learning environment where students explore, innovate, and problem-solve across all grade levels. Please note and acknowledge that having sinks at an age-appropriate student height and being spread apart in the physical area is essential. Acknowledged.

Response: Students utilize the devices at school only at this time. Devices are left in carts or storage spaces within the school overnight to charge for each school day. If there is a request or a need, a student can bring a device home, however, this is not frequent at this time. Many students are able to access a device at home and through communication with families, we are able to ensure that all have access to internet at home. The Littleton Public Schools strives to ensure the protection of our students' privacy while encouraging innovative uses of technology to support teaching and learning. We maintain a thorough vetting process whenever we engage with third party vendors to ensure student data privacy. Littleton Public Schools works with The Education Cooperative (TEC) to facilitate the execution of data privacy agreements with all vendors.

Further, for iPads (PK, K, T, Grade 1) we utilize:
JAMF MDM: We utilize JAMF as a Mobile Device Management (MDM) solution to centrally manage and distribute licensed applications to iPads. This ensures that all apps are deployed with valid licenses and are accessible to students.

For Chromebooks (Grade 2) we utilize:
Web-based Applications: The majority of applications used in Grade 2 are web-based, eliminating the need for individual device licensing.
Rostering for Licensed Access: We roster students for licensed access to specific web-based applications.

11) In response to these review comments, please describe the proposed staffing levels for the Media Center and indicate who will oversee, schedule, and maintain the range of Media Center spaces anticipated in the proposed project. Additionally, describe the skills and training that will be required of Media Center staff. Also, in response to these review comments, please describe the District's plan to use the Media Center during non-school hours for groups and the idea of a hybrid media model, extending beyond the typical weekly library visit.

Response: This new space should offer movable book stacks and comfortable, adaptable seating for various activities and group sizes, encouraging students to explore and work together in a relaxed environment. The library will continue to be staffed throughout the week to provide a Unified Arts experience for K-2 students for 45-minute sessions. This staff member will collaborate with grade level teachers in order to gather library media materials that support the current curriculum theme. To support this staff member's skills related to curriculum, he/she is offered and encouraged to attend all district PD as well as other trainings that are found to be applicable to this position. This staff member will be instrumental in dispersing the media materials throughout the Den Learning Spaces on the movable stacks.

This hybrid model would include both a weekly visit by each class to the media center to engage in a planned lesson in conjunction with

to access when needed or wanted

In such a hybrid model the library media center will be a destination and a traveling destination for students to access books more easily and closely to their learning spaces. Additionally, students will be able to use the library media center as a place to collaboratively learn, create and have experiential learning experiences that will deepen learning for all.

Due to the high use of the library media center during the school day for structured library lessons, collaborative and experiential learning, the space will typically be closed to the public during non-school hours to preserve the on-going learning in that space. Library media center use during non-school hours could be scheduled for special circumstances through the district's scheduling platform with approval from district administration.

12) In response to these review comments, provide the number of art periods per academic cycle, and the number of students participating in art programs.

Additionally, in response to these review comments, please provide the following information:

- *Describe whether the District has considered non-kiln required 3D projects for the student population. This could include substituting edible/bakeable dough and/or polymer clays for those requiring kiln-firing and toxic glazing for young student use.*

- *Please note and acknowledge art storage should include secure and appropriately ventilated space for toxic and hazardous materials as well as an accessible file of SDS (safety data sheets).*
- *Please note and acknowledge that kiln rooms should be secure but also include a window or external "in-use" light.*

Also, in response to these review comments, provide additional information and confirm the following:

- *Describe the necessity to sanitize instruments used in the Music program, if any.*
- *Describe the District's plan to ask/teach students to care for the instruments they use, if any.*

Response: currently this is 381 students. There are 26 art periods per academic cycle.

Currently in art, students already complete non-kiln 3D art. Such projects include creating 3D scenes of food, nature, and abstract art by using items found in the environment, modeling clay, and paper.

For the safety of everyone it is essential that the kiln room can be secured and have a window or external "in-use" light. Additionally, the storage for art will also need to be secure and appropriately ventilated for toxic and hazardous materials and include an accessible file of safety data sheets.

Any instruments used at Shaker Lane School will be shared and non-wind instruments. The music educator will educate students how proper sanitization of shared instruments like other shared educational materials may be needed. This would require having sanitary wipes to clean any shared instruments.

19) Please confirm that the first responding emergency representatives will be consulted in the planning process and associated requirements will be incorporated into the Preferred Schematic Report. Confirmed.

Additional Comments:

In response to these review comments, provide additional information about the design and location of the common small group learning spaces within the neighborhood/clusters and describe the District's plan to mitigate risk for all spaces that are "visible" that may require privacy in emergency conditions.

Additionally, the information provided on page 29, seems to have some formatting issues. Please provide an updated table with the PSR submittal. Acknowledged.

3.1.3 INITIAL SPACE SUMMARY

- ***Core Academic*** *– The overall proposed square footage for this category exceeds the MSBA guidelines by 19,882 net square feet ("nsf"). Based on the information provided, the following spaces have been proposed in order for the District to deliver its educational program:*

Core Academic Spaces	***Enrollment 1: Grades K-2 for 435 students***		
	Proposed No. Rooms	*MSBA Guidelines No. Rooms*	*Variance*
Kindergarten classroom with Toilet	*8*	*8*	*0*
General Classrooms (Grade 1-2)	*14*	*13*	*+1*
Academic Suite	*1*	*0*	*+1*
Maker Space (Imagatorium)	*3*	*0*	*+3*
Maker Space (Creation Station)	*1*	*0*	*+1*
Den Learning Space	*3*	*0*	*+3*

The District is proposing the following spaces:

- ***Kindergarten Classrooms (with Toilet)*** *– The District is proposing (8) 1,200 nsf totaling 9,600 nsf, which meets the MSBA guidelines. In response to these review comments, please review and respond to the following:*

    - *As the project further develops, please note and acknowledge that 1,100 nsf is the minimum size for all newly constructed Kindergarten Classrooms. Please acknowledge.*
    - *Confirm that the proposed project will provide a minimum of two sinks in each Kindergarten Classroom. Please refer to the attached memo regarding MSBA's Staff Recommendation for 2018 STE Area Guidelines*

    Response: Acknowledged and confirmed

- ***General Classrooms (Grades 1-2)*** *– The District is proposing (14) 950 nsf classrooms totaling 13,300 nsf, which exceeds the MSBA guidelines by (1) General Classroom and 950 nsf. Based on the information provided, the MSBA accepts this variation to the guidelines. In response to these review comments, please review and respond to the following:*

    - *As the project becomes further developed, please note and acknowledge that 900 nsf is the minimum size for all newly constructed General Classrooms in an elementary school.*
    - *Confirm that the proposed project will provide a minimum of two sinks in each General Classroom for grades 1-2. Please refer to the attached memo regarding MSBA's Staff Recommendation for 2018 STE Area Guidelines.*

    Response: Acknowledged and confirmed

- ***Den Learning Space*** *– The District is proposing (3) 1,400 nsf Den Learning Spaces totaling 4,200 nsf which exceeds the MSBA guidelines. In response to these review comments, please provide the following information:*

    - *Describe the anticipated adjacencies, the scheduling and utilization of the proposed areas, how these areas will be supervised and staffed.*
    - *Provide examples of activities that will occur in these areas that cannot be delivered within an appropriately sized and fit-out General Classroom.*
    - *Describe why these activities are better suited in a separate area rather than in a larger General Classroom.*

    Response: Each Den Learning Space will have a shared Google Calendar to reserve various zones within the den throughout the school day. As all classrooms are adjacent to this space, supervision will be provided by the classroom teachers.

    The Den Learning Space allows multiple classrooms to gather for a collaborative experience that our current building design does not offer and a larger general classroom would also not offer. Currently, our grade levels combine into a small classroom limiting activities and experiential learning that would be capitalized upon in the Den Learning Space. Such learning that could be enhanced in the Dens include science experiments through our FOSS program, STEM projects, and other tactile and kinesthetic experiences encouraged by our curriculum.

    A large, shared Den Learning Space would allow for pooling of teacher resources to save space and money. These resources include large or costly educational materials such as book collections, dramatic play modules, STEM equipment, water exploration apparatus, and gross motor gear.

- ***Academic Suite*** *– The District is proposing (1) 500 nsf Academic Suite space, which exceeds the MSBA guidelines. In response to these review comments, provide information that further describes the scheduling and utilization of the proposed area and how this space will be supervised and staffed and provide examples of activities that will occur in this space.*

  Response: We currently have two Reading Specialists and one Math Interventionist. These three staff members would share the Academic Suite for small group instruction as well as the small room adjacent to this suite for more private instruction as needed. This small group space would be scheduled and staffed by the interventionists. Examples of instruction in this space include remediation of skills and an extension of learned skills by students. Oftentimes this instruction includes manipulatives with which learners engage.

- ***Maker Space (Imagatorium)*** *– The District is proposing (3) 250 nsf Maker Space (Imagatorium) areas, totaling 750 nsf which exceeds the MSBA guidelines. The current version of MSBA's space summary template includes provisions, which the project team should become familiar with, for such spaces provided these spaces conform to MSBA guidelines for STE spaces and align with the District's educational program. In order for the MSBA to consider eligibility of these proposed spaces, provide additional information that describes how the proposed space(s) will be scheduled, staffed, and utilized. Include examples of activities that will occur in these spaces. An updated space summary is required in order for MSBA to complete review of this category.*

  Response: In accordance with the MSBA's recommendation for best practices for K-12 STEM Learning Spaces, the general classrooms will be equipped with sinks and other recommended amenities. The Imagatorium spaces are specifically for deeply imbedded, collaborative, multi-classroom STEM projects and curriculum that goes beyond the general classrooms' capabilities. The space summary for these spaces has not been modified in the updated version.

- ***Maker Space (Creation Station)*** *– The District is proposing (1) 100 nsf Maker Space (Creation Station) which exceeds the MSBA guidelines. As noted above, the current version of MSBA's space summary template includes provisions, which the project team should become familiar with, for such spaces provided these spaces align, conform to MSBA guidelines for STE spaces and with the District's educational program. In order for the MSBA to consider eligibility of the proposed space, provide additional information that describes how the proposed space will be scheduled, staffed, and utilized. Include examples of activities that will occur in these spaces. An updated space summary is required in order for MSBA to complete review of this category.*

  Please refer to the MSBA's "Review and Recommendations of Best Practices for K-12 STEM Learning Spaces" report and Staff Recommendation for 2018 Science/Technology/Engineering Area Guidelines as it relates to staffing of STE rooms, classroom sinks and storage.

  Response: The Creation Station will give students who are passing by an opportunity to observe how various machines work to create projects. However, it will not be a space where scheduled times are designated for students or staff, other than the STEM Integration Specialist. The machines include a laser cutter and 3D printer, which are not suitable for student use, so a room with provisions for safe, supervised student observation will allow this key part of project manufacturing and production to be meaningfully included in the STEM curriculum. The space summary for these spaces has not been modified in the updated version.

- ***Special Education*** *– The overall proposed square footage for this category exceeds the MSBA guidelines by 7,430 nsf. In response to these review comments, please review and respond to the following items:*

  - *The District is proposing (2) 1,200 nsf Self-Contained Special Education Classrooms (PACE) totaling 2,400 nsf that is 450 nsf below the MSBA guidelines. In response to these review comments, please*

relocate the dedicated (1) 1,200 nsf Pre-K Self-Contained Special Education Classroom to the "Other" category and provide an updated space summary. Refer to updated space summary

- *The District is proposing (1) 500 nsf English Language Learners ("ELL") Classroom. Please provide additional information that describes how this space will be scheduled and staffed during the school day. Also, provide an updated space summary that relocates the ELL Classroom to the 'Core Academic' category.* Refer to updated space summary

- *The District is proposing (1) 300 nsf OT/PT/APE Storage area which exceeds the MSBA guidelines. In response to these review comments, provide an updated space summary that relocates this space to the 'Non- Programmed Spaces' category. As a reminder, the Designer must coordinate a space planning scenario where the grossing factor does not exceed 1.50.* Refer to updated space summary

- *Please note that the Special Education program is subject to approval by the Department of Elementary and Secondary Education ("DESE"). The District should provide the required information required with the Schematic Design submittal. Formal approval of the District's proposed Special Education program by the DESE is a prerequisite for executing a Project Funding Agreement with the MSBA. Please acknowledge.* Acknowledged.

- ***Dining & Food Service** – The overall proposed square footage for this category exceeds the MSBA guidelines by 391 nsf. Please note that square footage exceeding the MSBA guidelines in this category will be considered ineligible for reimbursement. Please acknowledge.* Acknowledged.
- ***Medical** – The overall proposed square footage for this category exceeds the MSBA guidelines by 140 nsf. Please note that square footage exceeding the MSBA guidelines in this category will be considered ineligible for reimbursement. Please acknowledge.* Acknowledged.
- ***Administration & Guidance** – The overall proposed square footage for this category exceeds the MSBA guidelines by 260 nsf. Please note that square footage exceeding the MSBA guidelines in this category will be considered ineligible for reimbursement. Please acknowledge.* Acknowledged.
- ***Other** – The District is proposing 5,160 nsf which exceeds the MSBA guidelines. The District is proposing the following spaces:*
  - ***Pre-Kindergarten Classroom with Toilet** – The District is proposing (3) 1,200 nsf Pre-Kindergarten Classrooms totaling 3,600 nsf, which exceeds the MSBA guidelines.*
    - *As the project further develops, please note and acknowledge that 1,100 nsf is the minimum size for all newly constructed Kindergarten Classrooms. Please acknowledge.*
    - *Additionally, please refer to comment in section 3.1.2, Item 7, above.*

  Response: Acknowledged

  - ***Pre-Kindergarten Den Learning Space** – The District is proposing (1) 1,400 nsf Pre-Kindergarten Den Learning Space which exceeds the MSBA guidelines. In response to these review comments, please provide the following:*
    - *Describe the anticipated adjacencies, the scheduling and utilization of the proposed area, how this area will be supervised and staffed.*
    - *Provide examples of activities that will occur in these areas that cannot be delivered within an appropriately sized and fit-out Pre-kindergarten Classroom.*
    - *Describe why these activities are better suited in a separate area rather than in a larger Pre-kindergarten Classroom.*

- ***Mother's Room*** *– The District is proposing (1) 80 nsf Mother's Room which exceeds the MSBA guidelines. In response to these review comments, provide an updated space summary that relocates this space to the 'Non- Programmed Spaces' category. As a reminder, the Designer must coordinate a space planning scenario where the grossing factor does not exceed 1.50.*

  Response: Acknowledged. Refer to updated space summary

- ***Admin Kitchenette*** *– The District is proposing (1) 80 nsf Admin Kitchenette space which exceeds the MSBA guidelines. Please note that square footage exceeding the MSBA guidelines will be considered ineligible for reimbursement. Please acknowledge.* Acknowledged. Refer to updated space summary

Please note that upon selection of a preferred solution, the District may be required to adjust spaces/square footage that exceeds the MSBA guidelines and is not supported by the Educational Program provided. Acknowledged.

3.1.4 EVALUATION OF EXISTING CONDITIONS

3) The information provided indicates that a Project Notification Form ("PNF") was filed on July 29, 2024, with the Massachusetts Historical Commission ("MHC") for the existing Shaker Lane Elementary School site. In response to these review comments, please provide a copy of MHC approval as soon as it is available.

Also, please note and acknowledge that MHC approval is required prior to construction bids. The District should keep the MSBA informed of any decisions and/or proposed actions and should confirm that the proposed project is in conformance with Massachusetts General Law 950, CRM 71.00.

Response: MHC Certificate Attached

7) The information provided in the Existing Conditions Assessment provided by Samiotes indicates the following permitting requirements:

- *A Notice of Intent permit is required as portions of proposed school lies within the Bordering Vegetated Wetlands and Resource Area Buffer Zones*
- *Stormwater management measures will be required per the Town of Littleton to meet the current Massachusetts Stormwater management standards.*
- *Flow test will be required.*
- *A Notice Of Intent with Town of Littleton Conservation Commission, Stormwater permit with Town of Littleton Planning Board Committee, and Site Plan Review with Town of Littleton Planning Board Committee will be required due to new construction and location.*
- *MEPA permitting may be required.*
- *An additional study may be required to determine if the site contains habitats for the Monarch Butterfly and the Northern Long-eared Bat and if the project requires additional consultation with the US Fish and Wildlife Service.*
- *A review with the Planning Board will be required to determine the required amount of spaces. Required off-street parking and loading spaces shall be located on the same lot as the building or use they are intended to serve, or in the case of parking spaces, on other premises within three hundred (300) feet of such lot.*

In response to these review comments, identify any potential challenges and steps that may be required for these resolutions, if any. Additionally, please ensure that future versions of the project schedule will include dates of anticipated approvals and key steps of the proposed site.

Response:

Permitting Timelines:

The SD submission will provide an updated project schedule that includes the timeline for all permitting requirements with the anticipated filing dates and approval dates for the District's Preferred Schematic. All approvals must be obtained prior to construction bidding.

Anticipated Permitting timeline (to begin at Design Development), providing the following permits are required:

- Wetland Scientist engagement – Wetlands confirmatory field investigation and report 1-2 months
- Environmental consultant – Endangered Species Survey field investigation and report 1-2 months (if necessary, concurrent with wetlands investigation)
- MEPA – ENF typically 6-8 months. Can begin following Wetland/Environmental consultant investigations (Only potential MEPA ENF trigger is possible creation of 5 or more acres of impervious area, current Preferred Option is approximately 4.5 acres)
- Planning Board: 4-6 months
    - Site Plan Review
    - Stormwater Management Permit (concurrently with Site Plan Review)
- Conservation Commission: Notice of Intent 4-6 Months (concurrently with Planning Board and ENF Review)
- Board of Health – 3-4 Months (concurrently with above)
- NPDES/SWPPP – 1 Month (filed prior to construction following completion of Permitting)

Furthermore, the information provided regarding the sanitary sewage states the following:

- *"No municipal sanitary sewer line exists within Roxbury Drive or Shaker Lane as this district of Littleton relies on the use of septic systems. Re-using the existing IA system and offsite leaching field could possibly involve upgrades to the current system based on possible increases to school, staff, etc. Which will need to be investigated with any future design option planning".*
- *"A condition assessment to verify the location and condition of all sewer services and systems is recommended for future design phases. If any portion of the sewer services is to be reused, this would require a Title V inspection to determine if the system is in compliance with current DEP and Littleton Board of Health requirements".*
- *"Updated soil testing should also be performed on site to determine if a new system could be constructed adjacent to any school renovation/addition or new construction option. It also may be possible to tie into a proposed shared septic system currently being designed off Russell St. This option would require an approximate 1.5-mile connection to the system. All viable options will be investigated during the subsequent MSBA phases".*

As part of the District's PSR submittal, provide additional information and timeline associated with site testing or review and analysis.

Additionally, the information provided indicates that off-site work will be required for the proposed off-site leach field. Please note that all costs associated with off-site improvements are ineligible for MSBA reimbursement and must be itemized on all submitted cost estimates in subsequent submittals. Please acknowledge. Acknowledged.

8) The information provided by GeoEngineers in the Preliminary Geotechnical Report for the existing Shaker Lane Elementary School site and the alternative site referred to as the "Whitcomb Filed" site states the following:

- *"Additional explorations should be advanced to further understand the subsurface conditions within the building pad at the selected Site and to provide final design recommendations for foundations".*
- *"Borings and/or test pits should also be advanced in future development areas (retaining walls, stormwater management areas, pavement areas, etc.) as the design plans are progressed".*

As part of the District's PSR submittal, please include the timeline and additional information associated with the work listed above. Please note and acknowledge that all cost increases subsequent to a Project Scope and Budget Approval from the MSBA's Board of Directors will be the sole responsibility of the District.

Response: Acknowledged

9) The information provided notes that the Project Team will be performing a Phase 1 Environmental Site Assessment once the proposed building site for either an addition or new building has been determined during the PSR phase. As part of the District's PSR submittal, please provide a complete Phase 1 Environmental Site Assessment Report for review.

Response: (Designer) The proposed building site was not determined in sufficient time in order to conduct a Phase 1 Environmental Site Assessment. A Phase I Initial Site Investigation Report is a document which contains the results of Preliminary Response Actions undertaken at a disposal site. Since the property under consideration for this project is currently owned by the Town of Littleton and is not a known disposal site at this point, the Phase I ESA (assumed to mean ASTM 1527-21 Standard) will be performed in subsequent phase, if deemed appropriate by both the Owner and the MSBA. Additionally, the Phase 1 ESA will expire 180 days after a certain date (as will be identified in the ESA) and may need to be completed again should the Town wish to rely on it for any purpose.

Please note that any costs associated with the removal of fuel storage tanks and associated contaminated soil will be considered ineligible for reimbursement. Please acknowledge.

10) The information provided from the report for hazardous materials determination survey for the existing school indicates that there are hazardous flooring materials as well as hazardous ceiling that contains asbestos. Please note, the project team should be aware of the current policies associated with MSBA's participation in the abatement and removal of hazardous materials. Additionally, please note and acknowledge that all costs associated with the removal of asbestos containing floor materials and ceiling tiles are considered ineligible for reimbursement.

Response: Acknowledged

3.1.5 SITE DEVELOPMENT REQUIREMENTS

1) In response to these review comments, please review and respond to the following items:

- *Describe how the site constraints are potentially impacting the design options explored in the Preliminary Evaluation of Alternatives section.*

  The site has two wide open playing fields and lots of heavily wooded and wetland areas
  .
  Option 2.1 Add/ Reno: The academic wing addition would require significant tree removal and assumed ledge blasting. This Option also comes closest to the setback and neighboring abutters. The emergency access road will need careful consideration.

  Option 3.1 Upper Field Option: This option takes advantage of the most readily available open buildable area, however will require the longest extension of utilities.

Option 3.2 Lower Field Option: The wetland buffer encroaches onto the lower field, limiting the buildable space for that option. However, if the building borrows some space from the upper field, this could be a viable option. Provisions for relocating the athletic fields will need to be addressed during SD.

These site constraints have been considered during district discussion and evaluation of the options.

- *As part of the District's PSR, provide a site section(s) that illustrates how the Preferred Schematic sits on the site and how the proposed location impacts access and circulation. Please acknowledge.* Acknowledged.

2) In response to these review comments, please provide an existing site plan of the Shaker Lane Elementary School site and include the following information:

- *Circulation diagrams that identify the existing:*
  - *Bus and parent drop-off/pick-up locations;*
  - *Vehicular and pedestrian circulation; and*
  - *Emergency vehicle access.*
- *Also, provide diagram(s) and a narrative that describes how a physically challenged individual currently accesses the existing building.*

Response:
Refer to attached site diagram.
The existing site is provided with accessible parking and accessible routes from the accessible parking, as well as site arrival points, to the building entrances. This was described in the PDP under 4.5 Evaluation of Building Code Compliance on page 96, 4.6 Evaluation of AAB compliance on page 98, and 5.1 Site Development Narrative - Site Access and Circulation starting on page 118

- *As part of the District's PSR submittal, please provide circulation diagrams for all options explored as part of the Final Evaluation of Alternatives.*

Response: Acknowledged

3.1.6 PRELIMINARY EVALUATION OF ALTERNATIVES

As part of the Preliminary Evaluation of Alternatives, the District explored the following (6) options. Please note the (3) options denoted with an asterisk (*) are the options the District intends to further evaluate as part of the Final Evaluation of Alternatives included in its PSR submittal:

- ***Option 1**: Code upgrade/base repair for 435 students in kindergarten through grade 2, plus pre-kindergarten, at the existing Shaker Lane Elementary School; with an estimated project cost of $44.1 million.*
- ***Option 2.1***: Addition/renovation for designed for 435 students in kindergarten through grades 2, plus pre-kindergarten, at the existing Shaker Lane Elementary School; with an estimated project cost of $104.8 million. (2-story addition with classrooms, to east of existing Shaker Lane Elementary School)*
- ***Option 2.2**: Addition/renovation designed for 435 students in kindergarten through grade 2, plus pre-kindergarten, at the existing Shaker Lane Elementary School; with an estimated project cost of $107 million. (3-story addition with classrooms, to North of existing Shaker Lane school site)*
- ***Option 3.1***: New construction designed for 435 students in kindergarten through grade 2, plus pre-kindergarten at the existing Shaker Lane Elementary School site; with an estimated project cost of $108.4 million. (2-story building at Upper Field)*

- ***Option 3.2****: *New construction designed for students in kindergarten through grade 2, plus pre-kindergarten, at the existing Shaker Lane Elementary School site; with an estimated project cost of $106.1 million. (1-story Central Core and 3-story academic wing at Lower Field)*
- ***Option 4.1****: New construction designed for 435 students in kindergarten through grade 2, plus pre-kindergarten, on an alternative site referred to as Whitcomb Field; with an estimated project cost of $103.9 million. (2-story building at Whitcomb Field)*

4) The information provided indicates the District determined that "Option 1" a code upgrade option at the existing Shaker Lane Elementary School is not considered a viable option for further development. Please note the District will be required to include a code upgrade option of the existing school as part of the PSR submittal for cost comparison purposes. Please acknowledge. Acknowledged.

5-7) Additionally, as part of the District's PSR submittal please provide the following information:

- *Floor plan diagrams that include a key/legend for clarity that identify all the spaces with adjacencies to further understand the connections of the proposed spaces.*
- *Please provide the first-floor plan within the proposed site plan.*
- *Ensure that further detail is provided in the subsequent phases of the project that clearly describes and illustrates the separation, safety provisions, and possible construction laydown areas that will be applied during construction on the occupied site. Please acknowledge.* Acknowledged.
- *Please continue to use the same naming convention of options for clarity and consistency. Please acknowledge.* Acknowledged.

Furthermore, the information provided for each option studied indicates a total enrollment of 460 students in grades Pre-Kindergarten through Grade 2. Please note that the District has executed a Design Enrollment with the MSBA based on an enrollment of no more than 435 students, in kindergarten through grade 2 for the Shaker Lane Elementary School. As previously stated in the Enrollment Letter, dated February 23, 2023, for the Shaker Lane Elementary School project, the MSBA understands that the Shaker Lane Elementary School presently serves the District's pre-kindergarten through grade 2 enrollment. As discussed during the enrollment meeting on December 8, 2022, the pre-kindergarten enrollment is not included in these projections and the determination for required space will be determined in the early phase of the feasibility study portion of the grant program. Although the MSBA will recognize the potential to include a variation to the number of anticipated pre-kindergarten students, the design enrollment will continue to be based on no more than 435 students in grades K-5. Please acknowledge. Acknowledged.

Additional Comments:

- *The MSBA would like to inform you of MSBA's recent Project Advisory #88, posted on July 1, 2024, and linked here which describes changes to the MSBA submittal documents relating to required state site* approvals *and site resiliency. We ask you to review this Project Advisory and forward any questions you may have about these requirements to your MSBA Project Coordinator. These documents will assist your client and the MSBA to understand your project's status relating to the various required state site approvals and any design considerations pertaining to resiliency for your selected project site.*

  We ask that all members of your design team use the information indicated in Project Advisory #88 for your project, including the following updated MSBA documents:

  - *Module 3 Feasibility Study Guidelines*
  - *Module 4 Schematic Design Guidelines*
  - *Module 6 (Design Development, 60%, and 90% Construction Documents)*

Incomplete submittals or submittals not reviewed by the OPM will not be accepted. This includes the information described in Project Advisory #88. Acknowledged

- *Please note that as part of the upcoming Preferred Schematic submittal process, districts and their consultants are required to provide a summary overview of the proposed project to the MSBA Facilities Assessment Subcommittee (the "FAS"). In preparation, the MSBA requests that the District submit a complete PowerPoint of the FAS presentation with the PSR submittal. For your reference, the guidance memorandum for preparing an FAS presentation is attached.* Acknowledged and included.

Regarding Past Projects:

MSBA records do not indicate previous grants associated with the Shaker Lane Elementary School.

End

	Kindergarten	Kindergarten	Transitional	Transitional	1st Grade	1st Grade	2nd Grade	2nd Grade
	Barth, Furbush, Harte	Hurley, Duarte, Bell	M, Tu, Th, F	W	Dussi, Roper, Munnelly	Bullock, Vachon, Giles	Madyda, Pratt, Warnock	Ward, Holm, Garlisi
8:45	Arrival 8:40-8:55	Arrival 8:40-8:55	Arrival 8:40-8:55	Arrival 8:40-8:55	Arrival 8:40-8:55	Arrival 8:40-8:55	Arrival 8:40-8:55	Arrival 8:40-8:55
9:00	8:55 - 9:10 Morning Meeting 15 min	8:55 - 9:10 Morning Meeting 15 min	8:55 - 9:10 Morning Meeting 15 min	8:55 - 9:10 Morning Meeting 15 min	8:55 - 9:10 Morning Meeting 15 min	8:55 - 9:10 Morning Meeting 15 min	8:55 - 9:10 Morning Meeting 15 min	8:55 - 9:10 Morning Meeting 15 min
9:15	9:10 - 9:30 Fundations	9:10 - 9:30 Fundations	9:10 - 9:30 Fundations	9:10-10:30 ELA	9:10 - 9:35 FUNdations 25 min	9:10 - 9:40 Fundations 30 min	9:10 - 10:30 ELA 80 min	9:10 - 9:40 FUNdations 30 min
9:30	9:30-10:30 ELA 60 min	9:30-10:30 ELA 60 min	9:30-10:30 ELA 60 min		9:35 - 10:20 Special 45 min	9:40-10:20 Math 40 minutes		9:40 - 11:00 ELA 80 min
9:45								
10:00								
10:15					10:20 - 11:25 Math 65 min	10:20 - 11:05 Special 45 min		
10:30	AM break Recess/Snack 30 min	AM break Recess/Snack 30 min	AM break Recess/Snack 30 min	AM break Recess/Snack 30 min			Snack 10:30-10:40	
10:45							10:40 - 11:10 Fundations 30 min	
11:00	Math 60 min	Math 60 min	Math 60 min	Math 40 min		11:05 - 11:35 WINN 30 min	11:10 - 11:55 Special 45 min	11:00-11:15 AM break 15 min
11:15					ELA DD/Heggerty 11:25-11:35 (10 mins)			Snack 11:15-11:25
11:30				11:35 - 11:55 Recess (1st grade) 20 min	11:35 - 11:55 Recess 20 min	11:35 - 11:55 Recess 20 min		Math 60 min
11:45				11:55 - 12:15 Lunch (1st grade) 20 min	11:55 - 12:15 Lunch 20 min	11:55 - 12:15 Lunch 20 min	11:55 - 12:25 WINN 30 min	11:25-12:25
12:00	12:00 - 12:20 Recess 20 min	12:00 - 12:20 Recess 20 min	12:00 - 12:20 Recess 20 min	12:15 - 1:00 Special 45 min	12:15 - 1:35 ELA 80 minutes	12:15 - 12:45 Math continued 30 min	12:25 - 12:45 Recess 20 min	12:25 - 12:45 Recess 20 min
12:15	12:20 - 12:40 Lunch 20 min	12:20 - 12:40 Lunch 20 min	12:20 - 12:40 Lunch 20 min					
12:30	12:40 - 1:00 ELA Continued 20 min	12:40-1:15 WINN 35 min	12:40-1:15 WINN 35 min			12:45 - 2:05 ELA 80 min	12:45 - 1:05 Lunch 20 min	12:45 - 1:05 Lunch 20 min
12:45								
1:00	1:00 -1:45 Special 45 min	1:15-1:45 Choice 30 min	1:15-1:45 Choice 30 min	1:00 -1:25 Math (cont) 25 min			1:05 - 2:15 Math 70 min	1:05 - 1:30 Science/SS/SEL 25 min
1:15				1:25 - 1:55 WINN 30 min	Snack 1:35-1:45			1:30-2:00 WINN
1:30					1:45-2:15 Science/SS/SEL 30 min			
1:45	1:45-2:15 WINN	1:45 - 2:30 Special 45 min	1:45 - 2:30 Special 45 min	1:55 - 2:25 FUNdations 30 min				
2:00						Snack Break 2:05-2:15		2:00- 2:15 Closing Circle 15 min
2:15	2:15 - 2:45 Choice 30 min			2:25 - 2:45 Science/SS/Sel 20 min	2:15 - 2:45 WINN 30 min	2:15 - 2:45 Science/SS/SEL 30 min	2:15 - 2:30 PM break 15 min	2:15 - 2:30 ELA Continued 15 min
2:30		2:30-2:45 ELA Continued	2:30-2:45 ELA Continued				2:30 - 3:00 Science/SS/ SEL 30 min	2:30 - 3:15 Special 45 min
2:45	2:45 - 3:20 Heggerty/SEL/SCI/SS	2:45 - 3:20 Heggerty/SEL/SCI/SS	2:45 - 3:20 Heggerty/SEL/SCI/SS	2:45 - 3:00 Choice	2:45 - 3:00 PM break	2:45 - 3:00 PM break		

	Kindergarten	Kindergarten	Transitional	Transitional	1st Grade	1st Grade	2nd Grade	2nd Grade
	Barth, Furbush, Harte	Hurley, Duarte, Bell	M, Tu, Th, F	W	Dussi, Roper, Munnelly	Bullock, Vachon, Giles	Madyda, Pratt, Warnock	Ward, Holm, Garlisi
	Closing Circle/Dismissal	Closing Circle/Dismissal	Closing Circle/Dismissal	15 min				
3:00				3:00 - 3:20	3:00 - 3:20	3:00 - 3:20	3:00 - 3:10	
				Closing Circle/Dismissal	Closing Circle/Dismissal	Closing Circle/Dismissal	WW Cont. (DD) 10 min	
	35 min	35 min	35 min	20 min	20 min	20 min	3:10-3:20	
							Dismissal	3:15 - 3:20 - Dismissal

2.1 Geotechnical Memorandum

GeoEngineers USA

Memorandum

239 Causeway Street, Suite 400, Boston, Massachusetts 02114, Telephone: 617.749.9220 www.geoengineers.com

To:	Meryl Nistler, AIA, WELL AP, LEED AP, MCPPO, NCARB ~ Studio G Architects, Inc.
From:	Amy Blomeke, PE and Heidi Cashman, PE ~ GeoEngineers USA, PC
Date:	November 21, 2024
File:	27534-001-00
Subject:	Geotechnical Engineering Due Diligence Memorandum - Revised Shaker Lane Elementary School Project 35 Shaker Lane and 57 Russell Street Littleton, Massachusetts

GeoEngineers USA, PC (GeoEngineers) is pleased to provide our revised preliminary geotechnical engineering design considerations to Studio G Architects, Inc. (Studio G, Client) for the proposed Shaker Lane Elementary School project located at 35 Shaker Lane in Littleton, Massachusetts (the Site). The Town of Littleton has also provided proposed plans for a new school to be constructed at 57 Russell Street in Littleton, Massachusetts (the Alternative Site). This memorandum is subject to the Limitations described herein and in Attachment B.

Site Description and Project Understanding

The Site consists of paved parking lots, landscaping, multiple baseball fields, and the existing school building located at 35 Shaker Lane in Littleton, Massachusetts. The Site is bounded by residential properties to the west, south, and east, Shaker Lane to the southeast, and wooded land and cleared farmland to the north. Wetlands extend onto the northern portion of the Site within the wooded areas. The Alternative Site is bounded by a running track and Interstate 495 to the north, Beaver Brook, and residential properties to the east, Russell Street Elementary School to the west, and Beaver Brook, wooded land, and a football field to the south. Wetlands are located along the eastern wooded portion of the Alternative Site. Site grades at the Site gently slope down from the existing school building towards the baseball fields to the north. Further, the site grades at the Alternative Site are relatively flat in the area of the proposed work.

Based on the conceptual plans provided to us by you, we understand the 35 Shaker Lane property owned by the Town of Littleton for the existing Shaker Lane School has multiple design options for renovations; an addition to the existing building or new construction. Additionally, the Town of Littleton has considered a second location at 57 Russell Street in Littleton, Massachusetts, as an option to construct the new Shaker Lane Elementary School. The conceptual design options have been provided to GeoEngineers and can be found in Attachment C; however, site plans or ground elevations for both sites have not been provided.

Subsurface Conditions

REGIONAL GEOLOGY

We reviewed the geologic maps prepared by the U.S. Department of the Interior and U.S. Geological Survey (USGS) in cooperation with the Commonwealth of Massachusetts, Massachusetts Geological Survey, and Executive Office for Administration and Finance. The base map consists of the USGS 7.5-minute quadrangle boundaries. The Site and Alternative Site are located within the Westford 7.5-minute quadrangle. The

surficial soils in the vicinity of the Site are mapped from north to south as coarse glacial stratified deposits, swamp deposits consisting of peat and fine-grained soils, and glacial till. Bedrock outcrops are located to the northwest, east, and south of the Site. Furthermore, the surficial soils in the vicinity of the Alternative Site are mapped as coarse glacial stratified deposits and swamp deposits approach the southeastern boundary. The surficial materials map can be found in Attachment D.

The 1983 Bedrock Geologic Map of Massachusetts (MA Bedrock Map) indicates the bedrock type below the Site and Alternative Site consists of the Nashoba Formation containing schist and gneiss with minor quartzite and marble. Schist and gneiss are typically hard metamorphic rocks. The MA Bedrock Map can be found in Attachment D.

FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD MAP

We reviewed the Flood Insurance Rate Map (FIRM) for the town of Littleton published by the Federal Emergency Management Agency (FEMA), Map No. 25017C0236F, with an effective date of July 7, 2014. The FIRM indicates that the Site and Alternative Site are "Zone X" – unshaded, which are areas "determined to be outside the 500-year floodplain. The eastern and southern sides of the Alternative Site border "Zone A" which are areas "subject to inundation by the one (1) percent annual chance flood [100-year flood]" with base flood elevations of approximately 216 and 218 feet. Base flood elevations are referenced to the North American Vertical Datum of 1988 (NAVD88).

FIELD EXPLORATIONS

Subsurface soil and groundwater conditions at the Site were evaluated by excavating twenty-two (22) test pits (GEO-TP-1 through GEO-TP-16, and GEO-TP-101 through GEO-TP-106). GEO-TP-1 through GEO-TP-16 were advanced on September 25, 2024, to depths ranging from approximately 1.5 to 7.5 feet below existing ground surface (bgs). GEO-TP-101 through GEO-TP-106 were advanced on October 23, 2024, to depths ranging from approximately 5.5 to 12 feet bgs.

Test pits GEO-TP-1 through GEO-TP-16 were excavated by Littleton Department of Public Works (Littleton DPW) using a DEERE 410L excavator. Test pits GEO-TP-101 through GEO-TP-106 were excavated by Machine Time LLC (Machine Time) of Hudson, New Hampshire using a Doosan DX-140 LC excavator. The test pits were continuously monitored by a representative from our firm who examined and classified the soils encountered, obtained representative soil samples, observed groundwater conditions and prepared a detailed log of each exploration. Upon completion of the test pits, the excavations were backfilled with excavated material in lifts and compacted using the excavator bucket.

The approximate locations of the test pits are shown in Figure 1. The test pit logs are presented in Attachment A. The test pit logs are based on our interpretation of the field and laboratory data and indicate the various types of soil and groundwater conditions encountered. The logs also indicate the depths at which these soils or their characteristics change.

SUBSURFACE CONDITIONS

GeoEngineers' understanding of the subsurface conditions is based on the results of our field exploration program. The general subsurface conditions consist of surficial topsoil, overlying fill, glacial till, and bedrock. A buried topsoil layer was also observed in some locations as noted in the logs.

The subsurface soil units encountered in our explorations are described in more detail below:

- **Surface Materials:** The topsoil ranges in thickness from approximately 6 inches to 1 foot, where present. The surficial topsoil generally consists of silty sand with variable amounts of gravel and organics (roots, grass and leaves). Subsoil was encountered in GEO-TP-7 and GEO-TP-10 and consisted of fine to medium sand with variable amounts of silt, gravel and organics (roots). Roots were observed to extend as deep as 7 feet bgs as noted in the logs.
- **Granular Fill:** A layer of reworked natural material was observed overlying a buried topsoil layer in GEO-TP-8, GEO-TP-15, and GEO-TP-101 through GEO-TP-104 starting at depths of approximately 0.5 to 1 foot bgs and ranging in thickness from approximately 1 to 3.5 feet. Fill soils were also encountered below the topsoil, where present, in GEO-TP-3, GEO-TP-4, GEO-TP-9, GEO-TP-11, GEO-TP-13, GEO-TP-14. The granular fill generally consists of fine to medium sand with variable amounts of silt and gravel. Non-soil constituents including asphalt, concrete, coal, ash, ceramic tiles, wood, landscape tarp, plastic, glass and brick were encountered within the fill in GEO-TP-4, GEO-TP-9 and GEO-TP-13.
- **Buried Topsoil:** Buried topsoil was observed in GEO-TP-8, GEO-TP-15, and GEO-TP-101 through GEO-TP-104. Buried topsoil ranged in thickness from approximately 0.25 to 3.5 feet and generally consists of silty sand with variable amounts of gravel and roots.
- **Glacial Till:** The top of the glacial till deposit was encountered across the Site between approximately 0.5 and 7 feet bgs. The till consists of fine to medium sand with varying amounts of silt and gravel. Frequent cobbles and boulders were encountered in the till. GEO-TP-3 was terminated at approximately 5.25 feet bgs, GEO-TP-8 was terminated at approximately 4.25 feet bgs, GEO-TP-9 was terminated at approximately 5.75 feet bgs, GEO-TP-11 was terminated at approximately 6.25 feet bgs, and GEO-TP-101 was terminated at approximately 9.5 feet bgs due to refusal on boulders.
- **Bedrock:** The top of bedrock was encountered across the Site between approximately 1.25 and 7.5 feet bgs. Bedrock was encountered in GEO-TP-6, GEO-TP-7, GEO-TP-10, GEO-TP-102 and GEO-TP-103, as indicated on the logs.

Groundwater was not observed during the explorations, and it is expected to vary at both sites between approximately 5 to 15 feet bgs, depending on proximity to nearby wetlands.

Primary Geotechnical Considerations for Redevelopment

Based on our understanding of the subsurface conditions at the Sites and the proposed design concepts, it is our opinion that the primary geotechnical considerations associated with design and construction of the new school are as follows:

- We anticipate the proposed school building (either the addition to the existing building or new construction) could be supported by conventional, shallow spread footings and a slab-on-grade bearing

directly on natural, inorganic, granular soils or on compacted structural fill bearing directly on natural, inorganic, granular soils. Footings should not bear directly on bedrock or a combination of soil and bedrock. If the option to add on to the existing building is selected, proposed footings should not bear at the same depth of existing footings to avoid over-loading the existing footings.

  - For preliminary design purposes, the structural engineer should assume the footings should be proportioned based on a net allowable bearing pressure of three (3) kips per square foot (KSF) and seismic site class D.
  - Existing fill (if encountered) below proposed footings should be over-excavated within the zone of influence (ZOI) of footings. The ZOI is taken as a 1H:1V line projecting outward and downward from the edges of the footings.

- For preliminary design purposes, the structural engineer should assume the slab-on-grade should be designed based on a subgrade modulus of reaction of 150 pounds per cubic inch (PCI), provided the buildings are constructed with a 12-inch-thick layer of base course consisting of MassDOT M2.01.7, dense-graded crushed stone.
  - Existing fill below the slab-on-grade can remain in place provided the material is free of debris and proof-compacted until visibly firm and stable. Any areas observed to be loose or unstable should be over-excavated and replace with structural fill.
- When evaluating the multiple conceptual site plans, we recommend the following earthwork considerations as described below.
  - Shallow bedrock was encountered along the west end and south of the potential new building footprint. Bedrock outcrops are mapped to the northwest, east, and south of the Site but not in the vicinity of the Alternative Site. If encountered, bedrock should be removed at least 5 feet below the proposed finished floor elevation to allow for construction of the footings and sub-slab utilities. Additional test borings/test pits should be performed to evaluate the presence of bedrock once the proposed grades and building footprint are resolved.
  - Existing utilities should be removed within the zone of influence of the proposed building footprints.
  - Topsoil and fill containing organics are considered unsuitable for reuse in building areas as well as proposed pavement areas and should be removed in their entirety. Topsoil and fill containing organics can be re-used in landscape areas.
- Additional explorations should be advanced to further understand the subsurface conditions within the building pad at the selected Site and to provide final design recommendations for foundations.
- Borings and/or test pits should also be advanced in future development areas (retaining walls, stormwater management areas, pavement areas, etc.) as the design plans are progressed.

Limitations

We have prepared this memorandum for the exclusive use of Studio G Architects, Inc. for the Shaker Lane Elementary School project at 35 Shaker Lane or 57 Russell Street in Littleton, Massachusetts. This memorandum is not intended for use by others and the information contained herein is not applicable to other sites. No other party may rely on the product of our services unless we agree in advance, and in writing, to such reliance. This is to provide our firm with reasonable protection against open-ended liability

claims by third parties with whom there would otherwise be no contractual limits to their actions. Additional details of our limitations can be found in Attachment A.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted geotechnical engineering practices in this area at the time this memorandum was prepared. No conclusions, recommendations, and opinions presented in this memorandum are based on our professional knowledge, judgement, and experience. No warranty or other conditions, expressed or implied, should be understood.

Any electronic form, facsimile, or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments should be considered a copy of the original document. The original document is stored by GeoEngineers USA, PC and will serve as the official document of record.

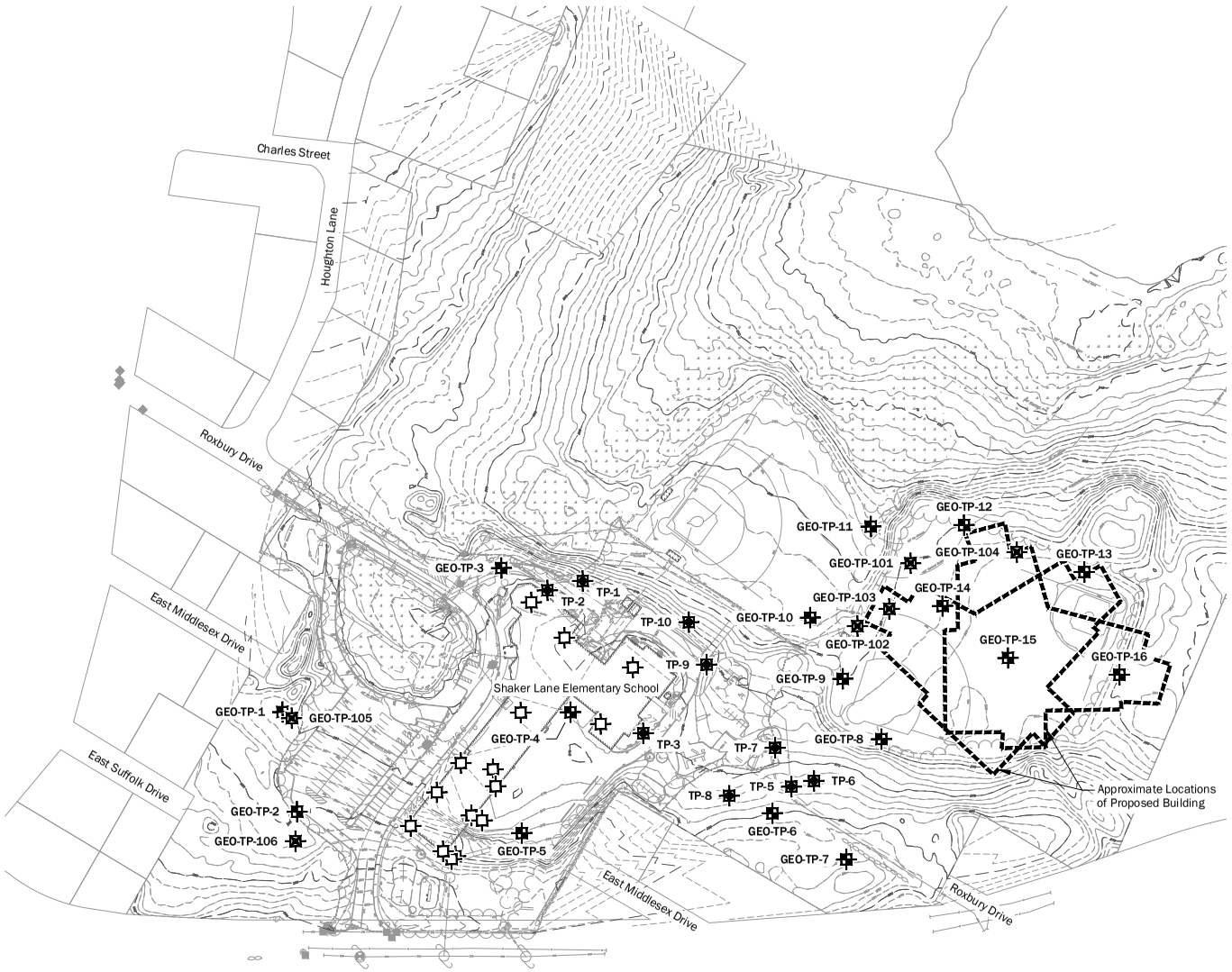
Please refer to the attachment titled "Limitations and Guidelines for Use" for additional information pertaining to the use of this memorandum.

We trust this memorandum meets the current project needs. Please contact us at 617.749.9220 if you have any questions.

ERH:ACB:HPC:PRM:dt

Attachments:
Figure 1. Exploration Location Plan
Attachment A. Test Pit Logs
Attachment B. Limitations and Guidelines for Use
Attachment C. Conceptual Plans by Studio G Architects, Inc.
Attachment D. Geologic Maps of Massachusetts

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.



Legend

- Proposed Building
- GEO-TP-101 — Test Pit by GeoEngineers, October 2024
- GEO-TP-3A — Test Pit by GeoEngineers, September 2024
- TP-1 — Test Pit by Others, 1997
- Historical Test Pit by Others

Source(s):
- Survey from Samiotes, dated 8/12/2024

Coordinate System: MA State Plane, Mainland Zone, NAD83, US Foot

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

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Feet

Exploration Location Plan

Geotechnical Memorandum
Shaker Lane Elementary School
Littleton, Massachusetts

GeoEngineers USA | Figure 1

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Attachment A
Test Pit Logs

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata

Approximate contact between soil strata

Material Description Contact

Contact between geologic units

Contact between soil of the same geologic unit

Sampler Symbol Descriptions

Modified California Sampler (6-inch sleeve) or Dames & Moore

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PL	Point load test
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
UU	Unconsolidated undrained triaxial compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

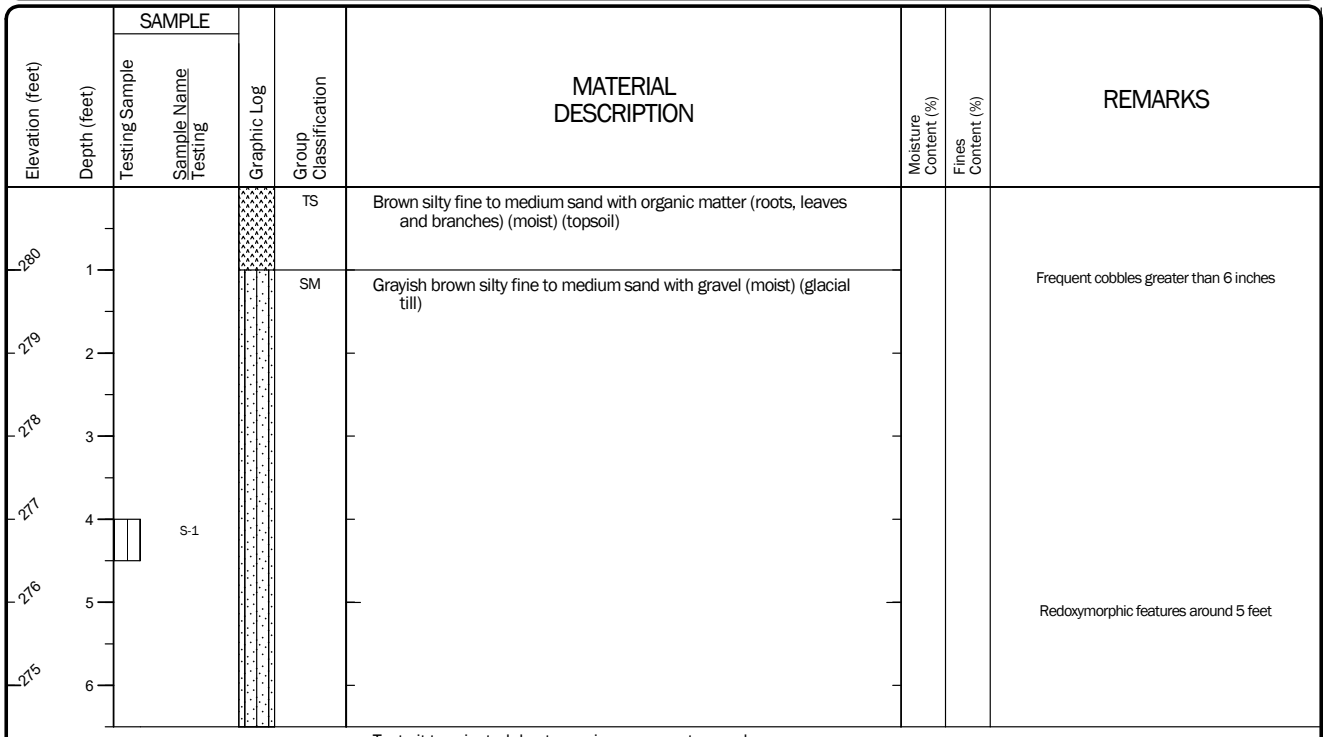
Key to Exploration Logs

GeoEngineers USA

Figure A-1

Rev. 03/2024

Date Excavated	9/25/2024	Total Depth (ft)	6.5	Logged By VAT Checked By HPC	Excavator Littleton DPW Equipment DEERE 410L	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	281 NAVD88	Easting (X) Northing (Y)	667245.0313 3018220.264	Coordinate System Horizontal Datum	MA State Plane North NAD83 (feet)	



Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Log of Test Pit GEO-TP-1

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-2
Sheet 1 of 1

Date:1/21/24 Path:P:\27\27534001\GINT\27534001.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEI8_TESTPIT_1P_GEOTEC_%F

Date Excavated	9/25/2024	Total Depth (ft)	7	Logged By VAT Checked By HPC	Excavator Littleton DPW Equipment DEERE 410L	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	285 NAVD88	Easting (X) Northing (Y)	667363.6743 3018132.856	Coordinate System Horizontal Datum	MA State Plane North NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
284	1		S-1		TS	Brown silty fine to medium sand with organic matter (roots, leaves and branches) (topsoil)			
					SM	Light brown silty fine to medium sand with gravel (moist) (glacial till)			Frequent cobbles greater than 6 inches
283	2								
282	3								
281	4								
280	5								
279	6								
278	7					Test pit terminated due to maximum excavator reach			

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Log of Test Pit GEO-TP-2

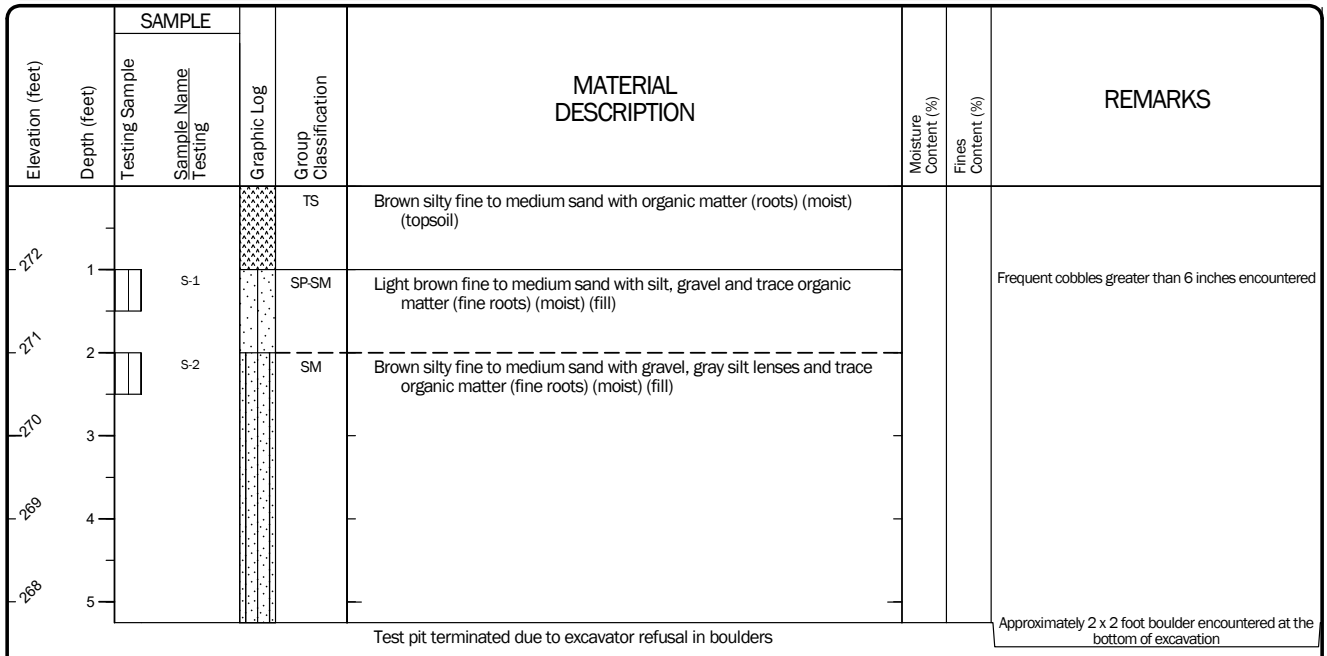
GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-3
Sheet 1 of 1

Date:11/21/24 Path:P:\27\27534001\GINT\27534001000.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GBI8_TESTPIT_1P_GEOTEC_%F

Date Excavated	9/25/2024	Total Depth (ft)	5.25	Logged By	VAT	Excavator	Littleton DPW	Groundwater not observed
				Checked By	HPC	Equipment	DEERE 410L	Caving not observed
Surface Elevation (ft)	273	Easting (X)	667320.3222	Coordinate System	MA State Plane North			
Vertical Datum	NAVD88	Northing (Y)	3018595.674	Horizontal Datum	NAD83 (feet)			



Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Log of Test Pit GEO-TP-3

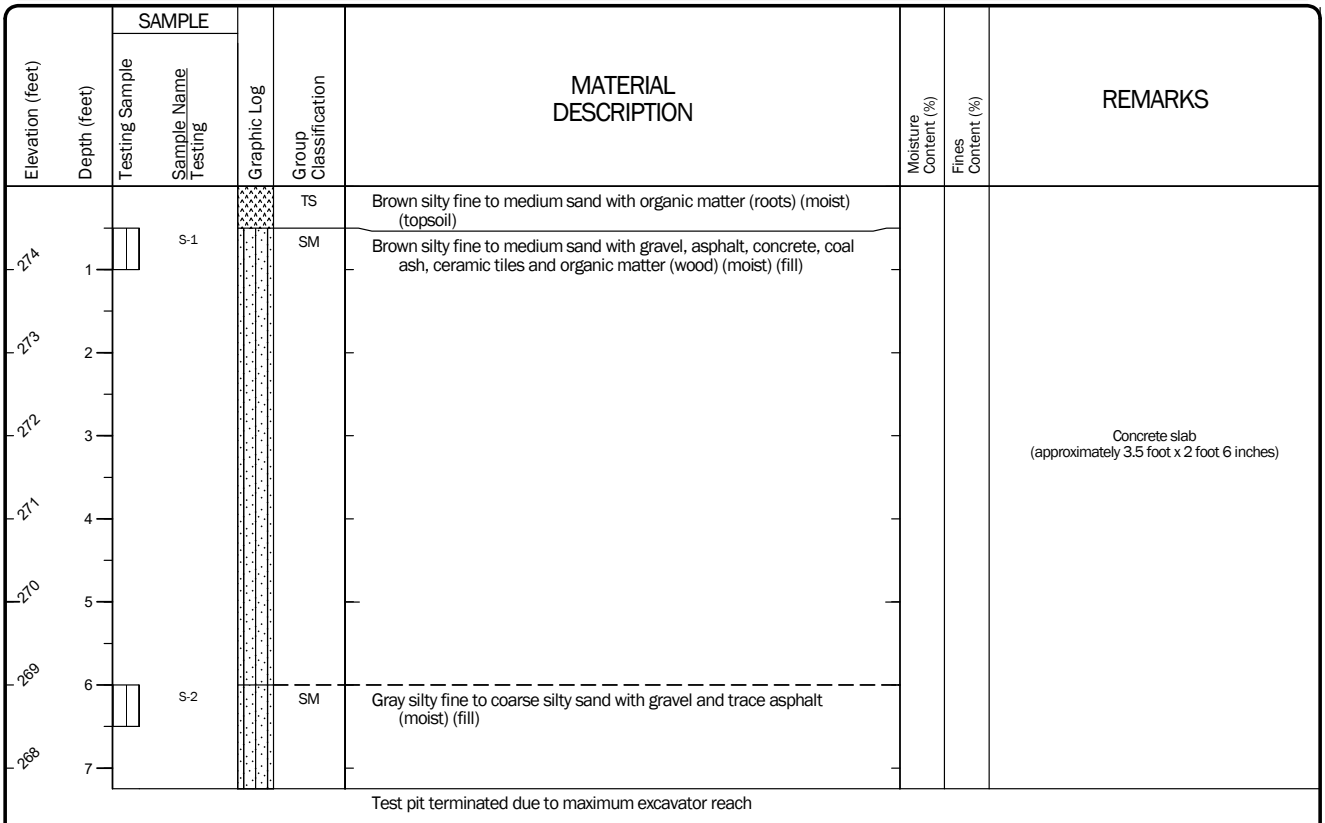
GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-4
Sheet 1 of 1

Date:11/21/24 Path:P:\27\27534001\GINT\27534001.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GBI8_TESTPIT_1P_GEOTEC_%F

Date Excavated	9/25/2024	Total Depth (ft)	7.25	Logged By VAT Checked By HPC	Excavator Littleton DPW Equipment DEERE 410L	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	275 NAVD88	Easting (X) Northing (Y)	667541.3846 3018519.25	Coordinate System Horizontal Datum	MA State Plane North NAD83 (feet)	



Test pit terminated due to maximum excavator reach

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Log of Test Pit GEO-TP-4

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-5
Sheet 1 of 1

Date:11/21/24 Path:P:\27\27534001\GINT\27534001.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GBI8_TESTPIT_1P_GEOTEC_%F

Date Excavated	9/25/2024	Total Depth (ft)	6.25	Logged By VAT Checked By HPC	Excavator Littleton DPW Equipment DEERE 410L	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	278 NAVD88	Easting (X) Northing (Y)	667616.9438 3018344.356	Coordinate System Horizontal Datum	MA State Plane North NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
277	1				TS	Brown silty fine to medium sand with organic matter (roots) (moist)			Frequent cobbles greater than 6 inches
276	2		S-1		SM	Gray silty fine to medium sand with gravel (moist) (glacial till)			
275	3								
274	4								Boulders (approximately 1 x 1.5 foot and 3 x 2 foot) encountered; Redoxymorphic features observed at 4 feet
273	5								
272	6					Test pit terminated due to maximum excavator reach			

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Date:11/21/24 Path:P:\27\27534001\GINT\27534001.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEI8_TESTPIT_1P_GEOTEC_%F

Log of Test Pit GEO-TP-5

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-6
Sheet 1 of 1

Date Excavated	9/25/2024	Total Depth (ft)	4	Logged By VAT Checked By HPC	Excavator Littleton DPW Equipment DEERE 410L	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	280 NAVD88	Easting (X) Northing (Y)	667854.0008 3018625.094	Coordinate System Horizontal Datum	MA State Plane North NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
279	1				TS	Brown silty fine to medium sand with organic matter (roots) (moist) (topsoil)			
					SP-SM	Light brown fine to medium sand with silt and gravel (moist) (glacial till)			
278	2								
277	3								
276	4					Test pit terminated due to excavator refusal in bedrock			Bedrock encountered at 4 feet

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Log of Test Pit GEO-TP-6

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-7
Sheet 1 of 1

Date:11/21/24 Path:P:\27\27534001\GINT\27534001.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEI8_TESTPIT_1P_GEOTEC_%F

Date Excavated	9/25/2024	Total Depth (ft)	1.5	Logged By	VAT	Excavator	Littleton DPW	Groundwater not observed
				Checked By	HPC	Equipment	DEERE 410L	Caving not observed

Surface Elevation (ft)	282	Easting (X)	667977.9751	Coordinate System	MA State Plane North
Vertical Datum	NAVD88	Northing (Y)	3018654.313	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
281	1		S-1		TS	Brown silty fine to medium sand with organic matter (leaves and roots) (moist) (topsoil)			
					SP	Orange-brown fine sand with trace silt and organic matter (fine roots) (moist) (subsoil)			Bedrock encountered at 1¼ bgs

Test pit terminated due to excavator refusal in bedrock

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Date:11/21/24 Path:P:\27\27534001\GINT\27534001000.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

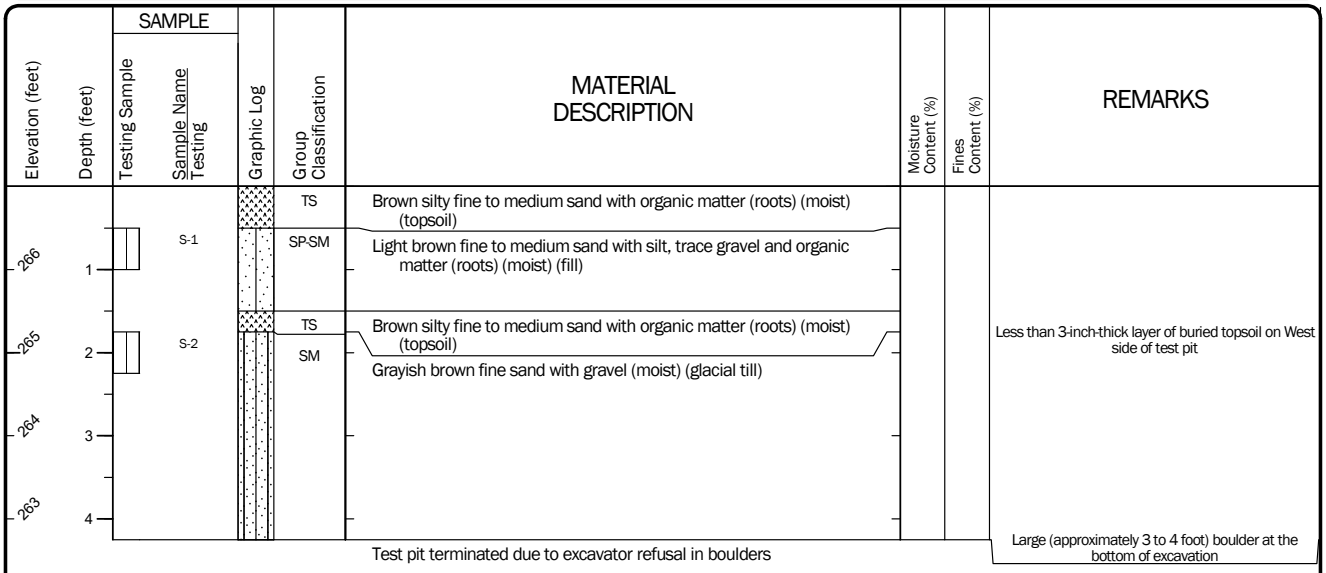
Log of Test Pit GEO-TP-7

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-8
Sheet 1 of 1

Date Excavated	9/25/2024	Total Depth (ft)	4.25	Logged By VAT Checked By HPC	Excavator Littleton DPW Equipment DEERE 410L	Groundwater not observed Caving not observed
Surface Elevation (ft)	267	Easting (X)	667888.9447	Coordinate System	MA State Plane North	
Vertical Datum	NAVD88	Northing (Y)	3018814.621	Horizontal Datum	NAD83 (feet)	



Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Date:11/21/24 Path:P:\27\27534001\GINT\27534001000.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Log of Test Pit GEO-TP-8

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-9
Sheet 1 of 1

Date Excavated	9/25/2024	Total Depth (ft)	7	Logged By	VAT	Excavator	Littleton DPW	Groundwater not observed
				Checked By	HPC	Equipment	DEERE 410L	Caving not observed
Surface Elevation (ft)	265	Easting (X)	667786.5086	Coordinate System	MA State Plane North
Vertical Datum	NAVD88	Northing (Y)	3018836.435	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
264	1		S-1		TS	Brown silty fine to medium sand with organic matter (roots) (moist) (topsoil)			
					SP	Light to orange brown fine sand with trace silt and trace gravel (moist)			
263	2								Redoxymorphic features
262	3		S-2		SP-SM	Grayish brown fine to medium sand with gravel (moist) (glacial till)			
261	4								
260	5								Frequent cobbles greater than 6 inches encountered
259	6								
258	7					Test pit terminated due to maximum excavator reach			

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Date:11/21/24 Path:P:\27\27534001\GINT\275340100.GPJ DBLibrary/Library\GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Log of Test Pit GEO-TP-9

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-10
Sheet 1 of 1

Date Excavated	9/25/2024	Total Depth (ft)	3	Logged By	VAT	Excavator	Littleton DPW	Groundwater not observed
				Checked By	HPC	Equipment	DEERE 410L	Caving not observed

Surface Elevation (ft)	264	Easting (X)	667689.4598	Coordinate System	MA State Plane North
Vertical Datum	NAVD88	Northing (Y)	3018865.541	Horizontal Datum	NAD83 (feet)

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
263	1		S-1		TS	Brown silty fine to medium sand with organic matter (roots) (moist) (topsoil)			
					SP-SM	Light brown fine to medium sand with silt and trace gravel (moist) (subsoil)			
			S-2		SP	Grayish brown fine to medium sand with trace silt and gravel (moist) (glacial till)			
262	2								
261	3					Test pit terminated due to excavator refusal in bedrock			Bedrock encountered at 3 feet

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Date:11/21/24 Path:P:\27\27534001\GINT\27534001000.GPJ DBLibrary/Library\GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

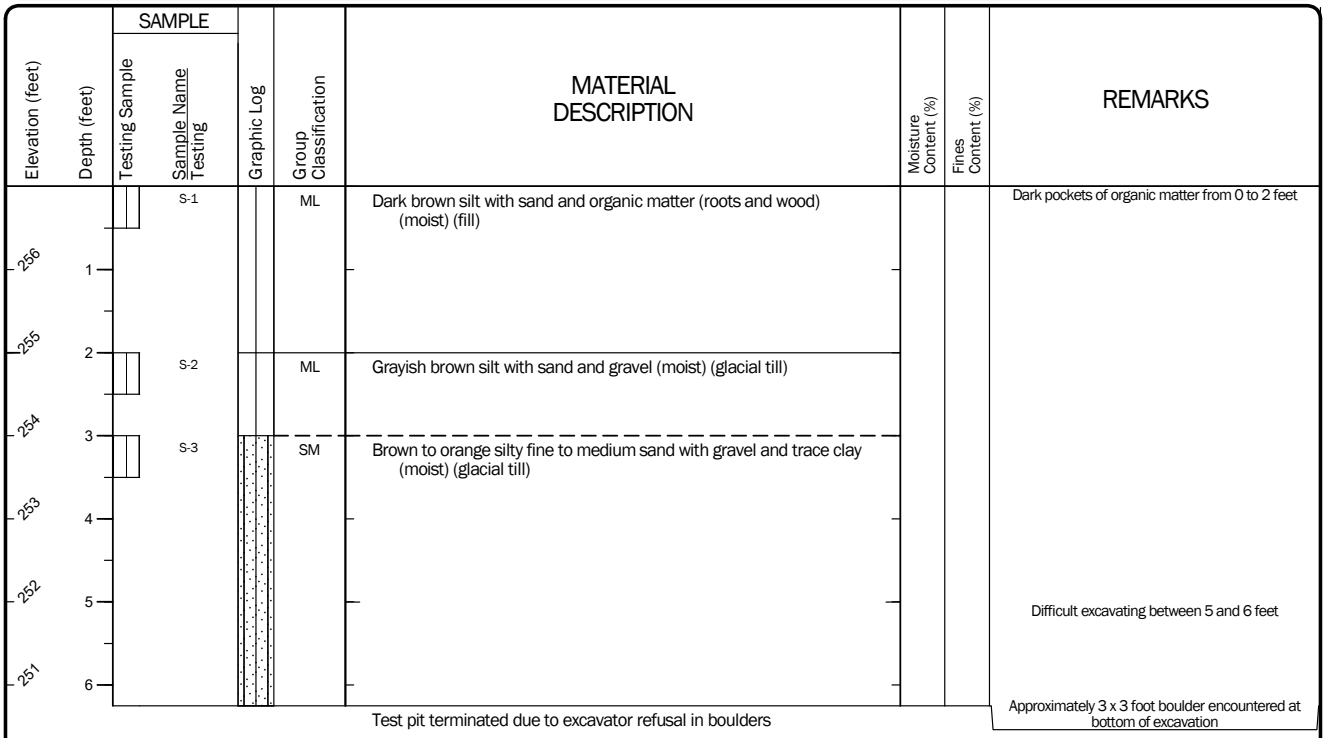
Log of Test Pit GEO-TP-10

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-11
Sheet 1 of 1

Date Excavated	9/25/2024	Total Depth (ft)	6.25	Logged By VAT Checked By HPC	Excavator Littleton DPW Equipment DEERE 410L	Groundwater not observed Caving not observed
Surface Elevation (ft)	257	Easting (X)	667657.0368	Coordinate System	MA State Plane North	
Vertical Datum	NAVD88	Northing (Y)	3019022.234	Horizontal Datum	NAD83 (feet)	



Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Log of Test Pit GEO-TP-11

GeoEngineers USA

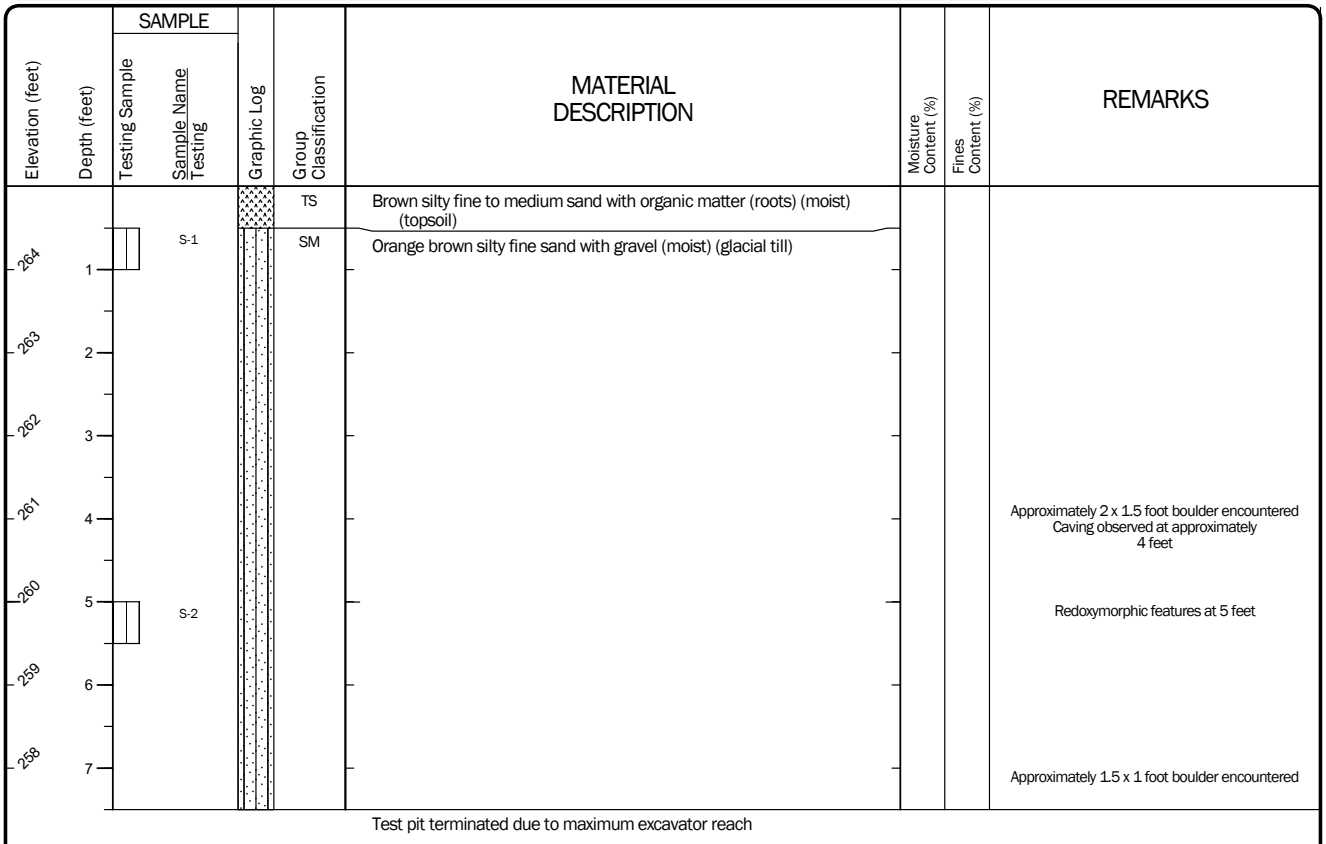
Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-12
Sheet 1 of 1

Date:11/21/24 Path:P:\27\27534001\GINT\27534001.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Date Excavated	9/25/2024	Total Depth (ft)	7.5	Logged By	VAT	Excavator	Littleton DPW	Groundwater not observed
				Checked By	HPC	Equipment	DEERE 410L	See "Remarks" section for caving observed

Surface Elevation (ft)	265	Easting (X)	667751.3252	Coordinate System	MA State Plane North
Vertical Datum	NAVD88	Northing (Y)	3019120.681	Horizontal Datum	NAD83 (feet)



Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Date:11/21/24 Path:P:\27\27534001\GINT\27534001000.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Log of Test Pit GEO-TP-12

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-13
Sheet 1 of 1

Date Excavated	9/25/2024	Total Depth (ft)	7.25	Logged By Checked By	VAT HPC	Excavator Equipment	Littleton DPW DEERE 410L	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	267 NAVD88			Easting (X) Northing (Y)	667923.7891 3019197.3	Coordinate System Horizontal Datum	MA State Plane North NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
266	1		S-1		SP-SM	Brown fine to medium sand with silt, gravel, organic matter (roots), trace plastic, asphalt and ash (moist) (fill)			
265	2				SP	Brown fine to medium sand with trace silt and trace organic matter (burned wood), landscape tarp (moist) (fill)			
264	3		S-2						
263	4								
262	5		S-3		SP-SM	Brown fine to medium sand with silt and organic matter (roots) (moist) (glacial till)			Frequent cobbles, greater than 6 inches
261	6								
260	7								

Test pit terminated due to maximum excavator reach

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Date:11/21/24 Path:P:\27\27534001\GINT\27534001.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Log of Test Pit GEO-TP-13

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-14
Sheet 1 of 1

Date Excavated	9/25/2024	Total Depth (ft)	6.75	Logged By Checked By	VAT HPC	Excavator Equipment	Littleton DPW DEERE 410L	Groundwater not observed See "Remarks" section for caving observed
Surface Elevation (ft) Vertical Datum	266 NAVD88			Easting (X) Northing (Y)	667813.372 3019015.024	Coordinate System Horizontal Datum	MA State Plane North NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
265	1		S-1		TS	Brown silty fine to medium sand with organic matter (roots) (moist) (topsoil)			
					SP-SM	Light brown fine to medium sand with silt and gravel (moist) (fill)			
264	2								
263	3								Frequent boulders (approximately 1.5 x 2 foot) throughout
262	4		S-2		SM	Brown silty fine to medium sand with gravel and organic matter (roots and branches) (moist) (fill)			
261	5								Caving observed at approximately 4½ feet
260	6		S-3		SP-SM	Brown fine to medium sand with silt, gravel and organic matter (wood) (moist) (fill)			Difficulty excavating from 5½ to 7 feet due to cobbles/boulders

Test pit terminated due to maximum excavator reach

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Date:11/21/24 Path:P:\27\27534001\GINT\27534001.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Log of Test Pit GEO-TP-14

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-15
Sheet 1 of 1

Date Excavated	9/25/2024	Total Depth (ft)	6.25	Logged By VAT Checked By HPC	Excavator Littleton DPW Equipment DEERE 410L	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	268 NAVD88	Easting (X) Northing (Y)	667934.6563 3019029.664	Coordinate System Horizontal Datum	MA State Plane North NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
267	1		S-1		TS	Brown silty fine to medium sand with organic matter (roots) (moist) (topsoil)			
					SP-SM	Light brown fine to medium sand with silt, gravel, organic matter (roots and wood) and trace cobbles (moist) (fill)			Frequent cobbles greater than 6 inches throughout
266	2								
265	3				SM	Dark brown silty fine to medium sand with organic matter (roots) (moist) (topsoil)			
264	4				SP-SM	Light to orange brown fine to medium sand with silt, gravel, organic matter (roots) and trace cobbles (moist) (glacial till)			Redoxymorphic features around 4 feet bgs
263	5		S-2						
262	6								

Test pit terminated due to maximum excavator reach

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Date:11/21/24 Path:P:\27\27534001\GINT\27534001000.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Log of Test Pit GEO-TP-15

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-16
Sheet 1 of 1

Date Excavated	9/25/2024	Total Depth (ft)	5.75	Logged By Checked By	VAT HPC	Excavator Equipment	Littleton DPW DEERE 410L	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	265 NAVD88			Easting (X) Northing (Y)	668066.6786 3019128.13	Coordinate System Horizontal Datum	MA State Plane North NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
264	1		S-1		SM	Brown silty fine to medium sand with organic matter (roots) and landscape tarp, plastic, glass, brick and asphalt (moist) (fill)			Frequent cobbles
263	2		S-2		SP-SM	Light brown fine sand with silt and gravel (moist) (glacial till)			
262	3								
261	4								
260	5								

Test pit terminated due to excavator refusal in boulders

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on GPS-Recreational grade. Vertical approximated based on GPS-Recreational grade.

Date:11/21/24 Path:P:\27\27534001\GINT\27534001.GPJ DBLibrary/Library\GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Log of Test Pit GEO-TP-16

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-17
Sheet 1 of 1

Date Excavated	10/23/2024	Total Depth (ft)	9.5	Logged By NHP Checked By HPC	Excavator Equipment Doosan DX140LC	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	265 NAVD88	Easting (X) Northing (Y)	667736 3019026	Coordinate System Horizontal Datum	MA State Plane Mainland NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
264	1		S-1		TS	Brown silty fine to medium sand with trace gravel and organic matter (grass, large roots) (moist) (topsoil)			Frequent cobbles (various sizes up to 1'x1') and boulders (1½' x 2', 1' x 2')
			S-2		SP-SM	Light brown fine to medium sand with silt and trace gravel (moist) (fill)			
263	2								
262	3								
261	4		S-3		SM	Brown silty fine to medium sand with organic matter (roots and peat) (moist) (buried topsoil)			
260	5		S-4		SP-SM	Light brown fine to medium sand with silt, trace gravel and organic matter (roots) (moist) (buried subsoil)			
259	6								
258	7		S-5		SM	Light gray silty fine to medium sand with gravel (moist) (glacial till)			
257	8								
256	9								

Test pit terminated at 9½ feet due to excavator refusal on boulders

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Date:11/21/24 Path:P:\27\27534001\GINT\27534001GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Log of Test Pit GEO-TP-101

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-18
Sheet 1 of 1

Date Excavated	10/23/2024	Total Depth (ft)	5.25	Logged By NHP Checked By HPC	Excavator Equipment Doosan DX140LC	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	264 NAVD88	Easting (X) Northing (Y)	667747 3018906	Coordinate System Horizontal Datum	MA State Plane Mainland NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
			S-1		TS	Brown silty fine to medium sand with trace gravel and organic matter (roots, leaves) (moist) (topsoil)			
263	1		S-2		SP-SM	Light brown fine to medium sand with silt, trace gravel and organic matter (roots) (moist) (fill)			Frequent cobbles
262	2								
			S-3		SM	Brown silty fine to medium sand, trace gravel and organic matter (roots) (moist) (buried topsoil)			
261	3				SP-SM	Light brown fine to medium sand with silt, trace gravel and organic matter (roots) (moist) (buried subsoil)			
260	4		S-4		SM	Grayish brown silty fine to medium sand, trace gravel (moist) (glacial till)			
259	5								

Test pit terminated at 5¼ feet due to excavator refusal in bedrock

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Date:11/21/24 Path:P:\27\27534001\GINT\27534001000.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Log of Test Pit GEO-TP-102

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-19
Sheet 1 of 1

Date Excavated	10/23/2024	Total Depth (ft)	7.5	Logged By NHP Checked By HPC	Excavator Equipment Doosan DX140LC	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	265 NAVD88	Easting (X) Northing (Y)	667762 3018957	Coordinate System Horizontal Datum	MA State Plane Mainland NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
264	1		S-1		TS	Brown silty fine to medium sand with trace gravel and organic matter (roots) (moist) (topsoil)			
			S-2		SP	Light brown fine to medium sand with trace silt and trace gravel (moist) (fill)			Frequent cobbles
263	2		S-3		SM	Brown silty fine to medium sand with organic matter (roots) (moist) (buried topsoil)			
262	3								
261	4								
260	5								
259	6		S-4		SM	Gray silty fine to medium sand with gravel and trace organic matter (roots) (moist) (glacial till)			
258	7								

Test pit terminated at 7½ feet due to excavator refusal in bedrock

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Date:11/21/24 Path:P:\27\27534001\GINT\27534001.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Log of Test Pit GEO-TP-103

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-20
Sheet 1 of 1

Date Excavated	10/23/2024	Total Depth (ft)	10.5	Logged By NHP Checked By HPC	Excavator Equipment Doosan DX140LC	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	267 NAVD88	Easting (X) Northing (Y)	667834 3019148	Coordinate System Horizontal Datum	MA State Plane Mainland NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
266	1		S-1		TS	Brown silty fine to medium sand with gravel and organic matter (roots) (moist) (topsoil)			
			S-2		SP	Light brown sand with trace silt (moist) (fill)			
265	2								
264	3		S-3		SM	Brown silty fine to medium sand with organic matter (roots) (moist) (buried topsoil)			
			S-4		SM	Orange-brown silty fine to medium sand with trace organic matter (roots) (moist) (glacial till)			
263	4								
262	5								
261	6								
260	7								Boulders (3'x3'x2' and 4'x3'x3')
259	8								
258	9								
257	10								

Test pit terminated at 10½ feet due to target depth achieved

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Log of Test Pit GEO-TP-104

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-21
Sheet 1 of 1

Date:11/21/24 Path:P:\27\27534001\GINT\27534001.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Date Excavated	10/23/2024	Total Depth (ft)	12	Logged By NHP Checked By HPC	Excavator Equipment Doosan DX140LC	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	280 NAVD88	Easting (X) Northing (Y)	667261 3018224	Coordinate System Horizontal Datum	MA State Plane Mainland NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
280	0		S-1		TS	Brown silty fine to medium sand with organic matter (roots) (moist) (topsoil)			
279	1		S-2		SM	Light brown silty fine to medium sand, trace gravel and organic matter (fine roots) (moist) (subsoil)			Frequent cobbles
278	2				SM	Gray silty fine to medium sand with silt and gravel (moist) (glacial till)			
277	3		S-3						
276	4								
275	5								
274	6								
273	7								
272	8								
271	9								
270	10								
269	11								
268	12		S-4						

Test pit terminated at 12 feet due to target depth achieved

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Date:11/21/24 Path:P:\27\27534001\GINT\27534001000.GPJ DBLibrary/Library:GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Log of Test Pit GEO-TP-105

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-22
Sheet 1 of 1

Date Excavated	10/23/2024	Total Depth (ft)	12	Logged By NHP Checked By HPC	Excavator Equipment Doosan DX140LC	Groundwater not observed Caving not observed
Surface Elevation (ft) Vertical Datum	286 NAVD88	Easting (X) Northing (Y)	667393 3018101	Coordinate System Horizontal Datum	MA State Plane Mainland NAD83 (feet)	

Elevation (feet)	Depth (feet)	SAMPLE: Testing Sample	SAMPLE: Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
285	1		S-1		TS	Brown silty fine to medium sand with trace gravel and organic matter (roots) (moist) (topsoil)			
			S-2		SP-SM	Grayish brown fine to medium sand with silt and gravel (moist) (fill)			Frequent cobbles
284	2								
283	3		S-3		SM	Gray silty fine to medium sand with gravel (moist) (glacial till)			
282	4								
281	5								
280	6								
279	7								
278	8								
277	9								
276	10								
275	11								
274	12		S-4						

Test pit terminated at 12 feet due to target depth achieved

Notes: See Figure A-1 for explanation of symbols.
The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to ½ foot.
Coordinates Data Source: Horizontal approximated based on Topographic Survey. Vertical approximated based on Topographic Survey.

Date:11/21/24 Path:P:\27\27534001\GINT\275340100.GPJ DBLibrary/Library\GEOUSA_DF_STD_US.GLB/GEB_TESTPIT_1P_GEOTEC_%F

Log of Test Pit GEO-TP-106

GeoEngineers USA

Project: Shaker Lane Elementary School
Project Location: Littleton, Massachusetts
Project Number: 27534-001-00

Figure A-23
Sheet 1 of 1

Attachment B
Limitations and Guidelines for Use

Attachment B
Limitations and Guidelines For Use[1]

This attachment provides information to help you manage your risks with respect to the use of this memorandum.

READ THESE PROVISIONS CLOSELY

It is important to recognize that the geoscience practices (geotechnical engineering, geology, and environmental science) rely on professional judgment and opinion to a greater extent than other engineering and natural science disciplines, where more precise and/or readily observable data may exist. To help clients better understand how this difference pertains to our services, GeoEngineers includes the following explanatory "limitations" provisions in its reports. Please confer with GeoEngineers if you need to know more how these "Limitations and Guidelines for Use" apply to your project or site.

GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES, PERSONS, AND PROJECTS

This memorandum has been prepared for Studio G Architects, Inc., for the Shaker Lane Elementary School project located at 35 Shaker Lane or 57 Russell Street in Littleton, Massachusetts, specifically identified in the memorandum. The information contained herein is not applicable to other sites or projects.

GeoEngineers structures its services to meet the specific needs of its clients. No party other than the party to whom this memorandum is addressed may rely on the product of our services unless we agree to such reliance in advance and in writing. Within the limitations of the agreed scope of services for the Project, and its schedule and budget, our services have been executed in accordance with our email authorization with Studio G Architects, Inc. dated July 19, 2024 and generally accepted geotechnical practices in this area at the time this memorandum was prepared. We do not authorize, and will not be responsible for, the use of this memorandum for any purposes or projects other than those identified in the memorandum.

A GEOTECHNICAL ENGINEERING OR GEOLOGIC REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

This memorandum has been prepared for the Shaker Lane Elementary School project located at 35 Shaker Lane or 57 Russell Street in Littleton, Massachusetts. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and memorandum. Unless GeoEngineers specifically indicates otherwise, it is important not to rely on this memorandum if it was:

- Not prepared for you,
- Not prepared for your project,
- Not prepared for the specific site explored, or

1 Developed based on material provided by GBA, GeoProfessional Business Association; www.geoprofessional.org.

- Completed before important project changes were made.

For example, changes that can affect the applicability of this memorandum include those that affect:

- The function of the proposed structure;
- Elevation, configuration, location, orientation, or weight of the proposed structure;
- Composition of the design team; or
- Project ownership.

If changes occur after the date of this memorandum, GeoEngineers cannot be responsible for any consequences of such changes in relation to this memorandum unless we have been given the opportunity to review our interpretations and recommendations. Based on that review, we can provide written modifications or confirmation, as appropriate.

ENVIRONMENTAL CONCERNS ARE NOT COVERED

Unless environmental services were specifically included in our scope of services, this memorandum does not provide any environmental findings, conclusions, or recommendations, including but not limited to, the likelihood of encountering underground storage tanks or regulated contaminants.

SUBSURFACE CONDITIONS CAN CHANGE

This geotechnical or geologic memorandum is based on conditions that existed at the time the study was performed. The findings and conclusions of this memorandum may be affected by the passage of time, by man-made events such as construction on or adjacent to the site, new information or technology that becomes available subsequent to the memorandum date, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. If more than a few months have passed since issuance of our memorandum or work product, or if any of the described events may have occurred, please contact GeoEngineers before applying this memorandum for its intended purpose so that we may evaluate whether changed conditions affect the continued reliability or applicability of our conclusions and recommendations.

GEOTECHNICAL AND GEOLOGIC FINDINGS ARE PROFESSIONAL OPINIONS

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies the specific subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied its professional judgment to render an informed opinion about subsurface conditions at other locations. Actual subsurface conditions may differ, sometimes significantly, from the opinions presented in this memorandum. Our memorandum, conclusions and interpretations are not a warranty of the actual subsurface conditions.

GEOTECHNICAL ENGINEERING RECOMMENDATIONS ARE NOT FINAL

We have developed the following recommendations based on data gathered from subsurface investigation(s). These investigations sample just a small percentage of a site to create a snapshot of the subsurface conditions elsewhere on the site. Such sampling on its own cannot provide a complete and

accurate view of subsurface conditions for the entire site. Therefore, the recommendations included in this memorandum are preliminary and should not be considered final. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for the recommendations in this memorandum if we do not perform construction observation.

We recommend that you allow sufficient monitoring, testing and consultation during construction by GeoEngineers to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes if the conditions revealed during the work differ from those anticipated, and to evaluate whether earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective means of managing the risks associated with unanticipated conditions. If another party performs field observation and confirms our expectations, the other party must take full responsibility for both the observations and recommendations. Please note, however, that another party would lack our project-specific knowledge and resources.

A GEOTECHNICAL ENGINEERING OR GEOLOGIC REPORT COULD BE SUBJECT TO MISINTERPRETATION

Misinterpretation of this memorandum by members of the design team or by contractors can result in costly problems. GeoEngineers can help reduce the risks of misinterpretation by conferring with appropriate members of the design team after submitting the memorandum, reviewing pertinent elements of the design team's plans and specifications, participating in pre-bid and preconstruction conferences, and providing construction observation.

DO NOT REDRAW THE EXPLORATION LOGS

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. The logs included in a geotechnical engineering or geologic memorandum should never be redrawn for inclusion in architectural or other design drawings. Photographic or electronic reproduction is acceptable, but separating logs from the memorandum can create a risk of misinterpretation.

GIVE CONTRACTORS A COMPLETE REPORT AND GUIDANCE

To help reduce the risk of problems associated with unanticipated subsurface conditions, GeoEngineers recommends giving contractors the complete geotechnical engineering or geologic memorandum, including these "Limitations and Guidelines for Use." When providing the memorandum, you should preface it with a clearly written letter of transmittal that:

- Advises contractors that the memorandum was not prepared for purposes of bid development and that its accuracy is limited; and
- Encourages contractors to conduct additional study to obtain the specific types of information they need or prefer.

CONTRACTORS ARE RESPONSIBLE FOR SITE SAFETY ON THEIR OWN CONSTRUCTION PROJECTS

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule, or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and adjacent properties.

BIOLOGICAL POLLUTANTS

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention, or assessment of the presence of Biological Pollutants. Accordingly, this memorandum does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants, and no conclusions or inferences should be drawn regarding Biological Pollutants as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

A Client that desires these specialized services is advised to obtain them from a consultant who offers services in this specialized field.

INFORMATION PROVIDED BY OTHERS

GeoEngineers has relied upon certain data or information provided or compiled by others in the performance of our services. Although we use sources that we reasonably believe to be trustworthy, GeoEngineers cannot warrant or guarantee the accuracy or completeness of information provided or compiled by others.

Attachment C

Conceptual Plans by Studio G Architects, Inc.



Agenda

1. Evaluation Criteria Discussion
2. Option 1: Code Upgrade
3. Option 2.1: Add/Reno
4. Option 2.2: Add/Reno
5. Option 3.1: New Construction
6. Option 3.2: New Construction
7. Option 4.1: Alternate Site
8. Summary & Discussion

studio g architects | Turner & Townsend Heery | ATLANTIC

Design & Site Selection Subcommittee Meeting

Shaker Lane School Project • Littleton Public Schools • Town of Littleton, MA

July 10, 2024

Evaluation Criteria

Site

- Adequate buildable area (excludes wetlands/buffers, setbacks, floodplains, etc)
- Parking & vehicle queueing safe/efficient/ contained on site
- Safe pedestrian access
- Optimizes outdoor program & play spaces
- Extended access to undeveloped nature/ green spaces
- Efficient use of site/integration into site

Cost/Schedule/Construction

- Minimizes MSBA non-reimbursement items
- Construction schedule
- Complexity of phasing
- Impact to educational program/facilities during construction
- Impact to abutters during construction

Sustainability

- Ability to readily meet energy code
- Ease of facility maintenance
- Potential for geothermal system
- Good solar orientation in academic wing
- Effort required to become solar panel-ready
- Ability to support future expansion
- Potential to achieve LEED Silver (increases MSBA reiumbursement rate)
- Potential to achieve Net Zero

Community/Neighborhood

- Affords community use of playgrounds/fields
- Local traffic impacts
- Building mass & scale impacts on abutters/ neighborhood

General

- Likely successful debt exclusion vote
- Geographic location in the district
- Permitting complexity (wetlands, planning, ZBA, Article 97, etc)

Interior Design Factors

- *Delivery of Educational Program*
- *Design flexibility*
- *Connection of interior to exterior spaces*
- *Envelope design sustainability*
- *Compact design*

Rating Scale:	
○ 0	Not preferable
◔ 1	Poor
◑ 2	Satisfactory
◕ 3	Advantageous
● 4	Highly advantageous

Option 1: Code Upgrade of Existing Building



MAIN ENTRY

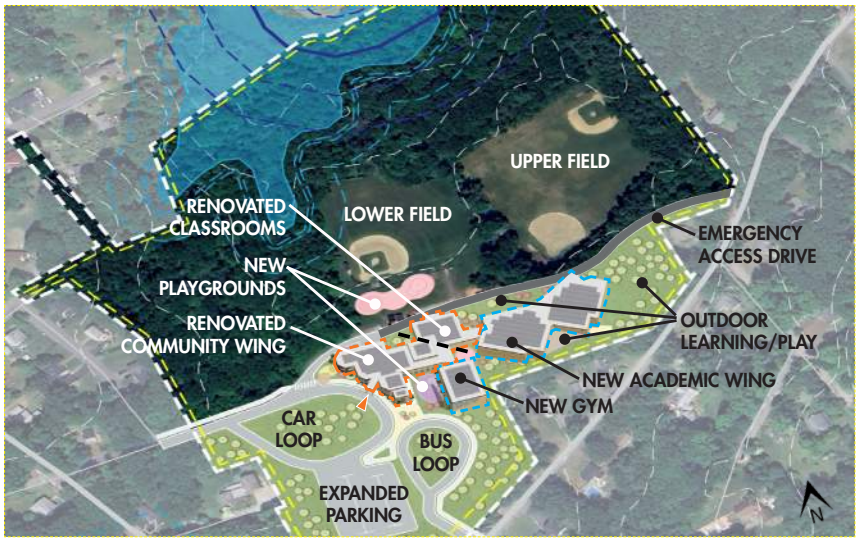
Benefits:

- Building & playground are accessible
- Fire protection improves life safety
- Additional toilet rooms
- Improved envelope reduces operational costs and improves occupant thermal comfort
- Opportunity to install central air conditioning
- Minimal changes to procedures & operations
- Opportunity to install geothermal and/or photovoltaic systems
- Opportunity to install new finishes throughout
- Opportunity to reconfigure vehicular circulation

Drawbacks

- Space program:
  - Will not meet MSBA guidelines
  - Will not meet educational plan or modern teaching methods
  - Will be reduced to accommodate additional toilets / envelope thickness / elevator / etc
- High costs for:
  - Installation / upgrades to fire protection
  - Upgrade envelope (doors, windows, roof, exterior walls)
  - Additional plumbing fixtures
  - Full-sized elevator
- Impacts to building occupants during construction, will require complex phasing and potentially swing space/modulars

Option 2.1: Renovation & Addition to East of Existing SLS



MAIN ENTRY
CONTROLLED ACCESS
EXISTING STRUCTURE TO REMAIN
NEW CONSTRUCTION ADDITION

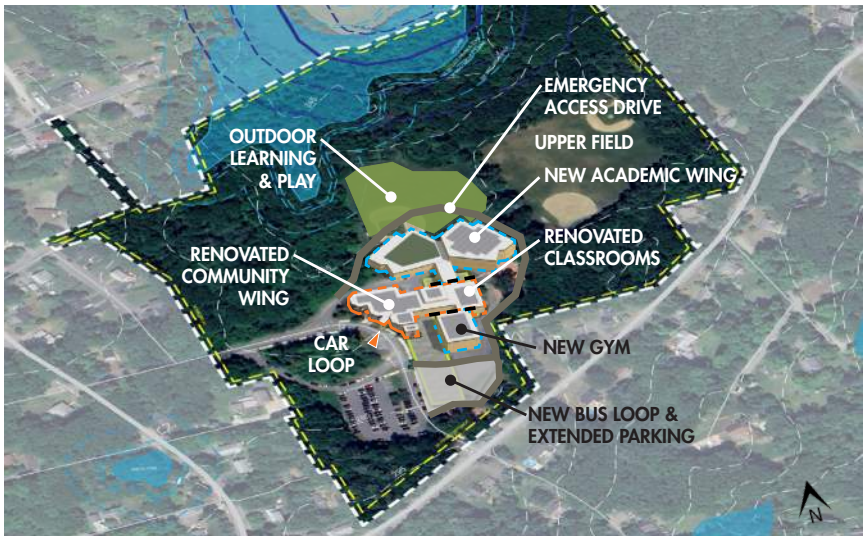
Benefits:

- Space program:
  - Can potentially meet MSBA guidelines
  - Can potentially meet educational plan & modern teaching methods
- Building & playgrounds are accessible
- Fire protection improves life safety
- Improved envelope & HVAC systems reduce operational costs and improves occupant thermal comfort
- Opportunity to install geothermal and/or photovoltaic systems
- Reuse of existing structure
- Improved pedestrian & vehiclar circulation

Drawbacks

- Constrained to existing footprint and building layout of renovated areas
- Renovated areas have high costs for:
  - Installation / upgrades to fire protection
  - Upgrade envelope (doors, windows, roof, exterior walls)
  - Additional plumbing fixtures
- Impacts to abutters and building occupants during construction, will require complex phasing
- Extensive site work at addition, potential ledge

Option 2.2: Renovation & Addition to North of Existing SLS



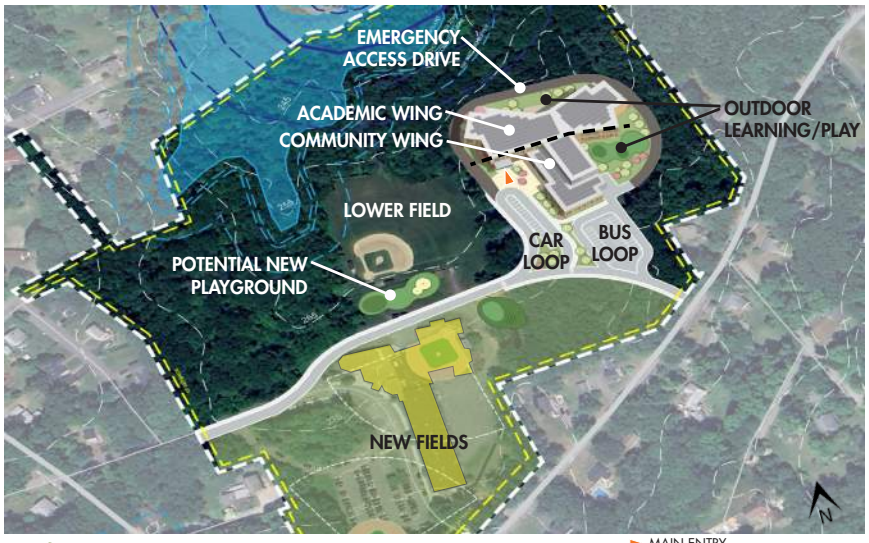
Benefits:

- Space program:
  - Can potentially meet MSBA guidelines
  - Can potentially meet educational plan & modern teaching methods
- Building & playgrounds are accessible
- Fire protection improves life safety
- Improved envelope & HVAC systems reduce operational costs and improves occupant thermal comfort
- Opportunity to install geothermal and/or photovoltaic systems
- Reuse of existing structure
- Improved pedestrian & vehiclar circulation

Drawbacks

- Constrained to existing footprint and building layout of renovated areas
- Renovated areas have high costs for:
  - Installation / upgrades to fire protection
  - Upgrade envelope (doors, windows, roof, exterior walls)
  - Additional plumbing fixtures
- Reduces community access to play fields & reduces size of lower field
- Impacts building occupants during construction, will require complex phasing
- Potentially three stories at addition - zoning issue?
- Construction interferes with existing septic system

Option 3.1: New Construction at Upper Field



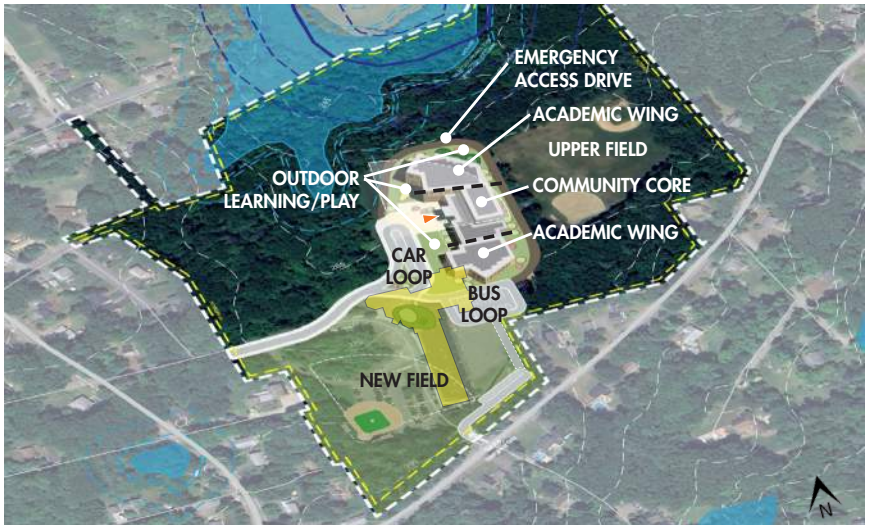
Benefits:

- Space program:
  - Will meet MSBA guidelines
  - Will meet educational plan & modern teaching methods
- Building & playgrounds are accessible
- New building systems & envelope meet sustainability goals
- Opportunity to install geothermal and/or photovoltaic systems
- Improved pedestrian & vehiclar circulation
- New building to meet the needs of the district
- Improved community access to public fields & indoor spaces
- Opportunity for extensive access to nature / green space / outdoor learning
- Minimal disruption to building occupants during construction

Drawbacks

- Requires extension of utilities
- Longer walking route for some pedestrians
- Construction interferes with existing septic system

Option 3.2: New Construction at Lower Field



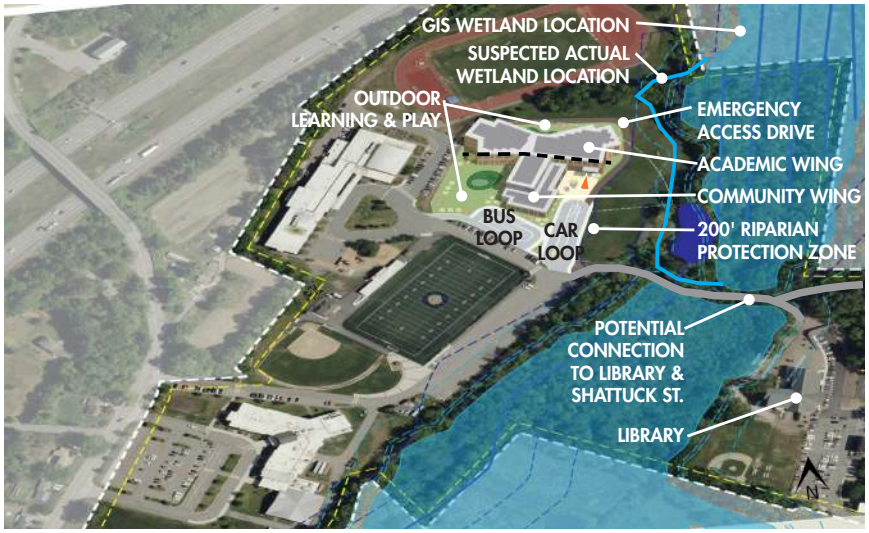
Benefits:

- Space program:
  - Will meet MSBA guidelines
  - Will meet educational plan & modern teaching methods
- Building & playgrounds are accessible
- New building systems & envelope meet sustainability goals
- Opportunity to install geothermal and/or photovoltaic systems
- Improved pedestrian & vehiclar circulation
- New building to meet the needs of the district
- Opportunity for extensive access to nature / green space / outdoor learning

Drawbacks

- Proximity to wetlands
- Potentially poor soil conditions due to organics
- Limited opportunity for future expansion
- Challenging community access to upper field
- Proximity to existing building may be disruptive to occupants
- Mediocre solar orientation at academic wings
- Construction interferes with existing septic system

Option 4.1: New Construction at Whitcomb Field



Benefits:

- Space program:
  - Will meet MSBA guidelines
  - Will meet educational plan & modern teaching methods
- Building & playgrounds are accessible
- New building systems & envelope meet sustainability goals
- New building to meet the needs of the district
- Consolidated LPS campus
- Desirable central location near schools & library
- Proximity to infrastructure including new sewer (unknown if treatment plant can accommodate)
- Extensive existing parking
- Minimal impacts to abutters during construction

Drawbacks

- Demolition of existing Shaker Lane School not reimbursable by MSBA
- Groundwater PFAS issues
- Airborne particulates from nearby 495
- Field currently used for Russell ES recess & community sports on weekends
- Potential impacts to local traffic patterns
- Only one way in/out without adding connection
- No opportunity to install geothermal system
- Limited extended access to nature due to wetlands
- Limited opportunity for future expansion

Summary



CODE UPGRADE



RENOVATION & ADDITION TO EAST OF SLS



RENOVATION & ADDITION TO NORTH OF SLS



NEW CONTRUCTION - UPPER FIELD



NEW CONSTRUCTION - LOWER FIELD



NEW CONSTRUCTION - WHITCOMB FIELD

Discussion: Recommendations to SBC

Site

- Adequate buildable area (excludes wetlands/buffers, setbacks, floodplains, etc)
- Parking & vehicle queueing safe/efficient/ contained on site
- Safe pedestrian access
- Optimizes outdoor program & play spaces
- Extended access to undeveloped nature/ green spaces
- Efficient use of site/integration into site

Cost/Schedule/Construction

- Minimizes MSBA non-reimbursement items
- Construction schedule
- Complexity of phasing
- Impact to educational program/facilities during construction
- Impact to abutters during construction

Sustainability

- Ability to readily meet energy code
- Ease of facility maintenance
- Potential for geothermal system
- Good solar orientation in academic wing
- Effort required to become solar panel-ready
- Ability to support future expansion
- Potential to achieve LEED Silver (increases MSBA reiumbursement rate)
- Potential to achieve Net Zero

Community/Neighborhood

- Affords community use of playgrounds/fields
- Local traffic impacts
- Building mass & scale impacts on abutters/ neighborhood

General

- Likely successful debt exclusion vote
- Geographic location in the district
- Permitting complexity (wetlands, planning, ZBA, Article 97, etc)

https://forms.gle/dGPau6t1UhBfrh2C7

Rating Scale:		
○	0	Not preferable
◔	1	Poor
◑	2	Satisfactory
◕	3	Advantageous
●	4	Highly advantageous

Discussion: Recommendations to SBC

Evaluation Criteria						
TOTALS						
	OPTION 1	OPTION 2.1	OPTION 2.2	OPTION 3.1	OPTION 3.2	OPTION 4.1
Site						
Adequate buildable area						
Parking & vehicle queueing safe/efficient/contained on site						
Safe pedestrian access						
Optimizes outdoor program & play spaces						
Extended access to undeveloped nature / green spaces						
Efficient use of site / integration into site						
Cost/Schedule/Construction						
Minimizes MSBA non-reimbursement items						
Construction schedule						
Complexity of phasing						
Impact to educational program/facilities during construction						
Impact to abutters during construction						
Sustainability						
Ability to readily meet energy code						
Ease of facility maintenance						
Potential for geothermal system						
Good solar orientation in academic wing						
Ability to support future expansion						
Potential to achieve LEED Silver						
Potential to achieve Net Zero						
Community/Neighborhood						
Affords community use of playgrounds/fields						
Local traffic impacts						
Building mass & scale impacts on abutters/neighborhood						
General						
Likely successful debt exclusion vote						
Geographic location in the district						
Permitting complexity						

Upcoming Meetings

- Holiday
- School Building Committee Meeting
- Proposed Design & Site Selection Subcommittee meeting
- Educational Visioning Timeframe (with District stakeholders)

JUNE 14 Last day of school

AUGUST 27 K-12 First day of school

We are here

PDP study, analysis and documentation | compile PDP report | PSR

May

Su	M	Tu	W	Th	F	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

- ☑ Execute MSBA contract
- ☑ Execute subconsultant contracts
- ☑ Establish workplan
- ☑ MSBA kick-off meeting
- ☑ Review Project Advisories

June

Su	M	Tu	W	Th	F	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

- ☑ Visioning sessions
- ☑ Establish educational plan & space program
- ☑ Existing facility conditions assessment
- ☑ Design options & site testing
- ☑ Community engagement

July

Su	M	Tu	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

- ❑ Site & design options SBC review/comment
- ❑ Visioning sessions
- ❑ Finalize educational plan & space program
- ❑ Security programming w/ Littleton Public Safety
- ❑ Site development & permitting analysis
- ❑ Community engagement

August

Su	M	Tu	W	Th	F	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

- ❑ Final tweaks to educational plan / space program
- ❑ SBC vote to submit PDP to MSBA August 21, 2024
- ❑ Submit PDP to MSBA August 30, 2024
- ❑ Begin PSR August 21, 2024

September

Su	M	Tu	W	Th	F	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

- ❑ MSBA PDP review, comments, & SGA responses
- ❑ Interior space planning options SBC review/ comment

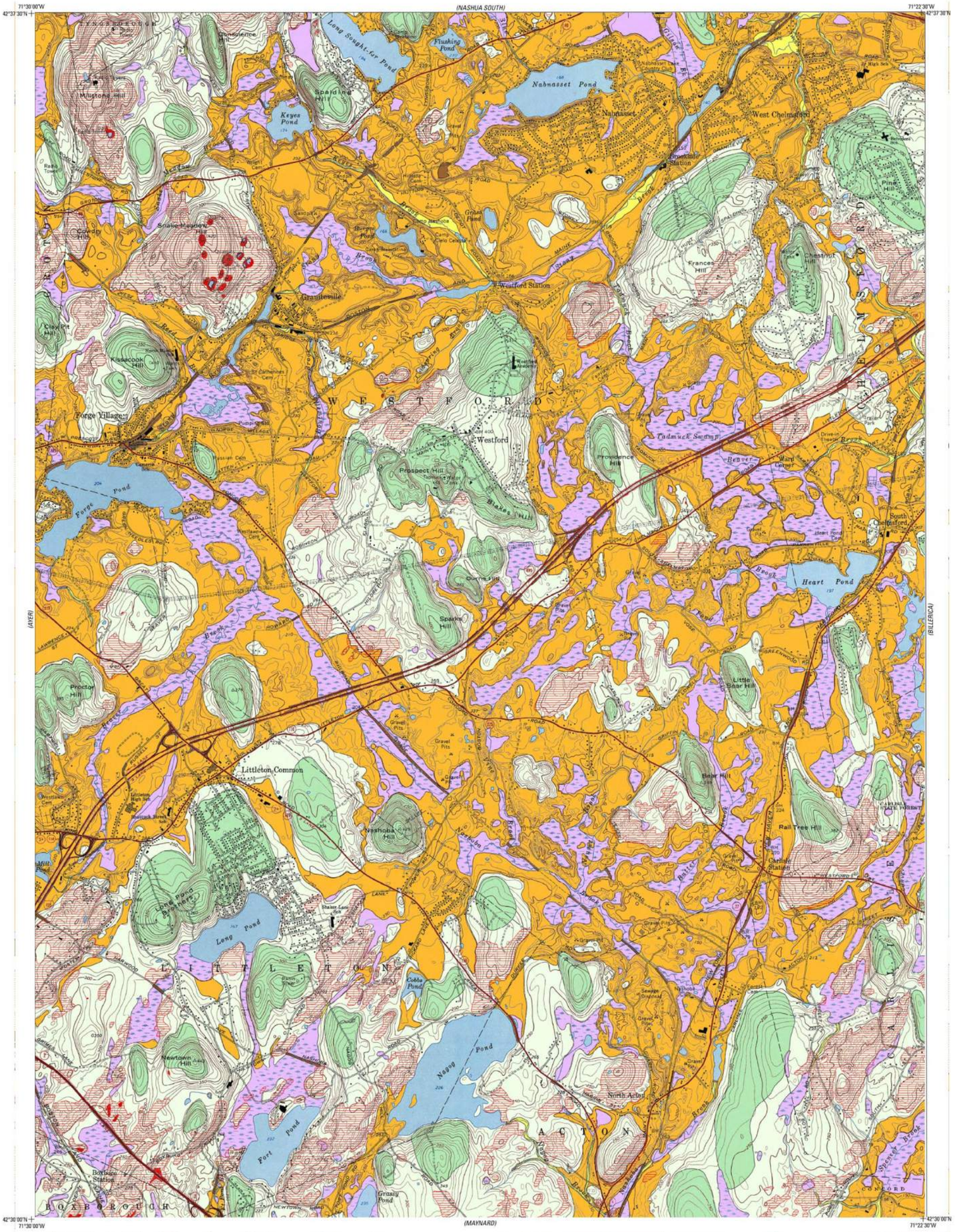
Attachment D
Geologic Maps of Massachusetts

USGS
science for a changing world

U.S. Department of the Interior
U.S. Geological Survey

Prepared in cooperation with the
Commonwealth of Massachusetts
Massachusetts Geological Survey
and Executive Office for Administration and Finance

Scientific Investigations Map 3402
Quadrangle 96—Westford
Discussion of surficial materials and description of map units available at https://doi.org/10.3133/sim3402



Base from U.S. Geological Survey, 1966

Map was scanned, processed, georeferenced, rectified, and cropped by the Massachusetts Geological Survey

Lambert Conformal Conic projection. North American Datum of 1983

Massachusetts state plane coordinate system, mainland zone

APPROXIMATE MEAN DECLINATION, 2018

SCALE 1:24 000

1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929



MAP LOCATION

Map units were reproduced from Hartshorn, J.H., comp., 1980, unpublished field map. Some units were mapped or revised from analysis of topographic (lidar) data and 2005 orthophoto images.

Surficial Materials Map of the Westford Quadrangle, Massachusetts

Compiled by
Byron D. Stone and Janet R. Stone

2018

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For sale by U.S. Geological Survey, Box 25286, Denver Federal Center, Denver, CO 80225; https://store.usgs.gov; 1-888-ASK-USGS (1-888-275-8747)

Suggested citation: Stone, B.D., and Stone, J.R., comps., 2018, Surficial materials map of the Westford quadrangle, Massachusetts, quadrangle 96 in Stone, J.R., Stone, B.D., DiGiacomo-Cohen, M.L., and Mabee, S.B., comps., Surficial materials of Massachusetts—A 1:24,000-scale geologic map database: U.S. Geological Survey Scientific Investigations Map 3402, 1 sheet, scale 1:24,000, https://doi.org/10.3133/sim3402

ISSN 2329-132X (online)
https://doi.org/10.3133/sim3402

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH
THE COMMONWEALTH OF MASSACHUSETTS,
DEPARTMENT OF PUBLIC WORKS,
AND JOSEPH A. SINNOTT, STATE GEOLOGIST

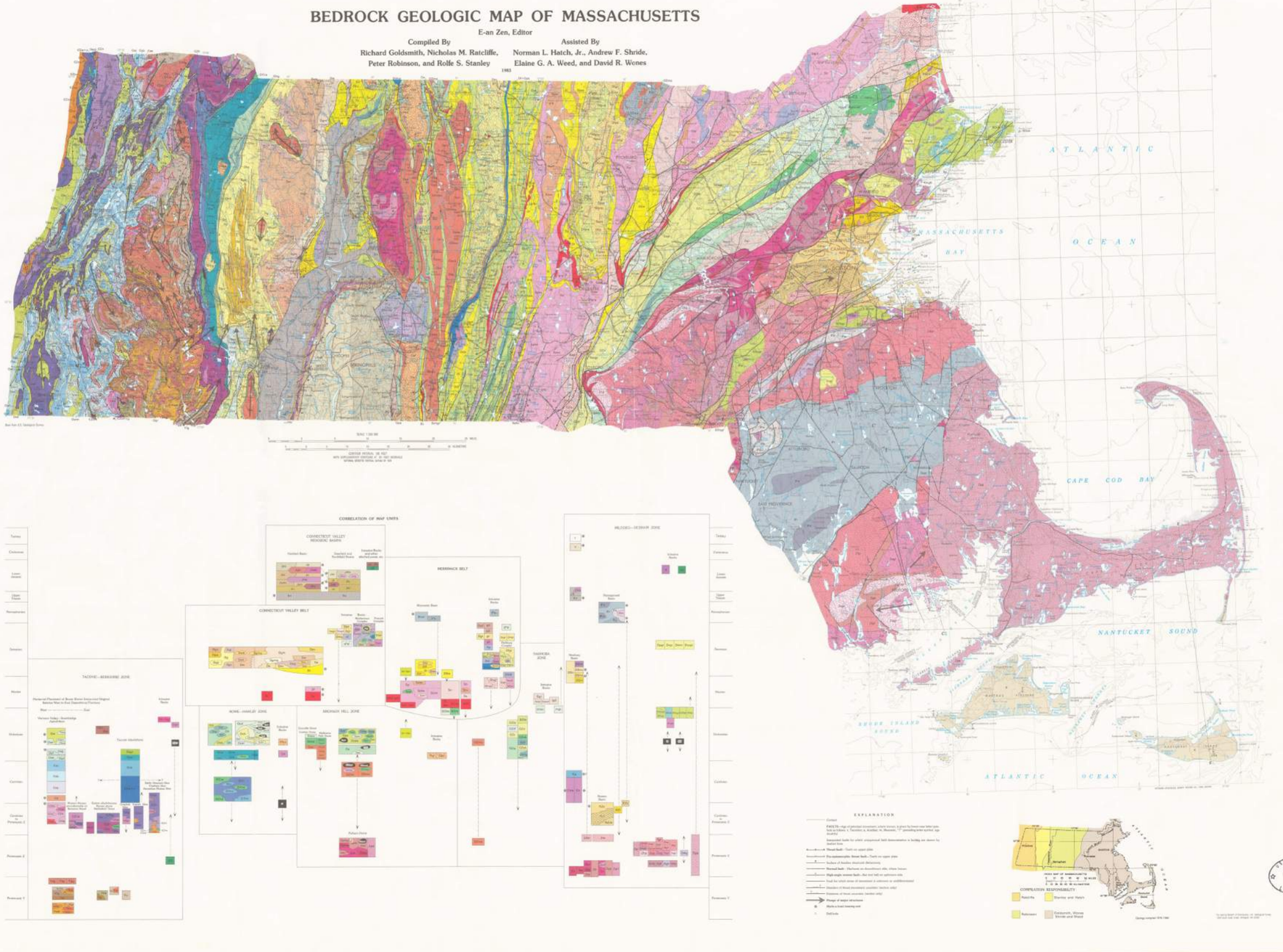
BEDROCK GEOLOGIC MAP OF MASSACHUSETTS

E-an Zen, Editor

Compiled By
Richard Goldsmith, Nicholas M. Ratcliffe,
Peter Robinson, and Rolfe S. Stanley

Assisted By
Norman L. Hatch, Jr., Andrew F. Shride,
Elaine G. A. Weed, and David R. Wones

1985

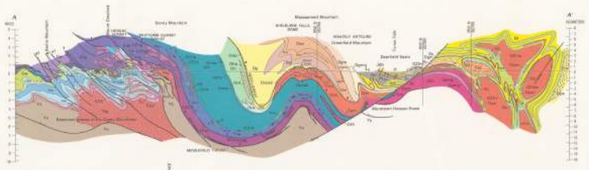


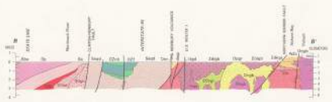
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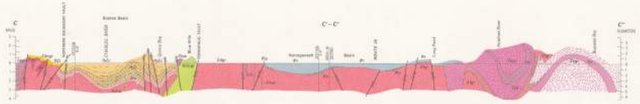
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

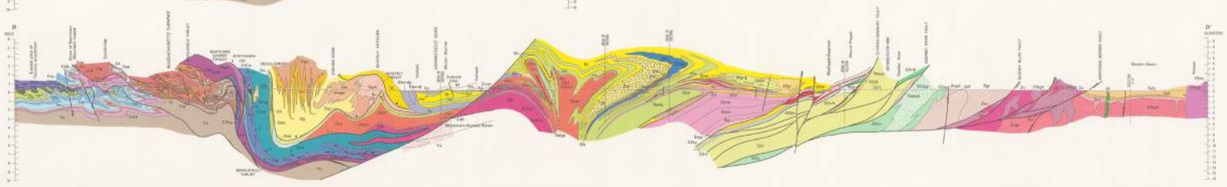
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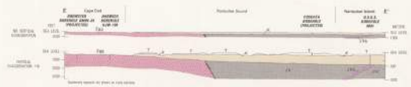
GEOLOGIC MAP OF MASSACHUSETTS
SHEET 2 OF 3



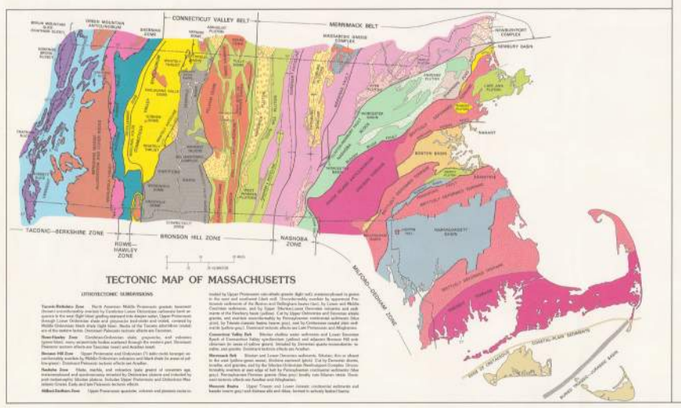




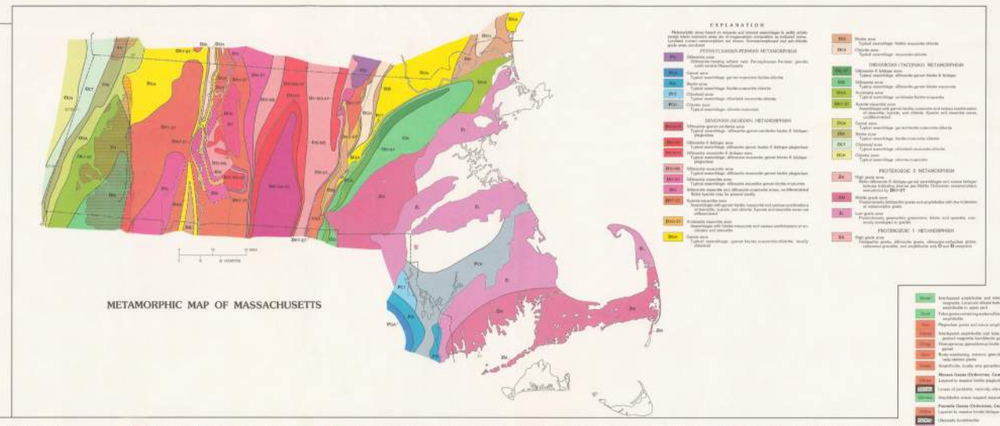








TECTONIC MAP OF MASSACHUSETTS



METAMORPHIC MAP OF MASSACHUSETTS



EXPLANATION OF MAP UNITS



BEDROCK GEOLOGIC MAP OF MASSACHUSETTS

E-an Zen, Editor

Compiled By
Richard Goldsmith, Nicholas M. Ratcliffe,
Peter Robinson, and Rolfe S. Stanley

Assisted By
Norman L. Hatch, Jr., Andrew F. Shride,
Elaine G. A. Weed, and David R. Wones

1983

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2.1 Test Pit Observation Memorandum

PEER CONSULTANTS, P.C.
Est. 1978

25 Mall Road, Suite 206 • Burlington, MA 01803
Phone: 781-238-8880 • Fax: 781-238-8884 • www.peercpc.com

Engineers • Scientists • Planners

November 24, 2024

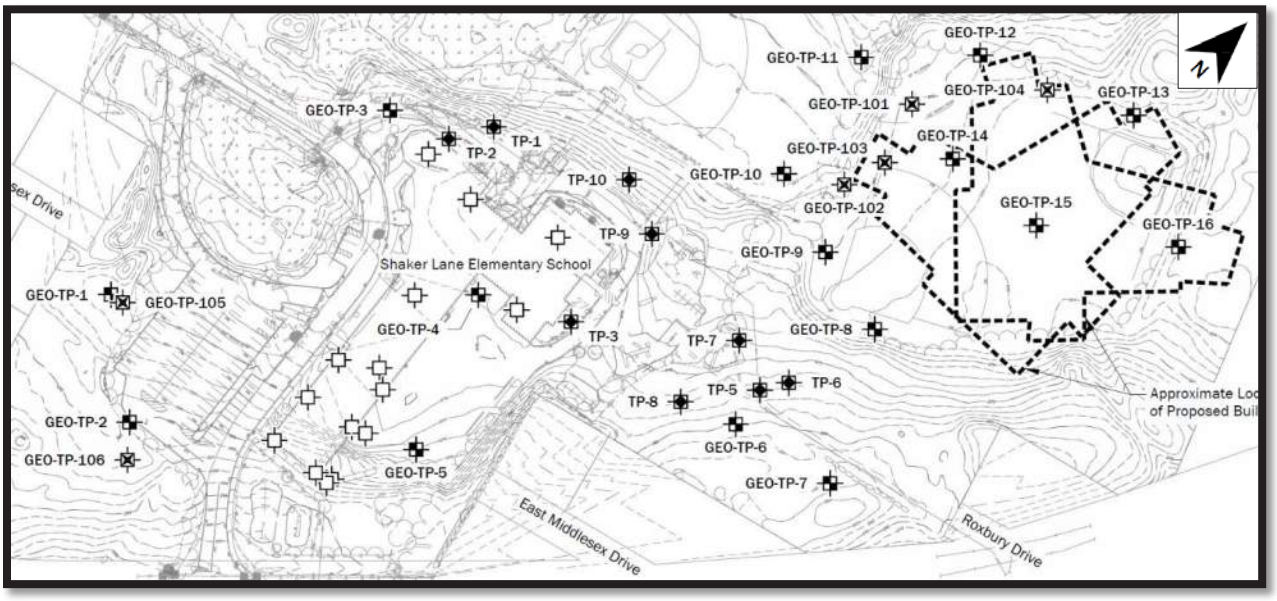
Meryl Nistler, AIA, WELL AP, LEED AP, MCPPO, NCARB
Senior Project Manager
Studio G Architects, Inc.
179 Boylston Street, Suite P
Jamaica Plain, Massachusetts 02130

Re: LITTLETON – SHAKER LANE ELEMENTARY SCHOOL
35 Shaker Lane, Littleton, MA 01460
Feasibility Phase Test Pit Observation Memorandum

Dear Ms. Nistler:

PEER Consultants P.C. (PEER) completed an initial visual review of soil conditions during the excavation of test pits, completed by Others at the Shaker Lane Elementary School on September 25, 2024 and on October 23, 2024. The weather on September 25, 2024 was cloudy, and the temperature ranged from 59°F to 65°F. The weather on October 23, 2024 was fog, then sun, and the temperature ranged from 53°F to 76°F. PEER understands that the Town of Littleton utilized a Deere 410 L Excavator on September 25, 2024, and that a private company utilized a Doosan DX 140 LC Excavator on October 23, 2024 during the excavation of the test pits. GeoEngineers, the geotechnical contractor, was represented by Ms. Virginia Trudel on September 25, 2024 and by Ms. Nicolette Peerman on October 23, 2024. PEER was represented by Mr. Dave Gorden, Board Certified Environmental Scientist and Certified Professional Soil Scientist on both the September date and the October date.

During the visual review of soil conditions during the excavation of test pits, PEER observed the excavation of 16 test pits on September 25, 2024 and four (of six) test pits on October 23, 2024. As per the Exploration Location Plan (undated) by GeoEngineers, an excerpt of which is shown below, the 16 test pits completed on September 25, 2024 were identified by GEO-TP-XX (with XX representing a two digit number) and the six test pits completed on October 23, 2024 were identified by GEO-TP-XXX (with XXX representing a three digit number). Geoengineers additionally showed historical test pits by Others on their Exploration Location Plan.



Shaker Lane Elementary School
Exploration Location Plan (GeoEngineers, undated)

Natural Resource Conservation Services

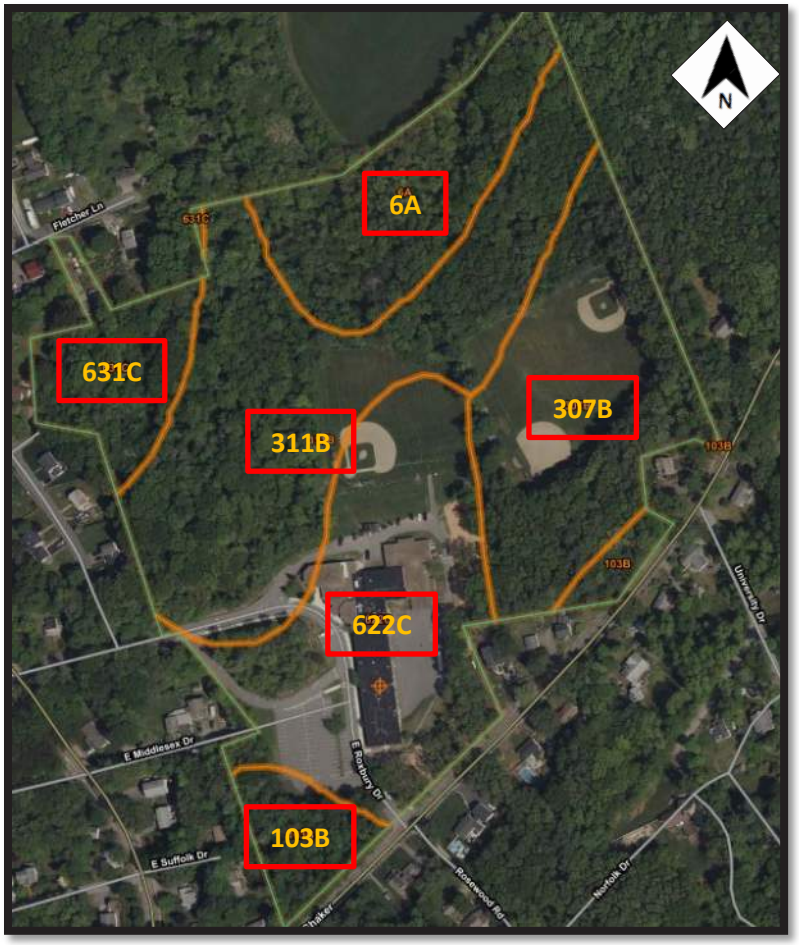
According to the Natural Resource Conservation Service (NRCS) Web Soil Survey, there are at least six soil series which occur on the Property. Soil test pits were in general excavated within three of the six soil series areas on the Property.

The Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony soil series [307B], and located along the southeastern edge of the Property, formed in parent material consisting of coarse-loamy lodgment till derived from gneiss, granite, and/or schist. Its surface is typically covered with approximately 9% of materials including cobbles, stones or boulders, with a depth to restrictive feature of 20 to 43 inches to densic material. Its drainage class is well drained, with a runoff class of medium, and a depth to water table of about 18 to 37 inches. It has no frequency of flooding and no frequency of ponding, and is not considered a hydric soil.

The Paxton-Urban land complex, 3 to 15 percent slopes soil series [622C], and located along the south-central portion (with concrete, asphalt, and buildings) of the Property and extending into a portion of the lower baseball field, formed in parent material consisting of coarse-loamy lodgment till derived from gneiss, granite, and/or schist. The Paxton portion of the land complex has a depth to restrictive feature of 20 to 39 inches to densic material. Its drainage class is well drained, with a runoff class of medium, and a depth to water table of about 18 to 37 inches. It has no frequency of flooding and no frequency of ponding, and is not considered a hydric soil. The “Urban Land”, i.e., land which has been excavated and/or filled, portion of the complex consists of cemented material.

The Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes soil series [103B] appears to be located along the southwestern edge and southeastern edge of the Property. The Charlton portion of the outcrop complex formed in parent material consisting of friable loamy eolian deposits over friable loamy basal till derived from granite and gneiss and has a surface which is typically covered with approximately 9% of materials including cobbles, stones or boulders, and a depth to restrictive feature of greater than 80 inches. Its drainage class is well drained, with a depth to water table of greater than 80 inches. It has no frequency of flooding and no frequency of ponding, and is not considered a hydric soil.

The Hollis portion of the outcrop complex formed in parent material consisting of friable, shallow loamy basal till over granite and gneiss, and has a surface which is typically covered with approximately 9% of materials including cobbles, stones or boulders. This soil series has a depth to restrictive feature of 8 to 20 inches to lithic bedrock. Its drainage class is well drained, with a depth to water table of greater than 80 inches. It has no frequency of flooding and no frequency of ponding, and is not considered a hydric soil



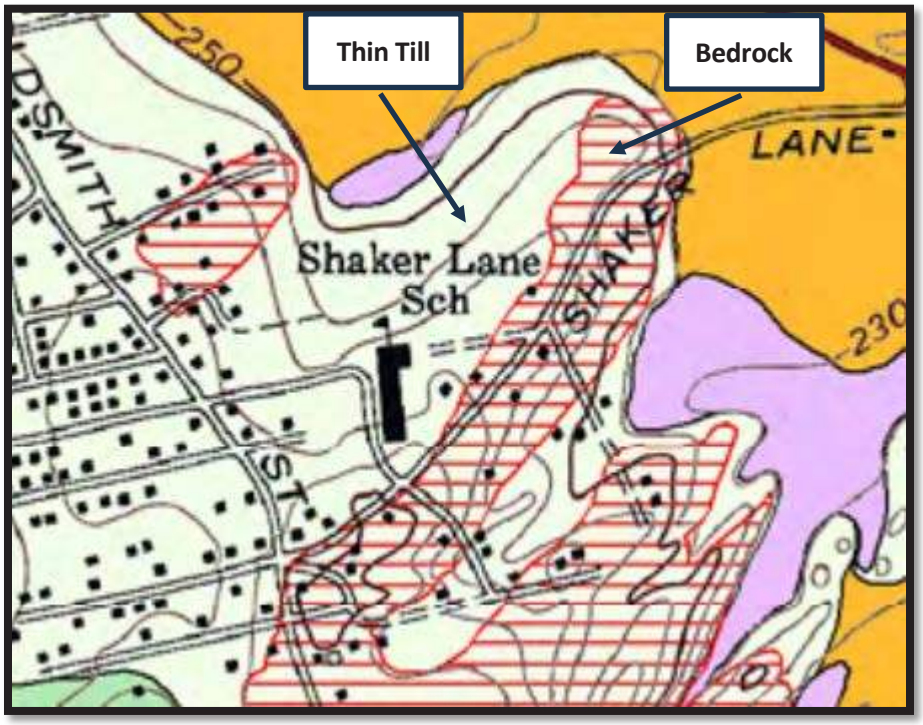
Natural Resource Conservation Service Soil Series Map

The Surficial Materials Map of the Westford Quadrangle, Massachusetts (2018) indicates that the surficial material at this project site consists of:

"**Thin till** — Nonsorted, nonstratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts; large surface boulders are common; unit was mapped where till is generally less than 10 to 15 ft thick including areas of shallow bedrock. Predominantly consists of upper till of the last glaciation; loose to moderately compact, generally sandy, commonly stony. Two facies are present in some places: a looser, coarser grained ablation facies, melted out from supraglacial position; and an underlying more compact, finer grained lodgement facies deposited subglacially. In general, both ablation and lodgement facies of upper till derived from fine-grained bedrock are finer grained, more compact, less stony and have fewer surface boulders than upper till derived from coarse-grained crystalline rocks. Across Massachusetts, fine-grained bedrock sources include the red Mesozoic sedimentary rocks of the Connecticut Valley lowland, marble in the western river valleys, and fine-grained schists in upland areas."

In addition, the Surficial Materials Map of the Westford Quadrangle, Massachusetts (2018) indicates that along, and north of Shaker Lane, the surficial material at this project site also consists of:

"**Bedrock outcrops and areas of abundant outcrop or shallow bedrock** — Solid color shows extent of individual bedrock outcrops; horizontal-line pattern indicates areas of shallow bedrock or areas where small outcrops are too numerous to map individually.



USGS - Surficial Materials Map of the Westford Quadrangle, 2018

Findings

In general, across the test pit locations on the Property, PEER observed soil which may be considered fill (suspected of containing oil and hazardous material), other fill / reworked fill, reworked native, and suspect bedrock. Please note that PEER considered reworked native soil to be soil which visually appeared similar to soil on the project site, and soil which was suspected of having been excavated during the development of the existing school, and then redeposited on the surface of other areas of the project site.

Fill (suspected of containing oil and hazardous material)

Within test pits GEO-TP-16 and GEO-TP-13, PEER observed plastic, wire, glass, brick, orange fencing, ceramic, Mirafi fabric, asphalt, burned wood, and wood ash (suspect) to approximately 30 inches below the ground surface and suspect other fill down to the completion depth. PEER also noted that, whereas other land surfaces appeared to occur as downslope to the north, a mound of material (similar in location to where aerial photographs may have indicated additional clearing), occurs outside of the chain link fence directly north of this fill suspected of containing oil and hazardous material.

Other fill / reworked fill

Within test pits GEO-TP-8; GEO-TP-102; GEO-TP-104; GEO-TP-103; GEO-TP-14; GEO-TP-15; GEO-TP-13; GEO-TP-101; and GEO-TP-16, at depth which in general occurred between 10 inches and 68 inches below the ground surface, PEER observed fill material which did not **visually** appear to contain foreign material but appeared to be in contrast with the expected soil type on the Property (as estimated by NRCS).

Reworked native

Within test pits GEO-TP-8; GEO-TP-3; GEO-TP-11; and GEO-TP-9, PEER also noted the presence of soil which appeared to consist of reworked native material.

Native

Within test pits GEO-TP-7; GEO-TP-10; GEO-TP-6; GEO-TP-5; GEO-TP-4; GEO-TP-1; GEO-TP-2, PEER in general observed what appeared to be a natural soil strata development in native soil materials.

Bedrock

Within test pits GEO-TP-7 (18 inches); GEO-TP-10 (34 inches); GEO-TP-6 (46 inches); and GEO-TP-102 (64 inches), PEER observed suspect bedrock at the depths as indicated in "()". Within test pit GEO-TP-103, the excavator operator suspected that bedrock was encountered at approximately 90 inches below the ground surface; however, due to the suspected depth, no personnel entered the test pit to confirm this possibility.

Initial Recommendations

PEER understands that in their Memorandum dated November 21, 2024, GeoEngineers has indicated that additional explorations should be advanced to further understand the subsurface conditions within the building pad at the selected Site and to provide final design recommendations for foundations; and that

borings and/or test pits should also be advanced in future development areas (retaining walls, stormwater management areas, pavement areas, etc.).

PEER additionally recommends that PEER shadow the next geotechnical investigation which may utilize an auger drilling rig to advance split spoons into the subsurface soil. PEER recommends that PEER's geo-environmental investigation include the pre-characterization sampling of the subsurface soil in borings to include parameters such as: VOCs – 8260; SVOCs – 8270; EPH / VPH / TPH; PCBs; MCP 14 Metals; pH/Corrosivity; Conductivity; Reactive Sulfide and Reactive Cyanide; Flashpoint/Ignitability; Pesticides; Herbicides; TCLP MCP 14 Metals; and include one or more soil samples which may detect and document any coal, coal ash, wood ash or asphalt that may be present by use of a combination of microscopy techniques including SEM/EDS, PLM, and macroscopic inspection.

Furthermore, should it be determined that the existing Shaker Lane Elementary School will be demolished as part of any future development of a new school, PEER recommends that additional pre-characterization sampling of the subsurface soil in borings be completed at the suspect former underground storage tank (UST) location, within the parking lot (and other paved areas) associated with the building, and proximate to the existing footprint of the building nearest the boiler room, and (eventually) beneath the current building.

Should it be additionally determined that the existing Lower Ball Field will be disturbed as part of future work on the Property, PEER recommends an additional direct push drill device (i.e., Geoprobe) geo-environmental investigation, which will include additional pre-characterization sampling of the subsurface soil in borings within the Lower Ball Field.

In addition, as it relates to the potential need for project-based dewatering activities (based on the estimated groundwater elevation beneath the project site, and based on the observation of wetlands and waterways on and near the project site), should a construction general permit or a remediation general permit be required for this activity, PEER recommends considering the implementation of a sampling and analysis program for groundwater through the installation of temporary groundwater monitoring wells during any additional subsurface soil investigation, and prior to site redevelopment.

Please contact us directly at 781.238.8880, should you have any questions or require any clarification on this Feasibility Phase Test Pit Observation Memorandum at the Shaker Lane Elementary School, in Littleton, MA.

Sincerely,

PEER Consultants, P.C.

David Gorden, BCES
Environmental Science Program Manager

2.3 RMAT Form

Climate Resilience Design Standards Tool Project Report

Shaker Lane School
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Project Contact Information: Ryan Ferrara (rferrara@littletonma.org)

Created By: taylord
Tool Version: Version 1.2

Project Summary

Link to Project

Estimated Capital Cost: $81944951.00
End of Useful Life Year: 2077
Project within mapped Environmental Justice neighborhood: No

Ecosystem Service Benefits	Scores
Project Score	High
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	High Exposure
Extreme Precipitation - Riverine Flooding	Moderate Exposure
Extreme Heat	High Exposure



Asset Preliminary Climate Risk Rating Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
Shaker Lane School	Low Risk	High Risk	Moderate Risk	High Risk

Climate Resilience Design Standards Summary

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
Shaker Lane School					
Extreme Precipitation					
Shaker Lane School	2070			10-yr (10%)	Tier 2
Extreme Heat					
Shaker Lane School	2070		50th		Tier 2

Scoring Rationale - Project Exposure Score

The purpose of the Exposure Score output is to provide a preliminary assessment of whether the overall project site and subsequent assets are exposed to impacts of natural hazard events and/or future impacts of climate change. For each climate parameter, the Tool will calculate one of the following exposure ratings: Not Exposed, Low Exposure, Moderate Exposure, or High Exposure. The rationale behind the exposure rating is provided below.

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coast Flood Risk Model (MC-FRM)

Extreme Precipitation - Urban Flooding

This project received a "High Exposure" because of the following:

- Increased impervious area
- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- Existing impervious area of the project site is between 10% and 50%

Extreme Precipitation - Riverine Flooding

This project received a "Moderate Exposure" because of the following:

- Part of the project is within 100ft of a waterbody
- No historic riverine flooding at project site
- The project is not within a mapped FEMA floodplain [outside of the Massachusetts Coast Flood Risk Model (MC-FRM)]
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Increased impervious area
- Existing trees are being removed as part of the proposed project
- Existing impervious area of the project site is between 10% and 50%
- Located within 100 ft of existing water body

Scoring Rationale - Asset Preliminary Climate Risk Rating

A Preliminary Climate Risk Rating is determined for each infrastructure and building asset by considering the overall project Exposure Score and responses to Step 4 questions provided by the user in the Tool. Natural Resource assets do not receive a risk rating. The following factors are what influenced the risk ratings for each asset.

Asset - Shaker Lane School
Primary asset criticality factors influencing risk ratings for this asset:

- Asset may inaccessible/inoperable for more than a day but less than a week after natural hazard event
- Loss/inoperability of the asset would have impacts limited to local area and/or municipality
- Some alternative programs and/or services are available to support the community
- Cost to replace is between $30 million and $100 million
- There are no hazardous materials in the asset

Project Climate Resilience Design Standards Output

Climate Resilience Design Standards and Guidance are recommended for each asset and climate parameter. The Design Standards for each climate parameter include the following: recommended planning horizon (target and/or intermediate), recommended return period (Sea Level Rise/Storm Surge and Precipitation) or percentile (Heat), and a list of applicable design criteria that are likely to be affected by climate change. Some design criteria have numerical values associated with the recommended return period and planning horizon, while others have tiered methodologies with step-by-step instructions on how to estimate design values given the other recommended design standards.

Asset: Shaker Lane School — Building/Facility

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Projected Tidal Datums: NOT APPLICABLE

Projected Water Surface Elevation: NOT APPLICABLE

Projected Wave Action Water Elevation: NOT APPLICABLE

Projected Wave Heights: NOT APPLICABLE

Projected Duration of Flooding: NOT APPLICABLE

Projected Design Flood Velocity: NOT APPLICABLE

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation — High Risk

Target Planning Horizon: 2070
Return Period: 10-yr (10%)

LIMITATIONS: The recommended Standards for Total Precipitation Depth & Peak Intensity are determined by the user drawn polygon and relationships as defined in the Supporting Documents. The projected Total Precipitation Depth values provided through the Tool are based on the climate projections developed by Cornell University as part of EEA's Massachusetts Climate and Hydrologic Risk Project, GIS-based data as of 10/15/21. For additional information on the methodology of these precipitation outputs, see Supporting Documents.

While Total Precipitation Depth & Peak Intensity for 24-hour Design Storms are useful to inform planning and design, it is recommended to also consider additional longer- and shorter-duration precipitation events and intensities in accordance with best practices. Longer-duration, lower-intensity storms allow time for infiltration and reduce the load on infrastructure over the duration of the storm. Shorter-duration, higher-intensity storms often have higher runoff volumes because the water does not have enough time to infiltrate infrastructure systems (e.g., catch basins) and may overflow or back up during such storms, resulting in flooding. In the Northeast, short-duration high intensity rain events are becoming more frequent, and there is often little early warning for these events, making it difficult to plan operationally. While the Tool does not provide recommended design standards for these scenarios, users should still consider both short- and long-duration precipitation events and how they may impact the asset.

The projected values, standards, and guidance provided within this Tool may be used to inform plans and designs, but they do not provide guarantees for future conditions or resilience. The projected values are not to be considered final or appropriate for construction documents without supporting engineering analyses. The guidance provided within this Tool is intended to be general and users are encouraged to do their own due diligence

Applicable Design Criteria

Tiered Methodology: Tier 2

Projected Total Precipitation Depth & Peak Intensity for 24-hr Design Storms: APPLICABLE

Asset Name	Recommended Planning Horizon	Recommended Return Period (Design Storm)	Projected 24-hr Total Precipitation Depth (inches)	Step-by-Step Methodology for Peak Intensity
Shaker Lane School	2070	10-Year (10%)	6.7	Downloadable Methodology PDF

Projected Riverine Peak Discharge & Peak Flood Elevation: APPLICABLE
Methodology to Estimate Projected Values : Tier 2

Extreme Heat High Risk

Target Planning Horizon: 2070
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 2

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE
Methodology to Estimate Projected Values : Tier 2

Projected Heat Index: APPLICABLE
Methodology to Estimate Projected Values : Tier 2

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: APPLICABLE
Methodology to Estimate Projected Values : Tier 2

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE
Methodology to Estimate Projected Values : Tier 2

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): APPLICABLE
Methodology to Estimate Projected Values : Tier 2

Project Inputs

Core Project Information

Name:	Shaker Lane School
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2077
Location of Project:	Littleton
Estimated Capital Cost:	$81,944,951
Who is the Submitting Entity?	City/Town Littleton Ryan Ferrara (rferrara@littletonma.org)
Is this project identified as a priority project in the Municipal Vulnerability Preparedness (MVP) plan or the local or regional Hazard Mitigation Plan (HMP)?	No
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Planning
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	The proposed Shaker Lane School, located at 35 Shaker Lane in Littleton, MA is a project consisting of a proposed addition/renovation, or a new construction 2-story building located to the north or north-east of the existing building on the two existing sport fields. The final size of each proposed design option ranges from 94,000sf to 98,000sf. The new school will have an enrollment of 435 students in grades K-2, and 45-60 students in Pre-K. There will be a full time staff of 75 employees and at least 15 part-time employees and volunteers. The project is anticipated to be LEED Certified.
Project Submission Comments:	

Project Ecosystem Service Benefits

Factors Influencing Output

- ✓ Project provides flood protection through nature-based solutions
- ✓ Project reduces storm damage
- ✓ Project protects public water supply
- ✓ Project recharges groundwater
- ✓ Project filters stormwater using green infrastructure
- ✓ Project improves water quality
- ✓ Project protects fisheries, wildlife, and plant habitat
- ✓ Project provides pollinator habitat
- ✓ Project provides recreation
- ✓ Project provides oxygen production
- ✓ Project improves air quality
- ✓ Project prevents pollution

Factors to Improve Output

- ✓ Incorporate strategies that reduce carbon emissions
- ✓ Incorporate nature-based solutions that sequester carbon carbon
- ✓ Identify opportunities to remediate existing sources of pollution

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	Yes
Reduces storm damage	Yes
Recharges groundwater	Yes
Protects public water supply	Yes
Filters stormwater using green infrastructure	Yes
Improves water quality	Yes
Promotes decarbonization	Maybe
Enables carbon sequestration	Maybe
Provides oxygen production	Yes
Improves air quality	Yes
Prevents pollution	Yes
Remediates existing sources of pollution	Maybe
Protects fisheries, wildlife, and plant habitat	Yes

Protects land containing shellfish	No
Provides pollinator habitat	Yes
Provides recreation	Yes
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	Unsure
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	Yes
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: Shaker Lane School
Asset Type: Typically Occupied
Asset Sub-Type: School (primary, secondary, high, vocational, etc.)
Construction Type: New Construction
Construction Year: 2027
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Building may be inaccessible/inoperable for more than a day, but less than a week after natural hazards events without consequences

Identify the geographic area directly affected by permanent loss or significant inoperability of the building/facility.
Impacts would be limited to local area and/or municipality

Identify the population directly served that would be affected by the permanent loss of use or inoperability of the building/facility.
Less than 1,000 people

Identify if the building/facility provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The building/facility does not provide services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

If the building/facility became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the building/facility would not be expected to result in injuries

If there are hazardous materials in your building/facility, what are the extent of impacts related to spills/releases of these materials?
There are no hazardous materials in the building/facility

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Minor – Inoperability will not likely affect other facilities, assets, or buildings

If this building/facility was damaged beyond repair, how much would it approximately cost to replace?
Between $30 million and $100 million

Is this a recreational facility which can be vacated during a natural hazard event?
No

If the building/facility became inoperable for longer than acceptable in Question 1, what are the public and/or social services impacts?
Some alternative programs and/or services are available to support the community

If the building/facility became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the building is not able to serve or operate its intended users or function)?
Loss of building is not expected to reduce the ability to maintain government services.

If the building/facility became inoperable for longer than acceptable in Question 1, what are the impacts to loss of confidence in government (i.e. the building is not able to serve or operate its intended users or function)?
No Impact

Report Comments

N/A

WARNER LARSON
LANDSCAPE ARCHITECTS

July 26, 2024

Shaker Lane Elementary School, Littleton, MA
Site Option Landscape Narratives

Option 1: Code Upgrade of Existing Building

All existing pedestrian sidewalks and walkways that are not accessible will be upgraded to meet ADA and MAAB accessibility requirements. New additional walkways and sidewalks will be provided to allow access to the athletic fields, including detectable warning panels and curb ramps. Entrances to the building which currently do not meet ADA or MAAB accessibility standards will be updated to meet current requirements.

Accessibility within play areas will also be improved by providing new accessible surfacing, removing plastic barriers, and providing accessible entrances and connections to existing pathways. Play equipment that is in poor condition will be removed and new play equipment will be installed in its place. In areas where fencing around play areas is incomplete, new fencing will be provided to ensure play areas are properly enclosed.

Athletic fields will be improved by completing perimeter fencing that is currently incomplete. Fencing that is in poor or declining condition will be replaced. Accessible pathways to and between athletic fields and to associated structures such as the concession stand will be provided. Furnishings at athletic fields (such as benches) that are in poor or declining condition will be replaced. Additional, new site furnishings and accessible paved gathering areas may be provided where possible.

Option 2.1: Renovation & Addition to East of Existing SLS

All existing pedestrian sidewalks and walkways to remain that are not accessible will be upgraded to meet ADA and MAAB accessibility requirements. The existing emergency access drive will be extended to meet Shaker Lane at the east corner of the school property, to the south of the athletic fields. A new bus loop will connect to Shaker Lane where the previous driveway entrance was located, and will include an accessible sidewalk adjacent to it. An expanded parking area to the south of the existing car loop will be provided, and accessible parking spaces within it will meet MAAB and ADA requirements. New additional walkways and sidewalks will be provided to allow access to the athletic fields, including detectable warning panels and curb ramps. Entrances to the existing building which currently do not meet ADA or MAAB accessibility standards will be updated to meet current requirements. All entrances to the new building addition will be accessible.

New, accessible play areas will also be provided, featuring new accessible surfacing and inclusive play equipment. New fencing will be provided to ensure that all play areas are properly

enclosed. Outdoor classroom and gathering spaces will be provided throughout the site. These spaces will be paved, accessible spaces that feature new site furnishings, or terraced seating that utilizes sloped areas.

The existing athletic fields will be improved by completing perimeter fencing that is currently incomplete. Fencing that is in poor or declining condition will be replaced. Accessible pathways to and between athletic fields and to associated structures such as the concession stand will be provided. Furnishings at athletic fields (such as benches) that are in poor or declining condition will be replaced.

Option 2.2: Renovation & Addition to North of Existing SLS

All existing pedestrian sidewalks and walkways to remain that are not accessible will be upgraded to meet ADA and MAAB accessibility requirements. The existing emergency access drive will be extended to loop around the addition to the north and east of the existing building to meet the existing parking lot to the west of the building. A new bus loop with parking inside the loop will connect to the existing parking lot and the new emergency access drive. Accessible parking spaces within the new parking lot and accessible walkways connecting to it will meet MAAB and ADA requirements. New additional walkways and sidewalks will be provided to allow access to the athletic fields, including detectable warning panels and curb ramps. Entrances to the existing building which currently do not meet ADA or MAAB accessibility standards will be updated to meet current requirements. All entrances to the new building addition will be accessible.

New, accessible play areas will also be provided to the north and south of the extended emergency access drive and will feature new accessible surfacing and inclusive play equipment. New fencing will be provided to ensure that all play areas are properly enclosed. Outdoor classroom and gathering spaces will be provided throughout the site. These spaces will be paved, accessible spaces that feature new site furnishings, or terraced seating that utilizes sloped areas.

The existing athletic fields to remain will be improved by completing perimeter fencing that is currently incomplete. Fencing that is in poor or declining condition will be replaced. Accessible pathways to and between athletic fields and to associated structures such as the concession stand will be provided. Furnishings at athletic fields (such as benches) that are in poor or declining condition will be replaced.

Option 3.1: New Construction at Upper Field

A new driveway will extend from Roxbury Street and connect to Shaker Lane on the east end of the property, to the south of the existing fields. New bus and car loops with parking spaces inside the loops will connect to this new driveway. New parking spaces will be located along this

new driveway and will allow access to the athletic fields and play spaces. A new emergency access drive will loop around the building. Accessible parking spaces within the new parking lots and accessible walkways connecting to it will meet MAAB and ADA requirements. New additional walkways and sidewalks will be provided to allow access to the athletic fields, including detectable warning panels and curb ramps. All entrances to the new building will be accessible.

New, accessible play areas will also be provided adjacent to the new school building and existing athletic field to the west and will feature new accessible surfacing and inclusive play equipment. New fencing will be provided to ensure that all play areas are properly enclosed. Outdoor classroom and gathering spaces will be provided adjacent to the new school building. These spaces will be paved, accessible spaces that feature new site furnishings, or terraced seating that utilizes sloped areas.

Two new athletic fields will be provided where the existing building and parking lot are currently located. The existing athletic field to remain will be improved by completing perimeter fencing that is currently incomplete. Fencing that is in poor or declining condition will be replaced. Accessible pathways to and between athletic fields and to associated structures such as the concession stand will be provided. Furnishings at athletic fields (such as benches) that are in poor or declining condition will be replaced.

Option 3.2: New Construction at Lower Field

A new car loop will extend from Roxbury Street and provide access to the new main entrance. To the south of the new building, a new bus loop will connect to Shaker Lane where the existing driveway meets Shaker Lane. New parking areas will be located inside the both the new bus and car loops and along the new driveways. A new emergency access drive will loop around the building. Accessible parking spaces within the new parking lots and accessible walkways connecting to it will meet MAAB and ADA requirements. New additional walkways and sidewalks will be provided to allow access to the athletic fields, including detectable warning panels and curb ramps. All entrances to the new building will be accessible.

New, accessible play areas will also be provided adjacent to the new school building and at the site of the existing school building to be demolished and will feature new accessible surfacing and inclusive play equipment. New fencing will be provided to ensure that all play areas are properly enclosed. Outdoor classroom and gathering spaces will be provided adjacent to the new school building. These spaces will be paved, accessible spaces that feature new site furnishings, or terraced seating that utilizes sloped areas.

A new athletic field will be provided where the existing parking lot is currently located. The existing lower athletic fields to remain will be improved by completing perimeter fencing that is currently incomplete. Fencing that is in poor or declining condition will be replaced. Accessible pathways to and between athletic fields and to associated structures such as the concession

stand will be provided. Furnishings at athletic fields (such as benches) that are in poor or declining condition will be replaced.

Option 4.1: New Construction at Lower Field

New bus and car loops will stem from a new driveway that connects from the existing driveway to the Library and Shattuck Street. New parking areas will be located inside the both the new bus and car loops and along the new driveways. A new emergency access drive will loop around the building. Accessible parking spaces within the new parking lots and accessible walkways connecting to it will meet MAAB and ADA requirements. Accessible routes that provide connectivity to adjacent athletic fields and community resources will be provided. All entrances to the new building will be accessible.

New, accessible play areas will also be provided adjacent to the new school building and will feature new accessible surfacing and inclusive play equipment. New fencing will be provided to ensure that all play areas are properly enclosed. Outdoor classroom and gathering spaces will be provided adjacent to the new school building. These spaces will be paved, accessible spaces that feature new site furnishings, or terraced seating that utilizes sloped areas.

Foley Buhl Roberts & ASSOCIATES INC
structural engineers

2150 Washington Street
Newton MA 02462
T 617·527·9600
F 617·527·9606

offices in:
Newton MA
Manchester NH
Portland ME
Decatur GA

www.fbra.com

SHAKER LANE ELEMENTARY SCHOOL
Littleton, Massachusetts

Preferred Schematic Report - Structural
November 8, 2024

INTRODUCTION

Foley Buhl Roberts & Associates, Inc. (FBRA) is collaborating with Studio G Architects (SGA) and their consultants in the evaluation of one renovation/addition option and two new construction options for the Shaker Lane Elementary School in Littleton, Massachusetts. Three potential building sites are under consideration at the existing Shaker Lane School site. These options represent further development of three of the six options presented in the *Preliminary Design Program (PDP)* dated August 20, 2024.

The purpose of this *Preferred Schematic Report (PSR)* is to outline the basis of the structural design, describe the proposed structural systems and summarize the anticipated scope of structural work required for the proposed renovations, additions, and new construction. Outline Structural Specifications are also included. This report should be used in conjunction with the preliminary Architectural Drawings and the documents of the other disciplines, in preparing the preliminary cost estimate.

The original Shaker Lane Elementary School is a two-story, flat roof building, constructed in 1959/1962. A one-story, flat roof addition was constructed on the east and on the west sides of the original building in 1998. The original building and the additions continue to be utilized by the Town of Littleton as an elementary school facility, accommodating approximately 460 students in grades pre-K through 2.

The Second Floor structure of the original school building consists of concrete slabs on steel form deck supported by steel joists, steel beams, and steel columns with masonry infills. Roof construction is steel roof deck supported by steel joists and steel beams. The addition is also steel framed but relies on steel braced frames instead of masonry infills for lateral stability. The total floor area of the original building and the addition is approximately 62,105 gross square feet. There are no elevators in the existing building.

The site slopes sharply downward from south to north, approximately one story at the south end of the existing building. The grades remain relatively flat extending to the north end of the existing building. Beyond the north end of the existing building, the site slopes downward approximately 15 feet to the lower field.

Structural conditions at the Shaker Lane Elementary School were reviewed at the site by FBRA on July 2, 2024. Refer to the July 19, 2024 *Existing Conditions Structural Report*, prepared by FBRA for information regarding the structural aspects of the original building and the 1998 additions.

A preliminary geotechnical investigation is underway into the potential building sites, but the results of the investigation will not be available prior to the completion of this report. Preliminary geotechnical engineer design considerations were provided in the Geotechnical Engineering Due Diligence Memorandum dated August 13, 2024 by GeoEngineers USA. The recommendations provided in the memo are based on the geologic maps prepared by the USGS.

The three design options under consideration are summarized in the following section.

I. PROPOSED OPTIONS

With reference to the August 30, 2024 *Preliminary Design Report* prepared by SGA and their consultants, the following Options are being considered:

Option 2.1 – Renovation & Addition East of the Existing Shaker Lane School

This option would include demolition and removal of the existing classroom wing of the 1959/1962 original building and three of the classrooms from the 1998 addition. A new Gymnasium would be constructed to the south of the existing structure, and a new, two-story Academic Wing would be constructed to the east of the existing structure. The original gymnasium space and the 1998 addition would be fully renovated and programmatically reconfigured. The completed facility would be approximately 94,850 GSF in area, including 25,850 GSF of renovated existing building space. The option would accommodate 460 students in Grades Pre-K through 2.

Option 3.1 - New Construction at Upper Field

This option would include construction of a new, two-story building to the northeast of the existing school building, at the current Upper Field site. A one-story, centrally located Community Wing with a double-height Gymnasium would be situated to the east of a two-story Academic Wing. The existing Shaker Lane School would remain open during construction, then the building (including the original 1959/1962 structure and the 1998 additions) would be demolished to make way for athletic fields. The completed facility would be approximately 97,757 GSF in area, accommodating 435 students in Grades K through 2 and an additional 48-60 students in Pre-K.

Option 3.2 - New Construction at Lower Field

This option would include construction of a new, two-story building to the north of the existing school building, at the current Lower Field site. A central Community Wing with a double-height Gymnasium would be surrounded to the north and south by Academic Wings. The existing Shaker Lane School would remain open during construction, then the building (including the original 1959/1962 structure and the 1998 additions) would be demolished to make way for athletic fields. The completed facility would be approximately 97,757 GSF in area, accommodating 435 students in Grades K through 2 and an additional 48-60 students in Pre-K.

II. BASIS OF DESIGN - NEW CONSTRUCTION

The basis of the structural design for new construction (addition in Option 2.1 and new buildings in Options 3.1 & 3.2) is described in this section.

Codes and Design Standards

Building Code:	Massachusetts State Building Code (780 CMR) - Tenth Edition.
Concrete:	ACI 318 and ACI 301; latest editions.
Masonry:	ACI 530 and ACI 530.1; latest editions.
Structural Steel:	AISC “Specification for Structural Steel Buildings” and AISC “Code of Standard Practice”.
Steel Deck:	Steel Deck Institute (SDI); Referenced Standards.

Design Loads/Parameters

Live Loads:

Classrooms (with partition allowance):	65 PSF
Upper Floor Corridors:	80 PSF
Open plan areas (including green space/outdoor play areas):	100 PSF
Stairs and First Floor Corridors:	100 PSF
Mechanical Areas:	150 PSF

Snow Loads (Littleton):

Basic Ground Snow Load:	50 PSF
Minimum Flat Roof Snow Load:	35 PSF

Wind Loads (Littleton):

Wind Speed (Ultimate):	126 MPH

Seismic Parameters (Littleton):

Spectral Response - Short Periods:	S_S = 0.320g
Spectral Response - 1-Second Periods:	S_1 = 0.072g
Risk Category:	III
Seismic Design Category:	B (Preliminary)
Site Class:	D (Preliminary)
Structural System:	Building Frame System
Lateral Load Resisting System:	Steel Braced Frames (*Not Specifically Detailed for Seismic Resistance*)
Response Modification Factor (R):	3.0
System Overstrength Factor (Ω_0):	3.0
Deflection Amplification Factor (C_d):	3.0

Foundations:

With reference to the aforementioned geotechnical memorandum, it appears that foundations for new construction can be conventional, shallow spread footings (i.e., individual spread footings at columns and continuous footings at foundation walls), bearing directly on natural soils or on compacted structural fill. An allowable bearing capacity of one and a half (1.5) tons per square foot (3.0 KSF) has been assumed in the preparation of this report. All unsuitable fill below the building footprint (and beyond) will need to be removed and replaced with compacted structural fill. The USGS maps show shallow bedrock in the vicinity of the site. If encountered, bedrock should be removed at least 5 feet below the proposed finished floor elevation to allow for construction of the footings. Footings should not bear directly on bedrock.

Construction Classification:

The construction classifications for the various options have not been determined at this time. Type IIA Construction (Noncombustible, Protected) has been assumed for all new construction in the preparation of this report (to be confirmed). Floor construction (except slabs on steel deck) and roof

construction require applied fireproofing to achieve the required fire resistance rating. A fire wall may be needed for Renovation/Addition Option 2.1, as the remaining sections of the existing building are not fire protected (to be further reviewed). In all options, the new construction will be fully sprinklered.

Sustainable Design Considerations:

Sustainable design considerations will be incorporated in the building design; it is intended that the new construction be designed to LEED standards.

III. STRUCTURAL SYSTEMS DESCRIPTION - NEW CONSTRUCTION (OPTIONS 2.1, 3,1 & 3.2)

Structural systems for new construction in all options (addition in Options 2.1 and new buildings in Options 3.1 & 3.2) are described in this section. The anticipated scope of structural work in the existing building (Option 2.1) is described in the **Section V** below.

Structural Bays/Spans: Structural bays/spans will vary; however, the typical structural bay will be square or rectangular, approximately 750 square feet to 900 square feet in area. Roof construction over the Gymnasium in each option will clear span the space below. It is assumed that strategically located columns will be acceptable in the Cafetorium space.

Story Heights/Floor Elevations: Typical story heights will be approximately 14 feet. Refer to the preliminary Architectural Drawings for additional information.

Foundations: Foundation construction can be conventional, shallow spread footings (i.e., individual spread footings at columns and continuous footings at foundation walls), bearing directly on natural soils or on compacted structural fill. The preliminary foundation design is based on an allowable bearing capacity of 3.0 kips per square foot (1.5 tons per square foot).

Drainage: Groundwater elevations are unknown at this time. Dewatering during construction may be required. Pending confirmation by the Geotechnical Engineer, the need for perimeter foundation drainage and underslab drainage is not anticipated.

Lowest Level Floor Construction will typically be a 5” thick concrete slab on grade, reinforced with welded wire fabric. Slabs on grade will be underlain by a heavy-duty vapor barrier, 2” of rigid insulation at the building perimeter and a 6” minimum layer of imported, compacted gravel fill. Saw cut control joints (1¼” deep) will be provided in each direction along each column line. Full depth isolation joints will be constructed around columns.

Upper Level Floor Construction: Composite structural steel framing: 3½” thick (minimum), normal weight concrete topping slab on a 2” deep, 18 gauge, composite type, galvanized steel floor deck (5½” minimum total slab thickness), reinforced with welded wire fabric, spanning to composite wide flange steel beams. Steel beams span to composite wide flange steel girders that are supported by wide flange steel columns or HSS (tube) steel columns. All composite steel beams and girders will be *unshored.* Composite action will be achieved by field welding ¾” diameter x 4” long headed shear studs through the deck, to the top flanges of the beams and girders. To avoid compromising composite action, conduit or other, similar embedded items *should not* be placed in the concrete slab on steel deck construction. Slabs on composite steel floor deck will be placed at the required elevation, adding concrete to compensate for the deflection of the (unshored) steel framing (assume an approximate average of ¾” additional concrete required over the bay area).

Roof Construction: Typical roof construction consists of a 1½” deep, 18 gauge, Type WR galvanized steel roof deck spanning to wide flange steel beams. Steel beams are typically supported by wide flange steel girders, which span to wide flange steel columns or HSS (tube) steel columns.

Steel roof deck over the Gymnasium will be cellular acoustic type, 3" deep; 20/20 gauge (Galvanized). Steel deck typically spans to steel purlins, which are supported by clear spanning steel beams and wide flange steel columns.

Exposed steel roof framing over the Gymnasium will be classified as Exposed to View Structural Steel (E.V.S.S.). All E.V.S.S. will be surface prepped and shop painted with a primer that is compatible with the finished paint. Primary roof structural members over the Gymnasium that are exposed to view may require intumescent paint to achieve the required fire resistance rating (to be determined).

Roof drainage will be achieved by tapered insulation; roof construction will be level.

Concrete slabs on composite steel deck will be provided below rooftop mechanical units, for acoustic reasons. Screens will be provided around rooftop equipment for acoustic and aesthetic purposes.

Steel Framing Connections: Type 2 simple framing connections (shear only); double clip angles typically; moment connections where necessary.

Columns: Typical columns will be HSS (tube) steel sections.

Lateral Force Resisting System: Lateral (wind and seismic) forces will be resisted by steel bracing, for reasons of economy, stiffness, reduced structural depth and smaller column sizes. Bracing members will be square or rectangular HSS sections. Brace configurations may include chevrons, inverted chevrons ("V"), or single diagonals in short bays, as required by architectural considerations. The bases of all braced frames will be tied together below the lowest level slab on grade with 2'-0" x 2'-0" reinforced concrete grade beams.

Expansion (Seismic) Joints: The new construction in Option 2.1 will be separated from the existing building by expansion joints. New construction Options 3.1 and 3.2 will likely need one (1) internal expansion joint. Fire walls may be needed to allow Type IIB Construction (noncombustible, unprotected).

Elevator Shafts: New elevator shafts will be 8" thick, 100% solid grouted, reinforced concrete masonry unit (CMU) construction, supported on 12" thick reinforced concrete elevator pit walls and a 2'-0" thick reinforced concrete elevator pit mat. Provide a sump pit in the mat and waterproof all interior surfaces.

Exterior Walls: Exterior walls will typically be masonry veneer (cavity wall construction), with areas of glazed curtainwall and architectural panels. A galvanized, light gauge steel stud backup wall (16 gauge minimum thickness) will be constructed at masonry veneer areas. Vertical slip joints will be provided in the metal stud backup system at each level. Intermediate, HSS Steel girts will be provided at the two-story gymnasium walls, to laterally support the wall construction at mid-height.

IV. ESTIMATED STRUCTURAL QUANTITIES - NEW CONSTRUCTION (OPTIONS 2.1, 3.1 & 3.2)

Estimated structural quantities for new construction for the above options (additions in Option 2.1 and new buildings in Options 3.1 and 3.2) are summarized in this section. Refer to Structural Systems Descriptions in **Section III** for steel floor and roof deck types/gauges, slab on grade and slab on steel deck information, and elevator shaft construction.

FOUNDATIONS:

The estimated quantities of foundation concrete and reinforcing for the various options are summarized below.

Typical Perimeter Frost Walls and Pilasters:

*16" thick, including a 10" wide masonry shelf, with horizontal and vertical reinforcing each face (**4.0+/- psf**). The outside surface of perimeter foundation walls shall receive a troweled-on bituminous mastic. Typical perimeter frost wall continuous footing: 2'-6" wide, by 12" deep, with continuous reinforcing bars, plus dowels to the foundation wall (**10.0+/- plf**). The bottom of the footing will be a minimum of 4'- 0" minimum below the exterior finish grade for frost protection. Pilasters at column locations will be 24 inches square, with **40 plf** reinforcing.*

Typical Interior Column Footings:

Typical, average interior column footings are as follows:

7'- 6" x 7'- 6" x 1'-10" deep, with 475 pounds of reinforcing.

Typical Perimeter Column Footings:

Typical, *average perimeter* column footings are as follows:

5'- 6" x 5'- 6" x 1'-6" deep, with 225 pounds of reinforcing.

Grade Beams at Lateral Bracing Bays (All Options):

2'-0" x 2'-0" with 65 pounds of reinforcing per foot.

Assume 60 linear feet of grade beam required for each 5,000 square feet of building footprint.

STRUCTURAL STEEL:

The estimated weight of structural steel for the various options is **14.0 psf** (based on the gross floor area of the building; including, beams, columns, bracing, plates, relieving angles, frames, connections, etc., but excluding equipment screens (approximately **100 plf** of structural steel required), entry canopies (**20 psf** of structural steel) and miscellaneous metal components).

V. ANTICIPATED STRUCTURAL WORK - EXISITING BUILDING (OPTION 2.1)

Renovations, alterations, repairs, and additions to existing buildings in Massachusetts are governed by the provisions of the Massachusetts State Building Code (MSBC; 780 CMR - 9th Edition) and the Existing Building Code of Massachusetts (EBCM; 780 CMR - 9th Edition, Chapter 34.00). These documents are based on amended versions of the *2015 International Building Code (IBC)* and the *2015 International Existing Building Code (IEBC)*, respectively.

For Option 2.1, Section 104.2.2.1 of the EBCM will require that the existing Shaker Lane School building be investigated and evaluated in sufficient detail as to ascertain the effects of any proposed work on the structural systems (both gravity load supporting elements and lateral force (wind and seismic) resisting elements). The EBCM defines three (3) compliance methods for the repair, alteration, change of occupancy, addition, or relocation of an existing building. The method of compliance is chosen by the Design Team (based on the project scope and cost considerations) and cannot be combined with other methods.

The Work Area Method of Compliance has been assumed in this report. The new construction in Option 2.1 will be structurally separated from the original Shaker Lane School building by an expansion joint.

The scope of structurally related work required for the renovation of the existing Shaker Lane School building is outlined in FBRA's July 18, 2024 Existing Conditions Structural Report. Refer to that report for a summary of structurally related repairs and deficiencies that would need to be addressed in this Option. The preliminary cost estimate should include allowances for those items noted.

In addition to the items listed in the *Existing Conditions Structural Report*, a full renovation of the existing Shaker Lane School in Option 2.1 would be classified as a *Level 3 Alteration* if more than 50% of the building floor area is reconfigured. Assuming that relatively significant structural alterations would be required to properly reconfigure and upgrade the building, the following additional structural scope would be required:

- A seismic retrofit of the building would be required, which may include reinforcing existing braced frames, adding new braced frames (with new foundations), and adding new reinforced masonry shear walls (with new foundations). The preliminary cost estimate should carry an allowance of ***$10.00/SF*** for this work (based on the gross floor area of the building).

- Sections 302.8.1 and 907.4.5 of the EBCM would require that masonry walls be anchored to roof construction. Preliminary estimates should include the cost of installing periodically spaced steel clip angles with adhesive anchors to anchor masonry walls to floor and roof framing. ***Preliminary cost estimates should include an allowance for 12" long steel clip angles with four (4) adhesive anchors spaced no further than 4'-0" o.c. at the floor and roof levels.*** Cantilevering masonry chimneys and masonry parapets would also need to be evaluated and reinforced/braced, if required.

- Infill of miscellaneous floor and roof openings, as may be required. ***Preliminary cost estimates should include an allowance to infill miscellaneous floor and roof openings with matching construction.***

- Miscellaneous new floor and roof openings, as may be necessary to accommodate Architectural and/or MEP/FP requirements. ***Preliminary cost estimates should include an allowance to provide miscellaneous floor and roof openings.***

- Supports for new MEP/FP equipment. ***Preliminary cost estimates should carry an allowance for miscellaneous supports/reinforcing related to new MEP/FP equipment.***

- Trenching and repair of lowest level slabs on grade. ***Preliminary cost estimates should carry an allowance for trenching and slab repair to accommodate new sub-slab plumbing and utilities.***

VI. OUTLINE STRUCTURAL SPECIFICATIONS:

Concrete:

- All concrete shall be normal weight, 4,000 psi at 28 days, except exterior (exposed) concrete (paving) which shall be normal weight, 5,000 psi.

- Portland Cement: ASTM C150, Type I or II.

- All concrete shall be proportioned with 3/4" maximum aggregate, ASTM C 33, except 3/8" maximum aggregate shall be used at toppings less than 2" thick (e.g., metal pan stairs).

- Fly Ash: ASTM C618, Class F. Ground Granulated Blast-Furnace Slag - ASTM C 989 - Grade 100 or 120.

- Fly ash, slag, and/or ground glass pozzolan shall be used as a partial replacement for Portland Cement in all concrete mixes for the building and site. The Global Warming Potential (GWP) for concrete mix designs (the total project) shall be a minimum of 15% lower than industry benchmark concrete mixes for the region as defined by the National Ready Mixed Concrete Association's (NRMCA) report titled "A Cradle-to-Gate Life Cycle Assessment of Ready-Mixed Concrete Manufactured by NRMCA Members - Version 3.2". The report provides benchmark Life Cycle Assessment (LCA) data, including GWP values, for nine ready mixed concrete products in eight regions. The following lists the two ready mixed concrete products (28-day compressive strength) and their associated GWP benchmark values (per cubic yard) for the eastern region:

  1. f'c = 4,000 psi (regular weight) GWP= 240.00 kg CO2e/cubic yard
  2. f'c = 5,000 psi GWP= 289.00 kg CO2e/cubic yard

- The maximum water/cement ratios for the ACI Concrete Exposure Classes are listed below:

  1. Exposure Class F1 (Footings and Foundation Walls): Maximum w/cm Ratio = 0.55
  2. Exposure Class F2 (Exterior, Exposed Walls): Maximum w/cm Ratio = 0.45
  3. Exposure Class F3 (Site Paving): Maximum w/cm Ratio = 0.40

- Cementitious Materials: Limit percentage, by weight of cementitious materials other than Portland cement in concrete for concrete assigned to Exposure Class F3 as follows:

  1. Fly ash or other pozzolans: 25 percent by mass
  2. Slag cement: 50 percent by mass
  3. Silica fume: 10 percent by mass
  4. Total of fly ash or natural pozzolans and silica fume: 35 percent by mass
  5. Total of fly ash or natural pozzolans, slag cement, and silica fume: 50 percent by mass

- All reinforcing shall be ASTM A 615 deformed bars, Grade 60.

- All welded wire fabric shall conform to ASTM A 185.

- Reinforcing bars, steel wire, welded wire fabric, and miscellaneous steel accessories shall contain a minimum of 98% (combined) post-industrial/post-consumer recycled content (the percentage of recycled content is based on the weight of the component materials). Certification of recycled content shall be in accordance with Submittal Requirements.

- Concrete products manufactured within 500 miles (by air) of the project site shall be documented in accordance with Submittal Requirements.

- Cure all concrete by moisture retention methods, approved by Architect; curing compounds shall not be used.

- Anchors and inserts: Hot dipped galvanized - ASTM A153.

Reinforced Concrete Masonry (Elevator Shaft):

- Masonry construction shall conform to ACI 530/ASCE 5/TMS 402 "Building Code Requirements for Masonry Structures", latest edition.

- Masonry strength, f'm shall not be less than 1350 psi.
- Requirements for load bearing block strength shall be as required for specified masonry strength (f'm) but shall not be less than 2000 psi on the net area of the block.
- Grout shall conform to ASTM C476, Type Fine, and shall be of strength required for specified masonry strength (F'm) but not less than 3000 psi.
- Mortar for reinforced masonry shall conform to ASTM C 270 Type S and shall be of strength required for specified masonry strength (f'm) but not less than 1800 psi.
- Reinforcing bars shall conform to ASTM A 615 Grade 60 deformed bars. Lap all continuous bars 48 diameters and provide bar positioners. Assume No. 5 bars at 2'-8" o.c. vertically and horizontal bond beams with 2 - No. 5 continuous at 4'-0" o.c.
- Joint reinforcing shall be 9-gauge ladder type conforming to ASTM A 82. Provide prefabricated corners and tees. Walls shall be reinforced horizontally with joint reinforcing at 16 inches on centers unless otherwise noted.
- Reinforcing bars, steel wire and miscellaneous accessories shall contain a minimum of 98% (combined) post-industrial/post-consumer recycled content (the percentage of recycled content is based on the weight of the component materials). Certification of recycled content shall be in accordance with Submittal Requirements.
- Elevator shaft walls shall be 100% solid grouted (all cores); low lift grouting.
- Masonry products manufactured within 500 miles (by air) of the project site shall be documented in accordance with Submittal Requirements.

Structural Steel:

- Structural steel shapes shall conform to ASTM A 992, Fy = 50 ksi.
- Steel tubes (HSS) shall conform to ASTM A 500, Grade C, Fy = 50 ksi.
- Structural steel plates and bars shall conform to ASTM A 36, Fy = 36 ksi.
- Steel members shall contain a minimum of 93% (combined) post-industrial/post-consumer recycled content (the percentage of recycled content is based on the weight of the component materials) and shall be produced by electric arc furnaces. Certification of recycled content shall be in accordance with the Submittal Requirements.
- Steel manufactured within 500 miles (by air) of the project site shall be documented in accordance with the Submittal Requirements. All structural steel shall be produced and fabricated domestically.
- Anchor Bolts: Anchor bolts at column base plates shall conform to ASTM F1554 – Grade 36 and shall be headed type. Provide a minimum of four (4), ¾" diameter anchor bolts at all columns; additional bolts and/or larger diameter will be required at bracing locations.
- Bolted connections shall be ASTM A 325, Type N (bearing) bolts, except slip-critical bolts shall be used at lateral brace beam connections.

- Typical shear connectors shall be ¾" diameter, 4" long, headed Nelson studs conforming to ASTM A 108. ***Assume that 25 shear connectors are required for every 100 square feet of floor area.***

- Shop and field welding shall be AWS D1.1 E70XX electrodes.

- Surface treatment for typical structural steel: SSPC Surface Preparation No. 3 (Power Tool Cleaning). Structural steel shall be left unprimed.

- Surface treatment for Exposed to View Structural Steel (E.V.S.S.) in the Gymnasium shall be SSPC Surface Preparation No. 6 (Commercial Blast Cleaning). Structural steel shall receive one coat of shop primer that is compatible with the finish paint.

- All exterior, exposed structural steel shall be hot-dipped galvanized.

Steel Deck:

- Typical steel roof deck shall be 1½" deep, 18-gauge, Type WR, conforming to ASTM A653, Grade 33 (minimum), galvanized in accordance with ASTM A 653, coating class G-60.

- Acoustic steel roof deck (over the gymnasium) shall be 3" deep, 20/20-gauge cellular type, conforming to ASTM A653, Grade 33 (minimum), galvanized in accordance with ASTM A 653, coating class G-60. Acoustic steel roof deck shall be shop treated and painted with a primer that is compatible with the finish paint.

- Typical steel floor deck shall be 2" deep, 18 Gauge, composite type, conforming to ASTM A 653, Grade 40 (minimum), galvanized in accordance with ASTM A 653, coating class G-60.

- Acoustic steel floor deck (below gymnasium rooftop HVAC units) shall be 3" deep, 18/20-gauge cellular acoustic composite type, conforming to ASTM A653, Grade 40 (minimum), galvanized in accordance with ASTM A 653, coating class G-60. Acoustic steel floor deck shall be shop treated and painted with a primer that is compatible with the finish paint.

- All steel floor deck and roof deck accessories (pour stops, finish strips, closures, etc.) shall be the same finish as the deck; 18 gauge minimum.

- Steel deck shall contain a minimum of 70% (combined) post-industrial/post-consumer recycled content (the percentage of recycled content is based on the weight of the component materials). Certification of recycled content shall be in accordance with the Submittal Requirements.

- Steel deck manufactured within 500 miles (by air) of the project site shall be documented in accordance with the Submittal Requirements.

- Provide 14-gauge sump pans at roof drains.

End of Preferred Schematic Report - Structural

Foley Buhl Roberts & ASSOCIATES INC
structural engineers

2150 Washington Street
Newton MA 02462
T 617·527·9600
F 617·527·9606
offices in:
Newton MA
Manchester NH
Portland ME
Decatur GA
www.fbra.com

SHAKER LANE ELEMENTARY SCHOOL
Littleton, Massachusetts

General

The Shaker Lane Elementary School is located at 35 Shaker Lane in Littleton, on a 31-acre site in the western part of the Town. The original 1959/1962 two-story, steel-framed/CMU infill wall building and the 1998 one-story, steel-framed addition have a combined floor area of approximately 70,000 GSF. The 1959/1962 original building consists of a classroom wing and gymnasium. The two-story classroom wing is composed of classroom bays on each side of a double loaded corridor. The one-story 1998 addition consists of classroom space on one side of the original gymnasium and cafeteria, library, and administration space at the other side. Existing structural drawings were available for the 1998 addition but were not available for the 1959/1962 original building. The building structure generally appears to be in satisfactory condition.

Existing Structural Systems and Observations

1959/1962 Original Building

Roof construction consists of steel roof deck on steel bar joists spanning to steel girders running along the corridor and exterior walls, which are supported by 4"x4" tube steel columns. The gymnasium roof consists of wide flange steel beams spaced at approximately 16 feet on center clear spanning approximately 40 feet over the gymnasium space.

Floor construction consists of a concrete slab on steel form deck spanning to steel bar joists. Steel bar joists span to wide-flange steel girders along the corridor and along the exterior walls. Steel girders are supported by 6"x4" tube steel columns spaced at approximately 16 feet on center. Four-inch nominal CMU walls infill between the steel frames along the corridors.

Ground floor construction is assumed to be soil-supported concrete slab on grade. Foundations are assumed to be conventional shallow footings, consisting of continuous perimeter concrete foundation walls supporting the exterior wall construction and cast-in-place concrete spread footings supporting steel columns. No subsurface soils information or geotechnical studies/reports were available for the original building.

Floor and Roof construction appears to be performing satisfactorily; there is no evidence of structural distress that would indicate significantly overstressed, deteriorated, or failed structural members.

Exterior wall construction consists of a brick masonry veneer with non-bearing, unreinforced CMU backup walls. Interior walls are a combination of non-bearing CMU construction and cold form metal framing partitions. The exterior brick masonry walls generally appear to be in satisfactory condition.

The lateral force resisting system is not clearly defined for either of the principal directions of the original building. The structure does not meet current wind and seismic load requirements (strength and detailing). The perimeter and interior masonry infill walls provide a level of lateral force resistance (by default); however, the construction of these walls does not meet current code requirements.

1998 Addition

Roof construction consists of 1½" steel roof deck on K-series steel joists or steel beams, which span to steel girders. Steel girders are supported by tube steel columns. The roof was designed for a uniform snow load of 35psf, which meets the current minimum flat roof snow load requirements for Littleton. The existing drawings do not state that snow drift was considered for the design of the roof; however, it does appear that joist spacing was reduced at areas adjacent to higher roofs. Roof construction appears to be performing satisfactorily; there is no evidence of structural distress that would indicate significantly overstressed, deteriorated, or failed structural members.

Ground floor construction consists of a soil-supported 5" concrete slab on grade. Foundations are conventional shallow footings. Continuous perimeter concrete foundation walls and footings support the exterior wall construction, and cast-in-place concrete spread footings support steel columns. Foundations were designed for a 2.0 TSF bearing capacity.

Exterior wall construction consists of a brick masonry veneer with cold formed metal stud framed backup walls. Interior walls are a combination of non-bearing CMU construction and cold form metal framing partitions. The exterior brick masonry walls generally appear to be in satisfactory condition.

The lateral force resisting system consists of steel braced frames in each of the principal directions of the building.

Structural Comments/Recommendations

Structural conditions were reviewed at the site (exposed and accessible areas only) on July 2, 2024. No exploratory demolition or structural materials testing was performed in conjunction with this study. While the building structure was observed to be generally in satisfactory condition, specific structural or structurally related conditions that may require further investigation and/or remediation in the future are listed below.

The building does not meet current seismic code requirements. Lateral force resistance and seismic hazards, including unreinforced masonry wall issues would need to be addressed in conjunction with a future major renovation of the building.

The roof of the 1998 Addition was designed for a uniform snow load of 35psf, which meets current minimum flat roof snow load requirements for Littleton. However, it is unknown if snow drift was considered at roof areas adjacent to the higher gymnasium roof. It is recommended that the roof framing should be evaluated further considering any potential snow drift conditions.

Cracks and spalls were observed at the top of the concrete foundation walls, exterior paving, and exterior stairs at several locations around the perimeter of the building. Refer to Figures 1 and 2. These are not major structural concerns. It is recommended that these locations be repaired and patched to prevent further deterioration from future freeze/thaw cycles.

Comments on Renovations, Alterations, Repairs, and Additions

Renovations, alterations, repairs, and additions to existing buildings in Massachusetts are governed by the provisions of the Massachusetts State Building Code (MSBC – 9th Edition) and the Massachusetts Existing Building Code (MEBC), which defines three compliance methods for the repair, alteration, change of occupancy, addition, or relocation of an existing building. The

method of compliance is chosen by the Design Team (based on the project scope and cost considerations) and cannot be combined with other methods. The Work Area Compliance Method (IEBC Chapters 4 through 12) is the most common compliance method chosen.

The design and construction of any proposed addition(s) to the existing building would be conducted in accordance with the Code for new construction. Generally speaking, additions should be structurally separated from the existing, adjacent construction by an expansion (seismic) joint to avoid any increases in gravity loads or lateral loads to the existing structural elements.

Where proposed alterations to existing structural elements carrying gravity loads result in a stress increase of over 5%, the affected element will need to be reinforced or replaced to comply with the Code for new construction. Alterations to existing structural elements resisting lateral loads (e.g., masonry infill walls and steel brace frames) which result in an increase in the demand - capacity ratio of over 10% should be avoided; otherwise, a seismic evaluation and potential upgrade will be required. Essentially, this means that removal of, or major alterations to the existing interior and exterior unreinforced masonry infill walls should be avoided if possible. Structurally attached additions (horizontal or vertical) which result in an increase in demand-capacity ratio of over 10% would also trigger a seismic evaluation and potential seismic evaluation.



Figure 1: Spalling concrete at corner of foundation wall. (Thermal expansion)



Figure 2: Cracked and spalling concrete at exterior site stair. (De-icing salts and freeze-thaw action)

End of Structural Report

3.5 Civil Assessment

PREFERRED SCHEMATIC REPORT - CIVIL ASSESSMENT MEMORANDUM

Re: Shaker Lane Elementary School, Littleton MA SCI File #54025.00

To: Meryl Nistler, AIA, WELL AP, LEED AP
Marylee Mercy, AIA, ALEP, MCPPO, NCARB
Studio G Architects

From: Drew Garvin
Stephen Powers, PE
Samiotes Consultants, Inc. November 8, 2024

EXISTING SHAKER LANE SCHOOL

Overview

The following are preliminary findings and research of the existing infrastructure of the Shaker Lane Elementary School in Littleton, MA in order to evaluate the current site for preliminary design program (PDP) options which include renovation/ addition and new construction alternatives. This study's focus is on the current site located at 35 Shaker Lane, Littleton, MA 01460 and these findings are predominantly based on visual inspection, available record plans, and other historic available resources. The site is approximately 31.75 Acres bordered by Shaker Lane to the south and Roxbury Drive to the west. Residential buildings are adjacent to the property to the west and south. The existing elementary school is a two story building with paved access to the school with a parking area to the west of the existing school building. There are athletic fields to the north and play spaces to the east of the existing school building.

Executive Summary (Civil + Infrastructure)

The existing major utilities review was based on the town's GIS, Engineering Department records, reviewing plans of previous property improvements, topographic plan of land dated 04/02/1997, and a site visit. Most of the major utilities (water, drainage, gas, & power) are available in the vicinity of the existing school building. Currently the water, power, and natural gas lines are available in the surrounding streets and drives, allowing for the potential of an addition or a new building to have access for connections. The existing school's sewer is served by an off-site septic system (see sanitary sewerage section).

Water Service

There is a 6" water main within Roxbury Drive (per property addition plans dated 04/02/1997) as well as a 8" water main within Shaker Lane. The 4" domestic line connects north (rear) of the building.

There appears to be only one (1) fire hydrant located along the existing school drive going south from Roxbury Drive to Shaker Lane (located within the grassed landscaped area in front of the school).

The spacing of hydrants around the school will need to be less than 500-ft between hydrants, which is code compliant, and provide full coverage to the building.

Refer to the plumbing facility assessment section for further in-depth analysis of the building's domestic and fire protection service and capacity.

Samiotes Consultants, Inc.
Civil Engineers + Land Surveyors

20 A Street
Framingham, MA 01701-4102

T 508.877.6688
F 508.877.8349

www.samiotes.com

Sanitary Sewage
In reviewing record drawings, the school's sanitary flow is treated via an Innovative Alternative (IA) technology sanitary sewage disposal system. The existing IA system is a series of tanks located north of the existing school. The effluent is then pumped via a 4" force main to a leaching field located off site. The 4" force main exits the property through a utility easement to a leaching field located off University Drive to the east to a 30-acre property purchased by the town in the 1990s. According to the recent Title 5 inspection dated August 16 & 21, 2024, performed by Advanced Wastewater Operations, LLC, the existing septic system was in good condition and in compliance to service the school population at that time (620 students/staff x 8 GPD = 4,960 GPD). An assessment to verify the condition of the IA system components is recommended for future design phases if any of the structures are to be reused.

After researching town records, no municipal sanitary sewer line exists within Roxbury Drive or Shaker Lane as this district of Littleton relies on the use of septic systems. Re-using the existing IA system and offsite leaching field could possibly involve upgrades to the current system based on possible increases to school students and/or staff, which will need to be investigated with any future design option planning.

Exploratory soil testing was performed on the Shaker Lane site in September of 2024 to determine if a new system (or reserve system) could be designed adjacent to any school renovation/addition or new construction option. Two potential areas were found and a second round of exploratory soil testing was performed in October of 2024 and witnessed by the appropriate Board of Health (BOH) agents to determine viability. An area in the southwest corner of the site (southwest of the existing school parking area) was determined to have potentially suitable material for a possible on-site system. Formal soil and percolation testing in this area, witnessed by the appropriate BOH agents, will be performed in the Spring of 2025 to confirm estimated high groundwater levels and viability.

Stormwater Management
The existing on-site stormwater conveyance system consists of a series of catch basins connected throughout the site within the driveways and parking areas. There are various stormwater outlets throughout the site that directly discharge to adjacent wetlands areas. Currently there is no subsurface infiltration system to provide recharge volume to the existing school building as all stormwater runoff is discharged to wetlands and detention basin on site.

Electric Service
The Shaker Lane Elementary School electrical service is provided by National Grid via overhead wires connected to infrastructure along Roxbury Drive.

Refer to the electrical facility assessment section for further in-depth analysis of the building's electrical system.

Gas Service
The Shaker Lane Elementary School gas service enters the site within Roxbury Drive from the west and connects to the rear of the existing school. There is also a gas main located withing Shaker Lane.

Refer to the plumbing facility assessment section for further in-depth analysis of the building's gas service and capacity.

Pavement
The parking lot/driveway asphalt is in good condition. Additional asphalt on the east side of the existing building, where student equipment and a student play area is located is in fair condition, but the asphalt is exhibiting signs of failure (i.e. "alligator" cracks), as well as lateral cracking. Most of the asphalt at the east

side of the existing school building would likely need a full depth replacement, in lieu of mill and overlay for any future paving rehabilitation.

Please refer to the LA section for additional information on the condition of site materials.

Parking and Accessibility
The current parking lot on-site has a total of approximately 85± car spaces, of which six (6) are designated as accessible parking spots. There appears to be no van accessible spots. The parking quantity on site is insufficient, such that some parking occurs in entrance and exit driveways.

Per the Littleton Zoning Bylaw, there is no off-street parking criteria listed for an educational use. A review with the Planning Board will be required to determine the required amount of spaces. Required off-street parking and loading spaces shall be located on the same lot as the building or use they are intended to serve, or in the case of parking spaces, on other premises within three hundred (300) feet of such lot.

Based on the most recent ADA/MAAB regulations; a site that contains a total of 76 to 100 parking spaces needs to provide a total of four (4) handicap accessible parking spaces of which 1 needs to be van accessible.

Please refer to LA section for additional information on Parking and Accessibility.

Emergency Vehicle Access
Emergency vehicle access is provided off Roxbury Drive via a main driveway that is routed through the western (front) side of the building. No Parking/Fire Lane striping is provided along the edge of the main access drive. Additionally, vehicular access is provided to the north section of the school building via a paved road off the main drive.

Flood Plain
The site is not within a FEMA Floodplain, per The FEMA Flood Insurance Rate Map (see figure 02). The property is located in Zone X, defined as an area outside the 500-year flood plain with less than 0.2% annual probability of flooding. Annual Probability of Flooding of Less than one percent.

NHESP Priority Habitats of Rare Species and Rare Wildlife
The site is not located within Estimated/Priority Habitat for Rare Species according to the Massachusetts Natural Heritage & Endangered Species Program (MaNHESP). However, the U.S. Fish & Wildlife Service's Information for Planning and Consultation (IPaC) GIS mapping database indicated that the existing site may potentially be habitat for the Monarch Butterfly and the Northern Long-eared Bat. An additional study may be required to determine if the site contains habitats for these two endangered species and if the project requires additional consultation with the US Fish and Wildlife Service.

Wetlands
Based on a site visit by ECR, the environmental subconsultant, resource areas (i.e. Wetlands, Flood Plain, Streams, etc.) are located on-site. Bordering Vegetated Wetlands (BVW #A1-#A60, BVW #B1-#B25,BVW #C1-#C6, BVW #D1-#D29) and the Inland Bank (#IB1-#IB7) have been identified and flagged by ECR. A stream located north of the site has also been identified and flagged to identify the extent of the 200 foot riverfront area. It is presumed any new construction or renovation will not encroach on resource areas (See Figure 01: Resource Delineation Areas Map). A wetland report by a wetland scientist will be provided for additional information to reference the Map of Resource Areas provided.

Conservation Bylaw regulation
Wetlands resource areas are protected by the Massachusetts Wetlands Protection At, Massachusetts Wetlands Protection Act Regulations, and Town of Littleton Conservation Bylaw. Per the Littleton

Conservation Bylaw, to prevent wetlands loss, in the judgment of the Commission, any new activity (other than travel by foot or non-motorized vehicle or removal of invasive vegetation using proper methods) or structure within 50 feet of a Bank or Bordering vegetated wetland (BVW) is likely to alter the Bank or BVW. No new activity or structure (other than the aforesaid travel or removal of invasive vegetation) shall be allowed within the No-Disturbance Area(s) set forth below except under a Waiver as provided in Section 1.4 of these Regulations (or as otherwise provided in these Regulations). This is the minimum distance for the No-Disturbance Area; the distance may be extended further by the Commission if deemed necessary for the protection of the Interests of the Bylaw, up to the outer extent of the Buffer Zone as established in the Bylaw.

a) No-Disturbance Area: This is any area within the BVW or Bank and the first 50 feet of the Buffer Zone from BVW or Bank. No activities or work is permitted other than passive (foot or non-motorized vehicle) passage and removal of invasive vegetation if done in compliance with these Regulations. Except as noted, no vegetation may be disturbed, and the area should remain unchanged from its pre-project state.

b) Marking the No-Disturbance Area: The commission may require the limits of No-Disturbance be marked prior to construction.

Permitting

Littleton Zoning Bylaw

Zoning Designation

Zoning Table Based on Littleton Zoning Bylaws	
Zoning District: R-1A-Single Residential District	
Requirements	Required/Allowed
Minimum Lot Area	40,000 SF
Front Yard Setback	30 FT *
Side Yard Setback	15 FT
Rear Yard Setback	15 FT
Minimum Lot Frontage	150 FT
Max. Building Height	32 FT
Max. Building + Paving Coverage	60%

*If more than one street abuts the lot, then the additional street setback may be reduced one foot for every 2,000 square feet under 40,000square feet of lot area, but to not less than 15 feet. Where structures exist on the adjacent lot(s) on either side of the property, the street setback need not be greater than the average of the setbacks of the adjacent structures

Site plan approval by the Planning Board is required for the creation of, addition to, or substantial alteration of all non-residential and non-agricultural structures, of a parking area having eight or more spaces, and for any substantial deviation from an approved site plan, or when any of the above situations is subject to a change of use. In addition, the Building Commissioner may require a site plan review if he/she deems it necessary in order to determine zoning compliance. The site plan review application requires essential details such as property location and adherence to zoning regulations, building specifications with elevation drawings, parking and access plans, site topography, utility systems, lighting, signs, proposed landscaping, buffers. Additionally, traffic impact data and environmental impact studies may be required by the Planning Board.

Stormwater Management Permit Regulation

All construction, development and redevelopment activities involving land disturbance of one acre or more or will disturb less than one acre of land but which is part of a larger common plan of development or sale which will ultimately disturb equal to or greater than one acre of land will require a Stormwater Management Permit (SMP).

The SMP application requires the preparation of an Erosion and Sedimentation Control Plan to address temporary stormwater runoff and erosion control during construction and a stormwater management plan for post-development stormwater control. Applicants will develop the stormwater management plan in accordance with the goals of the USEPA General Construction Permit, Massachusetts Stormwater Handbook, Massachusetts Wetlands Protection Act, M.G.L. Chapter 131, Section 40, and Town of Littleton Stormwater Management Permit Regulation.

Board of Health

Any updated/upgraded or new septic system will be required to meet 310 CMR 15.00 Septic Systems Policy and Town of Littleton Board of Health Title 5 supplemental regulations (currently supported by the Nashoba Board of Health). In addition to the septic system application, design plans and soil evaluations are required. An Operation and Maintenance plan may be needed, with a focus on record-keeping and ongoing compliance for environmental protection. Title 5 inspectors must be DEP and Town of Littleton Board of Health certified.

301 CMR 11.00: MEPA Regulations

Depending on the size and scope of the any new development, MEPA permitting may be required for the site. If the scope exceeds thresholds for an ENF (or an EIR for more significant land development impacts,) including but not limited to the following:

1. Direct alteration of 25 or more acres of land.
2. Creation of five or more acres of impervious area.

A full review of thresholds shall be completed once the Preferred Schematic Design is approved. Additionally, if a Project requires MEPA review in accordance with 301 CMR 11.01(2) and one or more Environmental Justice Populations are located within the Designated Geographic Area around the Project (within one mile of the project), measures shall be undertaken to provide public involvement opportunities for Environmental Justice Populations.

Permitting Timelines

The SD submission will provide an updated project schedule that includes the timeline for all permitting requirements with the anticipated filing dates and approval dates for the District's Preferred Schematic. All approvals must be obtained prior to construction bidding.

Anticipated Permitting timeline (to begin at Design Development), providing the following permits are required:

- Wetland Scientist engagement – Wetlands confirmatory field investigation and report 1-2 months
- Environmental consultant – Endangered Species Survey field investigation and report 1-2 months (if necessary, concurrent with wetlands investigation)
- MEPA – ENF typically 6-8 months. Can begin following Wetland/Environmental consultant investigations (Only potential MEPA ENF trigger is possible creation of 5 or more acres of impervious area, current Preferred Option is approximately 4.5 acres)
- Planning Board: 4-6 months
    - Site Plan Review

- Stormwater Management Permit (concurrently with Site Plan Review)

- Conservation Commission: Notice of Intent 4-6 Months (concurrently with Planning Board and ENF Review)
- Board of Health – 3-4 Months (concurrently with above)
- NPDES/SWPPP – 1 Month (filed prior to construction following completion of Permitting)

PROPOSED DEVELOPMENT OPTIONS

Option 2.1: Renovation & Addition to East of Existing Shaker Lane Elementary School (SLS)

This option includes renovating portions of the existing building and campus and constructing an addition on adjacent property to the east. With this renovation and addition alternative, it may be possible to reuse the majority of the existing utilities. Please see the below recommendations and impacts for this project alternative:

- Stormwater Management
  - Cleaning of all drainage structures and pipe network included in the existing car loop and existing lower parking area
  - Condition assessment of all portions of existing drainage system to be reused
  - Re-grade impervious areas for proper drainage and tributary areas to existing and proposed stormwater structures
  - Provide foundation drainage for the proposed additions / new buildings
  - Capture / route roof storm water to existing and proposed stormwater systems
  - Installation of additional stormwater structures (assume 10 catch basins (CBs), 8 drainage manholes (DMHs), 3 water quality units (WQUs with membrane), 1,500 LF of drain lines, 300 LF of roof drain lines)
  - Due to an increase in impervious area, a stormwater recharge system will need to have approximately 18,000 CF of storage
  - Utilization of rain gardens and Low Impact Design elements
  - Additional stormwater management measures and structures may be requested by the Town of Littleton to meet or exceed the current Massachusetts Stormwater management standards.
- Electric Service
  - The existing campus electric service may remain depending on the potential increase in electrical loads. At minimum, it is possible a new transformer will be required.
  - Refer to the electrical facility assessment section for further in-depth analysis of the building's electrical system and requirements.
- Gas Service
  - The existing campus gas service will remain.
  - Refer to the plumbing facility assessment section for further in-depth analysis of the building's gas service and capacity.
- Sewer
  - The Sewage Disposal I/A treatment System (SDS) components and a portion of the on-site force main may need to be reconfigured as proposed additions are planned at their current locations. The relocation of any SDS component may require construction phasing to maintain and protect existing functionality. The sewage disposal leaching field (off-site) may be able to remain assuming the SDS capacity can be confirmed to meet any updated flow from the proposed improvements as required by The Town of Littleton Board of Health and DEP. It should be noted that a new SDS with I/A treatment may be required depending on the increase in anticipated capacity (i.e. students/staff).
  - After a second round of exploratory testing was performed in October of 2024, a potential area was identified for a new on-site septic system (see Overview Sanitary Sewage section). This area's viability is planned to be confirmed with formal testing as witnessed by the

appropriate BOH agents and procedures in the Spring of 2025. It also may be beneficial to incorporate the existing I/A system components in any new design to increase effluent quality for recharge in the soil. These options will be further explored once the Preferred Schematic Design is approved.

- If a new SDS can be located on-site (with or without I/A requirements), sizing would be anticipated as outlined below:
    - Daily Flow = (540 students+80 admin) x 8 gallons per day/person = 4,960 GPD
    - System sizing = 4,960 GPD / 0.60 (LTAR – Assume Class II soil type <10 mpi (to be confirming with future on-site soil testing) = 8,267 SF leaching area required.

- System Design
    - 2-5,500 gallon tanks in series
    - 1-5,500 gallon pump / dosing chamber, including duplex pumps, equipment, wiring, etc.
    - 1-5,000 gallon grease trap
    - 3 manholes
    - Assume 6” PVC gravity flow to pump chamber – 100 LF
    - 3”+ PVC force main to leaching area – 200 LF
    - Leaching area – Assume 2’x2’x100’ trench – 600 SF of storage per trench
    - Assume 14 trenches – 600’ SF/trench x 14 trenches = 8,400 SF leaching area

- Water
    - It is assumed a new 8” service for fire protection and 4” domestic service for the building will be required.
    - Provide upgrade to 8”CLDI water main loop (approx. 2,000 LF) with hydrants located no more than 500 ft. apart as required by the Littleton Fire Department (assume 3 hydrants, 10 water valves) may be required.
    - A flow test will be required.
    - Refer to the plumbing facility assessment section for further in-depth analysis of the building’s domestic and fire protection service requirements and capacity.

- Wetland
    - Permitting as required by the Littleton Conservation Commission for any improvements above that may impact adjacent resources area (Bordering Vegetated Wetlands and Buffer Zones)

Option 3.1: New Construction at Upper Field (Preferred Option)

This option includes demolishing the existing Shaker Lane Elementary School building and constructing a new Elementary school in the northeast (upper) field location of the site. At the school building's old location, one large field would contain multiple youth soccer fields. This layout would require several new utility connections / piping and structures. Please see the below recommendations and impacts for this project alternative:

- Stormwater Management
  - Cleaning of all drainage structures and pipe network included in the existing car loop and existing lower parking area
  - Condition assessment of all portions of existing drainage system to be reused
  - Re-grade impervious areas for proper drainage and tributary areas to existing and proposed stormwater structures
  - Provide foundation drainage for the proposed school building
  - Capture / route roof storm water to proposed stormwater systems
  - Installation of additional stormwater structures (assume 21 CBs, 18 DMHs, 5 WQUs, 3,000 LF of drain lines, 400 LF of roof drain lines)
  - Due to an increase in impervious area, a stormwater recharge system will need to have approximately 30,000 CF of storage
  - Utilization of rain gardens and Low Impact Design elements
  - Additional stormwater management measures and structures may be requested by the Town of Littleton to meet or exceed the current Massachusetts Stormwater management standards.
- Electric Service
  - A new underground electric service will need to be provided for the upper field location (approx. 750') and it is expected that a new transformer and generator will be required.
  - Refer to the electrical facility assessment section for further in-depth analysis of the building's electrical system and requirements.
- Gas Service
  - A new underground gas service will need to be provided for the upper field location (approx. 750').
  - Refer to the plumbing facility assessment section for further in-depth analysis of the building's gas service and capacity.
- Sewer
  - See potential SDS options, updates, and calculations as described in Option 1.
- Water
  - It is assumed a new 8" service for fire protection and 4" domestic service to the building is recommended.
  - A 8"CLDI fire loop main (approx. 2,500 LF) with hydrants located no more than 500 ft. apart as required by the Littleton Fire Department (assume 4 hydrants, 13 water valves) may be required.
  - A flow test will be required.

- Refer to the plumbing facility assessment section for further in-depth analysis of the building's domestic and fire protection service requirements and capacity.

- Wetland
  - Permitting as required by the Littleton Conversation Commission for any improvements above that may impact adjacent resources area (Bordering Vegetated Wetlands and Buffer Zones)

Option 3.2: New Construction at Lower Field

This option includes demolishing the existing Shaker Lane Elementary School building and constructing a new Elementary school in the northeast (upper) field location and north (lower) field location of the site. At the school building's old location, one large field would contain multiple youth soccer fields. This layout would require several new utility connections / piping and structures. Please see the below recommendations and impacts for this project alternative:

- Stormwater Management
  - Cleaning of all drainage structures and pipe network included in the existing car loop and existing lower parking area
  - Condition assessment of all portions of existing drainage system to be reused
  - Re-grade impervious areas for proper drainage and tributary areas to existing and proposed stormwater structures
  - Provide foundation drainage for the proposed school buildings
  - Capture / route roof storm water to proposed stormwater systems
  - Installation of additional stormwater structures (assume 15 CBs, 11 DMHs, 5 WQUs, 3,000 LF of drain lines, 300 LF of roof drain lines)
  - Due to an increase in impervious area, a stormwater recharge system will need to have approximately 24,000 CF of storage
  - Utilization of rain gardens and Low Impact Design elements
  - Additional stormwater management measures and structures may be requested by the Town of Littleton to meet or exceed the current Massachusetts Stormwater management standards.
- Electric Service
  - A new underground electric service will need to be provided from Roxbury Drive for the lower field location (approx. 500') and it is expected that a new transformer and generator will be required.
  - Refer to the electrical facility assessment section for further in-depth analysis of the building's electrical system and requirements.
- Gas Service
  - A new underground gas service will need to be provided from Roxbury Drive for the lower field location (approx. 500').
  - Refer to the plumbing facility assessment section for further in-depth analysis of the building's gas service and capacity.
- Sewer
  - See potential SDS options, updates, and calculations as described in Option 1.
- Water
  - It is assumed a new 8" service for fire protection and 4" domestic service for the building will be required.
  - A 8"CLDI fire loop main (approx. 1,800 LF) with hydrants located no more than 500 ft. apart as required by the Littleton Fire Department (assume 4 hydrants, 13 water valves) may be required.

- A flow test will be required.
- Refer to the plumbing facility assessment section for further in-depth analysis of the building's domestic and fire protection service requirements and capacity.

- Wetland
  - Permitting as required by the Littleton Conservation Commission for any improvements above that may impact adjacent resources area (Bordering Vegetated Wetlands and Buffer Zones)

If you have any questions or comments regarding this memo, please call or email me at khadley@samiotes.com 508-877-6688 (ext. 10) or Drew Garvin at dgarvin@samiotes.com (ext. 25).



Figure 01: Resource Delineation Areas Map (sketch by ECR).

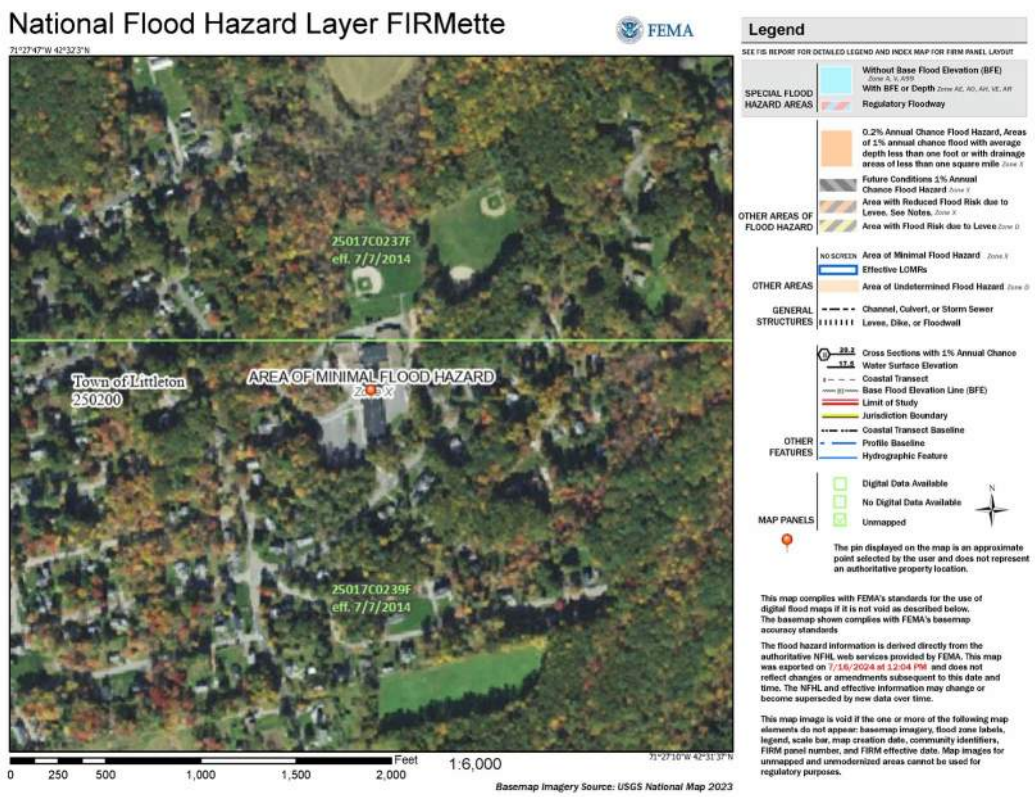


Figure 02: FEMA Firmette



Image 01: Existing ADA compliant parking/ striping/ ramp with detachable warning stripe.



Image 02: North side of building Drive aisle access and fire lane indication.



Image 03: Lower Athletic Field north of existing school building.



Image 04: Existing Loading Dock (Left) and IA septic system related structures and Maintence Shed (Right).



Image 05: Asphalt pavement with fading crosswalk striping to play area. North east of existing school building.



Image 06: Example of asphalt pavement cracking/deterioration on west side of existing building. Used as school play area with basketball hoop



Image 07: Example of Condensate/Roof drains with no connection to drainage system and no splash pad.



Image 08: : Condensate/Roof Drain with no connection to drainage system within close proximity of an electrical infrastructure for the existing school building.



Image 09: Asphalt walkway converts to concrete walkway south of the existing building.

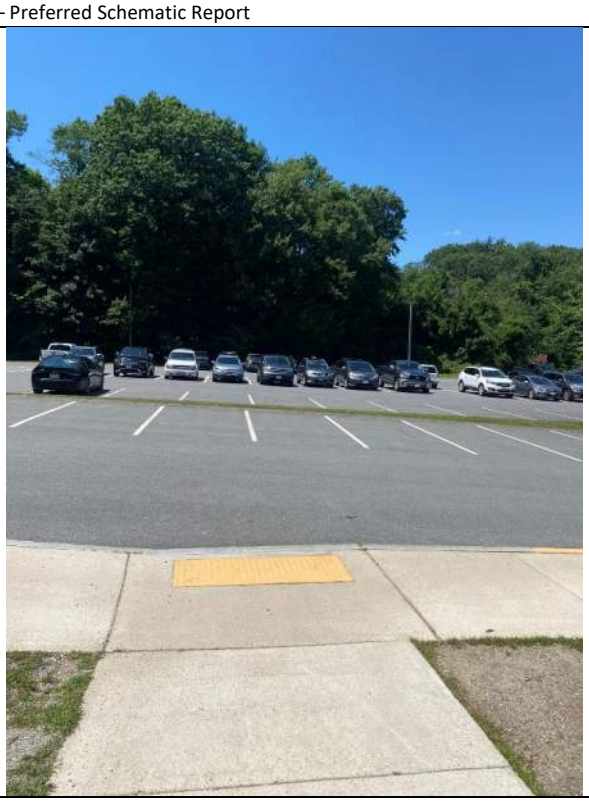


Image 10: Concrete walkway and ADA Detachable warning stripe to access exsting parking lot west of the exsting building.



Image 11: Existing parking lot with asphalt in good condition west of the existing school.



Image 12: Additonal ADA parking spaces with visible yellow hydrant with bollard to its left side of the image. ADA space not compliant due to having no accessible access to crosswalk.



Image 13: Gas meter and marking west of the exsting school building by main entrance to the school building.



Image 14: Catch basin at parking lot exit entrance on west side of existing school building.

3.5 PDP Civil Assessment

PRELIMINARY DESIGN PROGRAM - CIVIL ASSESSMENT MEMORANDUM

Re: Shaker Lane Elementary School SCI File #54025.00

To: Meryl Nistler
Marylee Mercy
Studio G Architects

From: Kyle Hadley
Drew Garvin
Stephen Powers, PE
Samiotes Consultants, Inc July 26, 2024

Overview

The following are preliminary findings and research of the existing infrastructure of the Shaker Lane Elementary School in Littleton, MA in order to evaluate the current site for preliminary design program (PDP) options which include renovation/ addition and new construction alternatives. This study's focus is on the current site located at 35 Shaker Lane, Littleton, MA 01460 and these findings are predominantly based on visual inspection, available record plans, and other historic available resources. The site is approximately 31.75 Acres bordered by Shaker Lane to the south and Roxbury Drive to the west. Residential buildings are adjacent to the property to the west and south. The existing elementary school is a two story building with paved access to the school with a parking area to the west of the existing school building. There are athletic fields to the north and play spaces to the east of the existing school building.

Zoning Designation

Zoning Table Based on Littleton Zoning Bylaws	
Zoning District: R-1A-Single Residential District	
Requirements	Required/Allowed
Minimum Lot Area	40,000 SF
Front Yard Setback	30 FT *
Side Yard Setback	15 FT
Rear Yard Setback	15 FT
Minimum Lot Frontage	150 FT
Building Height	32 FT
Building + Paving Coverage of Lot	60%

*If more than one street abuts the lot, then the additional street setback may be reduced one foot for every 2,000 square feet under 40,000square feet of lot area, but to not less than 15 feet. Where structures exist on the adjacent lot(s) on either side of the property, the street setback need not be greater than the average of the setbacks of the adjacent structures

Information on the Town of Littleton Conservation Bylaw regulation has also been included in the report, as the site has jurisdictional areas on or near the site that may require filing with the Conservation Commission if work occurs within those jurisdictional areas.

Executive Summary (Civil + Infrastructure)

The existing major utilities review was based on the town's GIS, Engineering Department records, reviewing plans of previous property improvements, topographic plan of land, dated 04/02/1997, and a site visit. Most of the major utilities (water, drainage, gas, & power) are available in the vicinity of the existing

Samiotes Consultants, Inc.
Civil Engineers + Land Surveyors

20 A Street
Framingham, MA 01701-4102

T 508.877.6688
F 508.877.8349

www.samiotes.com

school building. Currently the water, power, and natural gas lines are available in the surrounding streets and drives, allowing for the potential of an addition or a new building to have access for connections. The existing school' s sewer is served by an off-site septic system (see sanitary sewerage section).

Water Service
There is a 6" water main within Roxbury Drive (per property addition plans dated 04/02/1997). The 4" domestic line connects north of the building.

There appears to be only one (1) fire hydrant located along the existing school drive going south from Roxbury Drive to Shaker Lane located within the grassed landscaped area in front of the school.

The spacing of hydrants around the school will need to be less than 500-ft between hydrants, which is code compliant, and provide full coverage to the building.

Refer to the plumbing facility assessment section for further in-depth analysis of the building's domestic and fire protection service and capacity.

Sanitary Sewage
In reviewing record drawing, the school's sanitary flow is treated via an Innovative Alternative (IA), technology sanitary sewage disposal system. The existing IA system is a series of tanks located north of the existing school. The effluent is then pumped via a 4" force main to a leaching field. Located off site the 4" force main leads off the property through a utility easement to a leaching field located off University Drive to the east to a 30-acre property purchased by the town in the 1990s. It should be noted the off-site leaching facility could not be located during the initial site investigation visit. Future investigation required.

In review of record drawings, no municipal sanitary sewer line exists within Roxbury Drive or Shaker Lane as this district of Littleton relies on the use of septic systems. Re-using the existing IA system and offsite leaching field could possibly involve upgrades to the current system based on possible increases to school, staff, etc. Which will need to be investigated with any future design option planning.

A condition assessment to verify the location and condition of all sewer services and systems is recommended for future design phases. If any portion of the sewer services is to be reused, this would require a Title V inspection to determine if the system is in compliance with current DEP and Littleton Board of Health requirements.

Updated soil testing should also be performed on site to determine if a new system could be constructed adjacent to any school renovation/addition or new construction option. It also may be possible to tie into a proposed shared septic system currently being designed off Russell St. This option would require an approximate 1.5-mile connection to the system. All viable options will be investigated during the subsequent MSBA phases.

Stormwater Management
The existing on-site stormwater conveyance system consists of a series of catch basins connected throughout the site within the driveways and parking areas. There are various stormwater outlets throughout the site that directly discharge to adjacent wetlands areas. Additional field verifications required. An existing conditions survey is recommended to verify all connections and structures. Currently there is no subsurface infiltration system to provide recharge volume to the existing school building as all stormwater runoff is discharged to wetlands and detention basin on site.

Electric Service
The Shaker Lane Elementary School electrical service is provided by National Grid via overhead wires connected to infrastructure along Roxbury Drive.

Refer to the electrical facility assessment section for further in-depth analysis of the building's electrical system.

Pavement
The parking lot/driveway asphalt is in good condition. Additional asphalt on the east side of the existing building, where student equipment and student play area are located, is in fair condition, but the asphalt is exhibiting signs of failure (i.e. "alligator" cracks), as well as lateral cracking. Most of the asphalt at the east side of the existing school building would likely need a full depth replacement, in lieu of mill and overlay for any future paving rehabilitation.

Please refer to the LA section for additional information on materials condition.

Parking and Accessibility
The current parking lot on-site has a total of approximately 85± car spaces, of which six (6) are designated as accessible parking spots. There appears to be no van accessible spots. The parking quantity on site is insufficient, such that some parking occurs in entrance and exit driveways.

Per the Littleton Zoning Bylaw, there is no off-street parking criteria listed for an educational use. A review with the Planning Board will be required to determine the required amount of spaces Required off-street parking and loading spaces shall be located on the same lot as the building or use they are intended to serve, or in the case of parking spaces, on other premises within three hundred (300) feet of such lot.

Based on the most recent ADA/MAAB regulations; a site that contains a total of 76 to 100 parking spaces needs to provide 4 of total handicap accessible parking spaces of which 1 needs to be van accessible.

Please refer to LA section for additional information on Parking and Accessibility.

Emergency Vehicle Access
Emergency vehicle access is provided off Roxbury Drive via a main driveway that is routed through the western (front) side of the building. A striped fire lane is provided along the edge of the main access drive. Additionally, vehicular access is also provided to the north section of the school building via a paved road off the main drive.

Flood Plain
The site is not within a FEMA Floodplain, per The FEMA Flood Insurance Rate Map (see figure 02). The property is located in Zone X, defined as an area outside the 500-year flood plain with less than 0.2% annual probability of flooding. Annual Probability of Flooding of Less than one percent.

NHESP Priority Habitats of Rare Species and Rare Wildlife
The site is not located within Estimated/Priority Habitat for Rare Species according to the Massachusetts Natural Heritage & Endangered Species Program (MaNHESP). However, the U.S. Fish & Wildlife Service's Information for Planning and Consultation (IPaC) GIS mapping database indicated that the existing site may potentially be habitat for the Monarch Butterfly and the Northern Long-eared Bat. An additional study may be required to determine if the site contains habitats for these two endangered species and if the project requires additional consultation with the US Fish and Wildlife Service.

Wetlands
Based on a site visit by ECR, an environmental subconsultant, resource areas (i.e. Wetlands, Flood Plain, Streams, etc.) do appear to be located on-site. Bordering Vegetated Wetlands (BVW #A1-#A60, BVW #B1-#B25,BVW #C1-#C6, BVW #D1-#D29) and the Inland Bank (#IB1-#IB7) have been identified and flagged by ECR. A stream located north of the site has also been identified and flagged to identify the extent of the

200 foot riverfront area. It is presumed any new construction or renovation will not encroach on resource areas (See Figure 01: Resource Delineation Areas Map). A wetland report by a wetland scientist will be provided for additional information to reference the Map of Resource Areas provided.

Conservation Bylaw regulation
Wetlands resource areas are protected by the Massachusetts Wetlands Protection Act, Massachusetts Wetlands Protection Act Regulations, and Town of Littleton Conservation Bylaw. Per the Littleton Conservation Bylaw, to prevent wetlands loss, in the judgment of the Commission, any new activity (other than travel by foot or non-motorized vehicle or removal of invasive vegetation using proper methods) or structure within 50 feet of a Bank or Bordering vegetated wetland (BVW) is likely to alter the Bank or BVW. No new activity or structure (other than the aforesaid travel or removal of invasive vegetation) shall be allowed within the No-Disturbance Area(s) set forth below except under a Waiver as provided in Section 1.4 of these Regulations (or as otherwise provided in these Regulations). This is the minimum distance for the No-Disturbance Area; the distance may be extended further by the Commission if deemed necessary for the protection of the Interests of the Bylaw, up to the outer extent of the Buffer Zone as established in the Bylaw.

a) No-Disturbance Area: This is any area within the BVW or Bank and the first 50 feet of the Buffer Zone from BVW or Bank. No activities or work is permitted other than passive (foot or non-motorized vehicle) passage and removal of invasive vegetation if done in compliance with these Regulations. Except as noted, no vegetation may be disturbed, and the area should remain unchanged from its pre-project state.

b) Marking the No-Disturbance Area: The commission may require the limits of No-Disturbance be marked prior to construction.

Littleton Zoning Bylaw
Site plan approval by the Planning Board is required for the creation of, addition to, or substantial alteration of all non-residential and non-agricultural structures, of a parking area having eight or more spaces, and for any substantial deviation from an approved site plan, or when any of the above situations is subject to a change of use. In addition, the Building Commissioner may require a site plan review if he/she deems it necessary in order to determine zoning compliance. The site plan review application requires essential details such as property location and adherence to zoning regulations, building specifications with elevation drawings, parking and access plans, site topography, utility systems, lighting, signs, proposed landscaping, buffers. Additionally, traffic impact data and environmental impact studies may be required by the Planning Board.

Stormwater Management Permit Regulation
All construction, development and redevelopment activities involving land disturbance of one acre or more or will disturb less than one acre of land but which is part of a larger common plan of development or sale which will ultimately disturb equal to or greater than one acre of land will require a Stormwater Management Permit (SMP).

The SMP application requires the preparation of an Erosion and Sedimentation Control Plan to address temporary stormwater runoff and erosion control during construction and a stormwater management plan for post-development stormwater control. Applicants will develop the stormwater management plan in accordance with the goals of the USEPA General Construction Permit, Massachusetts Stormwater Handbook, Massachusetts Wetlands Protection Act, M.G.L. Chapter 131, Section 40, and Town of Littleton Stormwater Management Permit Regulation.

Board of Health

Any updated or new septic system will be required to meet 310 CMR 15.00 Septic Systems Policy and Town of Littleton Board of Health Title 5 supplement regulations. In addition, to the septic system application it is required to include design plans and soil evaluations. An Operation and Maintenance plan may be needed, with a focus on record-keeping and ongoing compliance for environmental protection. Title 5 inspectors must be DEP and Town of Littleton Board of Health certified.

301 CMR 11.00: MEPA Regulations

Depending on the size and scope of the any new development, MEPA permitting may be required for the site. If the scope exceeds thresholds for an ENF (or an EIR for more significant land development impacts,) including but not limited to the following:

1. Direct alteration of 25 or more acres of land.
2. Creation of five or more acres of impervious area.
3. Alteration requiring a variance in accordance with the Wetlands Protection Act.
4. New withdrawal or Expansion in withdrawal of: 2,500,000 or more gpd from a surface water source.

A full review of thresholds shall be completed once the project is approved. Additionally, if a Project requires MEPA review in accordance with 301 CMR 11.01(2) and one or more Environmental Justice Populations are located within the Designated Geographic Area around the Project (within one mile of the project), measures shall be undertaken to provide public involvement opportunities for Environmental Justice Populations.

PROPOSED DEVELOPMENTS

Option 1: Code Upgrade of Existing Building

This option includes upgrades to the existing school building to better sustain accessibility and safety. Capital I improvements revolve around fire protection, utility services, accessibility, HVAC, potential geothermal and/or photovoltaic systems, vehicle circulation, and finishes throughout the existing building. See below recommendations and impacts for this project alternative.

- Stormwater Management
  - Cleaning of all drainage structures and pipe network

- Condition assessment of existing drainage system
- Additional stormwater management measures may be requested per the Town of Littleton to meet the current Massachusetts Stormwater management standards. To the extent practicable. This may include capturing roof stormwater, installation of additional stormwater collection structures and/or water quality units, utilization of low impact development (LID) elements, etc.

- Sewer
  - The Existing Sewage disposal system will remain, assuming it passes a MassDEP Title V septic system evaluation.
- Water
  - A dedicated connection for fire protection to the building is recommended and possibly a fire loop main with hydrants located no more than 500 ft. apart as required by the Littleton Fire Department.
  - A flow test will be required.
- Parking
  - Parking capacity on site would need to be evaluated and increased as required by the Littleton Planning Board. Including ADA/Van accessible spaces as required ADA/MAAB. Review and update all ADA accessible ramps and access where needed to comply.
- Hardscape
  - Asphalt to the east of the existing building will likely need full depth replacement where failure is occurring.
  - Emergency Vehicle access – Evaluate fire truck turning radii and width for updated fire emergency (Fire) vehicles as required.
  - Car and School Bus Drop off areas – Evaluate vehicular accessibility and capacity.
- Wetland
  - Permitting as required by the Littleton Conversation Commission for any improvements above that may impact adjacent resources area (Bordering Vegetated Wetlands and Buffer Zones)

Option 2.1/ 2.2: Renovation & Addition to East of Existing Shaker Lane Elementary School (SLS) / Renovation & Addition to North of SLS

This option includes renovating portions of the existing building, campus and constructing additional buildings on adjacent property to the east. With this renovation and addition alternative, it may be

possible to reuse the majority of the existing utilities. Please see the below recommendations and impacts for this project alternative:

- Stormwater Management
  - Cleaning of all drainage structures and pipe network
  - Condition assessment of existing drainage system
  - Re-grade impervious areas for proper drainage and tributary areas to stormwater structures
  - Provide foundation drainage for the proposed additions/ new buildings
  - Capture / route roof storm water to stormwater systems
  - Installation of additional stormwater collection structures at low points (assume fifteen)
  - Installation of water quality units (assume two)

- Utilization of rain gardens and Low Impact Design elements
- Detention / Infiltration BMP's to offset additional imperviousness, in any option that creates additional impervious areas.
- Additional stormwater management measures and structures may be requested per the Town of Littleton to meet the current Massachusetts Stormwater management standards.

- Sewer
  - The Sewage Disposal I/A treatment system (SDS) components and the majority of the force main on site Sanitary may need to be reconfigured as proposed additions are proposed at their location. The SDS relocation of any SDS component may require complex phasing to maintain and protect. The Sewage disposal leaching field (off site) may be able to remain assuming the SDS capacity can be confirmed to meet any updated flow from the proposed improvements as required by The Town of Littleton Board of Health and Department of Public Works. It should be noted that a new SDS with I/A treatment may be required depending on the increase in anticipated capacity (i.e. students/staff).
- Water
  - A dedicated connection for fire protection to the building is recommended and possibly a fire loop main with hydrants located no more than 500 ft. apart as required by the Littleton Fire Department.
  - A flow test will be required.
- Parking
  - Parking capacity on site would need to be evaluated and increased as required by the Littleton planning board. Including ADA/Van accessible spaces as required ADA/MAAB. Review and update all ADA accessible ramps and access where needed to comply.
- Hardscape
  - Demolition and removal of existing asphalt on the east side of the existing building is required and asphalt emergency access drive would need to be extended to the east of the property and new curb cut access provided on Shaker Lane. Evaluate fire truck turning radii and width for updated fire emergency (Fire) vehicles as required. Remove and replace damaged curbing and construct a new bus loop.
  - Materials are listed below in order of preference.
    - Granite curbing (especially at drop off areas in front of school).
    - Pre-cast concrete (it is suggested that this material not to be used anywhere that is salted or snowplowed).
    - Bituminous Berm (it is suggested that this material not to be used anywhere that is salted or snowplowed).
  - Remove, replace, and provide all existing and proposed sidewalk sections in accordance with ADA/MAAB requirements.
  - Provide ADA/MAAB access to existing and proposed building egresses.
  - Install ADA/MAAB required tactile warning strips at all accessible ramps.
  - Emergency Vehicle access – Evaluate fire truck turning radii and width for updated fire emergency (Fire) vehicles as required.
  - Car and School Bus Drop off areas – Evaluate vehicular accessibility and capacity.
- Wetland

- Permitting as required by the Littleton Conversation Commission for any improvements above that may impact adjacent resources area (Bordering Vegetated Wetlands and Buffer Zones)

Option 3.1/3.2: New Construction at Upper Field / New Construction at Lower Field

This option includes demolishing the existing Shaker Lane Elementary School building and constructing a new Elementary school in the northeast (upper) field location and north (lower) field location of the site. The upper athletic field would be relocated in the southwest corner of the campus in the school building's old location. This layout would require several new utility connections / piping and structures. Please see the below recommendations and impacts for this project alternative:

- Stormwater Management
  - Condition assessment of existing drainage system in portion of Roxbury Drive entrance to remain.
  - Cleaning of all drainage structures and pipe networks. To remain.
  - Provide the new drainage system for proposed athletic fields to be relocated.
  - Provide foundation drainage for the proposed buildings.
  - Installation of additional stormwater collection structures at low points (assume fifteen).
  - Installation of water quality units (assume four).
  - Utilization of rain gardens and Low Impact Design.
  - Re-grade impervious areas for proper drainage and tributary areas to stormwater structures.
  - Detention / Infiltration BMP's to offset additional imperviousness, in any option that creates additional impervious areas.
  - Additional stormwater management measures will be required per the Town of Littleton to meet the current Massachusetts Stormwater management standards. Per layout of the proposed building design, permitting for a Notice of Intent with Town of Littleton Conservation Commission, Stormwater permit with Town of Littleton Planning Board Committee, and Site Plan Review with Town of Littleton Planning Board Committee will be required due to new construction and location.

- Sewer
  - A new SDS with I/A system components would need to be constructed to provide service the proposed school location. Additional on-site and off-site (i.e. 30-are property where existing SDS is located) soil testing would need to be performed in order to site the system and.
  - Based on preliminary discussions regarding new SDS facility, sizing is based on DEP regulations 310 CMR 15.203 (5) for Schools – Elementary School with cafeteria but no gymnasium with showers – 8 GPD/Person. Based on preliminary calculations of anticipated students (486) and staff (85), we estimate an overall sanitary flow of 4,360 GPD for the leaching facility. The size of the leaching facility will depend on the soil testing (infiltration rate). A new system may require new septic components (piping, settling tank, pump chamber, I/A technology).
  - There is a potential to tie the sewage flow to a new shared town SDS currently under design. This would require the construction of approximately 1.5 mile of force main connection along Goldsmith Street. New soil testing would be required to confirm an acceptable location and approvals obtained by Town of Littleton Board of Health and Town of Littleton Department of Public Works.

- Water

- A water main will need to be extended from Roxbury Drive to service the new school location and a fire protection line installed around the facility with hydrants no less than 500 ft. apart.
- Flow test is recommended.

- Parking
  - The new parking will follow rules and regulations to Town of Littleton Off-street parking requirements and design to meet Site Plan Approval from Town of Littleton Planning Board Committee. All ADA parking will need to be compliant with ADA standards and meet MSBA parking requirements.
  - Emergency Vehicle access – Provide new emergency access drive around the proposed school location with fire truck turning radii and width as required.
  - Car and School Bus Drop off areas – Provide new drop off and Bus loop areas to service proposed school needs and capacity.
- Hardscape
  - Demolition and removal of existing asphalt. New proposed asphalt will be designed and installed to accommodate the proposed needs. Additional access from Shaker Lane will need to be researched and designed to accommodate a thru way. The existing Shaker Lane access road will be removed.
- Wetland
  - Notice of Intent Permit required as portions of proposed school lies within the Bordering Vegetated Wetlands and Resource Area Buffer Zones.

Option 4.1: New Construction at Whitcomb Field

This option would explore the demolition of the existing Shaker Lane Elementary School and relocate the school's operations to the Whitcomb fields located adjacent to the Littleton Library, Town Hall, Littleton Middle School, and Russell Street Elementary School. Additional research and Town meeting to approve this option be required. An existing plot of land survey performed by a Professional Licensed Surveyor will be required. Some additional considerations for this option may include:

- Limited one way access in & out of the site
- Location near Interstate 495

- Stormwater Management
  - Condition assessment of existing drainage system.
  - Provide foundation drainage for the proposed buildings.
  - Installation of stormwater collection structures at low points (assume twenty).
  - Installation of water quality units (assume four).
  - Utilization of rain gardens and Low Impact Design.
  - Re-grade impervious/pervious areas for proper drainage and tributary areas to stormwater structures.
  - Detention / Infiltration BMP's to offset added impervious area.
  - Stormwater management measures will be required per the Town of Littleton to meet the current Massachusetts Stormwater management standards. Per layout of the proposed building design, permitting for a Notice of Intent with Town of Littleton Conservation Commission, Stormwater permit with Town of Littleton Planning Board Committee, and Site Plan Review with Town of Littleton Planning Board Committee will be required due to new construction and location.

- Sewer
  - A new SDS with I/A system components would need to be constructed to provide service the proposed school location. Additional on-site and off-site (i.e. 30-are property where existing SDS is located) soil testing would need to be performed in order to site the system.
  - Based on preliminary discussions regarding new SDS facility, sizing is based on DEP regulations 310 CMR 15.203 (5) for Schools – Elementary School with cafeteria but no gymnasium with showers – 8 GPD/Person. Based on preliminary calculations of anticipated students (486) and staff (85), we estimate an overall sanitary flow of 4,360 GPD for the leaching facility. The size of the leaching facility will depend on the soil testing (infiltration rate). A new system may require new septic components (piping, settling tank, pump chamber, I/A technology).
  - There is a potential to tie the sewage flow to a new shared town SDS currently under design. This would require the construction of approximately 1.5 mile of force main connection along Goldsmith Street. New soil testing would be required to confirm an acceptable location and approvals obtained by Town of Littleton Board of Health and Town of Littleton Department of Public Works.

- Water
  - The fire protection connection to the proposed buildings would be supplied from the Russel Road or Shattuck Street water main with addition of a hydrant every 500 ft within the proposed site.
  - New domestic water connections would also be supplied from Russel Road or Shattuck Street water main.
  - Flow test is recommended.

- Parking
  - The new parking will follow rules and regulations to Town of Littleton Off-street parking requirements and design to meet Site Plan Approval from Town of Littleton Planning Board Committee. All ADA parking will need to be compliant with ADA standards and meet MSBA parking requirements.
  - Emergency Vehicle access – Provide new emergency access drive in front of the proposed school location with fire truck turning radii and width as required.
  - Car and School Bus Drop off areas – Provide new drop off and Bus loop areas to service proposed school needs and capacity.

- Hardscape
  - Demolition and removal of existing athletic field. New proposed asphalt will be designed and installed to accommodate the proposed needs.
  - Complex staging of hardscape and roadwork within drive aisle to access Russell Street Elementary School and Athletic Fields.

- Wetland
  - Notice of Intent Permit required as proposed school lies within Wetland resource areas.
  - A site visit and site report by a wetland scientist is required to establish an understanding of wetland delineation on site.

If you have any questions or comments regarding this memo, please call or email me at khadley@samiotes.com 508-877-6688 (ext. 10) or Drew Garvin at dgarvin@samiotes.com (ext. 25).



Figure 01: Resource Delineation Areas Map (sketch by ECR).

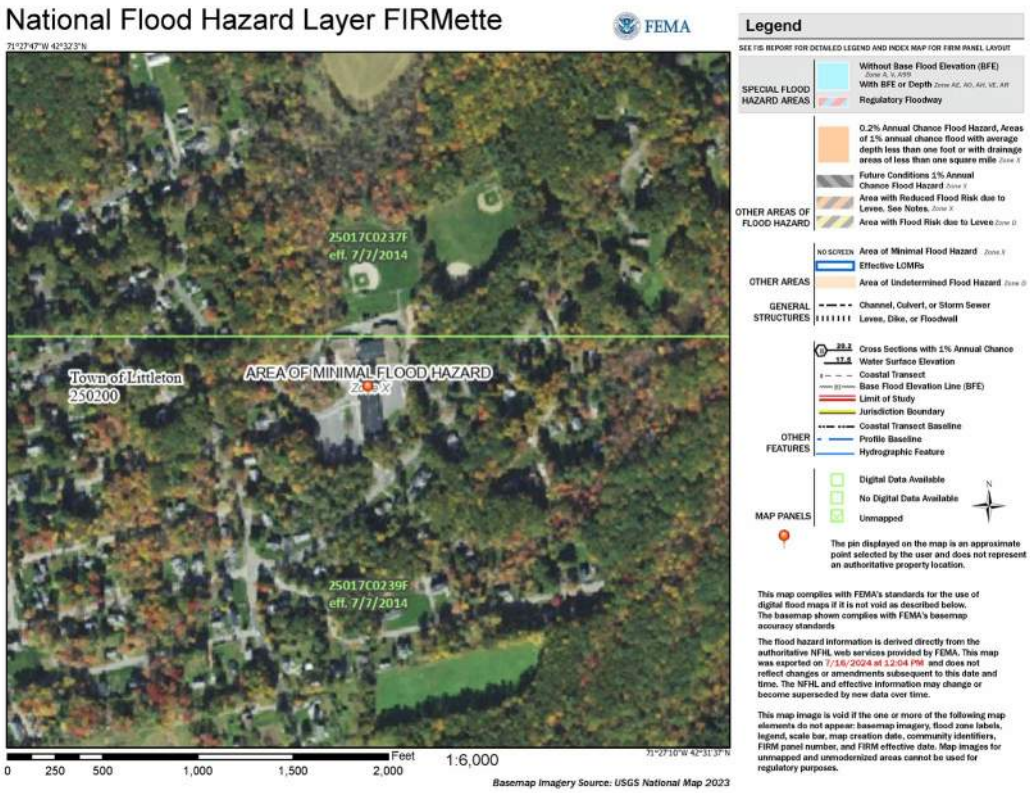


Figure 02: FEMA Firmette

Plumbing and Fire Protection Schematic Design Pricing Narrative for the Shaker Lane Elementary School

Prepared By:

Frank Stramaglia, CPD

VAV International Inc.
Consulting Mechanical Engineers
400 W. Cummings Park, Suite 4700
Woburn, MA 01801
(781) 935-7228
www.vavint.com

Littleton, Massachusetts

October 10, 2024

400 W. Cummings Park, Suite 4700 - Woburn, Massachusetts 01801 Tel (781) 935-7228 Fax (781) 935-1822 www.vavint.com

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OPTION 2.1 ADD/RENO

Plumbing Systems

A. Plumbing Fixtures

1. Number of plumbing fixtures will be added in the facility to accommodate student population in accordance with 248 CMR Paragraph 10.10, Table 1.
2. Plumbing fixtures will be equipped with the following water conserving features, such as manual flush valves and flow restricting aerators (for indoor water use reduction-LEED v4- WE Credit 2 & 4).

Water Closet	Urinals	Lavatory
1.28 gpf High Efficiency Toilet, 1.28 gpf manual flush valve.	0.125 gpf Ultra High Efficiency urinal with manual flush valve.	Delta metering faucet with temperature mixing valve, 0.35 gpm flow restricting aerator.

3. Water closets and urinals will be commercial vitreous china, wall hung (ADA compliant). Lavatories will be wall-mounted china. Each floor includes a janitor's closet with a mop service basin, if chemical dispenser will be attached to water supply, a code required BFP will be required, Toilet cores on each floor will include a drinking water fountain with a high-low handicapped accessible configuration and a bottle filling station. Toilet and mechanical rooms will have a floor drain with a trap primer. Hose bibs will be provided in each multi-stall bathroom and mechanical room. Roof Hydrants will be provided on the roof.
4. All classrooms will have two self-rimming stainless-steel sinks with 0.5 gpm gooseneck type faucets with aerator.
5. Drinking fountain will be dual height with bottle filler. Elkay, Hasley Taylor or Oasis.
6. Plumbing connections will be provided to each kitchen appliance requiring plumbing.
7. Any art room and STE room sinks will be provided with in-line solids interceptor.
8. Exterior non-freeze wall hydrants will be provided on all sides of the school building.

B. Domestic Water Distribution

1. Recommend New 4" domestic water supply line and will enter the water room. A Reduced Pressure Backflow Preventer will be provided to the main domestic water supply to protect the service (per the DEP regulation 310 CMR 22). The domestic water distribution will incorporate water meter at main line and few branch piping to monitor the water usage on various levels such as boiler room, water heater and irrigation system if one is being provided. Boiler water feed, make-up, and any other

mechanical take-offs will branch off through a reduced pressure-principle backflow preventer. Extend domestic cold water to all fixtures as required.

2. The domestic cold-water piping inside the building will be distributed in "L" type copper tube with wrought or cast copper fittings. Potable water will meet both the NSF 61 and NSF 372 standards for the lead-free Safe Drinking Water Act. The piping will be insulated to prevent condensation.
3. Domestic hot water tank can be re-used, recommend adding another tank for redundancy. Recommend replacing, circulators, mixing valves and all piping due to age. Extend domestic hot water to all fixtures as required.
4. The water heater will supply hot water to classroom fixtures and kitchen appliances. The domestic hot water distribution system will have a recirculation system including but not limited to pump, aqua-stat and automatic thermostatic mixing valves. Piping will extend to each fixture with no dead leg more than 12 feet in length. There will be one temperature hot water supply / recirculation system in the building. Commercial kitchens no longer require 140-degree water to 3-bay sink and dishwasher. The system will operate at 120°F and will serve all plumbing fixtures including commercial kitchen, kitchen sinks and appliances, as well as the custodian room sinks, lavatories and classroom sinks. Faucets will reduce the temperature to 105°F at the public lavatories and classroom sinks via associated mixing valves.
5. Domestic hot water will be distributed in "L" type copper tube with wrought or cast copper fittings. The hot water (HW), and re-circulating (HWR) piping will be insulated as required by the Energy Code.

C. Sanitary Waste

1. Recommend all new sanitary and vent piping based on age.
2. Recommend A dedicated 4" grease waste line will be installed to collect grease laden waste water from the new Kitchen appliances and fixtures. An interior grease trap will service fixtures that require one, such as dishwashers and the 3-bay sink. The grease line will then exit the building and will be connected to an exterior grease trap outside the building provided under the site. A dedicated 4" chamber vent will be provided and will run back to building and terminate independently through the roof. For culinary sinks, 3-bay sink, grease troughs and dishwasher an interior grease trap will be provided at the source.
3. Above ground sanitary drainage will be piped in cast iron with "no-hub" joints (3" or larger). Piping smaller than 3 inches will be piped in copper. Piping below floor shall be weight cast iron hub and spigot type.

D. Rain Water Drainage

1. Recommend all new storm piping.

2. Roof Drain system will carry rainwater away from the flat roof of the new building with conventional primary roof drains. Overflow drains will be provided and run independently from the primary drains. Overflow piping will spill to daylight via wall scuppers. Rainwater piping and the system will be sized to handle a rainfall rate of 4 inches per hour, with a total runoff from the main roof and the roof deck of just under 1 cubic foot per second. The storm system will be installed in cast iron piping with all horizontal piping insulated to prevent condensation. The storm system will exit the building in multiple locations.

OPTION 3.1 NEW CONSTRUCTION UPPER FIELD

Plumbing Systems

A. Plumbing Fixtures

1. plumbing fixtures in the facility to accommodate population of students and shall be in accordance with 248 CMR Paragraph 10.10, Table 1.
2. Plumbing fixtures will be equipped with the following water conserving features, such as manual flush valves and flow restricting aerators (for indoor water use reduction-LEED v4- WE Credit 2 & 4).

Water Closet	Urinals	Lavatory
1.28 gpf High Efficiency Toilet, 1.28 gpf manual flush valve.	0.125 gpf Ultra High Efficiency urinal with manual flush valve.	Delta metering faucet with temperature mixing valve, 0.35 gpm flow restricting aerator.

3. Water closets and urinals will be commercial vitreous china, wall hung (ADA compliant). Lavatories will be wall-mounted china. Each floor includes a janitor's closet with a mop service basin, if chemical dispenser will be attached to water supply, a code required BFP will be required, Toilet cores on each floor will include a drinking water fountain with a high-low handicapped accessible configuration and a bottle filling station. Toilet and mechanical rooms will have a floor drain with a trap primer. Hose bibs will be provided in each multi-stall bathroom and mechanical room. Roof Hydrants will be provided on the roof.
4. All classrooms will have two self-rimming stainless-steel sinks with 0.5 gpm gooseneck type faucets with aerator.
5. Drinking fountain will be dual height with bottle filler. Elkay, Hasley Taylor or Oasis.
6. Plumbing connections will be provided to each kitchen appliance requiring plumbing.
7. Any art room and STE room sinks will be provided with in-line solids interceptor.
8. Exterior non-freeze wall hydrants will be provided on all sides of the school building.

B. Domestic Water Distribution

1. New 4" domestic water supply line will enter the water room. A Reduced Pressure Backflow Preventer will be provided to the main domestic water supply to protect the service (per the DEP regulation 310 CMR 22). The domestic water distribution will incorporate water meter at main line and few branch piping to monitor the water usage on various levels such as boiler room, water heater and irrigation system if one is being provided. Boiler water feed, make-up, and any other mechanical take-offs will branch off through a reduced pressure-principle backflow preventer. Extend domestic cold water to fixtures as required.

2. The domestic cold-water piping inside the building will be distributed in "L" type copper tube with wrought or cast copper fittings. Potable water will meet both the NSF 61 and NSF 372 standards for the lead-free Safe Drinking Water Act. The piping will be insulated to prevent condensation.
3. Domestic hot water system will be two (2) electric hot water heater with a 24-kW heating element and a 100-gallon storage capacity. KW may be able to be reduced if HVAC can provide pre-heated water. New digital mixing valve, expansion tank and recirculation pump.
4. The acceptable manufacturers of hot water heaters are PVI, Lochinvar, A.O. Smith, Rheem or equal.
5. The water heater will supply hot water to classroom fixtures and kitchen appliances. The domestic hot water distribution system will have a recirculation system including but not limited to pump, aqua-stat and automatic thermostatic mixing valves. Piping will extend to each fixture with no dead leg more than 12 feet in length. There will be one temperature hot water supply / recirculation system in the building. Commercial kitchens no longer require 140-degree water to 3-bay sink and dishwasher. The system will operate at 120°F and will serve all plumbing fixtures including commercial kitchen, kitchen sinks and appliances, as well as the custodian room sinks, lavatories and classroom sinks. Faucets will reduce the temperature to 105°F at the public lavatories and classroom sinks via associated mixing valves.
6. Domestic hot water will be distributed in "L" type copper tube with wrought or cast copper fittings. The hot water (HW), and re-circulating (HWR) piping will be insulated as required by the Energy Code.

C. Sanitary Waste

1. One 6" gravity main will exit the building and connect to the sewer system. Refer to Civil narrative for details on sewer infrastructure.
2. A dedicated 4" grease waste line will be installed to collect grease laden waste water from the new Kitchen appliances and fixtures. An interior grease trap will service fixtures that require one, such as dishwashers and the 3-bay sink. The grease line will then exit the building and will be connected to an exterior grease trap outside the building provided under the site. A dedicated 4" chamber vent will be provided and will run back to building and terminate independently through the roof. For culinary sinks, 3-bay sink, grease troughs and dishwasher an interior grease trap will be provided at the source.
3. Above ground sanitary drainage will be piped in cast iron with "no-hub" joints (3" or larger). Piping smaller than 3 inches will be piped in copper. Piping below floor shall be weight cast iron hub and spigot type.
4. Each elevator pit will be provided with a 50 GPM sump pump with water minder system that will run to an oil separator before it connects to sanitary. A monitoring point would be added to Mechanical discipline BMS.

D. Rain Water Drainage

1. Roof Drain system will carry rainwater away from the flat roof of the new building with conventional primary roof drains. Overflow drains will be provided and run independently from the primary drains. Overflow piping will spill to daylight via wall scuppers. Rainwater piping and the system will be sized to handle a rainfall rate of 4 inches per hour, with a total runoff from the main roof and the roof deck of just under 1 cubic foot per second. The storm system will be installed in cast iron piping with all horizontal piping insulated to prevent condensation. The storm system will exit the building in multiple locations.

OPTION 3.2 NEW CONSTRUCTION LOWER FIELD

Plumbing Systems

A. Plumbing Fixtures

1. plumbing fixtures in the facility to accommodate population of students and shall be in accordance with 248 CMR Paragraph 10.10, Table 1.
2. Plumbing fixtures will be equipped with the following water conserving features, such as manual flush valves and flow restricting aerators (for indoor water use reduction-LEED v4- WE Credit 2 & 4).

Water Closet	Urinals	Lavatory
1.28 gpf High Efficiency Toilet, 1.28 gpf manual flush valve.	0.125 gpf Ultra High Efficiency urinal with manual flush valve.	Delta metering faucet with temperature mixing valve, 0.35 gpm flow restricting aerator.

3. Water closets and urinals will be commercial vitreous china, wall hung (ADA compliant). Lavatories will be wall-mounted china. Each floor includes a janitor's closet with a mop service basin, if chemical dispenser will be attached to water supply, a code required BFP will be required, Toilet cores on each floor will include a drinking water fountain with a high-low handicapped accessible configuration and a bottle filling station. Toilet and mechanical rooms will have a floor drain with a trap primer. Hose bibs will be provided in each multi-stall bathroom and mechanical room. Roof Hydrants will be provided on the roof.
4. All classrooms will have two self-rimming stainless-steel sinks with 0.5 gpm gooseneck type faucets with aerator.
5. Drinking fountain will be dual height with bottle filler. Elkay, Hasley Taylor or Oasis.
6. Plumbing connections will be provided to each kitchen appliance requiring plumbing.
7. Any art room and STE room sinks will be provided with in-line solids interceptor.
8. Exterior non-freeze wall hydrants will be provided on all sides of the school building.

B. Domestic Water Distribution

1. New 4" domestic water supply line will enter the water room. A Reduced Pressure Backflow Preventer will be provided to the main domestic water supply to protect the service (per the DEP regulation 310 CMR 22). The domestic water distribution will incorporate water meter at main line and few branch piping to monitor the water usage on various levels such as boiler room, water heater and irrigation system if one is being provided. Boiler water feed, make-up, and any other mechanical take-offs

will branch off through a reduced pressure-principal backflow preventer. Extend domestic hot water to fixtures as required.

2. The domestic cold-water piping inside the building will be distributed in "L" type copper tube with wrought or cast copper fittings. Potable water will meet both the NSF 61 and NSF 372 standards for the lead-free Safe Drinking Water Act. The piping will be insulated to prevent condensation.
3. Domestic hot water system will be two (2) electric hot water heater with a 24-kW heating element and a 100-gallon storage capacity. KW may be able to be reduced if HVAC can provide pre-heated water. New digital mixing valve, expansion tank and recirculation pump.
4. The acceptable manufacturers of hot water heaters are PVI, Lochinvar, A.O. Smith, Rheem or equal.
5. The water heater will supply hot water to classroom fixtures and kitchen appliances. The domestic hot water distribution system will have a recirculation system including but not limited to pump, aqua-stat and automatic thermostatic mixing valves. Piping will extend to each fixture with no dead leg more than 12 feet in length. There will be one temperature hot water supply / recirculation system in the building. Commercial kitchens no longer require 140-degree water to 3-bay sink and dishwasher. The system will operate at 120°F and will serve all plumbing fixtures including commercial kitchen, kitchen sinks and appliances, as well as the custodian room sinks, lavatories and classroom sinks. Faucets will reduce the temperature to 105°F at the public lavatories and classroom sinks via associated mixing valves.
6. Domestic hot water will be distributed in "L" type copper tube with wrought or cast copper fittings. The hot water (HW), and re-circulating (HWR) piping will be insulated as required by the Energy Code.

C. Sanitary Waste

1. One 6" gravity main will exit the building and connect to the sewer system. Refer to Civil narrative for details on sewer infrastructure.
2. A dedicated 4" grease waste line will be installed to collect grease laden waste water from the new Kitchen appliances and fixtures. An interior grease trap will service fixtures that require one, such as dishwashers and the 3-bay sink. The grease line will then exit the building and will be connected to an exterior grease trap outside the building provided under the site. A dedicated 4" chamber vent will be provided and will run back to building and terminate independently through the roof. For culinary sinks, 3-bay sink, grease troughs and dishwasher an interior grease trap will be provided at the source.
3. Above ground sanitary drainage will be piped in cast iron with "no-hub" joints (3" or larger). Piping smaller than 3 inches will be piped in copper. Piping below floor shall be weight cast iron hub and spigot type.

4. Elevator pit will be provided with a 50 GPM sump pump with water minder system that will run to an oil separator before it connects to sanitary. A monitoring point would be added to Mechanical discipline BMS.

D. Rain Water Drainage

2. Roof Drain system will carry rainwater away from the flat roof of the new building with conventional primary roof drains. Overflow drains will be provided and run independently from the primary drains. Overflow piping will spill to daylight via wall scuppers. Rainwater piping and the system will be sized to handle a rainfall rate of 4 inches per hour, with a total runoff from the main roof and the roof deck of just under 1 cubic foot per second. The storm system will be installed in cast iron piping with all horizontal piping insulated to prevent condensation. The storm system will exit the building in multiple locations.

Fire Protection System (All options)

A. Sprinklers

1. Building will be served from a new 6" fire service line from the street. Cross connection control shall be provided by use a supervised double check valve assembly backflow preventer on the fire service as it enters the building in a dedicated sprinkler room. A sprinkler riser with alarm check valve will be provided to meet the pressure and flow requirements of the sprinkler system.
2. The entire building shall be protected throughout with a wet automatic fire suppression system. A fire department connection will be provided outside the sprinkler room. Additional locations, size and type will be determined by Littleton Fire Department This system shall be designed in accordance with NFPA Standard 13, 2013, the Massachusetts State Building Code, 10th Edition and the City of Littleton Fire Department requirements.
3. Sprinklers shall be supplied from the standpipe. Floor control valve stations, consisting of a monitored shut-off valve, flow switch and an Inspector's test valve and sight glass, shall be provided at each floor take-off from the standpipe system. This shall report sprinkler flow to the fire alarm system on a floor-by-floor basis.
4. Sprinkler heads in electrical and mechanical rooms shall be standard response, 212ºF temperature listing. Sprinklers in all other areas shall be quick response heads.

B. Standpipes

1. Standpipes shall be supplied in all required egress stairs. Standpipes would be designed in accordance with NFPA Standard 14, 2014, and Littleton Fire Department requirements. Standpipes shall be located in each required egress stairway. Additionally, fdvs shall be located so that no part of the building is more than 200 feet from a standpipe valve. Each standpipe shall be equipped with a 2 1/2" fire department hose valve with 1 1/2" reducer at the stair floor landing. These shall be in recessed cabinets. Because the building is not a high rise, there is no minimum pressure requirement for the standpipes.

C. Fire Protection Systems

1. Standpipes & sprinklers shall be supplied from a dedicated water service, entering the building in the sprinkler room. The building service shall be equipped with a wet main alarm riser check valve, located at the service entrance. From there, this line would run to each stairway, and then up through the stairways as standpipes. Fire protection piping shall be schedule 40 piping with threaded fittings for any piping sized 2" and less. For sizes over 2", schedule 10 piping with roll grooved fittings and couplings shall be used. All valves controlling the flow of water shall be equipped with supervisory devices that report to the Fire Alarm system. Kitchen hood will be protected with a dry agent "Ansul R-102" packaged hood suppression system.

2. Maximum square footage per zone will be 50,000 SF.
3. Mechanical rooms, Kitchen and storage rooms shall be hydraulically calculated in accordance with NFPA 13 (2013 Edition) for an Ordinary Hazard Group I occupancy. The system shall be capable of providing a discharge density of 0.15 GPM/sf over a hydraulically remote area of 1500 SF and include an outside hose stream allowance of 250 GPM.
4. Classrooms, offices, and remaining areas shall be hydraulically calculated in accordance with NFPA 13 (2013 Edition) for a Light Hazard occupancy. The system shall be capable of providing a discharge density of 0.1 GPM/sf over a hydraulically remote area of 1500 SF and include an outside hose stream allowance of 100 GPM.
5. A flow test would be required to determine if a fire pump is required.

3.6 HVAC Report

GGD Consulting Engineers, Inc.

Shaker Lane Elementary
Littleton, MA
J#725 006 00.00
L#90767/Page 1/October 4, 2024

HVAC SYSTEM

OPTION: ADD-RENO, LOWER-FIELD NEW CONSTRUCTION, UPPER-FIELD NEW CONSTRUCTION

NARRATIVE REPORT

The following is the HVAC system narrative, which defines the scope of work and capacities of the HVAC system as well as the Basis of Design. The HVAC systems shall be designed and constructed for *LEED for Schools v4* where indicated on this narrative.

1. CODES

   All work installed under Division 230000 shall comply with the Commonwealth of Massachusetts Adopted Building Codes (IBC, IMC, IECC latest Adopted Editions with MA amendments), and all local, county, and federal codes, laws, statutes, and authorities having jurisdiction.

2. DESIGN INTENT

   The work of Division 230000 is described within the narrative report. The HVAC project scope of work shall consist of providing new HVAC equipment and systems as described here within. All new work shall consist of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Heating, Ventilating and Air Conditioning work and all incidental items thereto, including commissioning and testing.

   The HVAC narrative below provides a summary of four new HVAC systems which shall be studied as part of a life cycle cost analysis (LCCA) performed during schematic design.

3. BASIS OF DESIGN: (MASS CODE)

   Project weather and Code temperature values are listed herein based on weather data values as determined from ASHRAE weather data tables and the International Energy Conservation Code.

   Outside: Winter 2.6 deg. F, Summer 91 deg. F DB 74 deg. F WB

   Inside: 70 deg. F +/- 2 deg. F for Heating, 75 deg. F +/- 2 deg. F (55% RH) for all Air-conditioned areas (Administration, Nurses Office, Guidance, Cafeteria, Classrooms, Teacher Support, Gym).

   Unoccupied temperature setback will be provided (55 deg. F heating (adj.), 85 deg. F cooling (adj.).

   Outside air shall be provided at rates in accordance with ASHRAE Standard 62.1 and the International Mechanical Code (latest adopted editions) as a minimum. All occupied areas will be designed to maintain 800 PPM carbon dioxide maximum.

4. HVAC SYSTEM OPTIONS: As part of a life cycle cost analysis (LCCA), different HVAC systems shall be compared against a code compliant baseline system to determine the system with the greatest savings over a 50 year study period.

By comparison of each option to the baseline system, the option with the greatest total life-cycle savings is generally recommended. To further enhance controllability and overall system performance, additional options should be considered that will enhance year-round temperature control and comfort at a possible marginal increase in capital cost. The following HVAC systems are proposed to be studied as part of the life cycle cost analysis (LCCA) during the Schematic Design phase of the project.

A. Option – Addition and Renovation:

1. Heating Plant: The existing boilers, storage tanks, and associated fuel oil/gas supply systems at all site options will be demolished in entirety.

2. Controls: The existing controls systems will be demolished in entirety.

3. Unit Ventilators, Air Handlers, & Terminal Heating Equipment: All air handling, ventilating, and terminal heating equipment has met or exceeded expected service lifetimes. Additionally, the existing systems will not meet requirements of the Massachusetts Stretch Energy Code. For these reasons, as a part of the Addition and Renovation Option, the existing HVAC systems will be demolished in entirety.

4. Air Distribution Systems: In general, the majority of existing supply, return and exhaust air ductwork distribution system is nearing or beyond its expected service life. Therefore, all existing supply, return and exhaust ductwork shall be replaced. New ductwork shall be constructed and installed in accordance with SMACNA and IMC requirements. All new supply and return air ductwork shall be insulated per IMC code requirements. All new kitchen exhaust fans shall be provided with new fire-wrapped carbon steel or stainless steel grease ductwork.

5. Piping Systems: All existing piping for hot water distribution shall be demolished.

6. Demolition: All existing to be removed HVAC equipment and systems that are no longer required shall be demolished and removed. All existing refrigerant from removed AC equipment shall be legally reclaimed and suspected asbestos containing materials shall be tested and disposed of in an appropriate and lawful manner.

7. Phasing: All demolition and new work shall be done in a phased manner in accordance with Architect's proposed phasing plan.

5. HVAC SYSTEM BASELINE OPTION – Massachusetts Opt-in Stretch Energy Code Compliant Building & HVAC System

A. General:

Partially recirculating variable air volume (VAV) air handling units (AHU) with hot water and chilled water coils shall be provided for heating, ventilating, and air conditioning the building. The AHUs shall be provided with an energy recovery section capable of a minimum 75% enthalpy recovery ratio. Exhaust fans shall be provided for janitor's closets, and utility rooms. Air source heat pump AC units shall be provided for IT Server Rooms, Electric rooms and elevator machine rooms.

B. Central Heating and Cooling Plant:

Hydronic heating and cooling for the building shall be provided by a high-efficiency air source heat recovery heat pump chiller/heater plant that includes the following:

Add/Reno Option:

Twelve (12) modular air source to water heat pump chillers with simultaneous heating and cooling and a capacity of 30 tons each. An additional heat pump chiller/heater or a supplemental 450 kw backup electric boiler shall be included to inject heat into the hot water heating loop when ambient conditions limit the output capacity of the air-source heat pump chiller.

Lower Field New Construction Option:

Fourteen (14) modular air source to water heat pump chillers with simultaneous heating and cooling and a capacity of 30 tons each. An additional heat pump chiller/heater or a supplemental 550 kw backup electric boiler shall be included to inject heat into the hot water heating loop when ambient conditions limit the output capacity of the air-source heat pump chiller.

Upper Field New Construction Option:

Fifteen (15) modular air source to water heat pump chillers with simultaneous heating and cooling and a capacity of 30 tons each. An additional heat pump chiller/heater or a supplemental 550 kw backup electric boiler shall be included to inject heat into the hot water heating loop when ambient conditions limit the output capacity of the air-source heat pump chiller.

One (1) of the chiller modules will be redundant for heating/cooling backup purposes. The air-source heat pump chiller units will be grade mounted and shall be capable of providing 130ºF heating hot water at a 5ºF ambient temperature condition. A large outdoor location for the air-cooled heat pump chillers will be required. Provide pre-insulated underground piping from heating/cooling plant to an indoor mechanical room.

A mechanical room shall be provided for the associated hot water and chilled water pumps and hydronic accessories. The heat pump chiller plant will supply heating hot water and chilled water throughout the building via a four-pipe fiberglass insulated schedule 40 black steel and copper piping system.

A primary hot water pump array (Quantity of 4 pumps in the array with one redundant pump) with variable frequency drives will be provided and will modulate speed to maintain a minimum flow to the heat pump chiller. A secondary hot water pump array (Quantity of 4 pumps in the array with one redundant pump) with variable frequency drives will be provided for meeting the variable flow needs of the hot water system distribution throughout the building. A plate & frame heat exchanger installed within the mechanical room shall be provided to separate the primary and secondary piping loops. In addition to pumps, new hot water accessories including air separators, expansion tanks, and buffer tanks shall be provided.

A primary chilled water pump array (Quantity of 4 pumps in the array with one redundant pump) with variable frequency drives will be provided and will modulate speed to maintain a minimum flow to the heat pump chiller. A secondary chilled water pump array (Quantity of 4 pumps in the array with one redundant pump) with variable frequency drives will be provided for meeting the variable flow needs of the chilled water system distribution throughout the building. A plate & frame heat exchanger installed within the mechanical room shall be provided to separate the primary and secondary piping loops. In addition to pumps, new hot water accessories including air separators, expansion tanks, and buffer tanks shall be provided.

The heat pump chiller plant will distribute between 45°F and 55°F chilled water to the roof mounted air handling units located throughout the building. The chilled water distribution piping will be of the fiberglass insulated schedule 40 type and will be separate from the hot water distribution piping system.

C. Ventilation air handling equipment: It is proposed that a new recirculating air-conditioning system with VAV control be installed to provide air-conditioning and ventilation to the occupied areas of the building.

1. New recirculating rooftop air handling units with supply and return air fans, VFDs, energy recovery wheels, hot water heating (and reheat) coils with modulating valve, chilled water cooling coil, economizer capability, and MERV 14 filtration will be provided to serve a new fully air-conditioned system. Different building rooms and zones shall be provided with a variable volume (VAV) terminal box with combination temperature, humidity, and CO2 sensor controls. The controls will reduce outside air as allowed maintaining a maximum of 800 PPM while providing sufficient ventilation to meet the required heating or cooling load of the spaces served. As VAV boxes modulate, the supply and return air fans associated Variable Frequency Drives (VFD) of the rooftop units will adjust the fan speed based on system static pressure, reducing the energy consumed by the fans. Each room (or zone) shall be provided with ceiling mounted supply air diffusers. Classrooms will typically be provided with four individual diffusers between 200 and 250 CFM each (depending on room size). Return air will be drawn back to the units by ceiling return air registers located within the rooms and will be routed back to the rooftop unit by a galvanized sheet metal return air ductwork distribution system. New ductwork shall be constructed and

installed in accordance with SMACNA and IMC requirements. All new supply and return air ductwork shall be insulated per IMC code requirements (R-8). All new Kitchen exhaust fans shall be provided with new Fire-wrapped carbon steel or insulated stainless steel grease ductwork.

Preliminary RTU Quantities, zones and airflow capacities are as follows:

Add Reno Option:

RTU-A: (Admin) – 9500 CFM Total, 34 Tons cooling, 360 MBH heating
RTU-B: (Cafetorium) – 3500 CFM Total, 13 Tons cooling, 135 MBH heating
RTU-C: (Kitchen/Custodial) – 1000 CFM Total, 4 Tons cooling, 30 MBH heating
RTU-D: (Media Ctr) – 3500 CFM Total, 13 Tons cooling, 135 MBH heating
RTU-E: (Gym) - 7500 CFM Total, 27 Tons Cooling, 285 MBH heating
RTU-F: (Music & Art Wing) - 9000 CFM Total, 33 Tons cooling, 345 MBH heating
RTU-G: (Classroom Wing) - 18250 CFM Total, 66 Tons cooling, 695 MBH heating
RTU-H: (Classroom Wing) - 22500 CFM Total, 81 Tons cooling, 855 MBH heating
MAU: (Kitchen Makeup) – 3000 CFM Total, 16 Tons cooling, 245 MBH heating
H&V: (Back of House) – 800 CFM Total, 24 MBH heating

Lower Field New Construction Option:

RTU-A: (Admin) – 7000 CFM Total, 25 Tons cooling, 265 MBH heating
RTU-B: (Cafetorium) – 4750 CFM Total, 17 Tons cooling, 180 MBH heating
RTU-C: (Kitchen/Custodial) – 2000 CFM Total, 8 Tons cooling, 55 MBH heating
RTU-D: (Classroom Wing) – 8250 CFM Total, 30 Tons cooling, 315 MBH heating
RTU-E: (Gym) - 7500 CFM Total, 27 Tons Cooling, 285 MBH heating
RTU-F: (Classroom Wing) - 22000 CFM Total, 79 Tons cooling, 835 MBH heating
RTU-G: (Classroom Wing) - 10500 CFM Total, 38 Tons cooling, 400 MBH heating
RTU-H: (Media Ctr) - 2250 CFM Total, 9 Tons cooling, 85 MBH heating
RTU-I: (Classroom Wing) - 23500 CFM Total, 84 Tons cooling, 895 MBH heating
MAU: (Kitchen Makeup) – 3000 CFM Total, 11 Tons cooling, 230 MBH heating

Upper Field New Construction Option:

RTU-A: (Admin) – 14500 CFM Total, 52 Tons cooling, 552 MBH heating
RTU-B: (Cafetorium) – 4750 CFM Total, 17 Tons cooling, 180 MBH heating
RTU-C: (Kitchen/Custodial) – 800 CFM Total, 3 Tons cooling, 24 MBH heating
RTU-D: (Media Ctr) – 2250 CFM Total, 9 Tons cooling, 85 MBH heating
RTU-E: (Gym) - 7500 CFM Total, 27 Tons Cooling, 285 MBH heating
RTU-F: (Classroom Wing) - 9500 CFM Total, 34 Tons cooling, 360 MBH heating
RTU-G: (Classroom Wing) - 15500 CFM Total, 56 Tons cooling, 590 MBH heating
RTU-H: (Classroom Wing) - 13750 CFM Total, 49 Tons cooling, 525 MBH heating
RTU-I: (Classroom Wing) - 13000 CFM Total, 47 Tons cooling, 495 MBH heating
RTU-J: (Central Commons) - 11500 CFM Total, 41 Tons cooling, 440 MBH heating
MAU: (Kitchen Makeup) – 3000 CFM Total, 11 Tons cooling, 230 MBH heating
H&V: (Back of House) – 1350 CFM Total, 40 MBH heating

D. Exhaust Air Fan Systems:

1. Code required exhaust for the majority of building areas, including toilet rooms, shall be provided through the localized energy recovery ventilation (ERV) systems.

2. Dedicated exhaust air fan systems shall be provided for Kitchen exhaust air (if provided) and Janitor's closet areas.

E. Terminal Heating Equipment:

New hot water radiant heating panels or fin tube radiation shall be provided for perimeter heating of all restrooms with exterior exposure heating loads. Hot water radiation heating equipment shall be provided for all corridors, entryways. Hot water unit heaters shall be provided for all utility rooms.

6. HVAC SYSTEM OPTION 1 - Air Source Variable Refrigerant Flow (VRF)

A. General: Air source VRF (variable refrigerant flow) heat recovery heat pump units shall be connected to a combination of indoor ducted and ductless VRF indoor air handling units. Packaged Dedicated Outdoor Air System (DOAS) Air-Source Heat Pump Rooftop Units with minimum 75% eff. Energy recovery ventilation (ERV) and back-up electric heat shall provide the ventilation requirements for the majority of building areas. Backup heating shall be provided in areas of the building with extensive exterior exposures via perimeter electric resistance radiant heating panels. Exhaust fans would be provided for janitor's closets, and utility rooms. Air source heat pump AC units shall be provided for IT Server Rooms, Electric rooms and elevator machine rooms.

B. Central Heating and Cooling Plant:

Under this option, a high-efficiency Air Source Variable Refrigerant Flow (VRF) heat recovery system shall provide simultaneous heating and cooling capabilities to all regularly occupied spaces via a combination of fan coil, ductless wall and/or ductless ceiling cassette type VRF terminal air handling units. Air conditioning will be generated by outdoor roof mounted heat recovery type air source heat pump condensing units that shall be connected to indoor air handling units or terminal heating and cooling units. The outdoor VRF heat pump condensing units will be sized and located according to AHU and terminal equipment zones capacity requirements and VRF system piping length limitations. Therefore, multiple clusters of VRF outdoor heat pump condensing units shall be required. The HVAC terminal VRF systems (excluding the RTU loads) shall have the following total estimated capacities (based on the peak indoor space heating loads):

Add Reno Option: 120 Tons (80 Indoor Units)
Lower Field New Construction Option: 140 Tons (90 Indoor Units)
Upper Field New Construction Option: 145 Tons (90 Indoor Units)

C. Air Handling (HVAC) Ventilation Systems:

Ventilation shall be provided to building areas generally via rooftop mounted 100% outdoor air (DOAS) air handling units as described below. Air handling units shall be provided with packaged cooling/heating coils connected to high efficiency air source heat pump units and supplemental electric heating coils.

The DOAS units shall be provided with MERV 14 filters, heat pump cooling/heating coil section (split air source heat pump condensers for indoor air handling units where applicable), supply and exhaust fans with variable frequency drives or EC motors, supplemental electric heating coils, enthalpy recovery wheel, and a sensible reheat wheel or modulating hot gas re-heat coil for dehumidification. The DOAS units shall provide ventilation air to each occupied building area through a fiberglass insulated galvanized sheet-metal distribution system. Airflow from each space will be returned through a separate galvanized sheet-metal return air system back to the air handling units where it will pass through an enthalpy recovery wheel which will transfer heat from the exhaust air stream to the outside air intake stream for preheating or vice-versa for pre-cooling. The DOAS system distribution shall include variable air volume terminal boxes equipped with CO2 demand ventilation controls that will control the amount of ventilation airflow to each space. The units will operate at reduced capacity during the unoccupied periods if unoccupied space set points are not maintained.
Preliminary RTU Quantities, zones and airflow capacities are as follows:

Add Reno Option:

RTU-A: (Admin) – 5000 CFM Total, 20 Tons cooling, 140 MBH heating
RTU-B: (Cafetorium) – 2800 CFM Total, 12 Tons cooling, 80 MBH heating
RTU-C: (Kitchen/Custodial) – 1000 CFM Total, 4 Tons cooling, 30 MBH heating
RTU-D: (Media Ctr) – 2200 CFM Total, 9 Tons cooling, 60 MBH heating
RTU-E: (Gym) - 7500 CFM Total, 27 Tons Cooling, 285 MBH heating
RTU-F: (Music & Art Wing) - 3500 CFM Total, 14 Tons cooling, 95 MBH heating
RTU-G: (Classroom Wing) - 10000 CFM Total, 40 Tons cooling, 275 MBH heating
RTU-H: (Classroom Wing) - 10000 CFM Total, 40 Tons cooling, 275 MBH heating
MAU: (Kitchen Hood Makeup) – 3000 CFM Total, 11 Tons cooling, 230 MBH heating
H&V: (Back of House) – 800 CFM Total, 24 MBH heating

Lower Field New Construction Option:

RTU-A: (Admin) – 3500 CFM Total, 14 Tons cooling, 95 MBH heating
RTU-B: (Cafetorium) – 4000 CFM Total, 16 Tons cooling, 110 MBH heating
RTU-C: (Kitchen/Custodial) – 2000 CFM Total, 8 Tons cooling, 55 MBH heating
RTU-D: (Classroom Wing) – 4500 CFM Total, 18 Tons cooling, 125 MBH heating
RTU-E: (Gym) - 7500 CFM Total, 27 Tons Cooling, 285 MBH heating
RTU-F: (Classroom Wing) - 11000 CFM Total, 44 Tons cooling, 300 MBH heating
RTU-G: (Classroom Wing) - 6000 CFM Total, 24 Tons cooling, 165 MBH heating
RTU-H: (Media Ctr) - 1500 CFM Total, 6 Tons cooling, 42 MBH heating
RTU-I: (Classroom Wing) - 12000 CFM Total, 48 Tons cooling, 325 MBH heating
MAU: (Kitchen Hood Makeup) – 3000 CFM Total, 11 Tons cooling, 230 MBH heating

Upper Field New Construction Option:

RTU-A: (Admin) – 7500 CFM Total, 30 Tons cooling, 205 MBH heating
RTU-B: (Cafetorium) – 4000 CFM Total, 16 Tons cooling, 110 MBH heating
RTU-C: (Kitchen/Custodial) – 800 CFM Total, 4 Tons cooling, 24 MBH heating
RTU-D: (Media Ctr) – 1500 CFM Total, 6 Tons cooling, 40 MBH heating
RTU-E: (Gym) - 7500 CFM Total, 27 Tons Cooling, 285 MBH heating
RTU-F: (Classroom Wing) - 5000 CFM Total, 20 Tons cooling, 135 MBH heating
RTU-G: (Classroom Wing) - 8000 CFM Total, 32 Tons cooling, 220 MBH heating
RTU-H: (Classroom Wing) - 7000 CFM Total, 28 Tons cooling, 190 MBH heating
RTU-I: (Classroom Wing) - 7000 CFM Total, 28 Tons cooling, 190 MBH heating
RTU-J: (Central Commons) - 6000 CFM Total, 24 Tons cooling, 165 MBH heating
MAU: (Kitchen Hood Makeup) – 3000 CFM Total, 11 Tons cooling, 230 MBH heating
H&V: (Back of House) – 1350 CFM Total, 40 MBH heating

Air Distribution Systems:

New ductwork shall be constructed and installed in accordance with SMACNA and IMC requirements. All new supply and return air ductwork shall be insulated per IMC code requirements. All new Kitchen exhaust fans shall be provided with new Fire-wrapped carbon steel or insulated stainless steel grease ductwork.

D. Exhaust Air Fan Systems:

1. Code required exhaust for the majority of building areas, including toilet rooms, shall be provided through the DOAS systems throughout the building.

2. Dedicated exhaust air fan systems shall be provided for Kitchen exhaust air (if provided) and Janitor's closet areas.

E. Terminal Heating & Cooling Equipment:

Heating for Entryways, Storage Rooms, Toilet Rooms, Janitor Closets, etc and support areas will be generated by a combination of electric unit heaters, convectors, radiant panels, and fin tube radiation.

F. Split system AC heat pump units:

Provide new ductless split system high efficiency heat pump AC units to serve Elevator machine rooms, and IT and MDF Server rooms.

7. SYSTEM DESCRIPTION – Air Source Heat Pump Chiller/Heater with Classroom Displacement Ventilation

A. Central Heating and Cooling Plant:

Heating and cooling for building areas shall be provided by a high-efficiency air source heat recovery heat pump chiller/heater plant that includes the following quantities of chiller modules:

Add/Reno Option:

Ten (10) modular air source to water heat pump chillers with simultaneous heating and cooling and a capacity of 30 tons each. An additional heat pump chiller/heater or a supplemental 350 kw backup electric boiler shall be included to inject heat into the hot water heating loop when ambient conditions limit the output capacity of the air-source heat pump chiller.

Lower Field New Construction Option:

Twelve (12) modular air source to water heat pump chillers with simultaneous heating and cooling and a capacity of 30 tons each. An additional heat pump chiller/heater or a supplemental 450 kw backup electric boiler shall be included to inject heat into the hot water heating loop when ambient conditions limit the output capacity of the air-source heat pump chiller.

Upper Field New Construction Option:

Twelve (12) modular air source to water heat pump chillers with simultaneous heating and cooling and a capacity of 30 tons each. An additional heat pump chiller/heater or a supplemental 450 kw backup electric boiler shall be included to inject heat into the hot water heating loop when ambient conditions limit the output capacity of the air-source heat pump chiller.

In each site option, one (1) of the modules will be redundant for heating/cooling backup purposes. The air-cooled heat pump chiller units will be grade mounted and shall be capable of providing 130ºF heating hot water supply at a 5ºF ambient temperature condition. A large outdoor location for the air-cooled heat pump chillers will be required. Provide pre-insulated underground piping from heating/cooling plant to an indoor mechanical room.

A mechanical room shall be provided for the associated hot water and chilled water pumps and hydronic accessories. The heat pump chiller plant will supply heating hot water and chilled water to heating and cooling equipment and air handling equipment throughout the building via a four-pipe fiberglass insulated schedule 40 black steel and copper piping system.

A primary hot water pump array (Quantity of 4 pumps in the array with one redundant pump) with variable frequency drives will be provided and will modulate speed to maintain a minimum flow to the heat pump chiller. A secondary hot water pump array (Quantity of 4 pumps in the array with one redundant pump) with variable frequency drives will be provided for meeting the variable flow needs of the hot water system distribution throughout the building. A plate & frame heat exchanger installed within the mechanical room shall be provided to separate the primary and secondary piping loops. In addition to pumps, new hot water accessories including air separators, expansion tanks, and buffer tanks shall be provided.

A primary chilled water pump array (Quantity of 4 pumps in the array with one redundant pump) with variable frequency drives will be provided and will modulate speed to maintain a minimum flow to the heat pump chiller. A secondary chilled water pump array (Quantity of 4 pumps in the array with one redundant pump) with variable frequency drives will be provided for meeting the variable flow needs of the chilled water system distribution throughout the building. A plate & frame heat exchanger installed within the mechanical room shall be provided to separate the primary and secondary piping loops. In addition to pumps, new hot water accessories including air separators, expansion tanks, and buffer tanks shall be provided.

The heat pump chiller plant will distribute between 45°F and 55°F chilled water to the roof mounted air handling units located throughout the building and will distribute between 58°F and 62°F chilled water to the terminal radiant cooling panels units in the fully-air conditioned building. The chilled water distribution piping will be of the fiberglass insulated schedule 40 type and will be separate from the hot water distribution piping system. Compensated chilled water pumps with variable frequency drives will be provided for variable flow chilled water system distribution.

B. Ventilation air handling equipment: It is proposed that a new air-conditioning displacement ventilation system be installed to provide air-conditioning and ventilation to the occupied areas of the building.

1. New recirculating rooftop air handling units with supply and return air fans, VFDs, energy recovery wheels, hot water heating (and reheat) coils with modulating valve, chilled water cooling coil, economizer capability, and MERV 14 filtration will be provided to serve a new full air conditioning displacement ventilation system. Different building rooms and zones shall be provided with a variable volume (VAV) terminal box with combination temperature, humidity, and CO2 sensor controls. The controls will reduce outside air as allowed maintaining a maximum of 800 PPM while providing sufficient ventilation to meet the required heating or cooling load of the spaces served. As VAV boxes modulate, Variable Frequency Drives (VFD) associated with the supply and return air fans of the rooftop units will adjust the fan speed based on system static pressure, reducing the energy consumed by the fans. Each room (or zone) shall be provided with low wall or floor mounted supply air displacement diffusers. Classrooms will typically be provided with two individual wall mounted displacement diffusing units between 250 and 400 CFM each (depending on room size). Return air will be drawn back to the units by ceiling return air registers located within the rooms and will be routed back to the rooftop unit by a galvanized sheet metal return air ductwork distribution system. Supplemental ceiling mounted chilled/hot water radiant panels will be provided along exterior walls that shall be interlocked with space enthalpy sensors that shall modulate the control valve of the terminal cooling coil closed when the space enthalpy is above dewpoint conditions.

   Preliminary RTU Quantities, zones and airflow capacities are as follows:

Add/Reno Option:

RTU-A: (Admin) – 5000 CFM Total, 20 Tons cooling, 140 MBH heating
RTU-B: (Cafetorium) – 2800 CFM Total, 12 Tons cooling, 80 MBH heating
RTU-C: (Kitchen/Custodial) – 1000 CFM Total, 4 Tons cooling, 30 MBH heating
RTU-D: (Media Ctr) – 2200 CFM Total, 9 Tons cooling, 60 MBH heating
RTU-E: (Gym) - 7500 CFM Total, 27 Tons Cooling, 285 MBH heating
RTU-F: (Music & Art Wing) - 3500 CFM Total, 14 Tons cooling, 95 MBH heating
RTU-G: (Classroom Wing) - 10000 CFM Total, 40 Tons cooling, 275 MBH heating
RTU-H: (Classroom Wing) - 10000 CFM Total, 40 Tons cooling, 275 MBH heating
MAU: (Kitchen Makeup) – 3000 CFM Total, 11 Tons cooling, 230 MBH heating
H&V: (Back of House) – 800 CFM Total, 24 MBH heating

Lower Field New Construction Option:

RTU-A: (Admin) – 3500 CFM Total, 14 Tons cooling, 95 MBH heating
RTU-B: (Cafetorium) – 4000 CFM Total, 16 Tons cooling, 110 MBH heating
RTU-C: (Kitchen/Custodial) – 2000 CFM Total, 8 Tons cooling, 55 MBH heating
RTU-D: (Classroom Wing) – 4500 CFM Total, 18 Tons cooling, 125 MBH heating
RTU-E: (Gym) - 7500 CFM Total, 27 Tons Cooling, 285 MBH heating
RTU-F: (Classroom Wing) - 11000 CFM Total, 44 Tons cooling, 300 MBH heating
RTU-G: (Classroom Wing) - 6000 CFM Total, 24 Tons cooling, 165 MBH heating
RTU-H: (Media Ctr) - 1500 CFM Total, 6 Tons cooling, 42 MBH heating
RTU-I: (Classroom Wing) - 12000 CFM Total, 48 Tons cooling, 325 MBH heating
MAU: (Kitchen Makeup) – 3000 CFM Total, 11 Tons cooling, 230 MBH heating

Upper Field New Construction Option:

RTU-A: (Admin) – 7500 CFM Total, 30 Tons cooling, 205 MBH heating
RTU-B: (Cafetorium) – 4000 CFM Total, 16 Tons cooling, 110 MBH heating
RTU-C: (Kitchen/Custodial) – 800 CFM Total, 4 Tons cooling, 24 MBH heating
RTU-D: (Media Ctr) – 1500 CFM Total, 6 Tons cooling, 40 MBH heating
RTU-E: (Gym) - 7500 CFM Total, 27 Tons Cooling, 285 MBH heating
RTU-F: (Classroom Wing) - 5000 CFM Total, 20 Tons cooling, 135 MBH heating
RTU-G: (Classroom Wing) - 8000 CFM Total, 32 Tons cooling, 220 MBH heating
RTU-H: (Classroom Wing) - 7000 CFM Total, 28 Tons cooling, 190 MBH heating
RTU-I: (Classroom Wing) - 7000 CFM Total, 28 Tons cooling, 190 MBH heating
RTU-J: (Central Commons) - 6000 CFM Total, 24 Tons cooling, 165 MBH heating
MAU: (Kitchen Makeup) – 3000 CFM Total, 11 Tons cooling, 230 MBH heating
H&V: (Back of House) – 1350 CFM Total, 40 MBH heating

C. Air Distribution Systems:

The building areas are to be served by a fully air-conditioned variable volume displacement ventilation air distribution system with supplemental chilled water radiant cooling and heating panel system.

New ductwork shall be constructed and installed in accordance with SMACNA and IMC requirements. All new supply and return air ductwork shall be insulated per IMC code requirements (R-8). All new Kitchen exhaust fans shall be provided with new Fire-wrapped carbon steel or insulated stainless steel grease ductwork.

D. Exhaust Air Fan Systems:

1. Code required exhaust for the majority of building areas, including toilet rooms, shall be provided through the DOAS systems throughout the building.

2. Dedicated exhaust air fan systems shall be provided for Kitchen exhaust air (if provided) and Janitor's closet areas.

E. Terminal Heating & Cooling Equipment:

Provide new hot and chilled water radiant heating and cooling panels for the perimeter heating and cooling for all fully air conditioned areas (eg. Admin Offices, Guidance, Nurse's suite, cafeteria) of the building. Classrooms shall be provided with hot water radiant heating panels. New hot water radiant heating panels or fin tube radiation shall be provided for perimeter heating of all restrooms with exterior exposure heating loads. Hot water radiation heating equipment shall be provided for all corridors, entryways. Hot water unit heaters shall be provided for all utility rooms.

F. Split system AC heat pump units:

New ductless split system high efficiency heat pump AC units will be installed to serve Elevator machine rooms, and IT and MDF Server rooms.

8. HVAC SYSTEM OPTION 3 (Geothermal Closed Loop Heat Recovery Heat Pump Displacement Ventilation System).

A. General: A central geothermal ground source water to water heat recovery heat pump chiller plant shall be provided to generate hot water and chilled water for building air handling unit and terminal heating/cooling equipment. Central (indoor or rooftop) hot water and chilled water air handling units with minimum 75% efficient Energy recovery ventilation (ERV) providing Displacement Ventilation to terminal VAV units w/ CO2 DCV (demand control ventilation) and terminal hot water and chilled water dual-temp perimeter passive radiant heating/cooling panels. Exhaust fans would be provided for janitor's closets, and utility rooms. Ground source heat pump AC units shall be provided for IT Server Rooms, Electric rooms and elevator machine rooms.

B. Geothermal Heating and Cooling Plant:

1. Heating and cooling for the entire building at each site option will be capable of being provided via a high-efficiency ground-source heating and cooling plant including a modular water to water simultaneous heating/cooling heat recovery heat pump chiller plant that includes the following quantities of chiller modules:

Add/Reno Option:

Six (6) 50 nominal ton modules, with two (2) of the modules for heating/cooling backup purposes. The heat pump heat recovery chillers will be provided with ground source condenser water from approximately (54) closed loop type vertical ground source geothermal wells.

Lower Field New Construction Option:

Seven (7) 50 nominal ton modules, with two (2) of the modules for heating/cooling backup purposes. The heat pump heat recovery chillers will be provided with ground source condenser water from approximately (66) closed loop type vertical ground source geothermal wells.

Upper Field New Construction Option

Seven (7) 50 nominal ton modules, with two (2) of the modules for heating/cooling backup purposes. The heat pump heat recovery chillers will be provided with ground source condenser water from approximately (66) closed loop type vertical ground source geothermal wells.

In each site option, the heat pump chiller units will be located in a Mechanical Room and in an Add/Reno option, the size of the existing mechanical room will likely need to increase. The geothermal wells will be approximately 550 feet deep and spaced a minimum of 20-25' apart from one another, based on a capacity of 4 tons/well. The final well quantity, depth and distances shall be determined by the geothermal design consultant.

2. Primary and standby base-mounted geothermal water pumps with variable frequency drives (which will control down to maintain a minimum flow to the heat pump chillers) will be provided for overall variable flow condenser water system distribution. In addition to pumps, new geothermal water accessories including air separators, filters, and expansion tanks shall be provided.

C. Split system AC heat pump units:

Provide new ductless water source split system high efficiency heat pump AC units to serve Elevator machine rooms, and IT and MDF Server rooms.

D. Domestic hot water heating systems shall be pre-heated by the building hot water heating loop and a ground source heat pump system shall be utilized to provide additional heating of DHW heating. The DHW storage tank heat exchangers and heat pumps shall be by Plumbing and a geothermal to DHW pre-heat heat exchanger shall be provided by HVAC.

E. Aside from what is described above under this section HVAC System Option 3, the system is identical to the one described under section HVAC System Option 2.

9. COMMON REQUIREMENTS FOR ALL HVAC OPTIONS:

A. Lobby, Corridor, and Entry Way Heating:

New hot water convectors, cabinet unit heaters, and fin tube radiation heating equipment shall be installed to provide heating to building entry way and stairwell areas. Corridors shall be ventilated from adjacent air handling unit systems. Main Corridor and Lobby areas shall be heated and dehumidified by the displacement ventilation systems. For HVAC Option 1 VRF System – Electric terminal heating equipment shall be provided.

B. Utility Areas:

Utility areas will be provided with exhaust air fan systems for ventilation and will typically be heated with horizontal type ceiling suspended hot water or electric unit heaters.

The Main Electric Rooms and IDF rooms will be air conditioned by high efficiency ductless AC cooling units. Geothermal HVAC options shall use hydronic based heat pumps or fan coil units.

C. Testing, Adjusting, Balancing & Commissioning:

All new HVAC systems shall be tested, adjusted, balanced and commissioned as part of the project scope.

D. Automatic Temperature Controls – Building Energy Management System:

A new DDC (direct digital control) Automatic Temperature Control and Building Energy Management System shall be installed to control and monitor building HVAC systems. Energy metering shall be installed to monitor the energy usage of building HVAC systems and utilities (electric, water). The new DDC/ATC system shall be a BACNet open protocol system that is capable of being integrated into the Town Wide Central energy management system.

10. ADD-RENO PROJECT ADDITIONAL HVAC SCOPE:

A. Demolish and remove all existing HVAC systems and equipment.

B. Cap and make safe any existing natural gas main.

C. Blank off & seal all existing unit ventilator outdoor air intake grilles. The building envelope shall be upgraded by others in each of these locations to maintain code-required thermal heat transfer resistance.

11. TESTING REQUIREMENTS:

A. The Mechanical Contractor shall provide testing of the following systems with the Owner and Owner's Representative present where applicable to the selected HVAC option.

- Heat pump chiller plant system
- Condenser (Ground-Source) water plant system
- Back up boiler plant
- Air handling unit systems including all rooftop units, indoor air handling systems and exhaust air systems
- All pumps
- Terminal heating and cooling devices
- Variable Refrigerant Flow and Ductless AC Systems
- Automatic temperature control and building energy management system

B. Testing reports shall be submitted to the Engineer for review and approval before providing to the Owner.

12. OPERATION MANUALS AND MAINTENANCE MANUALS

When the project is completed, the Mechanical Contractor shall provide operation and maintenance manuals to the owner.

13. RECORD DRAWINGS AND CONTROL DOCUMENTS

When the project is completed, an as-built set of drawings, showing all mechanical system requirements from contract and addendum items will be provided to the owner.

14. COMMISSIONING

The project shall be commissioned per the Commissioning Section of the specifications.

3.6 Electrical Systems Report

GGD Consulting Engineers, Inc.

Shaker Lane Elementary School
Littleton, MA
J#725 006 00.00
L#90768/Page 1/October 4, 2024

ELECTRICAL SYSTEMS

OPTION: ADD-RENO, LOWER-FIELD NEW CONSTRUCTION, UPPER-FIELD NEW CONSTRUCTION

NARRATIVE REPORT

The following is the Electrical Systems narrative, which defines the scope of work and capacities of the Power, Lighting and Fire Alarm systems additionally, information has been provided regarding the Basis of Design for each system noted. The Electrical Systems shall be designed and constructed in accordance with LEED for Schools V4 where indicated on this narrative.

Based on the proposed areas for renovation and new construction options, proposed HVAC system options, and existing condition of the current systems, the system narratives will apply to all three design options unless otherwise noted.

1. CODES

   A. All work installed under Section 260000 shall comply with the Massachusetts State Building Code and all local, county, and federal codes, laws, statutes, and authorities having jurisdiction.

2. DESIGN INTENT

   A. The work of Section 260000 is as described in this Narrative. All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Electrical work and all items incidental thereto, including commissioning and testing.

   B. Design Parameters:

   - High Voltage: 277/480 volt
   - Low Voltage: 120/208 Volt
   - Phase: 3 Phase
   - Amperage: 2,000 Amps with 2,500 Amp rated bussing

3. SEQUENCE OF OPERATIONS AND INTERACTIONS

   A. Classroom and Corridor lighting will be controlled via “addressable relays”, which is achieved through programming networked controls. The control of the relays will be by automatic means, such as an occupancy sensor in each classroom. The system will have a BacNet gateway and will be interfaced with the BMS control system for schedule functions. The controllability shall be in conformance with associated LEED credit in indoor environmental quality.

   B. Automatic control of receptacles based on occupancy will be provided for at least 50% of the receptacles installed in private offices, open offices, conference rooms, rooms used primarily for printing and/or copying functions, break rooms, individual workstations, and classrooms. Controlled receptacles will be marked per NEC 406.3 (E).

C. Exterior lighting will be controlled by photocell “ON” and “scheduled” for “OFF” operation. The parking area lighting will be controlled by “zones” with dimmable capability. Exterior lights will be addressable and dimmable. Fixtures will be designed and programmed to turn on at dusk utilizing photo sensor input. Fixture shall be turned off based on scheduled preference typically 5AM-6AM. Fixture output shall be scheduled to be reduced by 50% after 12AM. Additional schedule functionality shall be provided based on end user input.

D. Emergency and Exit lighting will be run through life safety panels to be “ON “during normal power conditions, as well as, power outage conditions. The emergency lighting system will have control so that lights are “ON” only when building is occupied with the exception of buildings exit signs which shall remain always on.

4. DESCRIPTION OF THE SYSTEMS

A. Utilities:

1. The new/renovated building will be supplied with utility power from the utility company Littleton Municipal Light Department. The new service will be fed via underground primary duct bank to a pad mounted utility company owned liquid filled transformer.

2. The service electrical transformer will be furnished, installed, owned and maintained by Littleton Municipal Light Department, and it will be located adjacent to the building as shown on the civil drawings. The transformer will be of the pad- mounted type with a primary voltage of 13.8 kV and a secondary voltage of 480Y/277 volts. The transformer will be sized by the utility company based on the load data provided by The Design team.

3. Concrete pad and grounding grid for the pad-mounted transformer is provided by the Contractor per the Littleton Municipal Light Department standards.

4. Concrete encased duct bank of the two 4" PVC conduits will be provided by the Electrical Contractor for the primary feeder installation from the utility riser pole to the pad mounted transformer. Pre-cast concrete manholes 12' x 9' will be provided by the Contractor to facilitate the primary cables field installation at the request of the utility companty. The duct bank routing is shown on the civil drawings.

5. Utility company will provide a primary feeder cable from the utility riser pole to the pad mounted transformer and terminate the feeder cable on both ends.

6. Transformer secondary feeder of the copper conductors will be installed underground in the duct bank of five 4" PVC conduits from the pad-mounted transformer to the main electrical switchboard located in the main electrical room. The secondary feeder and terminations at the switchboard side will be provided by the Electrical Contractor, and terminated at the transformer side by Littleton Municipal Light Department.

7. The Littleton Municipal Light Department metering CTs will be installed at the transformer spades. The meter will be located at the transformer per the direction of the utility company.

8. Telephone, Cable TV, and City Fiber will be fed underground into the building's Main Distribution Frame/Head End Room.

B. Electrical Distribution System:

1. Service ratings for the Main Building are designed for an all electric building with hight efficiency lighting, mechanical, and misc. electrical systems as outlined in the load tables below. The service capacity will be sized for 2,000 amperes at 277/480 volt, 3∅, 4wire with 100% rated main breaker. The main buss will be sized at 2,500 amperes and will have an available space provision at the end of the gear to accommodate a future grid connected photovoltaic array. The switchboard will be furnished with a service entrance transient voltage surge protection device (SPD) rated 240 kA and digital metering unit to monitor voltage, current, power factor, demand kW and with a data communication port for interface with BMS. Main switchboard's short circuit rating shall be coordinated with the utility companies available short circuit capacity, but it is estimated to be 65 KAIC.

2. Copper conductors shall be utilized for all branch circuit and feeder wiring. Aluminum conductors will be allowed for all feeders 100 amperes or over excluding the secondary service conductors.

3. The building connected electrical load estimate is based on the preliminary building systems design:

Option 1 – Add Reno (94,850 sf)

Load Type	**KVA**
HVAC Loads (including AHU, Destratification Fans, DCU, Chiller,, UH, VRF, Boilers, FCs, Pumps, RTUs, Exhaust Fans, DCU)	759.0 KVA
Elevator	30.0 KVA
Exterior Lighting	5.0 KVA
Interior Lighting	48.0 KVA
General Power	190.0 KVA
Kitchen	150.0 KVA
Theatrical Lighting Equipment	15.0 KVA
Plumbing/Fire Protection (Pumps, etc.)	200.0 KVA
EV Car Charging	50.0 KVA
Total Connected Load	**1447.0 KVA**

Options 2/3 – Lower/Upper Field New Construction (97,757 sf)

Load Type	KVA
HVAC Loads (including AHU, Destratification Fans, DCU, Chiller,, UH, VRF, Boilers, FCs, Pumps, RTUs, Exhaust Fans, DCU)	784.0 KVA
Elevator	30.0 KVA
Exterior Lighting	5.0 KVA
Interior Lighting	50.0 KVA
General Power	196.0 KVA
Kitchen	150.0 KVA
Theatrical Lighting Equipment	15.0 KVA
Plumbing/Fire Protection (Pumps, etc.)	200.0 KVA
EV Car Charging	50.0 KVA
Total Connected Load	**1480.0 KVA**

4. Electrical power distribution equipment will be installed in the main electrical room that will also contain a 2 hour rated emergency electric room for life safety electrical switchgear, and in remote electrical closets distributed to each wing / functional core.

C. Interior Lighting System:

1. The intent of the lighting design is to provide a visual environment for the students and faculty that is supportive of the educational activities within the building. The lighting system will be designed in compliance with the applicable Energy Code and be eligible for the Utility company rebate program.

2. Interior lighting illumination levels will meet the IES recommended values for applicable activity type, be in compliance with the IECC 2021 energy allowances and LEED for Schools control requirements.

PROPOSED ILLUMINATION LEVELS

Location	Average Illumination Levels
Classrooms	30 FC
Offices, Conference Rooms, Library	30 FC
Kitchen	50 FC
Gymnasium	50 FC
Cafeteria	30 FC
Corridors	20 FC
Utility and Storage Rooms	20 FC

3. Classroom lighting fixtures will consist of recessed/surface mounted direct/indirect luminaries with integral LED source and electronic dimmable drivers. The fixtures will be pre-wired for continuous dimming control where natural daylight is available and also for multi-level switching. Two daylight dimming zones will be provided in each classroom.

4. Office lighting fixtures will consist of recessed/surface mounted direct only LED luminaries and electronic drivers for dual-level switching. Offices on the perimeter with windows will have daylight dimming where lighting within the daylight zone exceeds 150W.

   In general, lighting power density will be 20-40% less than IECC 2021. The power density reduction relates to associated LEED credit in energy and atmosphere.

5. Lighting levels will be approximately 30 foot candles in classrooms and offices. The daylight dimming foot-candle level will be in compliance with associated LEED credit in indoor environment quality.

6. Gymnasium lighting will be comprised of direct/indirect fixtures with integral LED source and electronic drivers. The fixtures will be provided with poly carbonate lensing. The light level will be designed for approximately 50 foot candles. Multi-level switching will be provided.

   Daylight dimming will be provided within 15 feet of skylights or glazing where lighting within the daylight zone exceeds 150W. Daylight dimming controls will be similar in operation to classrooms.

7. Corridor lighting will be comprised of recessed mounted linear fixtures with integral LED source and electronic drivers. The Corridor light level will be designed for approximately 20-foot candles. Corridor lighting will be controlled via time schedules during normal business hours and set to occupancy control thereafter.

8. Cafeteria lighting will be a combination of pendant mounted fixtures with direct only and direct/indirect distribution types. All fixtures shall be provided with integral LED source and electronic drivers. The light levels will be designed for approximately 30 foot candles.

9. Stage theatrical lights with connector strips and a dimming system will be provided for performances.

10. Kitchen and Servery lighting will consist of recessed 2'x2' and 2'x4' acrylic lensed gasketed troffers with aluminum frame doors, integral LED source, electronic drivers and NSF rated for food prepation areas. Light levels will be approximately 50 foot candles.

11. Each area will be locally switched and designed for multi-level controls. Each Classroom, Office space, and Toilet room will have occupancy sensors to turn lights off when unoccupied. Occupancy sensors will be set to vacancy mode where required by Energy Code.

12. Daylight dimming sensors will be installed in each room where natural light is available for continuous dimming of light fixtures. The control system will be in accordance with associated LEED credit in indoor environmental quality when lighting within the daylight zone exceeds 150W threshold.

13. The entire school will be controlled with an automatic lighting control system for programming of interior and exterior lights "on and off". Lighting control system will be interfaced with BMS system, and will be demand response capable in accordance with associated LEED credit in Energy and atmosphere.

D. Emergency Stand-by System:

1. An exterior 300 kW, 375 kVA diesel fired generator, with sound attenuated enclosures will provide emergency power. Light fixtures and LED Exit signs will be installed to serve all egress areas such as Corridors, Intervening Spaces, Toilets, Stairs, and Exit discharge exterior doors. The Administration area lighting will be connected to the emergency power.

2. The generator power system has been sized to support emergency (life safety), and optional standby building loads. The life safety branch of the emergency system will be provided with a manual transfer switch on the emergency line side of the transfer switch in compliance with NEC 700.3(F)

   a. All Exit signs and emergency lighting in the areas listed below are fed by Life Safety Emergency Power (required by code):

      - Corridors
      - Electrical/Mechanical Rooms
      - Gymnasium
      - Cafeteria/Commons
      - Lobbies
      - Administration areas
      - Health Suite/Nurses office
      - Toilets
      - Stage
      - Data rooms "Head End room & IDF Closets
      - Kitchen/Servery
      - Exterior Building mounted lights over doors required for egress lighting
      - Where required by code (egress areas)

   b. Fire Alarm System

   c. Optional Standby Equipment:

      - Equipment listed below is fed by Optional Standby Emergency Power:
        - Heat Pumps
        - MDF and IDF Cooling units

- Refrigeration (Kitchen/Nurse)

- Strategically located receptacles in administration area.
- Equipment within the Head End and IDF rooms including (served by UPS):
  - Paging/Intercom System (MDF)
  - Security System (IDF/MDF)
  - Telephone System (MDF)
  - Network electronics (IDF/MDF)
  - Servers (MDF)
  - Clock system (MDF)
  - Building Management System (MDF)

d. Standby power loads:

- Heating system heat pumps
- Telephone/ data closets and associated A/C equipment
- Communication systems (telephone and public address systems)
- Building BMS system control panels
- Kitchen refrigeration equipment
- Lighting and power in the Nurse/Medical area
- Security system equipment

E. Metering:

1. Measurement devices shall be installed to monitor the electrical energy use for each of the following separately:

   a. Total electrical energy

   b. Sub-metering in accordance with ASHRAE 90.1 paragraph 8.4.3

2. Recording and Reporting:

   a. The electrical energy usage for all loads listed above shall be recorded a minimum of every 15 minutes and reported at least hourly, daily, monthly, and annually. The system shall be capable of maintaining all data collected for a minimum of 36 months.

F. Site Lighting System:

3. Fixtures for area lighting will be pole mounted cut-off 'LED' luminaries in the parking area and roadways. Pole heights will be 16 feet. The exterior lighting will be connected to the automatic lighting control system for photocell "ON" and timed "OFF" operation. The site lighting fixtures will be dark sky compliant. The illumination level will be 0.5fc for parking areas in accordance with Illuminating Engineering Society. Lighting will be designed in accordance with associated LEED credit in sustainable sites.

4. Building perimeter fixtures will be 'LED' wall mounted cut-off over exterior doors for Exit discharge.

G. Wiring Devices:

1. Each classroom will have a minimum of (2) duplex receptacles per teaching wall and (2) double duplex receptacles on dedicated circuits at classroom computer workstations. The teacher's workstation will have a double duplex receptacle also on a dedicated circuit.

2. Office areas will generally have (1) duplex outlet per wall. At each workstation a double duplex receptacle will be provided.

3. Corridors will have a cleaning receptacle at approximately 25-40 foot intervals.

4. Exterior weatherproof receptacles with lockable enclosures will be installed at exterior doors.

5. A system of computer grade panelboards with double neutrals and surge protective devices will be provided for receptacle circuits.

H. Fire Alarm System:

1. A fire alarm and detection with mass notification system will be provided with 60 hours battery back-up standby, 15 minutes of alarm. The system will be of the addressable type where each device will be identified at the control panel and remote annunciator by device type and location to facilitate search for origin of alarms.

2. Smoke detectors will be provided in open areas, corridors, stairwells and other egress ways.

3. The sprinkler system will be supervised for water flow and tampering with valves.

4. Speaker/strobes with white and amber colored strobes will be provided in egress ways, classrooms, assembly spaces, open areas, and other large spaces. Strobe only units will be provided in single toilets and conference rooms. Amber strobes will be initiated during a mass notification event in which a different district message will be played over the speakers.

5. The system will be remotely connected to automatically report alarms to the Fire Department via a digitized master box.

6. The generator status panel will be located at the Fire Alarm Control Panel.

I. Uninterruptible Power Supply (UPS):

1. A 15KW 120/208V three (3) phase centralized UPS systems will be provided with seven minutes of battery back-up.

2. The system will provide conditioned power to sensitive electronic loads, telecommunication systems, bridge over power interruptions of short duration and allow an orderly shutdown of servers and communication systems during a prolonged power outage.

3. The UPS system will also be connected to the stand-by generator.

J. Lightning Protector System:

4. The lighting protection system will be provided with the following equipment:

a. Lighting protection air terminals

b. Down conductors

c. Grounds

d. Transient Voltage Surge Suppression

K. Renewable Energy System Provisions:

1. The base project will include:

a. Electrical provisions will be made for a roof mounted and exterior solar canopy renewable energy system for a grid connected photovoltaic PV system intended to reduce the facilities demand for power.

b. Conduit provisions for canopy PV systems that will be metered separately.

L. Level 2 AC Dual Electric Vehicle Charging Equipment. (EVSE)

1. Provide provisions for dual port EVSE stations fed with 40 ampere feeders back to a EVSE panel for at least 10% of parking spaces per Massachusetts stretch energy code. Two protective bollards will be installed at each charging station.

M. Two-Way Communications System:

1. A Two-Way Communications System will be provided at the elevator lobbies that do not have grade access. Area of rescue assistance call boxes will be provided at Elevator Lobbies with no grade access. The call boxes connect to a main panel located adjacent to the Fire Alarm annunciator panel.

N. Distribution Antennae System (DAS):

1. A public safety radio distributed antenna system (DAS) which consists of bi-directional amplifiers (BDA), donor antennas, coverage antennas, coax cable, coax connectors, splitters, combiners and couplers. These devices will be used as part of a system for in-building public safety 2-way radio system communication.

5. TESTING REQUIREMENTS

A. The Electrical Contractor shall provide testing of the following systems with the Owner and Owner's Representative present:

- Lighting and power panels for correct phase balance.
- Lighting control system (interior and exterior).
- Fire alarm system.
- Uninterruptible Power System, UPS.
- Lightning protection system.

B. Testing reports shall be submitted to the Engineer for review and approval before providing to the Owner.

6. OPERATION MANUALS AND MAINTENANCE MANUALS

A. When the project is completed, the Electrical Contractor shall provide operation and maintenance manuals to the Owner.

7. RECORD DRAWINGS AND CONTROL DOCUMENTS

A. When the project is completed, an as-built set of drawings, showing all lighting and power requirements from contract and addendum items, will be provided to the Owner.

8. COMMISSIONING

A. The project shall be commissioned per Commissioning Sections 019113 and 260800 of the specifications.

GGD Consulting Engineers, Inc.

Shaker Lane Elementary School
Littleton, MA
HVAC Existing Conditions Systems Report
J#725 006 00.00
L#89741/Page 1/July 19, 2024

HEATING, VENTILATION & AIR CONDITIONING (HVAC)

Executive Summary:

Upon site inspection of the Shaker Lane Elementary School it was determined that the building heating, ventilation, and air conditioning (HVAC) systems are generally functional but should be considered for replacement as part of any building upgrades. The central heating system consists of two Natural Gas fired hot water boilers, heating hot water (HHW) coil unit ventilators, HHW coil air-handling units, and miscellaneous terminal heating coil devices. Relief of building pressure from ventilation systems is accomplished by roof mounted exhaust fans. Large common spaces such as the gymnasium, cafeteria, and Library are provided with air handling units for conditioning and ventilation. These air handlers were installed in 1997 with the exception of the gymnasium unit which appears to be from 1959. The central boilers were installed in approximately the year 1997 and provide adequate overall heating to the building. The hot water circulation pumps are the same age as the boilers but the motors appear to have been replaced as part of routine maintenance within the past 10 years. It is believed that the HHW distribution piping and terminal equipment, excluding unit ventilators, are original to the building construction (1959, 1962, or 1997 dependent upon the location in the building). Classroom unit ventilators are generally more modern but have been updated in groups over time meaning their age ranges from 11 to 27 years old. The building control system is a combination of pneumatic and electronic controls. The electronic controls appear to be a modern digital control system by Delta Controls. Remaining pneumatic controls should be upgraded to be supported on the new Delta system. It is our recommendation that the building HVAC system should be replaced in its entirety as part of any proposed major building renovation and repair project.

Central Heating System:

The building is heated by two gas-fired, cast iron, HHW boilers. The boilers were manufactured by Smith with a burner by PowerFlame (Model C-3-G-25HBS-12). The boilers appear to be in fair physical and operating condition but are approximately 27 years old and have exceeded their expected service life according to the ASHRAE Equipment Life Expectancy Chart. The boilers each have gas input heating capacity of 3,3844 MBH. The boilers provide hot water to two zone loops via four pumps arranged in a primary/standby configuration. The boiler plant serves HHW classroom unit ventilators, heating and ventilation units, cabinet unit heaters and fin tube radiation heating elements.

Atmospheric combustion air for the boiler plant is brought into the boiler room through an external sidewall louver with a control damper. Combustion gases are discharged from the boilers through an insulated exhaust stack which terminates above the roof. The control system for the boiler plant is pneumatic.

TEL 508-998-5700 FAX 508-998-0883 email: info@g-g-d.com



Existing Boiler Plant



Boiler Room H&V Unit



Typ. HHW Circulator Pump (Loop 1)



HHW Circulator Pumps (Loop 2)



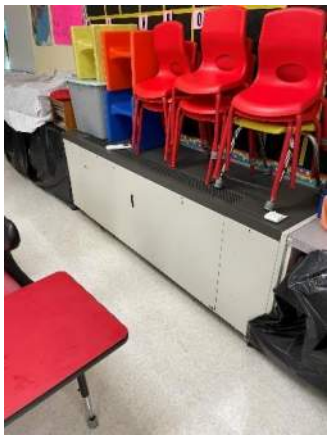
Pump Variable Frequency Drives



Boiler Exhaust Stack

Ventilation:

Ventilation for the building is provided either via unit ventilators which are typical for classrooms and offices or Overhead ducted distribution systems which are fed by ceiling-hung or rooftop-mounted air handling units. The exterior wall unit-ventilators are hydronic and deliver a mixture of heated re-circulation and outdoor air to the space during occupied hours. They are not configured to provide cooling. Most unit ventilators in the building have been integrated into the new Delta Controls system with a modern programmable digital thermostat, but there are several which have not and still operate on pneumatic control.



Classroom Unit Ventilator



Unit Ventilator Outdoor Air Louver

Air Handlers & Rooftop Units:

The cafeteria and library are provided with rooftop air handling units for conditioning and ventilation. The kitchen also has a rooftop-mounted makeup air unit to replace air exhausted through the cooking hood. Each of these rooftop air handlers were installed in 1997 and each is provided with hydronic heating coils fed from the central boiler plant. The rooftop unit for the library is the only unit provided with a DX refrigerant section for air conditioning. It should be noted that this unit operates on R-22 refrigerant which has been discontinued from production and is costly to acquire. There is air conditioning for the Cafeteria however, that is provided via three wall mounted split air conditioners manufactured by Fujitsu. The gymnasium air handling unit is hung from building structure above the Gym stage and appears to be from 1959. This unit has a hydronic heating coil and no cooling. There is also a small air handling unit hung from building structure in the boiler room which is dedicated to the heating and ventilation needs of that space. Air handlers in the building have the following characteristics:

	Manufactured By	Estimated Age	Serves	Heating MBH	Cooling MBH
RTU-1	McQuay	27	Café	708	N/A
RTU-2	Mammoth	27	Library	180	130
MAHU-1	McQuay	27	Kitchen	48	N/A
HV-1	McQuay	27	Boiler Rm	38	N/A
HV-2	Unknown	65	Gym	475	N/A



RTU-2



MAHU-1



RTU-1



H&V-2

Entryways, Hallways, Toilet Rooms, Kitchen Exhaust:

Entryways, hallways and toilet rooms are typically heated by floor mounted cabinet unit heaters or HHW fin-tube radiators, which are original to their respective buildings and are beyond their expected useful life in all instances. Toilets are exhausted via wall grilles at toilet fixtures ducted to rooftop exhaust fans. There is a cooking exhaust hood in the kitchen which appears in good condition and is exhausted by means of an appropriate upblast style exhaust fan.



Example Toilet Rm with Exh. Grilles



Kitchen Cooking Hood

Split Air Conditioning Systems:

Over time, air conditioning has been added to various classrooms and common zones via the use of ductless split cooling systems. Twenty-one total ductless split systems were observed with condenser locations either on the roof or mounted on grade. The ages of the splits varies widely but most appeared to be in fair to good functional condition. Several units were observed to use R-22 as the working refrigerant. These units especially, should be considered for replacement due to the difficulties and cost now associated with acquiring R-22.



Example Roof Mounted DCU



Example Grade Mounted DCU



Example R-22 DCU in IT Rm

Exhaust Air Systems:

The building classroom, administration offices, library, auditorium, gym and toilet room areas are all exhausted by exhaust air fan systems. There is no air-side energy recovery present in the building. Exhaust systems that serve these areas generally terminate at various roof exhaust fans. In general, the exhaust air fans appear to be in functioning condition and could continue to operate but are nearing the end of their useful lifespan and should be considered for replacement.



Typical Low-wall Exhaust Grille



Typical DCU at Classrooms

HVAC Controls:

The building HVAC system is primarily controlled by a hybrid of pneumatic control systems consisting of control panels, pneumatic air tubing, and an air compressor and air dryer system; and a modern DDC system from Delta Controls. The components which are on the modern control system report to a front-end workstation hosted at the high-school in the Town. The overall recommendation is for all remaining pneumatic controls to be converted to the modern Delta platform for improved energy efficiency and system monitoring capabilities.



Pneumatic ATC Compressor



Pneumatic/ Electronic Controls Cabinet



Typical Modern Thermostat



Typical Outdated Thermostat

Recommendations for Code Repair Project:

While the building HVAC systems appear to have been well maintained throughout the years, the highest cost elements of the existing HVAC system have exceeded their expected useful service life and operate based on outdated technology. Additionally, the current HVAC system does not meet the requirements of the current energy code and will require updating. Based on this, we recommend that the building HVAC system is replaced in its entirety as part of any baseline code building upgrades.

A lifecycle cost analysis should be performed during the early design stages of the project. A minimum of three replacement HVAC system options should be studied in terms of first, operating and maintenance/replacement costs over the study period to determine the system with the lowest lifetime cost of ownership.

As an initial option, we recommend that the following HVAC system renovations occur as part of a building renovation and repair project:

- Demolish and remove all existing HVAC systems and equipment.

- Blank off & seal all existing unit ventilator outdoor air intake grilles and restore the envelope in each of these locations to maintain code-required thermal heat transfer resistance.

- Hot Water Heating Plant: Provide a new electric high efficiency modular Air-source to Hydronic Heat Pump unit that shall be located on grade outdoors within an enclosed area. New primary and secondary hot water pumps sets shall be provided and arranged in a primary standby manner to distribute hot water from the air source heat pump unit to building terminal heating equipment via a new insulated hot water piping distribution loop. The distribution pumps shall be provided with EC motors or VFDs.

- Terminal Heating Equipment: New insulated hot water piping shall be distributed from the plant to a combination of terminal hot water heating equipment The majority of occupied classroom and office areas shall be provided with heating only fan coil units equipped with EC Motors for fan speed control. Entry areas and stairwells shall be provided with cabinet unit heaters. Utility rooms and storage areas with exterior exposures shall be provided with unit heaters. Corridors and areas with extensive exterior exposure areas shall be provided with fin tube radiation heating.

- Ventilation Systems: Provide new roof-mounted 100% outdoor air handling units with energy recovery ventilation (ERV) and code compliant efficiency air source heat pump sections. The ERV units shall be equipped with supply and return/exhaust fans equipped with VFDs or EC motors, Refrigerant heating/cooling coils, MERV-14 final filter, MERV-8 pre and exhaust filters, economizer control, recirculation air dampers, static pressure control, and demand control ventilation. There shall be separate ERV units for Classrooms and adjacent teacher support and circulation areas, Administration Areas, Cafeteria, and Library areas. The Classroom areas shall be served by multiple ERV units that shall be designed based on heating/cooling load exposures. Where possible the ERV units shall be connected to common outdoor air and exhaust air duct systems to minimize building envelope penetration.

- Zone Heating and Cooling: Provide a new high-efficiency Air Source Variable Refrigerant Flow (VRF) heat recovery system to provide simultaneous heating and cooling capabilities to all regularly occupied spaces via a combination of fan coil, ductless wall and/or ductless ceiling cassette type VRF terminal air handling units. Air conditioning will be generated by outdoor roof mounted heat recovery type air source heat pump condensing units that shall be connected to indoor air handling units or terminal heating and cooling units.

- Provide one new recirculation-type roof mounted air handling unit with energy recovery ventilation (ERV) and code compliant efficiency air source heat pump section to serve the Gymnasium. The Gym ERV unit shall be equipped with supply and return/exhaust fans equipped with VFDs or EC motors, Refrigerant heating/cooling coils, MERV-14 final filter, MERV-8 pre and exhaust filters, economizer control, recirculation air dampers, and demand control ventilation.

- The ERV units shall be designed to provide air conditioning or partial air conditioning (dehumidification) to the majority of building areas. The Administration and Cafeterias areas shall be provided with "full" air conditioning to maintain 75 deg F on a design cooling day, whereas the Library, Gym, Classroom, and related Teacher support areas shall be designed for partial air conditioning to maintain a temperature of 78 deg F on a design cooling day.

- Code required exhaust for the majority of building areas, including toilet rooms, shall be provided through the energy recovery ventilation (ERV) systems.

- New dedicated exhaust air fan systems shall be provided for Kitchen exhaust air and Janitor's closet areas.

- New VAV (variable air volume) terminal boxes with temperature and demand control ventilation shall be provided for each classroom and other densely occupied spaces. Enthalpy controls shall be provided to shut down mechanical cooling systems when operable windows are opened during hot and humid outdoor air conditions.

- Supplemental split Air Source heat pumps shall be provided to serve IT server rooms and closets.

- The existing building control systems shall be removed and a new direct digital automatic temperature control (ATC) and building energy management system (BMS) shall be provided. The new ATC/BMS system shall be web accessible, include energy metering, and shall be capable of being integrated into the current school-wide

Recommendations for Add/Reno Project:

While the building HVAC systems appear to have been well maintained throughout the years, the highest cost elements of the existing HVAC system have exceeded their expected useful service life and operate based on outdated technology. Additionally, the current HVAC system does not meet the requirements of the current energy code and will require updating. Based on this, we recommend that the building HVAC system is replaced in its entirety as part of any addition and renovation building upgrades.

A lifecycle cost analysis should be performed during the early design stages of the project. A minimum of three replacement HVAC system options should be studied in terms of first, operating and maintenance/replacement costs over the study period to determine the system with the lowest lifetime cost of ownership.

As an initial option, we recommend that the following HVAC system renovations occur as part of a building renovation and repair project:

- Demolish and remove all existing HVAC systems and equipment.

- Blank off & seal all existing unit ventilator outdoor air intake grilles and restore the envelope in each of these locations to maintain code-required thermal heat transfer resistance.

- Hot Water Heating Plant: Provide a new electric high efficiency modular Air-source to Hydronic Heat Pump unit that shall be located on grade outdoors within an enclosed area. New primary and secondary hot water pumps sets shall be provided and arranged in a primary standby manner to distribute hot water from the air source heat pump unit to building terminal heating equipment via a new insulated hot water piping distribution loop. The distribution pumps shall be provided with EC motors or VFDs.

- Terminal Heating Equipment: New insulated hot water piping shall be distributed from the plant to a combination of terminal hot water heating equipment The majority of occupied classroom and office areas shall be provided with heating only fan coil units equipped with EC Motors for fan speed control. Entry areas and stairwells shall be provided with cabinet unit heaters. Utility rooms and storage areas with exterior exposures shall be provided with unit heaters. Corridors and areas with extensive exterior exposure areas shall be provided with fin tube radiation heating.

- Ventilation Systems: Provide new roof-mounted 100% outdoor air handling units with energy recovery ventilation (ERV) and code compliant efficiency air source heat pump sections. The ERV units shall be equipped with supply and return/exhaust fans equipped with VFDs or EC motors, Refrigerant heating/cooling coils, MERV-14 final filter, MERV-8 pre and exhaust filters, economizer control, recirculation air dampers, static pressure control, and demand control ventilation. There shall be separate ERV units for Classrooms and adjacent teacher support and circulation areas, Administration Areas, Cafeteria, and Library areas. The Classroom areas shall be served by multiple ERV units that shall be designed based on heating/cooling load exposures. Where possible the ERV units shall be connected to common outdoor air and exhaust air duct systems to minimize building envelope penetration.

- Zone Heating and Cooling: Provide a new high-efficiency Air Source Variable Refrigerant Flow (VRF) heat recovery system to provide simultaneous heating and cooling capabilities to all regularly occupied spaces via a combination of fan coil, ductless wall and/or ductless ceiling cassette type VRF terminal air handling units. Air conditioning will be generated by outdoor roof mounted heat recovery type air source heat pump condensing units that shall be connected to indoor air handling units or terminal heating and cooling units.

- Provide one new recirculation-type roof mounted air handling unit with energy recovery ventilation (ERV) and code compliant efficiency air source heat pump section to serve the Gymnasium. The Gym ERV unit shall be equipped with supply and return/exhaust fans equipped with VFDs or EC motors, Refrigerant heating/cooling coils, MERV-14 final filter, MERV-8 pre and exhaust filters, economizer control, recirculation air dampers, and demand control ventilation.

- The ERV units shall be designed to provide air conditioning or partial air conditioning (dehumidification) to the majority of building areas. The Administration and Cafeterias areas shall be provided with "full" air conditioning to maintain 75 deg F on a design cooling day, whereas the Library, Gym, Classroom, and related Teacher support areas shall be designed for partial air conditioning to maintain a temperature of 78 deg F on a design cooling day.

- Code required exhaust for the majority of building areas, including toilet rooms, shall be provided through the energy recovery ventilation (ERV) systems.

- New dedicated exhaust air fan systems shall be provided for Kitchen exhaust air and Janitor's closet areas.

- New VAV (variable air volume) terminal boxes with temperature and demand control ventilation shall be provided for each classroom and other densely occupied spaces. Enthalpy controls shall be provided to shut down mechanical cooling systems when operable windows are opened during hot and humid outdoor air conditions.

- Supplemental split Air Source heat pumps shall be provided to serve IT server rooms and closets.

- The existing building control systems shall be removed and a new direct digital automatic temperature control (ATC) and building energy management system (BMS) shall be provided. The new ATC/BMS system shall be web accessible, include energy metering, and shall be capable of being integrated into the current school-wide

Recommendations for New Construction Project:

A lifecycle cost analysis should be performed during the early design stages of the project. A minimum of three new HVAC system options should be studied in terms of first, operating and maintenance/replacement costs over the study period to determine the system with the lowest lifetime cost of ownership.

We recommend that the following HVAC system be considered as one of the options for a new building project:

- Demolish and remove all existing HVAC systems and equipment.

- Blank off & seal all existing unit ventilator outdoor air intake grilles and restore the envelope in each of these locations to maintain code-required thermal heat transfer resistance.

- Hot Water Heating Plant: Provide a new electric high efficiency modular Air-source to Hydronic Heat Pump unit that shall be located on grade outdoors within an enclosed area. New primary and secondary hot water pumps sets shall be provided and arranged in a primary standby manner to distribute hot water from the air source heat pump unit to building terminal heating equipment via a new insulated hot water piping distribution loop. The distribution pumps shall be provided with EC motors or VFDs.

- Terminal Heating Equipment: New insulated hot water piping shall be distributed from the plant to a combination of terminal hot water heating equipment The majority of occupied classroom and office areas shall be provided with heating only fan coil units equipped with EC Motors for fan speed control. Entry areas and stairwells shall be provided with cabinet unit heaters. Utility rooms and storage areas with exterior exposures shall be provided with unit heaters. Corridors and areas with extensive exterior exposure areas shall be provided with fin tube radiation heating.

- Ventilation Systems: Provide new roof-mounted 100% outdoor air handling units with energy recovery ventilation (ERV) and code compliant efficiency air source heat pump sections. The ERV units shall be equipped with supply and return/exhaust fans equipped with VFDs or EC motors, Refrigerant heating/cooling coils, MERV-14 final filter, MERV-8 pre and exhaust filters, economizer control, recirculation air dampers, static pressure control, and demand control ventilation. There shall be separate ERV units for Classrooms and adjacent teacher support and circulation areas, Administration Areas, Cafeteria, and Library areas. The Classroom areas shall be served by multiple ERV units that shall be designed based on heating/cooling load exposures. Where possible the ERV units shall be connected to common outdoor air and exhaust air duct systems to minimize building envelope penetration.

- Zone Heating and Cooling: Provide a new high-efficiency Air Source Variable Refrigerant Flow (VRF) heat recovery system to provide simultaneous heating and cooling capabilities to all regularly occupied spaces via a combination of fan coil, ductless wall and/or ductless ceiling cassette type VRF terminal air handling units. Air conditioning will be generated by outdoor roof mounted heat recovery type air source heat pump condensing units that shall be connected to indoor air handling units or terminal heating and cooling units.

- Provide one new recirculation-type roof mounted air handling unit with energy recovery ventilation (ERV) and code compliant efficiency air source heat pump section to serve the Gymnasium. The Gym ERV unit shall be equipped with supply and return/exhaust fans equipped with VFDs or EC motors, Refrigerant heating/cooling coils, MERV-14 final filter, MERV-8 pre and exhaust filters, economizer control, recirculation air dampers, and demand control ventilation.

- The ERV units shall be designed to provide air conditioning or partial air conditioning (dehumidification) to the majority of building areas. The Administration and Cafeterias areas shall be provided with "full" air conditioning to maintain 75 deg F on a design cooling day, whereas the Library, Gym, Classroom, and related Teacher support areas shall be designed for partial air conditioning to maintain a temperature of 78 deg F on a design cooling day.

- Code required exhaust for the majority of building areas, including toilet rooms, shall be provided through the energy recovery ventilation (ERV) systems.

- New dedicated exhaust air fan systems shall be provided for Kitchen exhaust air and Janitor's closet areas.

- New VAV (variable air volume) terminal boxes with temperature and demand control ventilation shall be provided for each classroom and other densely occupied spaces. Enthalpy controls shall be provided to shut down mechanical cooling systems when operable windows are opened during hot and humid outdoor air conditions.

- Supplemental split Air Source heat pumps shall be provided to serve IT server rooms and closets.

- The existing building control systems shall be removed and a new direct digital automatic temperature control (ATC) and building energy management system (BMS) shall be provided. The new ATC/BMS system shall be web accessible, include energy metering, and shall be capable of being integrated into the current school-wide

PLUMBING ASSESSMENT

EXECUTIVE SUMMARY

Majority of pipes are past their useful life and in poor condition. We recommend replacing all cold, hot, waste and vent piping in the building.

Domestic hot water for the building is served from a 100 Gallon, 150 MBG High-efficiency gas-fired domestic water heater that was installed in 2015. Hot water heater is in good condition and still has 9 Years of useful life.

Gas meter is located on the outside of the building and serves domestic hot water heater, boilers, kitchen, and generator.

High Lead content was found in the cold-water system. Filters are being provided at the drinking fountains. Bubblers at classrooms are not being used.

Sanitary service runs to a septic system on site.

Roof drainage is via roof drains. Some water ponding was observed.

Plumbing fixtures are older high flow fixtures. We recommend replacing all plumbing fixture with new low flow fixtures.

Kitchen has code required grease trap for 3-bay sink but not the dishwasher.

Could not confirm if the kitchen hood gas shut-off valve was interlocked with the Ansul system and co detector as required per 248 CMR.

BATHROOMS





(L) Typical Wall hung Lavatory with manual faucet.

(R) Typical floor mounted flush valve water closet.





(L) Classroom sink, Bubbler not used based on Lead content.

(R) Bottle filler and drinking fountain station.

Comments:

Toilets: Toilets have manual flush valves and are 1.6 GPF.

Lavatories: Wall hung with manual high flow faucets.

Urinals: Manual flush valves, 1 gpf.

Recommend replacing all fixtures with low flow, sensor operated flush valves and faucets.

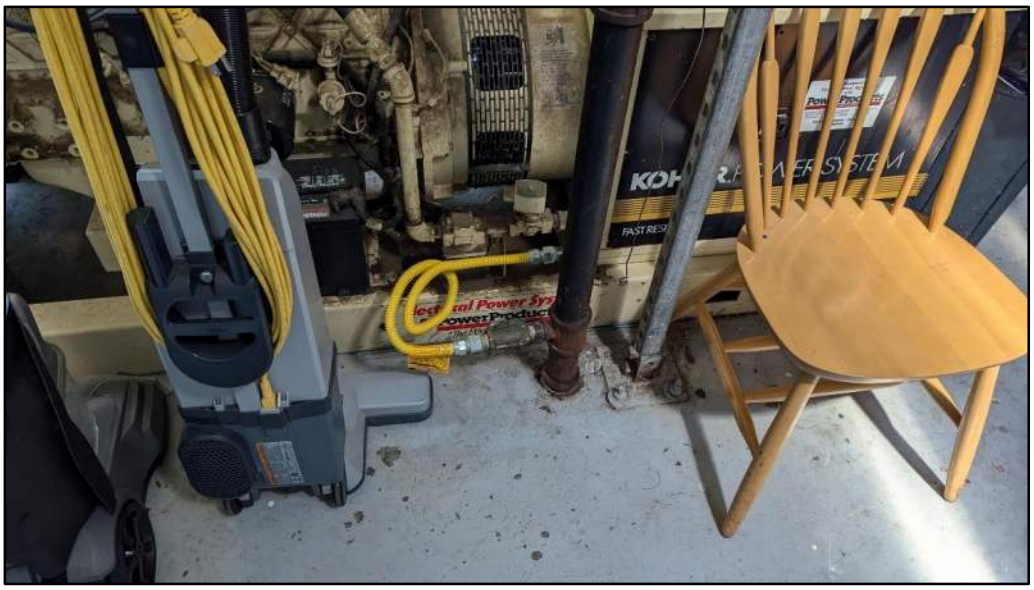
Mechanical Systems





(L) High Efficiency gas-fired hot water heater

(R) High/low mixing valve



Gas generator





(L) Gas Service

(R) Recirculation pumps

Comments:

1. Domestic hot water heater is in good shape and has 9 years of useful life yet.
2. Recommend replacing high/low mixing valve with new digital mixing valve.
3. Recirculation pumps are nearing end of useful life and appear oversized for this building.
4. Water service and piping should be replaced based on lead content.

KITCHEN



3-Bay sink and floor mounted grease interceptor.



Kitchen Hood

Comments:

1. Kitchen has code required grease trap for the 3-bay sink but the dishwasher does not appear to run to it per 248 CMR.
2. Not all kitchen equipment is provided with backflow prevention per current plumbing code.
3. Could not verify that gas line at kitchen hood is provided with a gas-shut off interlocked with ansul system and carbon dioxide detectors as required by current code.

ROOF





(L) Typical Roof drain

(R) Typical Vent through the roof

Comments:

1. Some water ponding occurring at the roof, appears to be a roof sloping issue.

3.6 PDP Fire Protection Assessment

FIRE PROTECTION ASSESSMENT

EXECUTIVE SUMMARY

Existing building does not have a Fire Suppression system. Per current building codes a building over 7,500 sq ft require a fully automatic sprinkler system in compliance with NFPA 13. The existing building does not meet the current codes and any additions or renovations would trigger the need to install a new Fire Suppression system throughout the building.

RECOMMENDATIONS

Install a new fire suppression system throughout the building in compliance with NFPA 13.

3.7 Cost Estimate - OPM

Littleton Public Schools
Town of Littleton, MA

Turner & Townsend Heery

Estimator: RLH
Checked by: RIDGELY
Project Manager: M. Stafford

BID PACK:	**GENERAL**
PHASE:	**Pre Concept**
DOCUMENTS DATE:	**10/4/2024**
ESTIMATE DATE:	**10/21/2024**
REVISION DATE:	**10/23/2024**

PROJECT:	**Shaker Lane Elementary School**
OWNER:	**Littleton Public Schools**
ARCHITECT:	**Studio G Architects**
ENGRS:	
MEP	**GGD Consulting Engineers**
Structural	**Foley Buhl Roberts**
Civil	**Samiotes Consultants**

Addition Renovation	**DBB**	$	76,186,668
	CMr	$	80,757,868
Upper Field	**DBB**	$	81,714,083
	CMr	$	86,616,928
Lower Field	**DBB**	$	80,691,269
	CMr	$	85,532,745

SHAKER LANE ELEMENTARY SCHOOL
PRE-CONCEPT ESTIMATE
OPTION 2.1 ADDITION RENOVATION
OPTION 3.1 NEW UPPER FIELD
OPTION 3.2 NEW LOWER FIELD
10/21/2024

COMBINED QUALIFICATIONS

This Pre-Concept Estimate is based on information received from Studio G Architects dated 10/4//2024. Unit costs are based on the most recent current data available for the local project area. This Pre-Concept Estimate is based on the following general assumptions:

- A normal Construction schedule has been used to prepare the estimate.
- Costs are based on a forty (40) hour work week, Monday thru Friday.
- Items that could impact this estimate are:
  - Restrictive technical specification
  - Non-competitive bid conditions
  - Sole source specification of materials or products
  - Delays beyond the projected schedule
  - Accelerated completion.
  - Supply chain delivery issues.
- This estimate is based on local prevailing wage rates.
- Cost for asbestos abatement or hazardous materials removal is provided per EFI Global opinion.
- The following items have been excluded:
  - Geotechnical engineering.
  - Installation of utility company services and user fees/surcharges.
  - Costs associated with third party commissioning services.
  - Costs associated with air monitoring/clearance sampling.
  - Costs for FF&E or any loose furniture or equipment or furniture/equipment moving.
  - A/E Design fees.
  - Owner Soft Costs
- Turner & Townsend Heery has no control over the cost of labor and materials, the Prime Contractors,' or Subcontractors' method of determining prices or competitive bidding and market conditions. This opinion of probable cost of construction is made based on the experience, qualifications, and best judgment of the Cost Analyst familiar with the

construction industry. Turner & Townsend Heery cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from this or subsequent estimates. Turner & Townsend Heery has prepared this estimate in accordance with generally accepted principles and practices.

DOCUMENTATION

The following documents were used in the preparation of this Concept Estimate:

- Hazmat Opinion by EFI Global dated August 29, 2024.
- Civil, Structural, MEP and Architectural narratives dated October 4, 2024.
- Space Summary not dated.
- Drawing Options dated October 4,2024

CLARIFICATIONS / QUALIFICATIONS

General

- In addition to the Qualifications and Assumptions noted below, all estimate scope descriptions, quantities and notes serve to specify what is included in this estimate.
- All allowance amounts are inclusive of all material costs, freight to jobsite, labor to install the item(s), and subcontractor overhead and profit.
- Builder's Risk insurance is included at 1.5%.
- Bond Fees is included at .75%.
- Building Permit Fee is excluded.
- Design Contingency is included at 12.00% and would reduce to zero upon completion of the documents at the 100% Construction Documents level.
- Escalation Contingency is included at 8.00%.
- General Contractor's OH&P and General Conditions/Requirements are included at 8%.
- Payment and Performance Bond fees are excluded.

SHAKER LANE ELEMENTARY SCHOOL
PRE-CONCEPT ESTIMATE
OPTION 2.1 ADDITION RENOVATION
OPTION 3.1 NEW UPPER FIELD
OPTION 3.2 NEW LOWER FIELD
10/21/2024

Architectural

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- All assumptions are based on previous experience and recently bid Elementary Schools.
- Specific quantities are derived from narrative statements.
- TTH has provided an additional 2' of exterior wall for a parapet.
- TTH has provided 10% Metal Panel, 5% Curtain Wall, 20 % Alum. Storefront and Alum. Windows and 65% Brick.
- TTH carried the Hazardous Material high cost provided by the opinion of EFI Global.
- TTH provided SF. allowance cost for the Renovation. The new is based on recently bid Elementary Schools.

Structural

- All assumptions are based on previous experience and recently bid Elementary Schools.
- Specific quantities are derived from narrative statements.
- TTH has carried 14 lbs per SF. based on the narrative provided by FoleyBUHLROBERTS & Associates

Fire Protection

- All assumptions are based on previous experience and recently bid Elementary Schools.
- Specific quantities are derived from narrative statements.

Plumbing

- All assumptions are based on previous experience and recently bid Elementary Schools.
- Specific quantities are derived from narrative statements.

SHAKER LANE ELEMENTARY SCHOOL
PRE-CONCEPT ESTIMATE
OPTION 2.1 ADDITION RENOVATION
OPTION 3.1 NEW UPPER FIELD
OPTION 3.2 NEW LOWER FIELD
10/21/2024

HVAC

- All assumptions are based on previous experience and recently bid Elementary Schools.
- Specific quantities are derived from narrative statements.

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Electrical, Communications, Safety and Security

- All assumptions are based on previous experience and recently bid Elementary Schools.
- Specific quantities are derived from narrative statements.

**********End of Qualifications**********

Turner & Townsend Heery

Estimator: RLH
Checked by: RIDGELY
Project Manager: M. Stafford

BID PACK:	**GENERAL**
PHASE:	**Pre Concept**
DOCUMENTS DATE:	**10/4/2024**
ESTIMATE DATE:	**10/21/2024**
REVISION DATE:	**10/23/2024**
PROJECT:	**Shaker Lane Elementary School** **Littleton, Mass.** **Option Addition and Reno**
OWNER:	
ARCHITECT:	**Studio G Architects**
ENGRS:	
MEP	
Structural	**Foley Buhl Roberts**
Civil	

BUILDINGS AREA:			**94,850**	**S.F.**
PROPOSED ADDITION:				
TOTAL PROJECT COST:	**DBB**	**$**	**76,186,668**	
TOTAL PROJECT COST per SF:		**$**	**803.23**	**S.F.**

PROJECT: **Shaker Lane Elementary School**
Littleton, Mass.
Option Addition and Reno

Project No:
Bid Pack: **GENERAL**
Date: **10/21/2024**
Phase: **Pre Concept**
Estimator: **RLH**
SF NEW: **94850**

UNIFORMAT SUMMARY - LEVEL 1

				Estimate	Per SF	%
A	**SUBSTRUCTURE**			$4,010,612	$42.28	5.26%
B	**SHELL**			$10,996,369	$115.93	14.43%
C	**INTERIORS**			$10,252,613	$108.09	13.46%
D	**SERVICES**			$15,550,718	$163.95	20.41%
E	**EQUIPMENT & FURNISHINGS**			$1,693,197	$17.85	2.22%
F	**SPECIAL CONSTRUCTION & DEMOLITION**			$1,892,360	$19.95	2.48%
G	**BUILDING SITEWORK**			$9,035,733	$95.26	11.86%
	TOTAL DIRECT COST			**$53,431,601**	**$563.33**	**70.13%**
Z	**GENERAL**					
	Z10	GENERAL CONDITIONS/REQUIREMENTS	8.74%	$4,668,632	$49.22	6.13%
	Z70	TAXES, PERMITS, INSURANCE & BONDS				
	Z7030	*Insurance (General Liability)*	1.50%	$871,503	$9.19	1.14%
	Z7050	*Builders Risk Insurance*	0.00%	$0	$0.00	0.00%
	Z7070	*Bond Fees*	0.75%	$435,752	$4.59	0.57%
	Z90	FEES AND CONTINGENCIES				
	Z9030	*Overhead & Profit*	3.00%	$1,743,007	$18.38	2.29%
	TOTAL DIRECT COST W/OUT CONTINGENCIES			**$61,150,495**	**$644.71**	**80.26%**
	Z9050.10	*Design Contingencies*	12.00%	$7,338,059	$77.36	9.63%
	Z9050.30	*Bidding Contingencies*		$0	$0.00	0.00%
	Z9050.50	*Escalation to Midpoint*	8.00%	$5,479,084	$57.77	7.19%
	Z9050.50	*Phasing Allowance*	3.00%	$2,219,029	$23.40	2.91%
	TOTAL CONSTRUCTION COST DBB			**$76,186,668**	**$803.23**	**100.00%**
		Additional Cost CMr	6.00%	$4,571,200	$48.19	6.00%
	TOTAL CONSTRUCTION COST CMr			**$80,757,868**	**$851.43**	**106.00%**

Turner & Townsend Heery

PROJECT: **Shaker Lane Elementary School**
Littleton, Mass.
Option Addition and Reno
MASTERFORMAT SUMMARY - LEVEL 1 CONCEPT ESTIMATE

Project No: **0**
Bid Pack: **GENERAL**
Date: **10/21/2024**
Phase: **Pre Concept**
SF NEW : **94850**

	Description		PRE CONCEPT Estimate	Per SF	% of Total
01 00 00	***General Requirements (See GC/GR backup)***				
02 00 00	***Existing Conditions/Demolition***		$2,040,301	$21.51	2.68%
03 00 00	***Concrete***		$2,262,728	$23.86	2.97%
04 00 00	***Masonry***		$2,686,973	$28.33	3.53%
05 00 00	***Metals***		$3,943,014	$41.57	5.18%
06 00 00	***Wood, Plastics, and Composites***		$205,075	$2.16	0.27%
07 00 00	***Thermal and Moisture Protection***		$1,844,975	$19.45	2.42%
08 00 00	***Openings***		$2,248,449	$23.71	2.95%
09 00 00	***Finishes***		$8,609,458	$90.77	11.30%
10 00 00	***Specialties***		$1,415,343	$14.92	1.86%
11 00 00	***Equipment***		$576,525	$6.08	0.76%
12 00 00	***Furnishings***		$1,116,672	$11.77	1.47%
13 00 00	***Special Construction***		$0	$0.00	0.00%
14 00 00	***Conveying Equipment***		$250,000	$2.64	0.33%
21 00 00	***Fire Suppression***		$764,300	$8.06	1.00%
22 00 00	***Plumbing***		$4,129,538	$43.54	5.42%
23 00 00	***Heating, Ventilating, and Air Conditioning (HVAC)***		$8,934,987	$94.20	11.73%
26 00 00	***Electrical***		$4,960,642	$52.30	6.51%
27 00 00	***Communications***		$701,478	$7.40	0.92%
28 00 00	***Electronic Safety and Security***		$366,258	$3.86	0.48%
31 00 00	***Earthwork***		$1,399,326	$14.75	1.84%
32 00 00	***Exterior Improvements***		$2,737,014	$28.86	3.59%
33 00 00	***Utilities***		$2,238,546	$23.60	2.94%
TOTAL DIRECT COST			**$53,431,601**	**$563.33**	**70.13%**
GENERAL CONDITIONS/REQUIREMENTS		8.74%	$4,668,632	**$49.22**	6.13%
	Subtotal		**$58,100,233**	**$612.55**	**76.26%**
TAXES, PERMITS, INSURANCE & BONDS					
	Insurance (General Liability+Builders Risk +Bond)	1.50%	$871,503	$9.19	1.14%
	Builders Risk	0.00%	$0	$0.00	0.00%
	Bond Fees	0.75%	$435,752	$4.59	0.57%
FEES AND CONTINGENCIES					
	Overhead and Profit	3.00%	$1,743,007	$18.38	2.29%
TOTAL DIRECT COST W/OUT CONTINGENCIES			**$61,150,495**	**$644.71**	**80.26%**
	Design Contingencies	12.0%	$7,338,059	$77.36	9.63%
	Market Contingency		$0	$0.00	0.00%
	Escalation Contingencies to Midpoint	8.0%	$5,479,084	$57.77	7.19%
	Phasing Allowance	3.0%	$2,219,029	$23.40	2.91%
TOTAL CONSTRUCTION COST DBB			**$76,186,668**	**$803.23**	**100.00%**
	Additional Construction CMr	**6.00%**	$4,571,200	**$48.19**	**6.00%**
TOTAL CONSTRUCTION COST CMr			**$80,757,868**	**$851.43**	**106.00%**

Turner & Townsend Heery

Estimator: RLH
Checked by: RIDGELY
Project Manager: M. Strafford

BID PACK:	**GENERAL**
PHASE:	**Pre Concept**
DOCUMENTS DATE:	**10/4/2024**
ESTIMATE DATE:	**10/21/2024**
REVISION DATE:	**10/23/2024**

PROJECT:	**Shaker Lane Elementary School** **Littleton, Mass.** **Option 3.1 Upper Field**
OWNER:	
ARCHITECT:	**Studio G Architects**
ENGRS:	
MEP	
Structural	**Foley Buhl Roberts**
Civil	

BUILDINGS AREA:			**97,800**	**S.F.**
PROPOSED ADDITION:				
TOTAL PROJECT COST:	**DBB**	**$**	**81,714,083**	
TOTAL PROJECT COST per SF:		**$**	**835.52**	**S.F.**

PROJECT: **Shaker Lane Elementary School**
Littleton, Mass.
Option 3.1 Upper Field

UNIFORMAT SUMMARY - LEVEL 1

Project No:
Bid Pack: **GENERAL**
Date: **10/21/2024**
Phase: **Pre Concept**
Estimator: **RLH**
SF: **97800**

				Estimate	Per SF	%
A	**SUBSTRUCTURE**			$5,093,989	$52.09	6.23%
B	**SHELL**			$15,243,166	$155.86	18.65%
C	**INTERIORS**			$9,762,565	$99.82	11.95%
D	**SERVICES**			$14,427,026	$147.52	17.66%
E	**EQUIPMENT & FURNISHINGS**			$2,228,339	$22.78	2.73%
F	**SPECIAL CONSTRUCTION & DEMOLITION**			$2,125,237	$21.73	2.60%
G	**BUILDING SITEWORK**			$10,516,662	$107.53	12.87%
	TOTAL DIRECT COST			**$59,396,984**	**$607.33**	**72.69%**
Z	**GENERAL**					
	Z10	GENERAL CONDITIONS/REQUIREMENTS	8.06%	$4,787,940	$48.96	5.86%
	Z70	TAXES, PERMITS, INSURANCE & BONDS				
	Z7030	*Insurance (General Liability)*	1.50%	$962,774	$9.84	1.18%
	Z7050	*Builders Risk Insurance*	0.00%	$0	$0.00	0.00%
	Z7070	*Bond Fees*	0.75%	$481,387	$4.92	0.59%
	Z90	FEES AND CONTINGENCIES				
	Z9030	*Overhead & Profit*	3.00%	$1,925,548	$19.69	2.36%
	TOTAL DIRECT COST W/OUT CONTINGENCIES			**$67,554,632**	**$690.74**	**82.67%**
	Z9050.10	*Design Contingencies*	12.00%	$8,106,556	$82.89	9.92%
	Z9050.30	*Bidding Contingencies*		$0	$0.00	0.00%
	Z9050.50	*Escalation to Midpoint*	8.00%	$6,052,895	$61.89	7.41%
	TOTAL CONSTRUCTION COST DBB			**$81,714,083**	**$835.52**	**100.00%**
	Additional Cost CMr		6.00%	$4,902,845	$50.13	6.00%
	TOTAL CONSTRUCTION COST CMr			**$86,616,928**	**$885.65**	**106.00%**

Heery International, Inc.

Project No:
Bid Pack:
Date:
Phase:
Estimator:
SF:

PROJECT: **Shaker Lane Elementary School**

UNIFORMAT SUMMARY - LEVEL 2

					Heery Estimate	Heery Per SF	%
A	**SUBSTRUCTURE**						
	A10	FOUNDATIONS			$0	$0.00	0.00%
	A20	SUBGRADE ENCLOSURES			$1,742,489	$17.82	2.13%
	A40	SLABS-ON-GRADE			$3,351,500	$34.27	4.10%
	A60	WATER AND GAS MITIGATION			$0	$0.00	0.00%
	A90	SUBSTRUCTURE RELATED ACTIVITIES			$0	$0.00	0.00%
B	**SHELL**						
	B10	SUPERSTRUCTURE			$5,888,814	$60.21	7.21%
	B20	EXTERIOR VERTICAL ENCLOSURES			$4,165,397	$42.59	5.10%
	B30	EXTERIOR HORIZONTAL ENCLOSURES			$5,188,954	$53.06	6.35%
C	**INTERIORS**						
	C10	INTERIOR CONSTRUCTION			$1,303,054	$13.32	1.59%
	C20	INTERIOR FINISHES			$8,459,511	$86.50	10.35%
D	**SERVICES**						
	D10	CONVEYING			$250,000	$2.56	0.31%
	D20	PLUMBING			$2,050,571	$20.97	2.51%
	D30	HVAC			$9,543,807	$97.58	11.68%
	D40	FIRE PROTECTION			$952,938	$9.74	1.17%
	D50	ELECTRICAL			$246,311	$2.52	0.30%
	D60	COMMUNICATIONS			$876,075	$8.96	1.07%
	D70	ELECTRONIC SAFETY AND SECURITY			$507,324	$5.19	0.62%
	D80	INTEGRATED AUTOMATION			$0	$0.00	0.00%
E	**EQUIPMENT & FURNISHINGS**						
	E10	EQUIPMENT			$831,525	$8.50	1.02%
	E20	FURNISHINGS			$1,396,814	$14.28	1.71%
F	**SPECIAL CONSTRUCTION & DEMOLITION**						
	F10	SPECIAL CONSTRUCTION			$1,332,380	$13.62	1.63%
	F20	FACILITY REMEDIATION			$792,857	$8.11	0.97%
	F30	DEMOLITION			$0	$0.00	0.00%
G	**BUILDING SITEWORK**						
	G10	SITE PREPARATION			$1,626,862	$16.63	1.99%
	G20	SITE IMPROVEMENTS			$750,063	$7.67	0.92%
	G30	LIQUID AND GAS SITE UTILITIES			$2,844,951	$29.09	3.48%
	G40	ELECTRICAL SITE IMPROVEMENTS			$5,294,785	$54.14	6.48%
	G50	SITE COMMUNICATIONS			$0	$0.00	0.00%
	TOTAL DIRECT COST				**$59,396,984**	**$607.33**	**72.69%**
Z	**GENERAL**						
	Z10	GENERAL CONDITIONS/REQUIREMENTS		8.06%	$4,787,940	$48.96	5.86%
	Z70	TAXES, PERMITS, INSURANCE & BONDS					
		Z7030	*Insurance (General Liability)*	1.50%	$962,774	$9.84	1.18%
		Z7050	*Builders Risk Insurance*	0.00%	$0	$0.00	0.00%
		Z7070	*Bond Fees*	0.75%	$481,387	$4.92	0.59%
	Z90	FEES AND CONTINGENCIES					
		Z9030	*Overhead & Profit*	3.00%	$1,925,548	$19.69	2.36%
	TOTAL DIRECT COST W/OUT CONTINGENCIES				**$67,554,632**	**$690.74**	**82.67%**
		Z9050.10	*Design Contingencies*	12.00%	$8,106,556	$82.89	9.92%
		Z9050.30	*Bidding Contingencies*	0.00%	$0	$0.00	0.00%
		Z9050.50	*Escalation*	8.00%	$6,052,895	$61.89	7.41%
	TOTAL CONSTRUCTION COST				**$81,714,083**	**$835.52**	**100.00%**

Turner & Townsend Heery

PROJECT: **Shaker Lane Elementary School**
Littleton, Mass.
Option 3.1 Upper Field
MASTERFORMAT SUMMARY - LEVEL 1 CONCEPT ESTIMATE

Project No: **0**
Bid Pack: **GENERAL**
Date: **10/21/2024**
Phase: **Pre Concept**
SF Area : **97800**

SF Area
97,800

	Description		PRE CONCEPT Estimate	Per SF	% of Total
01 00 00	***General Requirements (See GC/GR backup)***				
02 00 00	***Existing Conditions/Demolition***		$2,060,372	$21.07	2.52%
03 00 00	***Concrete***		$2,922,931	$29.89	3.58%
04 00 00	***Masonry***		$3,262,390	$33.36	3.99%
05 00 00	***Metals***		$5,669,684	$57.97	6.94%
06 00 00	***Wood, Plastics, and Composites***		$219,131	$2.24	0.27%
07 00 00	***Thermal and Moisture Protection***		$2,826,144	$28.90	3.46%
08 00 00	***Openings***		$2,701,009	$27.62	3.31%
09 00 00	***Finishes***		$8,182,948	$83.67	10.01%
10 00 00	***Specialties***		$1,311,742	$13.41	1.61%
11 00 00	***Equipment***		$831,525	$8.50	1.02%
12 00 00	***Furnishings***		$1,396,814	$14.28	1.71%
13 00 00	***Special Construction***		$0	$0.00	0.00%
14 00 00	***Conveying Equipment***		$250,000	$2.56	0.31%
21 00 00	***Fire Suppression***		$787,900	$8.06	0.96%
22 00 00	***Plumbing***		$2,447,846	$25.03	3.00%
23 00 00	***Heating, Ventilating, and Air Conditioning (HVAC)***		$9,146,532	$93.52	11.19%
26 00 00	***Electrical***		$5,102,878	$52.18	6.24%
27 00 00	***Communications***		$876,075	$8.96	1.07%
28 00 00	***Electronic Safety and Security***		$507,324	$5.19	0.62%
31 00 00	***Earthwork***		$1,691,728	$17.30	2.07%
32 00 00	***Exterior Improvements***		$3,918,842	$40.07	4.80%
33 00 00	***Utilities***		$3,283,169	$33.57	4.02%
TOTAL DIRECT COST			**$59,396,984**	**$607.33**	**72.69%**
GENERAL CONDITIONS/REQUIREMENTS		8.06%	$4,787,940	**$48.96**	5.86%
	Subtotal		**$64,184,924**	**$656.29**	**78.55%**
TAXES, PERMITS, INSURANCE & BONDS					
	Insurance (General Liability+Builders Risk +Bond)	1.50%	$962,774	$9.84	1.18%
	Builders Risk	0.00%	$0	$0.00	0.00%
	Bond Fees	0.75%	$481,387	$4.92	0.59%
FEES AND CONTINGENCIES					
	Overhead and Profit	3.00%	$1,925,548	$19.69	2.36%
TOTAL DIRECT COST W/OUT CONTINGENCIES			**$67,554,632**	**$690.74**	**82.67%**
	Design Contingencies	12.0%	$8,106,556	$82.89	9.92%
	Escalation Contingencies to Midpoint of July 2025 (3.5% for 9 months)	8.0%	$6,052,895	$61.89	7.41%
TOTAL CONSTRUCTION COST DBB			**$81,714,083**	**$835.52**	**100.00%**
	Additional Cost CMr	6.0%	**$4,902,845**	**$50.13**	**6.00%**
TOTAL CONSTRUCTION COST CMr			**$86,616,928**	**$885.65**	**106.00%**

Turner & Townsend Heery

Estimator: RLH
Checked by: RIDGELY
Project Manager: M. Stafford

BID PACK:	**GENERAL**
PHASE:	**Pre Concept**
DOCUMENTS DATE:	**10/4/2024**
ESTIMATE DATE:	**10/21/2024**
REVISION DATE:	**10/23/2024**

PROJECT:	**Shaker Lane Elementary School** **Littleton, Mass.** **Option 3.2 Lower Field**
OWNER:	
ARCHITECT:	**Studio G Architects**
ENGRS:	
MEP	
Structural	**Foley Buhl Roberts**
Civil	

BUILDINGS AREA:			**97,800**	**S.F.**
PROPOSED ADDITION:				
TOTAL PROJECT COST:	**DBB**	**$**	**80,691,269**	
TOTAL PROJECT COST per SF:		**$**	**825.06**	**S.F.**

PROJECT: **Shaker Lane Elementary School**
Littleton, Mass.
Option 3.2 Lower Field

Project No:
Bid Pack: **GENERAL**
Date: **10/21/2024**
Phase: **Pre Concept**
Estimator: **RLH**
SF: **97800**

UNIFORMAT SUMMARY - LEVEL 1

				Estimate	Per SF	%
A	**SUBSTRUCTURE**			$4,578,927	$46.82	5.67%
B	**SHELL**			$14,978,767	$153.16	18.56%
C	**INTERIORS**			$9,754,378	$99.74	12.09%
D	**SERVICES**			$14,427,026	$147.52	17.88%
E	**EQUIPMENT & FURNISHINGS**			$2,228,339	$22.78	2.76%
F	**SPECIAL CONSTRUCTION & DEMOLITION**			$2,125,237	$21.73	2.63%
G	**BUILDING SITEWORK**			$10,516,662	$107.53	13.03%
	TOTAL DIRECT COST			**$58,609,335**	**$599.28**	**72.63%**
Z	**GENERAL**					
	Z10	GENERAL CONDITIONS/REQUIREMENTS	8.14%	$4,772,187	$48.80	5.91%
	Z70	TAXES, PERMITS, INSURANCE & BONDS				
	Z7030	*Insurance (General Liability)*	1.50%	$950,723	$9.72	1.18%
	Z7050	*Builders Risk Insurance*	0.00%	$0	$0.00	0.00%
	Z7070	*Bond Fees*	0.75%	$475,361	$4.86	0.59%
	Z90	FEES AND CONTINGENCIES				
	Z9030	*Overhead & Profit*	3.00%	$1,901,446	$19.44	2.36%
	TOTAL DIRECT COST W/OUT CONTINGENCIES			**$66,709,052**	**$682.10**	**82.67%**
	Z9050.10	*Design Contingencies*	12.00%	$8,005,086	$81.85	9.92%
	Z9050.30	*Bidding Contingencies*		$0	$0.00	0.00%
	Z9050.50	*Escalation to Midpoint*	8.00%	$5,977,131	$61.12	7.41%
	TOTAL CONSTRUCTION COST DBB			**$80,691,269**	**$825.06**	**100.00%**
		ADDITIONAL COST CMr	6.00%	$4,841,476	$49.50	6.00%
	TOTAL CONSTRUCTION COST CMr			**$85,532,745**	**$874.57**	**106.00%**

Turner & Townsend Heery

PROJECT: **Shaker Lane Elementary School**
Littleton, Mass.
Option 3.2 Lower Field
MASTERFORMAT SUMMARY - LEVEL 1 CONCEPT ESTIMATE

Project No: **0**
Bid Pack: **GENERAL**
Date: **10/21/2024**
Phase: **Pre Concept**
SF Area : **97800**

SF Area
97,800

	Description		PRE CONCEPT Estimate	Per SF	% of Total
01 00 00	***General Requirements (See GC/GR backup)***				
02 00 00	***Existing Conditions/Demolition***		$2,060,372	$21.07	2.55%
03 00 00	***Concrete***		$2,415,163	$24.69	2.99%
04 00 00	***Masonry***		$3,199,425	$32.71	3.97%
05 00 00	***Metals***		$5,662,173	$57.90	7.02%
06 00 00	***Wood, Plastics, and Composites***		$219,131	$2.24	0.27%
07 00 00	***Thermal and Moisture Protection***		$2,679,052	$27.39	3.32%
08 00 00	***Openings***		$2,638,697	$26.98	3.27%
09 00 00	***Finishes***		$8,182,948	$83.67	10.14%
10 00 00	***Specialties***		$1,311,742	$13.41	1.63%
11 00 00	***Equipment***		$831,525	$8.50	1.03%
12 00 00	***Furnishings***		$1,396,814	$14.28	1.73%
13 00 00	***Special Construction***		$0	$0.00	0.00%
14 00 00	***Conveying Equipment***		$250,000	$2.56	0.31%
21 00 00	***Fire Suppression***		$787,900	$8.06	0.98%
22 00 00	***Plumbing***		$2,447,846	$25.03	3.03%
23 00 00	***Heating, Ventilating, and Air Conditioning (HVAC)***		$9,146,532	$93.52	11.34%
26 00 00	***Electrical***		$5,102,878	$52.18	6.32%
27 00 00	***Communications***		$876,075	$8.96	1.09%
28 00 00	***Electronic Safety and Security***		$507,324	$5.19	0.63%
31 00 00	***Earthwork***		$1,691,728	$17.30	2.10%
32 00 00	***Exterior Improvements***		$3,918,842	$40.07	4.86%
33 00 00	***Utilities***		$3,283,169	$33.57	4.07%
TOTAL DIRECT COST			**$58,609,335**	**$599.28**	**72.63%**
GENERAL CONDITIONS/REQUIREMENTS		8.14%	$4,772,187	**$48.80**	5.91%
	Subtotal		**$63,381,522**	**$648.07**	**78.55%**
TAXES, PERMITS, INSURANCE & BONDS					
	Insurance (General Liability+Builders Risk +Bond)	1.50%	$950,723	$9.72	1.18%
	Builders Risk	0.00%	$0	$0.00	0.00%
	Bond Fees	0.75%	$475,361	$4.86	0.59%
FEES AND CONTINGENCIES					
	Overhead and Profit	3.00%	$1,901,446	$19.44	2.36%
TOTAL DIRECT COST W/OUT CONTINGENCIES			**$66,709,052**	**$682.10**	**82.67%**
	Design Contingencies	12.0%	$8,005,086	$81.85	9.92%
	Escalation Contingencies to Midpoint of July 2025 (3.5% for 9 months)	8.0%	$5,977,131	$61.12	7.41%
TOTAL CONSTRUCTION COST DBB			**$80,691,269**	**$825.06**	**100.00%**
	Additional Cost CMr	6.0%	$4,841,476	**$49.50**	**6.00%**
TOTAL CONSTRUCTION COST CMr			**$85,532,745**	**$874.57**	**106.00%**

PSR Options Cost Estimate

Shaker Lane Elementary School

Littleton, MA

PM&C LLC
20 Downer Avenue, Suite 5
Hingham, MA 02043
(T) 781-740-8007

Prepared for:

studio g Architects

October 22, 2024
Reconciled

Shaker Lane Elementary School 22-Oct-24
Littleton, MA

PSR Options Cost Estimate

INTRODUCTION

NOTE: The costs for the various PSR Options indicated above are intended to be an analysis of the relative costs between options and NOT a prediction of the actual final cost of any individual option. Major variables such as geotechnical, site grading, structural system and final MEP systems have yet to be designed in detail so costs will vary significantly from the benchmark cost estimating included as part of this PSR cost analysis. The costs outlined in this report should not be represented as the FINAL construction budget.

This PSR Design Submission cost estimate was produced from narratives and outline drawings dated September 30, 2024 prepared by studio g Architects and their design team.

This estimate includes all direct construction costs, General Contractors OH+P and design contingency. Cost escalation assumes start dates indicated.

Bidding conditions are expected to be public bidding under 149 of the Massachusetts General Laws to pre-qualified general contractors, and pre-qualified sub-contractors, open specifications for materials and manufacturers.

The estimate is based on prevailing wage rates for construction in this market and represents a reasonable opinion of cost. It is not a prediction of the successful bid from a contractor as bids will vary due to fluctuating market conditions, errors and omissions, proprietary specifications, lack or surplus of bidders, perception of risk, etc. Consequently the estimate is expected to fall within the range of bids from a number of competitive contractors or subcontractors, however we do not warrant that bids or negotiated prices will not vary from the final construction cost estimate.

ITEMS NOT CONSIDERED IN THIS ESTIMATE

Items not included in this estimate are:

- All professional fees and insurance
- Building Permit costs
- Rock excavation
- Land acquisition, feasibility, and financing costs
- All Furnishings, Fixtures and Equipment
- Items identified in the design as Not In Contract (NIC)
- Items identified in the design as by others
- Owner supplied and/or installed items (e.g. draperies, furniture and equipment)
- Utility company back charges, including work required off-site
- Work to City streets and sidewalks, (except as noted in this estimate)

PM&C

Shaker Lane Elementary School
Littleton, MA

22-Oct-24

PSR Options Cost Estimate

PSR PRICING OPTIONS

MAIN CONSTRUCTION COST SUMMARY

OPTIONS	Gross Floor Area	$/sf	Estimated Construction Cost - DBB	Estimated Construction Cost - CMr	$/sf
OPTION 2.1 - Add/Reno	94,850	$809.91	**$76,819,993**	**$81,429,193**	$858.50
OPTION 3.1 - New Construction at Upper Field	97,800	$837.88	**$81,944,951**	**$86,861,648**	$888.16
OPTION 3.2 - New Construction at Lower Field	97,800	$827.43	**$80,922,788**	**$85,778,155**	$877.08

PM&C

Shaker Lane Elementary School
Littleton, MA

22-Oct-24

PSR Options Cost Estimate

MAIN CONSTRUCTION COST SUMMARY

	Start Date		Gross Floor Area	$/sf	Estimated Construction Cost
OPTION 2.1 - Add/Reno					
NEW ADDITION TO EXISTING SCHOOL			64,650	$504.78	$32,633,797
RENOVATE EXISTING SCHOOL			30,200	$467.03	$14,104,351
DEMOLITION			31,900	$12.00	$382,800
REMOVE HAZARDOUS MATERIALS [1]					$795,000
SITEWORK					$6,035,182
SUB-TOTAL	Jun-27		94,850	$568.80	$53,951,130
ESCALATION	8.00%				$4,316,090
DESIGN AND PRICING CONTINGENCY	12.0%				$6,474,136
SUB-TOTAL			94,850	$682.57	$64,741,356
GENERAL CONDITIONS		30	MTHS	$150,000	$4,500,000
GENERAL REQUIREMENTS	2.00%				$1,294,827
PHASING	4.00%				$2,589,654
BONDS	0.75%				$485,560
INSURANCES	1.50%				$971,120
PERMIT					Excl
SUB-TOTAL					$74,582,517
OH+P	3.0%				$2,237,476
MODULAR CLASSROOMS					By Others
TOTAL OF ALL CONSTRUCTION			94,850	$809.91	**$76,819,993**
					including Markups
ADD ALTERNATE - Option 1; Air Source Variable Refrigerant Flow (VRF) in lieu of base line option			94,850	($25.38)	**($2,407,315)**
ADD ALTERNATE - Option 3; Geothermal Closed Loop Heat Recovery Heat Pump Displacement Ventilation System in lieu of base line option			94,850	$27.92	**$2,648,036**

[1] Costs allowance from efi global dated August 29, 2024

PM&C

Shaker Lane Elementary School
Littleton, MA

22-Oct-24

PSR Options Cost Estimate

MAIN CONSTRUCTION COST SUMMARY

	Start Date		Gross Floor Area	$/sf	Estimated Construction Cost
OPTION 3.1 - New Construction at Upper Field					
NEW CONSTRUCTION			97,800	$500.50	$48,948,929
DEMOLITION			62,100	$10.00	$621,000
REMOVE HAZARDOUS MATERIALS [1]					$795,000
SITEWORK					$10,353,060
SUB-TOTAL	Jun-27		97,800	$620.84	$60,717,989
ESCALATION	8.00%				$4,857,439
DESIGN AND PRICING CONTINGENCY	12.0%				$7,286,159
SUB-TOTAL			97,800	$745.01	$72,861,587
GENERAL CONDITIONS		24	MTHS	$150,000	$3,600,000
GENERAL REQUIREMENTS	2.00%				$1,457,232
PHASING					NR
BONDS	0.75%				$546,462
INSURANCES	1.50%				$1,092,924
PERMIT					Excl
SUB-TOTAL					$79,558,205
OH+P	3.0%				$2,386,746
MODULAR CLASSROOMS					Not Required
TOTAL OF ALL CONSTRUCTION			97,800	$837.88	**$81,944,951**

			including Markups
ADD ALTERNATE - Option 1; Air Source Variable Refrigerant Flow (VRF) in lieu of base line option	97,800	($21.82)	**($2,134,100)**
ADD ALTERNATE - Option 3; Geothermal Closed Loop Heat Recovery Heat Pump Displacement Ventilation System in lieu of base line option	97,800	$24.23	**$2,370,065**

[1] Costs allowance from efi global dated August 29, 2024

PM&C

Shaker Lane Elementary School
Littleton, MA

22-Oct-24

PSR Options Cost Estimate

MAIN CONSTRUCTION COST SUMMARY

	Start Date	Gross Floor Area	$/sf	Estimated Construction Cost
OPTION 3.2 - New Construction at Lower Field				
NEW CONSTRUCTION		97,800	$499.62	$48,862,668
DEMOLITION		62,100	$10.00	$621,000
REMOVE HAZARDOUS MATERIALS [1]				$795,000
SITEWORK				$9,646,044
SUB-TOTAL	Jun-27	97,800	$612.73	$59,924,712
ESCALATION	8.00%			$4,793,977
DESIGN AND PRICING CONTINGENCY	12.0%			$7,190,965
SUB-TOTAL		97,800	$735.27	$71,909,654
GENERAL CONDITIONS	24	MTHS	$150,000	$3,600,000
GENERAL REQUIREMENTS	2.00%			$1,438,193
PHASING				NR
BONDS	0.75%			$539,322
INSURANCES	1.50%			$1,078,645
PERMIT				Excl
SUB-TOTAL				$78,565,814
OH+P	3.0%			$2,356,974
MODULAR CLASSROOMS				Not Required
TOTAL OF ALL CONSTRUCTION		97,800	$827.43	**$80,922,788**

				including Markups
ADD ALTERNATE - Option 1; Air Source Variable Refrigerant Flow (VRF) in lieu of base line option		97,800	($23.07)	**($2,256,323)**
ADD ALTERNATE - Option 3; Geothermal Closed Loop Heat Recovery Heat Pump Displacement Ventilation System in lieu of base line option		97,800	$22.45	**$2,195,751**

[1] Costs allowance from efi global dated August 29, 2024

PM&C

Shaker Lane Elementary School 22-Oct-24
Littleton, MA

PSR Options Cost Estimate GFA 94,850

CONSTRUCTION COST SUMMARY

	BUILDING SYSTEM		*ADDITION SUB-TOTAL*	*RENOVATION SUB-TOTAL*	*TOTAL*	*$/SF*	*%*
OPTION 2.1 - Add/Reno							
A10	**FOUNDATIONS**						
	A1010	Standard Foundations	$2,196,240	$60,400			
	A1020	Special Foundations	$0	$0			
	A1030	Lowest Floor Construction	$632,282	$241,600	**$3,130,522**	$33.00	6.7%
A20	**BASEMENT CONSTRUCTION**						
	A2010	Basement Excavation	$0	$0			
	A2020	Basement Walls	$0	$0	**$0**	$0.00	0.0%
B10	**SUPERSTRUCTURE**						
	B1010	Upper Floor Construction	$1,651,007	$402,000			
	B1020	Roof Construction	$1,922,925	$100,000	**$4,075,932**	$42.97	8.7%
B20	**EXTERIOR CLOSURE**						
	B2010	Exterior Walls	$2,887,140	$1,047,836			
	B2020	Windows	$1,916,500	$774,658			
	B2030	Exterior Doors	$64,650	$30,200	**$6,720,984**	$70.86	14.4%
B30	**ROOFING**						
	B3010	Roof Coverings	$1,324,650	$981,500			
	B3020	Roof Openings	$45,000	$5,000	**$2,356,150**	$24.84	5.0%
C10	**INTERIOR CONSTRUCTION**						
	C1010	Partitions	$2,336,013	$876,450			
	C1020	Interior Doors	$725,400	$181,200			
	C1030	Specialties/Millwork	$820,389	$354,643	**$5,294,095**	$55.82	11.3%
C20	**STAIRCASES**						
	C2010	Stair Construction	$110,000	$0			
	C2020	Stair Finishes	$10,000	$0	**$120,000**	$1.27	0.3%
C30	**INTERIOR FINISHES**						
	C3010	Wall Finishes	$517,200	$241,600			
	C3020	Floor Finishes	$775,800	$362,400			
	C3030	Ceiling Finishes	$775,800	$362,400	**$3,035,200**	$32.00	6.5%
D10	**CONVEYING SYSTEMS**						
	D1010	Elevator	$182,400	$0	**$182,400**	$1.92	0.4%
D20	**PLUMBING**						
	D20	Plumbing	$1,383,212	$982,141	**$2,365,353**	$24.94	5.1%
D30	**HVAC**						
	D30	HVAC	$6,170,040	$2,852,246	**$9,022,286**	$95.12	19.3%
D40	**FIRE PROTECTION**						
	D40	Fire Protection	$600,573	$276,877	**$877,450**	$9.25	1.9%
D50	**ELECTRICAL**						
	D5010	Complete System	$4,542,376	$2,174,000	**$6,716,376**	$70.81	14.4%

PM&C

Shaker Lane Elementary School 22-Oct-24
Littleton, MA

PSR Options Cost Estimate GFA 94,850

CONSTRUCTION COST SUMMARY

	BUILDING SYSTEM		*ADDITION SUB-TOTAL*	*RENOVATION SUB-TOTAL*	*TOTAL*	*$/SF*	*%*
OPTION 2.1 - Add/Reno							
E10	**EQUIPMENT**						
	E10	Equipment	$307,700	$760,000	**$1,067,700**	$11.26	2.3%
E20	**FURNISHINGS**						
	E2010	Fixed Furnishings	$736,500	$342,000			
	E2020	Movable Furnishings	NIC	NIC	**$1,078,500**	$11.37	2.3%
F10	**SPECIAL CONSTRUCTION**						
	F10	Special Construction	$0	$0	**$0**	$0.00	0.0%
F20	**HAZMAT REMOVALS**						
	F2010	Building Elements Demolition	$0	$695,200			
	F2020	Hazardous Components Abatement	$0	$0	**$695,200**	$7.33	1.5%
TOTAL DIRECT COST (Trade Costs)					***$46,738,148***	*$492.76*	*100.0%*

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Addition							
	GROSS FLOOR AREA CALCULATION						
	Level 1			36,050			
	Level 2			28,600			
	TOTAL GROSS FLOOR AREA (GFA)				**64,650 *sf***		
	A10 FOUNDATIONS						
	A1010 STANDARD FOUNDATIONS						
	Strip footings - perimeter; 30"x12"						
	Formwork	**2,400**	sf	20.00	48,000		
	Re-bar	**12,000**	lbs.	2.00	24,000		
	Concrete material	**117**	cy	175.00	20,475		
	Placing concrete	**117**	cy	130.00	15,210		
	Typical foundation walls						
	Formwork	**9,600**	sf	20.00	192,000		
	Re-bar	**38,400**	lbs.	2.00	76,800		
	Concrete material	**248**	cy	175.00	43,400		
	Placing concrete	**248**	cy	130.00	32,240		
	Form shelf	**1,200**	lf	10.00	12,000		
	Spread Footings; allow 5'-6"x5'-6"x18" exterior						
	Formwork	**1,584**	sf	20.00	31,680		
	Re-bar	**19,125**	lbs.	2.00	38,250		
	Concrete material	**85**	cy	175.00	14,875		
	Placing concrete	**85**	cy	130.00	11,050		
	Set anchor bolts grout plates	**48**	ea	250.00	12,000		
	Spread Footings; allow 7'-6"x7'-6"x22" interior						
	Formwork	**1,373**	sf	20.00	27,460		
	Re-bar	**47,500**	lbs.	2.00	95,000		
	Concrete material	**100**	cy	175.00	17,500		
	Placing concrete	**100**	cy	130.00	13,000		
	Set anchor bolts grout plates	**25**	ea	250.00	6,250		
	Piers/Pilasters	**23**	cy	1,400.00	32,200		
	Grade beams, 2x2						
	Formwork	**2,700**	sf	20.00	54,000		
	Re-bar (65lbs/lf)	**29,250**	lbs.	2.00	58,500		
	Concrete material	**70**	cy	175.00	12,250		
	Placing concrete	**70**	cy	130.00	9,100		
	Cafetorium ramps and elevation changes -allowance	**1**	ls	50,000.00	50,000		
	Elevator Pits						
	Walls, 12" thick	**1**	ea				
	Formwork	**320**	sf	20.00	6,400		
	Re-bar	**800**	lbs.	2.00	1,600		
	Concrete material	**6**	cy	175.00	1,050		
	Placing concrete	**6**	cy	130.00	780		
	Mat slab at pits, 24" thick	**100**	sf	35.00	3,500		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Damproofing at foundation wall				assume NR		
	Waterproofing at elevator pit	**340**	sf	14.00	4,760		
072100	*THERMAL INSULATION*						
	Foundation wall insulation	**4,800**	sf	5.50	26,400		
312000	*EARTHWORK*						
	Strip footings/ fdn wall						
	Excavation & reuse on site	**1,333**	cy	40.00	53,320		
	Spread footings						
	Excavation & reuse on site	**834**	cy	40.00	33,360		
312000	*BUILDING EARTHWORK - allowances*						
	Cut - over excavated 3' of fill beneath building	**4,667**	cy	15.00	70,005		
	Fill - import structural - 25% swell	**3,125**	cy	55.00	171,875		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Addition							
312000	*ROCK REMOVAL*						
	Rock removal allowance - 5' at footprint placed in hillside	**6,134**	cy	100.00	613,400		
312000	*SOIL DISPOSAL - conversion factor 1.7 to tons*						
	Load excess soils for disposal	**4,667**	cy	2.50	11,668		
	Less than RCS-1 - clean non-regulated	**7,934**	tn	23.00	182,482		
	Miscellaneous						
	Perimeter drain	**1,200**	lf	32.00	38,400		
	Underslab drainage	**36,050**	sf		Assume NR		
	Dewatering for foundation work	**1**	ls	30,000.00	30,000		
	SUBTOTAL					2,196,240	
A1020	**SPECIAL FOUNDATIONS**						
	Structural fill/Ground Improvements allowance				Not anticipated		
	SUBTOTAL					-	
A1030	**LOWEST FLOOR CONSTRUCTION**						
033000	*CONCRETE*						
	Vapor barrier	**36,050**	sf	1.50	54,075		
	Slab on grade	*36,050*	*sf*				
	WWF reinforcement	**41,458**	sf	1.85	76,697		
	Concrete - 5" thick	**575**	cy	175.00	100,625		
	Placing concrete	**575**	cy	100.00	57,500		
	Finishing and curing concrete	**36,050**	sf	4.00	144,200		
	Control joints - saw cut	**36,050**	sf	0.10	3,605		
	Miscellaneous						
	Equipment pads	**1**	ls	15,000.00	15,000		
	Loading dock	**1**	ls	30,000.00	30,000		
	Radon system				Excluded; NR		
072100	*THERMAL INSULATION*						
	Under slab insulation, 2" @ perimeter for 4'	**4,800**	sf	3.00	14,400		
312000	*EARTHWORK*						
	Gravel base, 12"	**1,335**	cy	48.00	64,080		
	Compact existing sub-grade	**36,050**	sf	0.50	18,025		
	Underslab E&B for plumbing	**36,050**	sf	1.50	54,075		
	SUBTOTAL					632,282	
	TOTAL - FOUNDATIONS						**$2,828,522**
A20	***BASEMENT CONSTRUCTION***						
A2010	**BASEMENT EXCAVATION**						
	No Work in this section						
	SUBTOTAL					-	
A2020	**BASEMENT WALLS**						
	No Work in this section						
	SUBTOTAL					-	
	TOTAL - BASEMENT CONSTRUCTION						
B10	***SUPERSTRUCTURE***						
		14.0	*lbs/sf*				
B1010	**FLOOR CONSTRUCTION**	*452*	*tns*	excluding canopies + roof screens			
		$6,750	*$/Ton*				
033000	*CONCRETE*						
	WWF reinforcement	**32,890**	sf	1.85	60,847		
	Concrete fill to metal deck; normal weight, total thickness 5 1/2"	**501**	cy	175.00	87,675		
	Place and finish concrete	**28,600**	sf	3.50	100,100		
	Rebar to decks	**8,580**	lbs	2.00	17,160		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Addition							
051200	*STRUCTURAL STEEL FRAMING*						
	Structural steel framing; 14 lbs per SF	**200**	tns	5,400.00	1,080,000		
	Shear studs	**7,150**	ea	3.50	25,025		
	2" metal galvanized floor deck	**28,600**	sf	7.00	200,200		
	Expansion joints	**1**	ls	50,000.00	50,000		
078100	*FIREPROOFING/FIRESTOPPING*						
	Fire proofing to columns and beams; 2 hr				Assume NR		
	Intumescent paint @ architecturally exposed beams and columns - allow	**1**	ls	30,000.00	30,000		
	SUBTOTAL					1,651,007	
B1020	**ROOF CONSTRUCTION**						
033000	*CONCRETE*						
	Concrete deck at low roofs and at mechanical equipment pads - allow	**5,000**	sf	10.00	50,000		
051200	*STRUCTURAL STEEL FRAMING*						
	Structural steel framing; 14 lbs per SF	**252**	tns	5,400.00	1,360,800		
	Canopies - 20#/sf	**20**	tns	5,800.00	116,000		
	Roof screens - allow 100#/lf	**1**	tns	5,800.00	5,800		
	Dunnage - allowance	**5**	tns	5,800.00	29,000		
	Decking						
	1 1/2" galvanized metal deck, typical	**36,050**	sf	6.50	234,325		
	Premium for acoustic (Gymnasium)	**6,000**	sf	7.00	42,000		
	Canopy decking	**2,000**	sf	6.50	13,000		
078100	*FIREPROOFING/FIRESTOPPING*						
	Fireproofing to columns, beams and deck				Assume NR		
	Intumescent paint @ architecturally exposed primary members in Gymnasium - allow (if required)	**6,000**	sf	12.00	72,000		
	SUBTOTAL					1,922,925	
	TOTAL - SUPERSTRUCTURE						**$3,573,932**
B20	***EXTERIOR CLOSURE***						
B2010	**EXTERIOR WALLS**	*36,000*	Total closure area				
	Exterior Wall Area - 75% solid	*27,000*	*sf total area solid*				
042000	*MASONRY*						
	Mockup	**1**	ls	50,000.00	50,000		
	Brick veneer; 90%	**24,300**	sf	45.00	1,093,500		
	4" Polyiso at masonry	**24,300**	sf	4.80	116,640		
	Miscellaneous flashings and sealants	**27,000**	sf	1.50	40,500		
	Staging to exterior wall	**27,000**	sf	4.00	108,000		
055000	*MISC. METALS*						
	Misc. metals at masonry including loose lintels (relieving angles included in steel tns)	**27,000**	sf	1.50	40,500		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Air barrier	**27,000**	sf	9.50	256,500		
	Air barrier/flashing at openings	**3,000**	lf	6.00	18,000		
	Miscellaneous sealants to closure	**27,000**	sf	1.00	27,000		
072100	*THERMAL INSULATION*						
	3 1/2" Batt insulation in stud	**27,000**	sf	3.00	81,000		
	Insulation at glazed openings	**3,000**	lf	6.00	18,000		
076400	*CLADDING*						
	Metal panel (Alucobond or equal); 10% (including insulation)	**2,700**	sf	90.00	243,000		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Addition							
	Equipment Screen (allow 100lf)	**100**	lf	900.00	90,000		
078150	*EXPANSION JOINT COVERS*						
	Expansion joints	**1**	ls	25,000.00	25,000		
092900	*GYPSUM BOARD ASSEMBLIES*						
	Framing and sheathing at canopies	**2,000**	sf	15.00	30,000		
	Exterior wall;						
	6" Stud backup	**27,000**	sf	16.00	432,000		
	Gypsum sheathing	**27,000**	sf	3.50	94,500		
	Drywall lining to interior face of stud backup	**27,000**	sf	4.00	108,000		
101400	*SIGNAGE*						
	Exterior signage - allowance	**1**	ls	15,000.00	15,000		
	SUBTOTAL					2,887,140	
B2020	**WINDOWS**						
	Exterior Wall Area; 25%	*9,000*	sf				
061000	*ROUGH CARPENTRY*						
	Wood blocking at openings	**3,000**	lf	10.00	30,000		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Air barrier/flashing at windows	**3,000**	lf	10.00	30,000		
	Backer rod & double sealant	**3,000**	lf	11.00	33,000		
080001	*METAL WINDOWS*						
	Windows/Storefront; triple glazed (25%)	**9,000**	sf	185.00	1,665,000		
	Horizontal aluminum fin sunshades @ south facing windows - allowance	**1**	ls	150,000.00	150,000		
089000	*LOUVERS*						
	Louvers	**100**	sf	85.00	8,500		
	SUBTOTAL					1,916,500	
B2030	**EXTERIOR DOORS**						
	Allowance for exterior doors	**64,650**	gsf	1.00	64,650		
	SUBTOTAL					64,650	
	TOTAL - EXTERIOR CLOSURE						**$4,868,290**
B30	***ROOFING***						
055000	*MISCELLANOUS METALS*						
	Allowance for roof ladders	**1**	ls	15,000.00	15,000		
061000	*ROUGH CARPENTRY*						
	Rough carpentry and blocking @ roof	**38,050**	sf	1.50	57,075		
070002	*ROOFING AND FLASHING*						
	EPDM roof membrane system, complete	**36,050**	sf	28.00	1,009,400		
	Membrane roofing at canopies	**2,000**	sf	25.00	50,000		
	Premium for outdoor balconies at 2nd floor	**1,200**	sf	50.00	60,000		
	Miscellaneous Roofing						
	Miscellaneous flashings/copings/walkway pads etc.	**38,050**	sf	3.50	133,175		
	SUBTOTAL					1,324,650	
B3020	**ROOF OPENINGS**						
086300	*ROOF SKYLIGHTS*						
	Allowance for roof hatches	**1**	ls	5,000.00	5,000		
	Skylights; 16'x8'	**2**	ea	20,000.00	40,000		
	SUBTOTAL					45,000	
	TOTAL - ROOFING						**$1,369,650**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Addition							
C10	***INTERIOR CONSTRUCTION***						
C1010	**PARTITIONS**						
040001	*MASONRY*						
	Elevator shaft, 2hr	**1,400**	sf	44.00	61,600		
	Firewall, 2 hr	**375**	sf	50.00	18,750		
061000	*ROUGH CARPENTRY*						
	Backer panels in electrical closets	**1**	ls	5,000.00	5,000		
	Wood blocking at interiors	**64,650**	gsf	0.50	32,325		
078400	*FIREPROOFING/FIRESTOPPING*						
	Fire stopping including slab edges and core	**64,650**	gsf	0.75	48,488		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Miscellaneous sealants throughout building	**64,650**	gsf	1.00	64,650		
078150	*EXPANSION JOINTS*						
	Allowance for expansion joint covers	**1**	ls	25,000.00	25,000		
081110	*INTERIOR GLAZING*						
	Allowance for interior glazing	**64,650**	gsf	2.00	129,300		
	Lightwell glazing (2 loc)	**1,800**	sf	150.00	270,000		
092900	*GYPSUM BOARD ASSEMBLIES*						
	Allowance for GWB partitions	**64,650**	gsf	26.00	1,680,900		
	SUBTOTAL					2,336,013	
C1020	**INTERIOR DOORS**						
	Doors, frames, hardware; complete	**64,650**	gsf	6.00	387,900		
	8' sliding glass pocket doors at typical classrooms	**27**	ea	12,500.00	337,500		
	SUBTOTAL					725,400	
C1030	**SPECIALTIES / MILLWORK**						
055000	*MISCELLANEOUS METALS*						
	Miscellaneous metals throughout building	**64,650**	gsf	4.00	258,600		
061000	*ROUGH CARPENTRY*						
062000	*INTERIOR ARCHITECTURAL WOODWORK*						
	Interior millwork package	**64,650**	gsf	5.00	323,250		
101100	*VISUAL DISPLAY SURFACES*						
	Markerboard and tackboard package	**64,650**	gsf	1.50	96,975		
101400	*SIGNAGE*						
	Room identification, directional & safety signage, building directory + environmental graphics	**64,650**	gsf	1.00	64,650		
102110	*TOILET/ CHANGING/SHOWER COMPARTMENTS*						
	Toilet compartments	**64,650**	gsf	0.50	32,325		
102800	*TOILET ACCESSORIES*						
	Toilet accessories	**64,650**	gsf	0.50	32,325		
104400	*FIRE PROTECTION SPECIALTIES*						
	Fire extinguisher cabinets	**1**	ls	10,264.28	10,264		
	AED cabinets	**1**	ls	2,000.00	2,000		
105000	*LOCKERS*			assume NR - cubbies in classrooms			
	SUBTOTAL					820,389	
	TOTAL - INTERIOR CONSTRUCTION						**$3,881,802**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Addition							
C20	***STAIRCASES***						
C2010	**STAIR CONSTRUCTION**						
033000	*CONCRETE*						
	Concrete to stairs	**2**	flt	5,000.00	10,000		
055000	*MISCELLANEOUS METALS*						
	Egress stairs including rails and handrails	**2**	flt	50,000.00	100,000		
	SUBTOTAL					110,000	
C2020	**STAIR FINISHES**						
090005	*RESILIENT FLOORS*						
	Stair finishes - egress	**2**	flts	5,000.00	10,000		
	SUBTOTAL					10,000	
	TOTAL - STAIRCASES						**$120,000**
C30	***INTERIOR FINISHES***						
C3010	**WALL FINISHES**						
	Wall finishes; allowance	**64,650**	gsf	8.00	517,200		
	SUBTOTAL					517,200	
C3020	**FLOOR FINISHES**						
	Floor finishes complete package	**64,650**	gsf	12.00	775,800		
	SUBTOTAL					775,800	
C3030	**CEILING FINISHES**						
	Ceiling finishes, complete package	**64,650**	gsf	12.00	775,800		
	SUBTOTAL					775,800	
	TOTAL - INTERIOR FINISHES						**2,068,800**
D10	***CONVEYING SYSTEMS***						
D1010	**ELEVATOR**						
055000	*MISCELLANEOUS METALS*						
	Pit ladder and miscellaneous metals	**1**	ea	900.00	900		
	Sill angles	**1**	ls	1,500.00	1,500		
142100	*ELEVATOR*						
	Elevator, 2 stop	**1**	ea	180,000.00	180,000		
	SUBTOTAL					182,400	
	TOTAL - CONVEYING SYSTEMS						**$182,400**
D20	***PLUMBING***						
D20	**PLUMBING, GENERALLY**						
	Equipment						
	Primary Plumbing Equipment is Assumed in Reno						
	Roof drain	**16**	ea	2,200.00	35,200		
	Overflow roof drain	**16**	ea	2,200.00	35,200		
	Floor drain	**18**	ea	1,800.00	32,400		
	Hose bibb, allow	**6**	ea	500.00	3,000		
	Freezeproof hose bibb, allow	**3**	ea	850.00	2,550		
	Rough-in & connection to kitchen equipment	**1**	ls	25,000.00	25,000		
	Miscellaneous plumbing equipment		sf	0.50			
	Plumbing Fixtures & Specialties						
	All Fixture Counts are Assumed - based on Similar Projects	**64,650**	sf	3.20	206,880		
	Water closet				included in cost/sf		
	Lavatory wall hung/drop in				included in cost/sf		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Addition							
	Classroom sink				included in cost/sf		
	Kitchenette - Staff Dining				included in cost/sf		
	Janitors Closet				included in cost/sf		
	Drinking fountain				included in cost/sf		
	Safety Shower/Eyewash				included in cost/sf		
	Fixture Rough In	**1**	ls	20,688.00	20,688		
	Misc. plumbing fixtures	**64,650**	sf	0.25	16,163		
	Domestic Water						
	Copper pipe type L w/fittings & hangers	**5,280**	lf	60.00	316,800		
	Valves & accessories	**1**	ls	57,024.00	57,024		
	Pipe Insulation						
	Domestic water pipe insulation	**5,280**	lf	10.00	52,800		
	Sanitary Waste						
	Sanitary W&V UG, SV Cast Iron Pipe	**800**	lf	48.00	38,400		
	Sanitary W&V AG, Hubless Cast Iron Pipe	**3,915**	lf	55.00	215,325		
	Storm Water						
	Storm Drainage UG, SV Cast Iron Pipe	**64,650**	sf	0.50	32,325		
	Storm Drainage AG, Hubless Cast Iron Pipe	**64,650**	sf	1.50	96,975		
	Pipe insulation on horizontal runs	**64,650**	sf	0.20	12,930		
	Secondary Storm Drainage AG, Hubless Cast Iron Pipe	**64,650**	sf	1.00	64,650		
	Secondary Pipe insulation on horizontal runs	**64,650**	sf	0.20	12,930		
	Natural Gas Piping						
	Natural Gas Piping				Not Required		
	Miscellaneous						
	Coordination & BIM	**1**	ls	51,720.00	51,720		
	Coring, sleeves & fire stopping	**1**	ls	6,960.72	6,961		
	Hydraulic lifts/rigging	**1**	ls	16,162.50	16,163		
	Commissioning support	**1**	ls	6,200.00	6,200		
	Testing and sterilization	**1**	ls	5,818.50	5,819		
	Fees & permits	**1**	ls	19,108.61	19,109		
	SUBTOTAL					1,383,212	
	TOTAL - PLUMBING						**$1,383,212**
D30	***HVAC***						
D30	**HVAC, GENERALLY**						
	Equipment						
	Modular air source heat pump chillers	**10**	ea	126,000.00	1,260,000		
	Electric Boiler, 450 kW, back-up	**450**	kw	72.00	32,400		
	Expansion tanks	**2**	ea	12,500.00	25,000		
	Air Separators	**2**	ea	9,600.00	19,200		
	Buffer tanks	**2**	ea	25,000.00	50,000		
	HEX-1, Heat Exchangers	**1**	ea	75,000.00	75,000		
	HEX-2, Heat Exchangers	**1**	ea	55,000.00	55,000		
	Radiant heating/cooling/perimeter terminal units	**64,650**	gsf	2.50	161,625		
	Unit heaters and cabinet heaters	**10**	ea	1,800.00	18,000		
	Split systems/heat pumps (IT, electric, elev machine rooms)	**6**	ea	12,500.00	75,000		
	Misc. Mech equipment	**64,650**	gsf	1.00	64,650		
	Pumps						
	Primary hot water, includes redundant	**5**	ea	9,800.00	49,000		
	Secondary hot water, includes redundant	**5**	ea	15,500.00	77,500		
	Primary chilled water, includes redundant	**5**	ea	12,000.00	60,000		
	Secondary chilled water, includes redundant	**5**	ea	16,500.00	82,500		
	Pump VFD	**20**	ea	4,500.00	90,000		
	Air distribution						
	RTU-G, Classrooms, energy recovery, HW/CW coils	**18,250**	cfm	24.00	438,000		
	RTU-H, Classroom, energy recovery, HW/CW coils	**22,500**	cfm	24.00	540,000		
	Fans						
	Exhaust fans, cfm TBD	**64,650**	gsf	1.00	64,650		
	Sheet metal & Accessories						
	Galvanized ductwork	**54,953**	lbs	18.00	989,154		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Addition							
	Black steel exhaust ductwork	**1,500**	lbs	26.00	39,000		
	Duct insulation	**35,719**	sf	6.50	232,174		
	Duct insulation, fire wrap	**900**	sf	22.00	19,800		
	Dishwasher exhaust	**800**	lbs	26.00	20,800		
	Registers, grilles & diffusers	**64,650**	gsf	0.75	48,488		
	VAV's w/coil	**64,650**	gsf	1.00	64,650		
	Sound attenuators	**1**	ls	20,000.00	20,000		
	Misc. Duct accessories	**64,650**	gsf	0.85	54,953		
	Mech. Piping						
	Hot/Chilled water, supply and return	**5,877**	lf	65.00	382,005		
	Refrigerant piping - split systems	**800**	lf	50.00	40,000		
	Condensate drain piping with fittings & hangers	**517**	lf	45.00	23,265		
	Valves & accessories	**1**	ls	66,790.50	66,791		
	Piping insulation	**6,677**	lf	12.00	80,124		
	Automatic Temperature Controls						
	Automatic temperature controls DDC	**64,650**	gsf	8.00	517,200		
	Balancing						
	System testing & balancing	**64,650**	sf	0.85	54,953		
	Miscellaneous						
	Coring, cutting, sleeves & fire stopping	**1**	ls	16,000.00	16,000		
	Vibration isolation and supports	**1**	ls	15,000.00	15,000		
	Hydraulic lifts/rigging	**1**	ls	35,000.00	35,000		
	Coordination / BIM / ENG Support / As-Builts	**1**	ls	96,975.00	96,975		
	Commissioning Support	**1**	ls	25,000.00	25,000		
	Fees & permits	**1**	ls	91,182.86	91,183		
	SUBTOTAL					6,170,040	
	TOTAL - HVAC						**$6,170,040**
D40	***FIRE PROTECTION***						
D40	**FIRE PROTECTION, GENERALLY**						
	Fire Protection Equipment						
	Fire water service entrance	**1**	ea	12,500.00	12,500		
	Double check valve assembly	**1**	ea	8,500.00	8,500		
	Wet alarm check valve assembly	**1**	ea	5,500.00	5,500		
	Floor control valve assembly	**2**	ea	2,700.00	5,400		
	Fire department connection	**1**	ea	1,600.00	1,600		
	Electric bell	**1**	ea	500.00	500		
	Fire pump, incl jockey pump (TBD)		ea	125,000.00			
	Misc. Fire Protection Equipment	**64,650**	gsf	0.25	16,163		
	Fire Protection Service						
	Sprinkler heads	**679**	ea	115.00	78,085		
	Main sprinkler piping	**1,290**	lf	55.00	70,950		
	Standpipe sprinkler piping	**516**	lf	55.00	28,380		
	Branch sprinkler piping	**7,469**	lf	40.00	298,760		
	Miscellaneous						
	Coordination & BIM	**1**	ls	25,860.00	25,860		
	Hydraulic calculations	**1**	ls	7,500.00	7,500		
	Coring, sleeves & fire stopping	**1**	ls	20,000.00	20,000		
	Shop drawings	**1**	ls	9,500.00	9,500		
	Commissioning of system	**1**	ls	2,500.00	2,500		
	Fees & permits	**1**	ls	8,875.47	8,875		
	SUBTOTAL					600,573	
	TOTAL - FIRE PROTECTION						**$600,573**
D50	***ELECTRICAL***						
D5010	**ELECTRICAL SYSTEMS**						
	Gear & Distribution						
	Normal power distribution system						

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Addition							
	2500AF 2000AT gear and distribution	**64,650**	gsf	9.00	581,850		
	Power monitoring	**1**	ls	15,000.00	15,000		
	Emergency power						
	Emergency Generator; 300 kW Diesel	**1**	ls	165,000.00	165,000		
	Emergency power gear and distribution	**64,650**	gsf	6.00	387,900		
	Photovoltaic						
	PV system infrastructure for future system	**1**	ls	20,000	20,000		
	Equipment Wiring						
	Feeders + electrical to equipment	**64,650**	gsf	4.00	258,600		
	SUBTOTAL					1,428,350	
D5020	**LIGHTING & POWER**						
	Lighting, controls + power	**64,650**	gsf	21.00	1,357,650		
	SUBTOTAL					1,357,650	
D5030	**COMMUNICATION & SECURITY SYSTEMS**						
	Telecommunications						
	Telcom rough-in, devices and cabling	**64,650**	gsf	5.50	355,575		
	Network switches and Handsets, allow				assume By others		
	Master Clock & PA						
	Master Clock & PA	**64,650**	gsf	1.50	96,975		
	2 Way Communications						
	2 Way Communications system	**1**	ls	20,000.00	20,000		
	Audio Visual Systems						
	Gym sound system	**1**	ls	50,000.00	50,000		
	Rough-in: general building	**64,650**	sf	0.75	48,488		
	Stage Systems:						
	Cafetorium stage lighting and dimming package, allow				Reno		
	Speech Reinforcement						
	Speech Reinforcement System	**30**	loc	3,500.00	105,000		
	Fire Alarm						
	FA system	**64,650**	gsf	3.50	226,275		
	BDA/DAS	**64,650**	gsf	1.25	80,813		
	Security System						
	Security system	**64,650**	gsf	5.00	323,250		
	SUBTOTAL					1,306,376	
D5040	**OTHER ELECTRICAL SYSTEMS**						
	Lightning protection	**1**	ls	50,000.00	50,000		
	Common Work Results for Electrical	**1**	ls	400,000.00	400,000		
	Temporary power & lighting				Included above		
	Coordination & management				Included above		
	Fees & permits				Included above		
	SUBTOTAL					450,000	
	TOTAL - ELECTRICAL						**$4,542,376**
E10	***EQUIPMENT***						
E10	**EQUIPMENT, GENERALLY**						
112000	*LOADING DOCK EQUIPMENT*						
	Loading dock equipment	**1**	ls	10,000.00	10,000		
110620	*THEATRICAL EQUIPMENT*				See Reno		
113100	*APPLIANCES*						
	Residential appliances - allowance	**1**	ls	20,000.00	20,000		
114000	*FOOD SERVICE EQUIPMENT*				See Reno		
115300	*EDUCATIONAL EQUIPMENT*						
	Kiln	**1**	ea	5,000.00	See Reno		
115213	*PROJECTION SCREENS*						

	CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	OPTION 2.1 - Addition							
572		Motorized projection screen - allowance	**1**	ls	20,000.00	See Reno		
573								
574	*116600*	*GYM EQUIPMENT*						
575		Basketball backstops	**6**	ea	10,000.00	60,000		
576		Scoreboard	**1**	ea	20,000.00	20,000		
577		Shot timer	**1**	ea	5,000.00	5,000		
578		Gym wall pads	**1,800**	sf	17.00	30,600		
579		Wall pads in OT/PT	**300**	sf	17.00	5,100		
580		Volleyball equipment	**1**	ls	5,000.00	5,000		
581		Divider curtain (1#)	**1**	ea	27,000.00	27,000		
582		Climbing wall - allow	**1**	ls	75,000.00	75,000		
583		Allowance for built-in indoor play equipment	**1**	ls	50,000.00	50,000		
584								
585	*126000*	*SEATING*						
586		Bleachers in gym				No scope		
587		SUBTOTAL					307,700	
588								
589		***TOTAL - EQUIPMENT***						**$307,700**
590								
591								
592	***E20***	***FURNISHINGS***						
593								
594	**E2010**	**FIXED FURNISHINGS**						
595								
596	*122100*	*WINDOW TREATMENT*						
597		Window treatments - allowance	**9,000**	sf	10.00	90,000		
598								
599	*123553*	*CASEWORK*						
600		Casework package	**64,650**	gsf	10.00	646,500		
601		SUBTOTAL					736,500	
602								
603	**E2020**	**MOVABLE FURNISHINGS**						
604		All movable furnishings to be provided and installed by owner						
605		SUBTOTAL					NIC	
606								
607		***TOTAL - FURNISHINGS***						**$736,500**
608								
609								
610	***F10***	***SPECIAL CONSTRUCTION***						
611								
612	**F10**	**SPECIAL CONSTRUCTION**						
613		SUBTOTAL					-	
614								
615		***TOTAL - SPECIAL CONSTRUCTION***						
616								
617								
618	***F20***	***SELECTIVE BUILDING DEMOLITION***						
619								
620	**F2010**	**BUILDING ELEMENTS DEMOLITION**						
621		SUBTOTAL					-	
622								
623	**F2020**	**HAZARDOUS COMPONENTS ABATEMENT**						
624		See main summary for HazMat allowance				See Summary		
625		SUBTOTAL						
626								
627		***TOTAL - SELECTIVE BUILDING DEMOLITION***						
628								
		SUBTOTAL						**$32,633,797**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Renovation							
	GROSS FLOOR AREA CALCULATION						
		Level 1		30,200			
	TOTAL GROSS FLOOR AREA (GFA)				**30,200** ***sf***		
	A10 FOUNDATIONS						
	A1010 STANDARD FOUNDATIONS						
1	Allowance for minimal foundation work	**30,200**	gsf	2.00	60,400		
2	SUBTOTAL					60,400	
3							
4	**A1020 SPECIAL FOUNDATIONS**				No work		
5	SUBTOTAL					-	
6							
7	**A1030 LOWEST FLOOR CONSTRUCTION**						
8	Miscellaneous slab repairs, infills, cutting + patching at restrooms, kitchen etc. including new ADA ramps where necessary - assume 40% replacement	**12,080**	sf	20.00	241,600		
9	SUBTOTAL					241,600	
10							
11	***TOTAL - FOUNDATIONS***						**$302,000**
12							
13							
14	***A20 BASEMENT CONSTRUCTION***						
15							
16	**A2010 BASEMENT EXCAVATION**						
17	No Work in this section						
18	SUBTOTAL					-	
19							
20	**A2020 BASEMENT WALLS**						
21	No Work in this section						
22	SUBTOTAL					-	
23							
24	***TOTAL - BASEMENT CONSTRUCTION***						
25							
26							
27	***B10 SUPERSTRUCTURE***						
28							
29	**B1010 FLOOR CONSTRUCTION**						
30							
31	*051200* *STRUCTURAL STEEL FRAMING*						
32	Allowance for seismic upgrades/ gravity or lateral system upgrades	**30,200**	gsf	10.00	302,000		
33	Allowance for seismic clips anchored to existing roof at masonry walls, chimeys and parapets	**500**	ea	200.00	100,000		
34	SUBTOTAL					402,000	
35							
36	**B1020 ROOF CONSTRUCTION**						
37							
38	*051200* *STRUCTURAL STEEL FRAMING*						
39	Allowance for new roof penetrations and infills	**1**	ls	50,000.00	50,000		
40	Allowance for dunnage	**1**	ls	50,000.00	50,000		
41	SUBTOTAL					100,000	
42							
43	***TOTAL - SUPERSTRUCTURE***						**$502,000**
44							
45							
46	***B20 EXTERIOR CLOSURE***						
47							
48	**B2010 EXTERIOR WALLS**	*16,000*	Total closure area				
49	**Exterior Wall Area - 75% solid**	*12,000*	*sf total area solid*				
50							
51	*042000* *MASONRY*						
52	Mockup	**1**	ls	50,000.00	50,000		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Renovation							
	Brick veneer; 90%	**10,800**	sf	45.00	486,000		
	4" Polyiso at masonry	**10,800**	sf	4.80	51,840		
	Miscellaneous flashings and sealants	**12,000**	sf	1.50	18,000		
	Staging to exterior wall	**12,000**	sf	4.00	48,000		
055000	*MISC. METALS*						
	Misc. metals at masonry including loose lintels (relieving angles included in steel tns)	**12,000**	sf	1.50	18,000		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Air barrier	**12,000**	sf	9.50	114,000		
	Air barrier/flashing at openings	**1,333**	lf	6.00	7,998		
	Miscellaneous sealants to closure	**12,000**	sf	1.00	12,000		
072100	*THERMAL INSULATION*						
	3 1/2" Batt insulation in stud	**12,000**	sf	3.00	36,000		
	Insulation at glazed openings	**1,333**	lf	6.00	7,998		
076400	*CLADDING*						
	Metal panel (Alucobond or equal); 10% (including insulation)	**1,200**	sf	90.00	108,000		
	Equipment Screen				See Addition		
078150	*EXPANSION JOINT COVERS*				See Addition		
092900	*GYPSUM BOARD ASSEMBLIES*						
	Exterior wall;						
	6" Stud backup				ETR		
	Gypsum sheathing	**12,000**	sf	3.50	42,000		
	Drywall lining to interior face of stud backup	**12,000**	sf	4.00	48,000		
101400	*SIGNAGE*				See Addition		
	SUBTOTAL					1,047,836	
B2020	**WINDOWS**						
	Exterior Wall Area; 25%	*4,000*	sf				
061000	*ROUGH CARPENTRY*						
	Wood blocking at openings where necessary	**1,333**	lf	5.00	6,665		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Air barrier/flashing at windows	**1,333**	lf	10.00	13,330		
	Backer rod & double sealant	**1,333**	lf	11.00	14,663		
080001	*METAL WINDOWS*						
	Windows/Storefront replacement; triple glazed	**4,000**	sf	185.00	740,000		
089000	*LOUVERS*				See Addition		
	SUBTOTAL					774,658	
B2030	**EXTERIOR DOORS**						
	Allowance for exterior doors	**30,200**	gsf	1.00	30,200		
	SUBTOTAL					30,200	
	TOTAL - EXTERIOR CLOSURE						**$1,852,694**
B30	***ROOFING***						
055000	*MISCELLANOUS METALS*				w/ Addition		
061000	*ROUGH CARPENTRY*						
	Rough carpentry and blocking @ roof	**30,200**	sf	1.00	30,200		
070002	*ROOFING AND FLASHING*	**30,200**					
	Removal of existing roofing	**30,200**	sf		included in Haz Mat $$		
	EPDM roof membrane system, complete	**30,200**	sf	28.00	845,600		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Renovation							
	Miscellaneous Roofing						
	Miscellaneous flashings/copings/walkway pads etc.	**30,200**	sf	3.50	105,700		
	SUBTOTAL					981,500	
B3020	**ROOF OPENINGS**						
086300	*ROOF SKYLIGHTS*						
	Allowance for roof hatches	**1**	ls	5,000.00	5,000		
	Skylights; 16'x8'				w/ Addition		
	SUBTOTAL					5,000	
	TOTAL - ROOFING						**$986,500**
C10	***INTERIOR CONSTRUCTION***						
C1010	**PARTITIONS**						
040001	*MASONRY*						
	Firewall, 2 hr	**1,725**	sf	50.00	86,250		
	Allowance for masonry partitions reconfurations/ cutting and patching etr	**30,200**	gsf	2.00	60,400		
061000	*ROUGH CARPENTRY*						
	Backer panels in electrical closets	**1**	ls	5,000.00	5,000		
	Wood blocking at interiors	**30,200**	gsf	0.50	15,100		
078400	*FIREPROOFING/FIRESTOPPING*						
	Fire stopping patch	**30,200**	gsf	0.50	15,100		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Miscellaneous sealants throughout building	**30,200**	gsf	1.00	30,200		
078150	*EXPANSION JOINTS*				w/ Addition		
081110	*INTERIOR GLAZING*						
	Allowance for interior glazing	**30,200**	gsf	2.00	60,400		
092900	*GYPSUM BOARD ASSEMBLIES*						
	Allowance for new interior GWB partitions @ reconfigured spaces	**30,200**	gsf	20.00	604,000		
	SUBTOTAL					876,450	
C1020	**INTERIOR DOORS**						
	Doors, frames, hardware upgrades/ replacement where necessary	**30,200**	gsf	6.00	181,200		
	SUBTOTAL					181,200	
C1030	**SPECIALTIES / MILLWORK**						
055000	*MISCELLANEOUS METALS*						
	Miscellaneous metals throughout building	**30,200**	gsf	3.00	90,600		
061000	*ROUGH CARPENTRY*						
062000	*INTERIOR ARCHITECTURAL WOODWORK*						
	Interior millwork package	**30,200**	gsf	5.00	151,000		
101100	*VISUAL DISPLAY SURFACES*						
	Markerboard and tackboard package	**30,200**	gsf	1.50	45,300		
101400	*SIGNAGE*						
	Room identification, directional & safety signage, building directory + environmental graphics	**30,200**	gsf	1.00	30,200		
102110	*TOILET/ CHANGING/SHOWER COMPARTMENTS*						
	Toilet compartments	**30,200**	gsf	0.50	15,100		
102800	*TOILET ACCESSORIES*						
	Toilet accessories	**30,200**	gsf	0.50	15,100		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Renovation							
104400	*FIRE PROTECTION SPECIALTIES*						
	Fire extinguisher cabinets	**1**	ls	5,342.86	5,343		
	AED cabinets	**1**	ls	2,000.00	2,000		
105000	*LOCKERS*			assume NR - cubbies in classrooms			
	SUBTOTAL					354,643	
	TOTAL - INTERIOR CONSTRUCTION						**$1,412,293**
C20	***STAIRCASES***						
C2010	**STAIR CONSTRUCTION**				**No work**		
	SUBTOTAL					-	
	TOTAL - STAIRCASES						
C30	***INTERIOR FINISHES***						
C3010	**WALL FINISHES**						
	Wall finishes; allowance	**30,200**	gsf	8.00	241,600		
	SUBTOTAL					241,600	
C3020	**FLOOR FINISHES**						
	Floor finishes complete package	**30,200**	gsf	12.00	362,400		
	SUBTOTAL					362,400	
C3030	**CEILING FINISHES**						
	Ceiling finishes, complete package	**30,200**	gsf	12.00	362,400		
	SUBTOTAL					362,400	
	TOTAL - INTERIOR FINISHES						**966,400**
D10	***CONVEYING SYSTEMS***						
D1010	**ELEVATOR**				See Addition		
	SUBTOTAL					-	
	TOTAL - CONVEYING SYSTEMS						
D20	***PLUMBING***						
D20	**PLUMBING, GENERALLY**						
	Plumbing Demolition						
	Plumbing demolition, cut, cap, make safe	**1**	ls	24,000.00	24,000		
	Equipment						
	Reduced pressure backflow preventer, main	**1**	ea	6,500.00	6,500		
	Water meter assembly	**1**	ea	3,500.00	3,500		
	Secondary water heating tank (redundancy)	**1**	ea	25,000.00	25,000		
	Expansion tank	**1**	ea	2,500.00	2,500		
	Air separator	**1**	ea	3,500.00	3,500		
	Thermal mixing valve	**1**	ea	18,500.00	18,500		
	Hot water recirculation pump	**1**	ea	2,800.00	2,800		
	Sub Metering	**1**	ea	2,500.00	2,500		
	Interior grease interceptor	**1**	ea	6,500.00	6,500		
	Elevator pit sump pump with oil separator	**1**	ea	3,500.00	3,500		
	Roof drain	**8**	ea	2,200.00	17,600		
	Overflow roof drain	**8**	ea	2,200.00	17,600		
	Floor drain	**6**	ea	1,800.00	10,800		
	Kitchen floor drain	**4**	ea	1,800.00	7,200		
	Kitchen floor sink	**4**	ea	2,400.00	9,600		
	Hose bibb, allow	**10**	ea	500.00	5,000		
	Freezeproof hose bibb, allow	**4**	ea	850.00	3,400		
	Rough-in & connection to kitchen equipment	**1**	ls	20,000.00	20,000		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Renovation							
	Miscellaneous plumbing equipment	**30,200**	sf	0.50	15,100		
	Plumbing Fixtures & Specialties						
	All Fixture Counts are Assumed - based on Similar Projects	**30,200**	sf	4.25	128,350		
	Water closet				included in cost/sf		
	Lavatory wall hung/drop in				included in cost/sf		
	Classroom sink				included in cost/sf		
	Music room sink				included in cost/sf		
	Cafeteria sink				included in cost/sf		
	Classroom Sink - Art Room w/solids interceptor				included in cost/sf		
	Kitchenette - Staff Dining				included in cost/sf		
	Shower				included in cost/sf		
	Nurses Sink				included in cost/sf		
	Janitors Closet				included in cost/sf		
	Drinking fountain				included in cost/sf		
	Safety Shower/Eyewash				included in cost/sf		
	Dishwasher connection - assumed at Kitchenette sink				included in cost/sf		
	Coffee machine connection - assumed at Kitchenette sink				included in cost/sf		
	Refrigerant connection - assumed at Kitchenette sink				included in cost/sf		
	Fixture Rough In	**1**	ls	12,835.00	12,835		
	Misc. plumbing fixtures	**30,200**	sf	0.25	7,550		
	Domestic Water						
	Copper pipe type L w/fittings & hangers	**3,080**	lf	60.00	184,800		
	Valves & accessories	**1**	ls	33,264.00	33,264		
	Pipe Insulation						
	Domestic water pipe insulation	**3,080**	lf	10.00	30,800		
	Sanitary Waste						
	Sanitary W&V UG, SV Cast Iron Pipe	**800**	lf	48.00	38,400		
	Sanitary W&V AG, Hubless Cast Iron Pipe	**2,340**	lf	55.00	128,700		
	Grease Waste						
	Grease W&V UG, SV Cast Iron Pipe	**200**	lf	48.00	9,600		
	Grease W&V AG, Hubless Cast Iron Pipe	**400**	lf	55.00	22,000		
	Storm Water						
	Storm Drainage UG, SV Cast Iron Pipe	**30,200**	sf	0.50	15,100		
	Storm Drainage AG, Hubless Cast Iron Pipe	**30,200**	sf	1.50	45,300		
	Pipe insulation on horizontal runs	**30,200**	sf	0.20	6,040		
	Secondary Storm Drainage AG, Hubless Cast Iron Pipe	**30,200**	sf	1.00	30,200		
	Secondary Pipe insulation on horizontal runs	**30,200**	sf	0.20	6,040		
	Natural Gas Piping						
	Natural Gas Piping				Not Required		
	Miscellaneous						
	Coordination & BIM	**1**	ls	27,180.00	27,180		
	Coring, sleeves & fire stopping	**1**	ls	6,960.72	6,961		
	Hydraulic lifts/rigging	**1**	ls	22,650.00	22,650		
	Commissioning support	**1**	ls	6,200.00	6,200		
	Testing and sterilization	**1**	ls	1,510.00	1,510		
	Fees & permits	**1**	ls	13,561.19	13,561		
	SUBTOTAL					982,141	
	TOTAL - PLUMBING						**$982,141**
D30	***HVAC***						
D30	**HVAC, GENERALLY**						
	HVAC Demolition						
	HVAC demolition, phased planning, per narrative	**1**	ls	36,000.00	36,000		
	Equipment						
	Modular air source heat pump chillers	**2**	ea	126,000.00	252,000		
	Radiant heating/cooling/perimeter terminal units	**30,200**	gsf	2.50	75,500		
	Unit heaters and cabinet heaters	**6**	ea	1,800.00	10,800		
	Split systems/heat pumps (IT, electric, elev machine rooms)	**2**	ea	12,500.00	25,000		
	Misc. Mech equipment	**30,200**	gsf	1.00	30,200		
	Air distribution						

	CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	OPTION 2.1 - Renovation							
314		RTU-A, Admin, energy recovery, HW/CW coils	**9,500**	cfm	24.00	228,000		
315		RTU-B, Cafetorium, energy recovery, HW/CW coils	**3,500**	cfm	24.00	84,000		
316		RTU-C, Kitchen, energy recovery, HW/CW coils	**1,000**	cfm	24.00	24,000		
317		RTU-D, Media Ctr, energy recovery, HW/CW coils	**3,500**	cfm	24.00	84,000		
318		RTU-E, Gym, energy recovery, HW/CW coils	**7,500**	cfm	24.00	180,000		
319		RTU-F, Music & Art, energy recovery, HW/CW coils	**9,000**	cfm	24.00	216,000		
320		MAU-1, Kitchen makeup air	**3,000**	cfm	24.00	72,000		
321		H&V Back of House	**800**	cfm	24.00	19,200		
322		Fans						
323		Exhaust fans, cfm TBD	**30,200**	gsf	1.00	30,200		
324		KEF-1, Kitchen exhaust fan	**1,500**	cfm	4.00	6,000		
325		Sheet metal & Accessories						
326		Galvanized ductwork	**25,670**	lbs	18.00	462,060		
327		Black steel exhaust ductwork	**1,500**	lbs	26.00	39,000		
328		Duct insulation	**16,686**	sf	6.50	108,459		
329		Duct insulation, fire wrap	**900**	sf	22.00	19,800		
330		Dishwasher exhaust	**800**	lbs	26.00	20,800		
331		Registers, grilles & diffusers	**30,200**	gsf	0.75	22,650		
332		VAV's w/coil	**30,200**	gsf	1.00	30,200		
333		Sound attenuators	**1**	ls	20,000.00	20,000		
334		Misc. Duct accessories	**30,200**	gsf	0.85	25,670		
335		Mech. Piping						
336		Hot/Chilled water, supply and return	**2,745**	lf	65.00	178,425		
337		Refrigerant piping - split systems	**400**	lf	50.00	20,000		
338		Condensate drain piping with fittings & hangers	**242**	lf	45.00	10,890		
339		Valves & accessories	**1**	ls	31,397.25	31,397		
340		Piping insulation	**3,145**	lf	14.00	44,030		
341		Automatic Temperature Controls						
342		Automatic temperature controls DDC	**30,200**	gsf	8.00	241,600		
343		Balancing						
344		System testing & balancing	**30,200**	sf	0.85	25,670		
345		Miscellaneous						
346		Coring, cutting, sleeves & fire stopping	**1**	ls	8,500.00	8,500		
347		Vibration isolation and supports	**1**	ls	15,000.00	15,000		
348		Hydraulic lifts/rigging	**1**	ls	60,000.00	60,000		
349		Coordination / BIM / ENG Support / As-Builts	**1**	ls	45,300.00	45,300		
350		Commissioning Support	**1**	ls	12,000.00	12,000		
351		Fees & permits	**1**	ls	37,895.27	37,895		
352		SUBTOTAL					2,852,246	
353								
354		***TOTAL - HVAC***						**$2,852,246**
355								
356								
357	***D40***	***FIRE PROTECTION***						
358								
359	**D40**	**FIRE PROTECTION, GENERALLY**						
360		Fire Protection Equipment						
361		Double check valve assembly	**1**	ea	8,500.00	8,500		
362		Wet alarm check valve assembly	**1**	ea	5,500.00	5,500		
363		Fire department connection	**1**	ea	1,600.00	1,600		
364		Electric bell	**1**	ea	500.00	500		
365		Fire pump, incl jockey pump (TBD)		ea	125,000.00	NIC		
366		Misc. Fire Protection Equipment	**30,200**	gsf	0.25	7,550		
367		Fire Protection Service						
368		Sprinkler heads	**317**	ea	115.00	36,455		
369		Main sprinkler piping	**602**	lf	55.00	33,110		
370		Branch sprinkler piping	**3,487**	lf	40.00	139,480		
371		Miscellaneous						
372		Coordination & BIM	**1**	ls	13,590.00	13,590		
373		Hydraulic calculations	**1**	ls	7,500.00	7,500		
374		Coring, sleeves & fire stopping	**1**	ls	10,000.00	10,000		
375		Shop drawings	**1**	ls	6,500.00	6,500		
376		Commissioning of system	**1**	ls	2,500.00	2,500		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Renovation							
	Fees & permits	**1**	ls	4,091.78	4,092		
	SUBTOTAL					276,877	
	TOTAL - FIRE PROTECTION						**$276,877**
D50	***ELECTRICAL***						
D5010	**ELECTRICAL SYSTEMS**						
	Gear & Distribution						
	Normal power distribution system						
	2500AF 2000AT gear and distribution	**30,200**	gsf	9.00	271,800		
	Power monitoring	**1**	ls	7,500.00	7,500		
	Emergency power						
	Emergency Generator; 300 kW Diesel	**1**	ls	165,000.00	In Add		
	Emergency power gear and distribution	**30,200**	gsf	6.00	181,200		
	Photovoltaic						
	PV system infrastructure for future system	**1**	ls	20,000	In Add		
	Equipment Wiring						
	Feeders + electrical to equipment	**30,200**	gsf	4.00	120,800		
	SUBTOTAL					581,300	
D5020	**LIGHTING & POWER**						
	Lighting, controls + power	**30,200**	gsf	21.00	634,200		
	SUBTOTAL					634,200	
D5030	**COMMUNICATION & SECURITY SYSTEMS**						
	Telecommunications						
	Telcom rough-in, devices and cabling	**30,200**	gsf	5.50	166,100		
	Network switches and Handsets, allow				assume By others		
	Master Clock & PA						
	Master Clock & PA	**30,200**	gsf	1.50	45,300		
	2 Way Communications						
	2 Way Communications system	**1**	ls	20,000.00	In Add		
	Audio Visual Systems						
	Cafe sound system	**1**	ls	50,000.00	50,000		
	Rough-in: general building	**30,200**	sf	0.75	22,650		
	Stage Systems:						
	Cafetorium stage lighting and dimming package, allow	**1**	ls	100,000.00	100,000		
	Speech Reinforcement						
	Speech Reinforcement System	**5**	loc	3,500.00	17,500		
	Fire Alarm						
	FA system	**30,200**	gsf	3.50	105,700		
	BDA/DAS	**30,200**	gsf	1.25	37,750		
	Security System						
	Security system	**30,200**	gsf	5.00	151,000		
	SUBTOTAL					696,000	
D5040	**OTHER ELECTRICAL SYSTEMS**						
	Lightning protection	**1**	ls	22,500.00	22,500		
	Common Work Results for Electrical	**1**	ls	200,000.00	200,000		
	Demo and make safe	**1**	ls	40,000.00	40,000		
	Temporary power & lighting				Included above		
	Coordination & management				Included above		
	Fees & permits				Included above		
	SUBTOTAL					262,500	
	TOTAL - ELECTRICAL						**$2,174,000**
E10	***EQUIPMENT***						
E10	**EQUIPMENT, GENERALLY**						
112000	*LOADING DOCK EQUIPMENT*				See Addition		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Renovation							
110620	*THEATRICAL EQUIPMENT*						
	Cafetorium rigging & stage curtains	**1**	ls	75,000.00	75,000		
	Cafetorium lighting system	**1**	ls		see electrical		
	Cafetorium fixture package including controls	**1**	ls		see electrical		
113100	*APPLIANCES*						
	Residential appliances - allowance	**1**	ls	10,000.00	10,000		
114000	*FOOD SERVICE EQUIPMENT*				See Reno		
	Kitchen equipment -allowance	**1**	ls	650,000.00	650,000		
115300	*EDUCATIONAL EQUIPMENT*						
	Kiln	**1**	ea	5,000.00	5,000		
115213	*PROJECTION SCREENS*						
	Motorized projection screen - allowance	**1**	ls	20,000.00	20,000		
116600	*GYM EQUIPMENT*				See Addition		
126000	*SEATING*				See Addition		
	SUBTOTAL					760,000	
	TOTAL - EQUIPMENT						**$760,000**
E20	***FURNISHINGS***						
E2010	**FIXED FURNISHINGS**						
122100	*WINDOW TREATMENT*						
	Window treatments - allowance	**4,000**	sf	10.00	40,000		
123553	*CASEWORK*						
	Casework package	**30,200**	gsf	10.00	302,000		
	SUBTOTAL					342,000	
E2020	**MOVABLE FURNISHINGS**						
	All movable furnishings to be provided and installed by owner						
	SUBTOTAL					NIC	
	TOTAL - FURNISHINGS						**$342,000**
F10	***SPECIAL CONSTRUCTION***						
F10	**SPECIAL CONSTRUCTION**						
	SUBTOTAL					-	
	TOTAL - SPECIAL CONSTRUCTION						
F20	***SELECTIVE BUILDING DEMOLITION***						
F2010	**BUILDING ELEMENTS DEMOLITION**						
	Sawcut and remove slab on grade	**12,080**	sf	10.00	120,800		
	Demolish and remove exterior brick veneer	**12,000**	sf	15.00	180,000		
	Demolish and remove exterior glazing	**4,000**	sf	8.00	32,000		
	Interior demolition of walls, finishes + specialties for reconfigured spaces	**30,200**	sf	6.00	181,200		
	MEP demo; cut + cap in trades	**30,200**	sf	3.00	90,600		
	Temporary protection/ shoring existing etc.	**30,200**	sf	3.00	90,600		
	SUBTOTAL					695,200	
F2020	**HAZARDOUS COMPONENTS ABATEMENT**						
	See main summary for HazMat allowance				See Summary		
	SUBTOTAL						
	TOTAL - SELECTIVE BUILDING DEMOLITION						**$695,200**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Renovation							
510							
	SUBTOTAL						**$14,104,351**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Add/Reno SITEWORK							
	G SITEWORK						
G10	**SITE PREPARATION & DEMOLITION**						
311000	*GENERAL CONDITIONS*						
	6' high site construction fence	**2,500**	lf	35.00	87,500		
	6' high site construction fence double gate	**2**	loc	5,000.00	10,000		
	Site construction entrance and removal/restoration	**2**	loc	12,000.00	24,000		
	Mobilization & Demobilization	**1**	ea	80,000.00	80,000		
	Temp laydown areas	**1**	ls	10,000.00	10,000		
	Wheel wash rack	**1**	ls	10,000.00	10,000		
	Concrete washout area	**1**	ea	2,500.00	2,500		
	Snow removal - allowance	**1**	ls		Excluded		
	Winter conditions - allowance	**1**	ls		Excluded		
	Police details	**1**	ls		Excluded		
	Site security	**1**	ls		Excluded		
	Job site construction trailer	**1**	ls		Excluded		
	Temp utilities for job trailer	**1**	ls		Excluded		
311000	*PHASING*						
	Allowance for phasing	**1**	ls	500,000.00	500,000		
311000	*SITE SALVAGE ITEMS*						
	Allowance to salvage any items on site	**1**	ls	10,000.00	10,000		
311000	*SITE DEMOLITION AND RELOCATIONS*						
	Demolish existing paving	**37,869**	sf	1.25	47,336		
	Demolish landscape curbing	**1,256**	lf	12.00	15,072		
	Demolish existing concrete walk	**1,563**	sf	1.50	2,345		
	Demolish existing pavers	**321**	sf	1.50	482		
	Demolish existing playground mulch	**16,007**	sf	1.50	24,011		
	Demolish existing fencing	**234**	lf	5.00	1,170		
	Demolish existing walls	**170**	lf	95.00	16,150		
	Demolish playground equipment	**7**	loc	2,500.00	17,500		
	Remove misc. site furnishings - benches, sheds, storage containers, etc	**1**	ls	50,000.00	50,000		
311000	*UTILITY DEMOLITION*						
	Demolish existing utility lines	**2,057**	lf	25.00	51,425		
	Demolish existing utility structures	**17**	ea	500.00	8,500		
	Remove and fill leach field	**925**	cy	55.00	50,875		
	Pump and remove septic tanks	**1**	ls	10,000.00	10,000		
311000	*ROADWAY WORK - allowance for utility connection*						
	Sawcut	**170**	lf	8.25	1,403		
311000	*VEGETATION & TOPSOIL MANAGEMENT*						
	Clear and grub	**1**	ls	2,500.00	2,500		
	Tree clearing	**1**	acre	8,000.00	8,000		
	Stump removal	**1**	acre	4,000.00	4,000		
	Vegetation protection fencing - allowance	**1**	ls	2,500.00	2,500		
	Strip + stockpile topsoil	**2,159**	cy	11.50	24,829		
312000	*EROSION & SEDIMENT CONTROL*						
	Silt Fence; installation and removal - allow	**2,500**	lf	15.00	37,500		
	Silt Sacks; installation and removal - allow	**10**	ea	250.00	2,500		
	Erosion Control monitoring & maintenance	**1**	ls	30,000.00	30,000		
	SUBTOTAL					1,142,098	
312000	*BUILDING EARTHWORK*						
	Structural fill/Ground Improvements allowance				See Earthwork		
	SUBTOTAL					-	
312000	*SITE EARTHWORK*						
	Site cut to design subgrade	*7,704*	*cy*				
	Cut	**7,704**	cy	10.00	77,040		
	Stockpile/screen for reuse - assume 50%	**3,852**	cy	10.00	38,520		
	SOIL DISPOSAL - conversion factor 1.7 to tons	*3,852*	*cy*		-		
	Load excess soils for disposal	**3,852**	cy	2.50	9,630		
	Less than RCS-1 - clean non-regulated	**6,548**	tn	23.00	150,604		
	Site fill to design subgrade	*5,115*	*cy*				
	Fill - from cut	**3,852**	cy	12.00	46,224		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Add/Reno SITEWORK							
	Fill - imported	**1,579**	cy	46.00	72,634		
	Gravel fill at demo-ed building - basements, foundations, pits etc	**799**	cy	46.00	36,754		
312000	*ROCK REMOVAL*						
	Rock removal allowance	**1,000**	cy	100.00	100,000		
312000	*ESTABLISHING GRADE*						
	Sub grade establishment	**200,000**	sf	0.15	30,000		
	Fine grading throughout the site	**200,000**	sf	0.25	50,000		
312000	*HAZARDOUS MATERIALS*						
	UST removal allowance	**1**	ls	50,000.00	50,000		
	SUBTOTAL					661,406	
	TOTAL - SITE PREPARATION						**$1,803,504**
G20	**SITE IMPROVEMENTS**						
320000	***ROADWAYS AND PARKING LOTS***						
	Asphalt Paving; parking lots and roadway	*23,519*	*sf*				
	gravel base; 12" thick	**871**	cy	50.00	43,550		
	asphalt top; 1.5" thick	**225**	tns	180.00	40,500		
	asphalt binder; 2.5" thick	**374**	tns	130.00	48,620		
320000	*CURBING*						
	Concrete curb - service road/fire lane	**2,442**	lf	38.00	92,796		
	ADA Curb cuts - allowance	**1**	ls	10,000.00	10,000		
320000	*ROAD MARKINGS AND SIGNS*						
	Sign allowance	**1**	ls	20,000.00	20,000		
	Pavement markings allowance	**1**	ls	10,000.00	10,000		
	Crosswalk hatching - allowance	**1**	ls	10,000.00	10,000		
	SUBTOTAL					275,466	
320000	***PEDESTRIAN PAVING***						
	Allowance to update existing sidewalks to meet ADA and MAAB requirements	**1**	ls	50,000.00	50,000		
	Concrete sidewalks	*6,477*	*sf*				
	gravel base; 8" thick	**161**	cy	50.00	8,050		
	Broom finish concrete paving; 4" thick	**6,477**	sf	12.00	77,724		
	Concrete pads - allowance	*250*	*sf*				
	gravel base; 12" thick	**9**	cy	50.00	450		
	Broom finish concrete paving; 8" thick	**250**	sf	17.00	4,250		
	Bituminous concrete walkways - incl. outdoor classrooms	*4,835*	*sf*				
	gravel base; 8" thick	**120**	cy	50.00	6,000		
	asphalt top; 1" thick	**31**	tns	180.00	5,580		
	asphalt binder; 1.5" thick	**46**	tns	130.00	5,980		
	SUBTOTAL					158,034	
320000	***SITE IMPROVEMENTS***						
320000	*SITE FURNISHINGS - allowances*						
	Bollards allowance for utilities	**10**	ea	1,100.00	11,000		
	Site furnishings - allowance for new site furnishings at outdoor and play areas	**1**	ls	75,000.00	75,000		
	Terraced seating allowance - utilize sloped areas when possible	**1**	ls	150,000.00	150,000		
320000	*PLAY AREAS - allowance*						
	Playground - pour-in-place safety surfacing	7,000	*sf*				
	gravel base; 8" thick	**174**	cy	50.00	8,700		
	Pour-in-place safety surface	**7,000**	sf	36.00	252,000		
	Edging	**100**	lf	45.00	4,500		
	Allowance for play equipment	**1**	ls	250,000.00	250,000		
320000	*FENCING*						
	Fencing at outdoor classrooms and play areas	**535**	lf	75.00	40,125		
	Fence gates at outdoor classrooms and play areas	**3**	ea	1,500.00	4,500		
	SUBTOTAL					795,825	

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 2.1 - Add/Reno SITEWORK							
329900	*SITE WALLS*						
	Segmental Wall- 4' ht.	*482*	*lf*				
	Large block wall	**2,410**	sf	55.00	132,550		
	Excavate and prepare wall base	**107**	cy	100.00	10,700		
	Backfill wall - crushed stone	**71**	cy	65.00	4,615		
	Backfill-controlled placement; above grade - on-site soils no geogrid	**286**	cy	35.00	10,010		
	Geotextiles	**3,615**	sf	2.50	9,038		
	Wall drain	**482**	lf	22.00	10,604		
	4' Ht. CLF	**482**	lf	65.00	31,330		
	SUBTOTAL					208,847	
	Landscaping						
329900	*LAWN AND SEED*						
	Screen topsoil	**2,159**	cy	7.50	16,193		
	Export tailings from screening process - assume clean rock	**648**	cy	8.50	5,508		
	Amend/Place	**1,511**	cy	20.00	30,220		
	Topsoil - imported 6" thick; swell 25%	**1,369**	cy	65.00	88,985		
	Soil and mulch at planting areas; 12" thick - allowance	**250**	cy	65.00	16,250		
	Power rake and hydroseed disturbed areas	**84,000**	sf	0.35	29,400		
	Allowance to repair existing field from drainage work	**1**	ls	50,000.00	50,000		
320000	*ATHLETIC LANDSCAPING*	*40,424*	*sf*				
	Topsoil - imported 6" thick; swell 25%	**936**	cy		incl. above		
	Lawn seeding	**40,424**	sf	0.55	22,233		
	Irrigation	**40,424**	sf	2.00	80,848		
329900	*TREES/SHRUBS/PLANTINGS*						
	Allowance for all plantings	**1**	ls	75,000.00	75,000		
328400	*IRRIGATION*						
	Allowance for irrigation - lawn and planting	**1**	ls		Assume NR		
	SUBTOTAL					414,637	
	TOTAL - SITE IMPROVEMENTS						**$1,852,809**
G30	**CIVIL MECHANICAL UTILITIES**						
210000	*FIRE PROTECTION*						
	8" CLDI - loop	**2,000**	lf	80.00	160,000		
	8" CLDI - to building from loop allowance	**50**	lf	80.00	4,000		
	Fire department connection	**1**	ea	2,500.00	2,500		
	Gate valve	**10**	ea	1,200.00	12,000		
	Fire hydrant	**3**	ea	6,500.00	19,500		
	Thrust blocks - allowance	**1**	ls	5,000.00	5,000		
331000	*WATER UTILITIES*						
	4" CLDI - to building from loop allowance	**50**	lf	67.50	3,375		
331000	*CONNECTIONS*						
	Connect to water lines in Woolworth and Williams	**2**	ea	10,000.00	20,000		
	Allowance to connect water to outdoor classroom	**1**	ea	15,000.00	15,000		
312000	*EXCAVATION & BACKFILL*	*2,100*	*lf*				
	DI gravity piping excavation	**1,867**	cy	46.75	87,282		
	Trench bedding	**420**	cy	25.00	10,500		
	Pressure test & chlorinate	**2,100**	lf	5.00	10,500		
	Allowance for temporary water service	**1**	ea	25,000.00	NR		
	Allowance for temporary support of existing utilities	**1**	ea	15,000.00	NR		
	SUBTOTAL					349,657	
333000	*SANITARY SEWER*						
	Sewer force main - 3"	**200**	lf	30.00	6,000		
	6" PVC	**100**	lf	36.00	3,600		
	SMH - 0-5' deep	**3**	ea	4,800.00	14,400		
	Leaching area	**8,400**	sf	30.00	252,000		
	Grease trap - 5,000 gal.	**1**	ea	15,000.00	15,000		
	Septic tank; 5,500 gal - in series	**2**	ea	20,000.00	40,000		
	Pump chamber; 5,500 gal	**1**	ea	20,000.00	20,000		

	CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	OPTION 2.1 - Add/Reno SITEWORK							
187		Pump system	**1**	ls	125,000.00	125,000		
188	*312000*	*EXCAVATION & BACKFILL - force main*	*200*	*lf*				
189		Force main piping excavation- assume shallow	**119**	cy	15.00	1,785		
190		Trench bedding	**59**	cy	25.00	1,475		
191		Backfill w/cut soils	**60**	cy	23.00	1,380		
192		Backfill w/ new fill material w/ 25% swell factor	**75**	cy	45.00	3,375		
193		Load excess soils for disposal	**60**	cy	2.50	150		
194		Less than RCS-1 - clean non-regulated	**102**	tn	23.00	2,346		
195	*312000*	*EXCAVATION & BACKFILL - Gravity*	*100*	*lf*				
196		PVC gravity piping excavation	**89**	cy	46.75	4,161		
197		Trench bedding	**30**	cy	25.00	750		
198		Pressure testing	**100**	lf	4.00	400		
199		Allowance for temporary sewer service				NR		
200		Allowance for temporary support of existing utilities				NR		
201		SUBTOTAL					491,822	
202								
203	*334000*	*STORM DRAINAGE*						
204		Drain lines	**1,500**	lf	125.00	187,500		
205		Rood drains	**300**	lf	60.00	18,000		
206		Clean structures and pipe network in existing car loop and parking	**1**	ls	25,000.00	25,000		
207		Foundation drain at additions	**1,090**	lf	23.00	25,070		
208		4' Dia. DMH - 0-5' deep	**8**	ea	4,200.00	33,600		
209		CB - 4' Dia.	**10**	ea	3,800.00	38,000		
210		WQU	**1**	ea	20,000.00	20,000		
211		Roof drain connections	**2**	ea	500.00	1,000		
212		Allowance for rain gardens and swales	**1**	ls	100,000.00	100,000		
213		Underground recharger	*4,200*	*sf*				
214		Infiltration chambers	**100**	ea	750.00	75,000		
215		End caps	**25**	ea	350.00	8,750		
216		Excavate and reuse on-site	**1,400**	cy	25.00	35,000		
217		Load excess soils for disposal	**1,400**	cy	2.50	3,500		
218		Less than RCS-1 - clean non-regulated	**2,380**	tn	23.00	54,740		
219		Install stone base; 12" thick	**257**	tn	65.00	16,705		
220		Fine grade base	**4,200**	sf	0.25	1,050		
221		Back-fill infiltration bed with 1-2" crushed stone; 9.1cy/ea	**1,502**	tn	50.00	75,100		
222		Geotextile fabrics	**10,500**	sf	0.75	7,875		
223		SUBTOTAL					725,890	
224								
225	*220001*	*NATURAL GAS*				NR		
226		SUBTOTAL					-	
227								
228		***TOTAL - SITE MECHCANICAL UTILITIES***						**$1,567,369**
229								
230	**G40**	**ELECTRICAL UTILITIES**						
231		Primary ductbank, empty, allow	**1,000**	lf	90.00	90,000		
232		Secondary ductbank -2000A, allow	**50**	ls	900.00	45,000		
233		Telecom services, empty 4-4", allow	**1,050**	lf	180.00	189,000		
234		Manhole, allowance	**4**	ea	10,000.00	40,000		
235		Site lighting, allow at roadways	**30**	ea	5,000.00	150,000		
236		Site lighting, allow at parking areas	**20**	ea	5,000.00	100,000		
237		Site security, allow	**1**	ls	100,000.00	100,000		
238		Electric vehicle charging station (10% day one 2-40A provisions for future)	**13**	ea	7,500.00	97,500		
239		Sports field Lighting						
240		Sports field Lighting				NIC		
241		SUBTOTAL					811,500	
242								
243		***TOTAL - SITE ELECTRICAL UTILITIES***						**$811,500**
244								
245	**G90**	**TRAFFIC MITIGATION**				Assume NR		
246		SUBTOTAL						
247								
248		***TOTAL - SITE MITIGATION***						**$0**
249								
		TOTAL - SITE DEVELOPMENT						**$6,035,182**

PM&C

Shaker Lane Elementary School 22-Oct-24
Littleton, MA

PSR Options Cost Estimate GFA 97,800

CONSTRUCTION COST SUMMARY

OPTION 3.1 - New Construction at Upper Field

	BUILDING SYSTEM		*SUB-TOTAL*	*TOTAL*	*$/SF*	*%*
A10	**FOUNDATIONS**					
	A1010	Standard Foundations	$2,473,841			
	A1020	Special Foundations	$0			
	A1030	Lowest Floor Construction	$997,471	**$3,471,312**	$35.49	7.1%
A20	**BASEMENT CONSTRUCTION**					
	A2010	Basement Excavation	$0			
	A2020	Basement Walls	$0	**$0**	$0.00	0.0%
B10	**SUPERSTRUCTURE**					
	B1010	Upper Floor Construction	$2,223,723			
	B1020	Roof Construction	$2,959,800	**$5,183,523**	$53.00	10.6%
B20	**EXTERIOR CLOSURE**					
	B2010	Exterior Walls	$3,928,254			
	B2020	Windows	$2,600,177			
	B2030	Exterior Doors	$97,800	**$6,626,231**	$67.75	13.5%
B30	**ROOFING**					
	B3010	Roof Coverings	$2,075,400			
	B3020	Roof Openings	$45,000	**$2,120,400**	$21.68	4.3%
C10	**INTERIOR CONSTRUCTION**					
	C1010	Partitions	$3,320,050			
	C1020	Interior Doors	$924,300			
	C1030	Specialties/Millwork	$1,239,500	**$5,483,850**	$56.07	11.2%
C20	**STAIRCASES**					
	C2010	Stair Construction	$345,000			
	C2020	Stair Finishes	$70,000	**$415,000**	$4.24	0.8%
C30	**INTERIOR FINISHES**					
	C3010	Wall Finishes	$782,400			
	C3020	Floor Finishes	$1,173,600			
	C3030	Ceiling Finishes	$1,173,600	**$3,129,600**	$32.00	6.4%
D10	**CONVEYING SYSTEMS**					
	D1010	Elevator	$182,400	**$182,400**	$1.87	0.4%
D20	**PLUMBING**					
	D20	Plumbing	$2,749,743	**$2,749,743**	$28.12	5.6%

PM&C

Shaker Lane Elementary School 22-Oct-24
Littleton, MA

PSR Options Cost Estimate GFA 97,800

CONSTRUCTION COST SUMMARY

	BUILDING SYSTEM		*SUB-TOTAL*	*TOTAL*	*$/SF*	*%*
OPTION 3.1 - New Construction at Upper Field						
D30	**HVAC**					
	D30	HVAC	$9,685,801	**$9,685,801**	$99.04	19.8%
D40	**FIRE PROTECTION**					
	D40	Fire Protection	$874,869	**$874,869**	$8.95	1.8%
D50	**ELECTRICAL**					
	D5010	Complete System	$6,855,500	**$6,855,500**	$70.10	14.0%
E10	**EQUIPMENT**					
	E10	Equipment	$1,067,700	**$1,067,700**	$10.92	2.2%
E20	**FURNISHINGS**					
	E2010	Fixed Furnishings	$1,103,000			
	E2020	Movable Furnishings	NIC	**$1,103,000**	$11.28	2.3%
F10	**SPECIAL CONSTRUCTION**					
	F10	Special Construction	$0	**$0**	$0.00	0.0%
F20	**HAZMAT REMOVALS**					
	F2010	Building Elements Demolition	$0			
	F2020	Hazardous Components Abatement	$0	**$0**	$0.00	0.0%
TOTAL DIRECT COST (Trade Costs)				***$48,948,929***	*$500.50*	*100.0%*

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST

OPTION 3.1 - New Construction at Upper Field

GROSS FLOOR AREA CALCULATION

	Level 1	58,800
	Level 2	39,000
	TOTAL GROSS FLOOR AREA (GFA)	**97,800** ***sf***

	A10	***FOUNDATIONS***					
	A1010	**STANDARD FOUNDATIONS**					
1		Strip footings - perimeter; 30"x12"					
2		Formwork	**3,000**	sf	20.00	60,000	
3		Re-bar	**15,000**	lbs.	2.00	30,000	
4		Concrete material	**146**	cy	175.00	25,550	
5		Placing concrete	**146**	cy	130.00	18,980	
6		Typical foundation walls					
7		Formwork	**12,000**	sf	20.00	240,000	
8		Re-bar	**48,000**	lbs.	2.00	96,000	
9		Concrete material	**310**	cy	175.00	54,250	
10		Placing concrete	**310**	cy	130.00	40,300	
11		Form shelf	**1,500**	lf	10.00	15,000	
12		Spread Footings; allow 5'-6"x5'-6"x18" exterior					
13		Formwork	**1,980**	sf	20.00	39,600	
14		Re-bar	**23,850**	lbs.	2.00	47,700	
15		Concrete material	**106**	cy	175.00	18,550	
16		Placing concrete	**106**	cy	130.00	13,780	
17		Set anchor bolts grout plates	**60**	ea	250.00	15,000	
18		Spread Footings; allow 7'-6"x7'-6"x22" interior					
19		Formwork	**2,745**	sf	20.00	54,900	
20		Re-bar	**95,000**	lbs.	2.00	190,000	
21		Concrete material	**200**	cy	175.00	35,000	
22		Placing concrete	**200**	cy	130.00	26,000	
23		Set anchor bolts grout plates	**50**	ea	250.00	12,500	
24		Piers/Pilasters	**34**	cy	1,400.00	47,600	
25		Grade beams, 2x2					
26		Formwork	**4,200**	sf	20.00	84,000	
27		Re-bar (65lbs/lf)	**45,500**	lbs.	2.00	91,000	
28		Concrete material	**109**	cy	175.00	19,075	
29		Placing concrete	**109**	cy	130.00	14,170	
30		Cafetorium ramps and elevation changes -allowance	**1**	ls	50,000.00	50,000	
31		Elevator Pits					
32		Walls, 12" thick	**1**	ea			
33		Formwork	**320**	sf	20.00	6,400	
34		Re-bar	**800**	lbs.	2.00	1,600	
35		Concrete material	**6**	cy	175.00	1,050	
36		Placing concrete	**6**	cy	130.00	780	
37		Mat slab at pits, 24" thick	**100**	sf	35.00	3,500	
38							
39	*070001*	*WATERPROOFING, DAMPPROOFING AND CAULKING*					
40		Damproofing at foundation wall				assume NR	
41		Waterproofing at elevator pit	**340**	sf	14.00	4,760	
42							
43	*072100*	*THERMAL INSULATION*					
44		Foundation wall insulation	**6,000**	sf	5.50	33,000	
45							
46	*312000*	*EARTHWORK*					
47		Strip footings/ fdn wall					
48		Excavation & reuse on site	**1,667**	cy	40.00	66,680	
49		Spread footings					
50		Excavation & reuse on site	**1,347**	cy	40.00	53,880	
51	*312000*	*BUILDING EARTHWORK - allowances*					
52		Cut - over excavated 4' of fill beneath building	**11,389**	cy	15.00	170,835	
53		Fill - import structural - 25% swell	**4,375**	cy	55.00	240,625	

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.1 - New Construction at Upper Field							
312000	*SOIL DISPOSAL - conversion factor 1.7 to tons*						
	Load excess soils for disposal	**11,389**	cy	2.50	28,473		
	Less than RCS-1 - clean non-regulated	**19,361**	tn	23.00	445,303		
	Miscellaneous						
	Perimeter drain	**1,500**	lf	32.00	48,000		
	Underslab drainage	**58,800**	sf		Assume NR		
	Dewatering for foundation work	**1**	ls	30,000.00	30,000		
	SUBTOTAL					2,473,841	
A1020	**SPECIAL FOUNDATIONS**						
	Structural fill/Ground Improvements allowance				Not anticipated		
	SUBTOTAL					-	
A1030	**LOWEST FLOOR CONSTRUCTION**						
033000	*CONCRETE*						
	Vapor barrier	**58,800**	sf	1.50	88,200		
	Slab on grade	*58,800*	*sf*				
	WWF reinforcement	**67,620**	sf	1.85	125,097		
	Concrete - 5" thick	**938**	cy	175.00	164,150		
	Placing concrete	**938**	cy	100.00	93,800		
	Finishing and curing concrete	**58,800**	sf	4.00	235,200		
	Control joints - saw cut	**58,800**	sf	0.10	5,880		
	Miscellaneous						
	Equipment pads	**1**	ls	15,000.00	15,000		
	Loading dock	**1**	ls	30,000.00	30,000		
	Radon system				Excluded; NR		
072100	*THERMAL INSULATION*						
	Under slab insulation, 2" @ perimeter for 4'	**6,000**	sf	3.00	18,000		
312000	*EARTHWORK*						
	Gravel base, 12"	**2,178**	cy	48.00	104,544		
	Compact existing sub-grade	**58,800**	sf	0.50	29,400		
	Underslab E&B for plumbing	**58,800**	sf	1.50	88,200		
	SUBTOTAL					997,471	
	TOTAL - FOUNDATIONS						**$3,471,312**
A20	***BASEMENT CONSTRUCTION***						
A2010	**BASEMENT EXCAVATION**						
	No Work in this section						
	SUBTOTAL					-	
A2020	**BASEMENT WALLS**						
	No Work in this section						
	SUBTOTAL					-	
	TOTAL - BASEMENT CONSTRUCTION						
B10	***SUPERSTRUCTURE***						
		14.0	*lbs/sf*				
B1010	**FLOOR CONSTRUCTION**	*685*	*tns*	excluding canopies + roof screens			
		$6,626	*$/Ton*				
033000	*CONCRETE*						
	WWF reinforcement	**44,850**	sf	1.85	82,973		
	Concrete fill to metal deck; normal weight, total thickness 5 1/2"	**683**	cy	175.00	119,525		
	Place and finish concrete	**39,000**	sf	3.50	136,500		
	Rebar to decks	**11,700**	lbs	2.00	23,400		
051200	*STRUCTURAL STEEL FRAMING*						
	Structural steel framing; 14 lbs per SF	**273**	tns	5,400.00	1,474,200		
	Shear studs	**9,750**	ea	3.50	34,125		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.1 - New Construction at Upper Field							
	2" metal galvanized floor deck	**39,000**	sf	7.00	273,000		
	Expansion joints	**1**	ls	50,000.00	50,000		
078100	*FIREPROOFING/FIRESTOPPING*						
	Fire proofing to columns and beams; 2 hr				Assume NR		
	Intumescent paint @ architecturally exposed beams and columns - allow	**1**	ls	30,000.00	30,000		
	SUBTOTAL					2,223,723	
B1020	**ROOF CONSTRUCTION**						
033000	*CONCRETE*						
	Concrete deck at low roofs and at mechanical equipment pads - allow	**7,500**	sf	10.00	75,000		
051200	*STRUCTURAL STEEL FRAMING*						
	Structural steel framing; 14 lbs per SF	**412**	tns	5,400.00	2,224,800		
	Canopies - 20#/sf	**20**	tns	5,800.00	116,000		
	Roof screens - allow 100#/lf	**1**	tns	5,800.00	5,800		
	Dunnage - allowance	**5**	tns	5,800.00	29,000		
	Decking						
	1 1/2" galvanized metal deck, typical	**58,800**	sf	6.50	382,200		
	Premium for acoustic (Gymnasium)	**6,000**	sf	7.00	42,000		
	Canopy decking	**2,000**	sf	6.50	13,000		
078100	*FIREPROOFING/FIRESTOPPING*						
	Fireproofing to columns, beams and deck				Assume NR		
	Intumescent paint @ architecturally exposed primary members in Gymnasium - allow (if required)	**6,000**	sf	12.00	72,000		
	SUBTOTAL					2,959,800	
	TOTAL - SUPERSTRUCTURE						**$5,183,523**
B20	***EXTERIOR CLOSURE***						
B2010	**EXTERIOR WALLS**	*50,000*	Total closure area				
	Exterior Wall Area - 75% solid	*37,500*	*sf total area solid*				
042000	*MASONRY*						
	Mockup	**1**	ls	50,000.00	50,000		
	Brick veneer; 90%	**33,750**	sf	45.00	1,518,750		
	4" Polyiso at masonry	**33,750**	sf	4.80	162,000		
	Miscellaneous flashings and sealants	**37,500**	sf	1.50	56,250		
	Staging to exterior wall	**37,500**	sf	4.00	150,000		
055000	*MISC. METALS*						
	Misc. metals at masonry including loose lintels (relieving angles included in steel tns)	**37,500**	sf	1.50	56,250		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Air barrier	**37,500**	sf	9.50	356,250		
	Air barrier/flashing at openings	**4,167**	lf	6.00	25,002		
	Miscellaneous sealants to closure	**37,500**	sf	1.00	37,500		
072100	*THERMAL INSULATION*						
	3 1/2" Batt insulation in stud	**37,500**	sf	3.00	112,500		
	Insulation at glazed openings	**4,167**	lf	6.00	25,002		
076400	*CLADDING*						
	Metal panel (Alucobond or equal); 10% (including insulation)	**3,750**	sf	90.00	337,500		
	Equipment Screen (allow 100lf)	**100**	lf	900.00	90,000		
078150	*EXPANSION JOINT COVERS*						

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.1 - New Construction at Upper Field							
	Expansion joints	**1**	ls	25,000.00	25,000		
092900	*GYPSUM BOARD ASSEMBLIES*						
	Framing and sheathing at canopies	**2,000**	sf	15.00	30,000		
	Exterior wall;						
	6" Stud backup	**37,500**	sf	16.00	600,000		
	Gypsum sheathing	**37,500**	sf	3.50	131,250		
	Drywall lining to interior face of stud backup	**37,500**	sf	4.00	150,000		
101400	*SIGNAGE*						
	Exterior signage - allowance	**1**	ls	15,000.00	15,000		
	SUBTOTAL					3,928,254	
B2020	**WINDOWS**						
	Exterior Wall Area; 25%	*12,500*	sf				
061000	*ROUGH CARPENTRY*						
	Wood blocking at openings	**4,167**	lf	10.00	41,670		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Air barrier/flashing at windows	**4,167**	lf	10.00	41,670		
	Backer rod & double sealant	**4,167**	lf	11.00	45,837		
080001	*METAL WINDOWS*						
	Windows/Storefront; triple glazed (25%)	**12,500**	sf	185.00	2,312,500		
	Horizontal aluminum fin sunshades @ south facing windows - allowance	**1**	ls	150,000.00	150,000		
089000	*LOUVERS*						
	Louvers	**100**	sf	85.00	8,500		
	SUBTOTAL					2,600,177	
B2030	**EXTERIOR DOORS**						
	Allowance for exterior doors	**97,800**	gsf	1.00	97,800		
	SUBTOTAL					97,800	
	TOTAL - EXTERIOR CLOSURE						**$6,626,231**
B30	***ROOFING***						
055000	*MISCELLANOUS METALS*						
	Allowance for roof ladders	**1**	ls	15,000.00	15,000		
061000	*ROUGH CARPENTRY*						
	Rough carpentry and blocking @ roof	**60,800**	sf	1.50	91,200		
070002	*ROOFING AND FLASHING*						
	EPDM roof membrane system, complete	**58,800**	sf	28.00	1,646,400		
	Membrane roofing at canopies	**2,000**	sf	25.00	50,000		
	Premium for outdoor balconies at 2nd floor	**1,200**	sf	50.00	60,000		
	Miscellaneous Roofing						
	Miscellaneous flashings/copings/walkway pads etc.	**60,800**	sf	3.50	212,800		
	SUBTOTAL					2,075,400	
B3020	**ROOF OPENINGS**						
086300	*ROOF SKYLIGHTS*						
	Allowance for roof hatches	**1**	ls	5,000.00	5,000		
	Skylights; 16'x8'	**2**	ea	20,000.00	40,000		
	SUBTOTAL					45,000	
	TOTAL - ROOFING						**$2,120,400**
C10	***INTERIOR CONSTRUCTION***						

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.1 - New Construction at Upper Field							
C1010	**PARTITIONS**						
040001	*MASONRY*						
	Elevator shaft, 2hr	**1,400**	sf	44.00	61,600		
061000	*ROUGH CARPENTRY*						
	Backer panels in electrical closets	**1**	ls	5,000.00	5,000		
	Wood blocking at interiors	**97,800**	gsf	0.50	48,900		
078400	*FIREPROOFING/FIRESTOPPING*						
	Fire stopping including slab edges and core	**97,800**	gsf	0.75	73,350		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Miscellaneous sealants throughout building	**97,800**	gsf	1.00	97,800		
078150	*EXPANSION JOINTS*						
	Allowance for expansion joint covers	**1**	ls	25,000.00	25,000		
081110	*INTERIOR GLAZING*						
	Allowance for interior glazing	**97,800**	gsf	2.00	195,600		
	Lightwell glazing (2 loc)	**1,800**	sf	150.00	270,000		
092900	*GYPSUM BOARD ASSEMBLIES*						
	Allowance for GWB partitions	**97,800**	gsf	26.00	2,542,800		
	SUBTOTAL					3,320,050	
C1020	**INTERIOR DOORS**						
	Doors, frames, hardware; complete	**97,800**	gsf	6.00	586,800		
	8' sliding glass pocket doors at typical classrooms	**27**	ea	12,500.00	337,500		
	SUBTOTAL					924,300	
C1030	**SPECIALTIES / MILLWORK**						
055000	*MISCELLANEOUS METALS*						
	Miscellaneous metals throughout building	**97,800**	gsf	4.00	391,200		
061000	*ROUGH CARPENTRY*						
062000	*INTERIOR ARCHITECTURAL WOODWORK*						
	Interior millwork package	**97,800**	gsf	5.00	489,000		
101100	*VISUAL DISPLAY SURFACES*						
	Markerboard and tackboard package	**97,800**	gsf	1.50	146,700		
101400	*SIGNAGE*						
	Room identification, directional & safety signage, building directory + environmental graphics	**97,800**	gsf	1.00	97,800		
102110	*TOILET/ CHANGING/SHOWER COMPARTMENTS*						
	Toilet compartments	**97,800**	gsf	0.50	48,900		
102800	*TOILET ACCESSORIES*						
	Toilet accessories	**97,800**	gsf	0.50	48,900		
104400	*FIRE PROTECTION SPECIALTIES*						
	Fire extinguisher cabinets	**1**	ls	15,000.00	15,000		
	AED cabinets	**1**	ls	2,000.00	2,000		
105000	*LOCKERS*			assume NR - cubbies in classrooms			
	SUBTOTAL					1,239,500	
	TOTAL - INTERIOR CONSTRUCTION						**$5,483,850**
C20	***STAIRCASES***						
C2010	**STAIR CONSTRUCTION**						
033000	*CONCRETE*						

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.1 - New Construction at Upper Field							
	Concrete to stairs	**4**	flt	5,000.00	20,000		
055000	*MISCELLANEOUS METALS*						
	Egress stairs including rails and handrails	**2**	flt	50,000.00	100,000		
	Learning stair w/ partial integrated ramp	**1**	flt	150,000.00	150,000		
	Lobby stair framing and rails	**1**	flt	75,000.00	75,000		
	SUBTOTAL					345,000	
C2020	**STAIR FINISHES**						
090005	*RESILIENT FLOORS*						
	Stair finishes - egress	**2**	flts	5,000.00	10,000		
	Stair finishes @ lobby stair	**1**	flts	20,000.00	20,000		
	Stair finishes @ Learning stair and ramp	**1**	flts	40,000.00	40,000		
	SUBTOTAL					70,000	
	TOTAL - STAIRCASES						**$415,000**
C30	***INTERIOR FINISHES***						
C3010	**WALL FINISHES**						
	Wall finishes; allowance	**97,800**	gsf	8.00	782,400		
	SUBTOTAL					782,400	
C3020	**FLOOR FINISHES**						
	Floor finishes complete package	**97,800**	gsf	12.00	1,173,600		
	SUBTOTAL					1,173,600	
C3030	**CEILING FINISHES**						
	Ceiling finishes, complete package	**97,800**	gsf	12.00	1,173,600		
	SUBTOTAL					1,173,600	
	TOTAL - INTERIOR FINISHES						**3,129,600**
D10	***CONVEYING SYSTEMS***						
D1010	**ELEVATOR**						
055000	*MISCELLANEOUS METALS*						
	Pit ladder and miscellaneous metals	**1**	ea	900.00	900		
	Sill angles	**1**	ls	1,500.00	1,500		
142100	*ELEVATOR*						
	Elevator, 2 stop	**1**	ea	180,000.00	180,000		
	SUBTOTAL					182,400	
	TOTAL - CONVEYING SYSTEMS						**$182,400**
D20	***PLUMBING***						
D20	**PLUMBING, GENERALLY**						
	Equipment						
	Reduced pressure backflow preventer, main	**1**	ea	6,500.00	6,500		
	Water meter assembly	**1**	ea	3,500.00	3,500		
	Electric Water Heaters, 100 gallons	**2**	ea	28,000.00	56,000		
	Expansion tank	**1**	ea	5,000.00	5,000		
	Air separator	**1**	ea	3,500.00	3,500		
	Thermal mixing valve	**1**	ea	18,500.00	18,500		
	Hot water recirculation pump	**1**	ea	2,800.00	2,800		
	Sub Metering	**1**	ea	2,500.00	2,500		
	Interior grease interceptor	**1**	ea	8,000.00	8,000		
	Elevator pit sump pump with oil separator	**1**	ea	5,500.00	5,500		
	Roof drain	**24**	ea	2,200.00	52,800		
	Overflow roof drain	**24**	ea	2,200.00	52,800		

	CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
		OPTION 3.1 - New Construction at Upper Field						
378		Floor drain	**28**	ea	1,800.00	50,400		
379		Kitchen floor drain	**4**	ea	1,800.00	7,200		
380		Kitchen floor sink	**4**	ea	2,400.00	9,600		
381		Hose bibb, allow	**10**	ea	500.00	5,000		
382		Freezeproof hose bibb, allow	**8**	ea	850.00	6,800		
383		Rough-in & connection to kitchen equipment	**1**	ls	25,000.00	25,000		
384		Miscellaneous plumbing equipment	**97,800**	sf	0.50	48,900		
385		Plumbing Fixtures & Specialties						
386		*All Fixture Counts are Assumed - based on Similar Projects*	**97,800**	sf	4.50	440,100		
387		Water closet				included in cost/sf		
388		Lavatory wall hung or drop in				included in cost/sf		
389		Classroom sink				included in cost/sf		
390		Music room sink				included in cost/sf		
391		Cafeteria sink				included in cost/sf		
392		Classroom Sink - Art Room w/solids interceptor				included in cost/sf		
393		Kitchenette - Staff Dining				included in cost/sf		
394		Shower				included in cost/sf		
395		Nurses Sink				included in cost/sf		
396		Janitors Closet				included in cost/sf		
397		Drinking fountain				included in cost/sf		
398		Safety Shower/Eyewash				included in cost/sf		
399		Dishwasher connection - assumed at Kitchenette sink				included in cost/sf		
400		Coffee machine connection - assumed at Kitchenette sink				included in cost/sf		
401		Refrigerant connection - assumed at Kitchenette sink				included in cost/sf		
402		Fixture Rough In	**1**	ls	44,010.00	44,010		
403		Misc. plumbing fixtures	**97,800**	sf	0.25	24,450		
404		Domestic Water						
405		Copper pipe type L w/fittings & hangers	**10,395**	lf	60.00	623,700		
406		Valves & accessories	**1**	ls	112,266.00	112,266		
407		Pipe Insulation						
408		Domestic water pipe insulation	**10,395**	lf	10.00	103,950		
409		Sanitary Waste						
410		Sanitary W&V UG, SV Cast Iron Pipe	**800**	lf	48.00	38,400		
411		Sanitary W&V AG, Hubless Cast Iron Pipe	**8,280**	lf	55.00	455,400		
412		Grease Waste						
413		Grease W&V UG, SV Cast Iron Pipe	**400**	lf	48.00	19,200		
414		Grease W&V AG, Hubless Cast Iron Pipe	**400**	lf	55.00	22,000		
415		Storm Water						
416		Storm Drainage UG, SV Cast Iron Pipe	**97,800**	sf	0.50	48,900		
417		Storm Drainage AG, Hubless Cast Iron Pipe	**97,800**	sf	1.50	146,700		
418		Pipe insulation on horizontal runs	**97,800**	sf	0.20	19,560		
419		Secondary Storm Drainage AG, Hubless Cast Iron Pipe	**97,800**	sf	1.00	97,800		
420		Secondary Pipe insulation on horizontal runs	**97,800**	sf	0.20	19,560		
421		Natural Gas Piping						
422		Natural Gas Piping				Not Required		
423		Miscellaneous						
424		Coordination & BIM	**1**	ls	78,240.00	78,240		
425		Coring, sleeves & fire stopping	**1**	ls	6,960.72	6,961		
426		Hydraulic lifts/rigging	**1**	ls	24,450.00	24,450		
427		Commissioning support	**1**	ls	6,200.00	6,200		
428		Testing and sterilization	**1**	ls	8,802.00	8,802		
429		Fees & permits	**1**	ls	38,794.44	38,794		
430		SUBTOTAL					2,749,743	
431								
432		***TOTAL - PLUMBING***						**$2,749,743**
433								
434								
435	***D30***	***HVAC***						
436								
437	**D30**	**HVAC, GENERALLY**						
438		Equipment						
439		Modular air source heat pump chillers	**14**	ea	126,000.00	1,764,000		
440		Electric Boiler, 450 kW, back-up	**550**	kw	72.00	39,600		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	OPTION 3.1 - New Construction at Upper Field						
	Expansion tanks	**2**	ea	12,500.00	25,000		
	Air Separators	**2**	ea	9,600.00	19,200		
	Buffer tanks	**2**	ea	25,000.00	50,000		
	HEX-1, Heat Exchangers	**1**	ea	75,000.00	75,000		
	HEX-2, Heat Exchangers	**1**	ea	55,000.00	55,000		
	Radiant heating/cooling/perimeter	**97,800**	gsf	2.00	195,600		
	Unit heaters and cabinet heaters	**12**	ea	1,800.00	21,600		
	Split systems/heat pumps (IT, electric, elev machine rooms)	**6**	ea	12,500.00	75,000		
	Misc. Mech equipment	**97,800**	gsf	1.00	97,800		
	Pumps						
	Primary hot water, includes redundant	**5**	ea	9,800.00	49,000		
	Secondary hot water, includes redundant	**5**	ea	15,500.00	77,500		
	Primary chilled water, includes redundant	**5**	ea	12,000.00	60,000		
	Secondary chilled water, includes redundant	**5**	ea	16,500.00	82,500		
	Pump VFD	**20**	ea	4,500.00	90,000		
	Air distribution						
	RTU-A, Admin, energy recovery, HW/CW coils	**14,500**	cfm	24.00	348,000		
	RTU-B, Cafetorium, energy recovery, HW/CW coils	**4,750**	cfm	24.00	114,000		
	RTU-C, Kitchen, energy recovery, HW/CW coils	**800**	cfm	24.00	19,200		
	RTU-D,Classroom, energy recovery, HW/CW coils	**2,250**	cfm	24.00	54,000		
	RTU-E, Gym, energy recovery, HW/CW coils	**7,500**	cfm	24.00	180,000		
	RTU-F, Classroom, energy recovery, HW/CW coils	**9,500**	cfm	24.00	228,000		
	RTU-G, Classrooms, energy recovery, HW/CW coils	**15,500**	cfm	24.00	372,000		
	RTU-H, Media, energy recovery, HW/CW coils	**13,750**	cfm	24.00	330,000		
	RTU-I, Classroom, energy recovery, HW/CW coils	**13,000**	cfm	24.00	312,000		
	RTU-J, Central Commons, energy recovery, HW/CW coils	**11,500**	cfm	24.00	276,000		
	MAU-1, Kitchen makeup air	**3,000**	cfm	24.00	72,000		
	H&V Back of House	**1,350**	cfm	24.00	32,400		
	Fans						
	Exhaust fans, cfm TBD	**97,800**	gsf	1.00	97,800		
	KEF-1, Kitchen exhaust fan	**1,500**	cfm	4.00	6,000		
	Sheet metal & Accessories						
	Galvanized ductwork	**84,108**	lbs	18.00	1,513,944		
	Black steel exhaust ductwork	**1,500**	lbs	26.00	39,000		
	Duct insulation	**54,670**	sf	6.50	355,355		
	Duct insulation, fire wrap	**900**	sf	22.00	19,800		
	Dishwasher exhaust	**800**	lbs	26.00	20,800		
	Registers, grilles & diffusers	**97,800**	gsf	0.75	73,350		
	VAV's w/coil	**97,800**	gsf	1.00	97,800		
	Sound attenuators	**1**	ls	50,000.00	50,000		
	Misc. Duct accessories	**97,800**	gsf	0.85	83,130		
	Mech. Piping						
	Hot/Chilled water, supply and return	**8,891**	lf	65.00	577,915		
	Refrigerant piping - split systems	**800**	lf	50.00	40,000		
	Condensate drain piping with fittings & hangers	**782**	lf	45.00	35,190		
	Valves & accessories	**1**	ls	78,372.60	78,373		
	Piping insulation	**9,691**	lf	14.00	135,674		
	Automatic Temperature Controls						
	Automatic temperature controls DDC	**97,800**	gsf	8.50	831,300		
	Balancing						
	System testing & balancing	**97,800**	gsf	0.85	83,130		
	Miscellaneous						
	Coring, cutting, sleeves & fire stopping	**1**	ls	16,000.00	16,000		
	Vibration isolation and supports	**1**	ls	30,000.00	30,000		
	Hydraulic lifts/rigging	**1**	ls	72,000.00	72,000		
	Coordination / BIM / ENG Support / As-Builts	**1**	ls	146,700.00	146,700		
	Commissioning Support	**1**	ls	25,000.00	25,000		
	Fees & permits	**1**	ls	143,139.92	143,140		
	SUBTOTAL					9,685,801	
	TOTAL - HVAC						**$9,685,801**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.1 - New Construction at Upper Field							
D40	***FIRE PROTECTION***						
D40	**FIRE PROTECTION, GENERALLY**						
	Fire Protection Equipment						
	Fire water service entrance	**1**	ea	12,500.00	12,500		
	Double check valve assembly	**1**	ea	8,500.00	8,500		
	Wet alarm check valve assembly	**1**	ea	5,500.00	5,500		
	Floor control valve assembly	**6**	ea	2,700.00	16,200		
	Fire department connection	**1**	ea	1,600.00	1,600		
	Electric bell	**1**	ea	500.00	500		
	Fire pump, incl jockey pump (TBD)				NIC		
	Misc. Fire Protection Equipment	**97,800**	gsf	0.25	24,450		
	Fire Protection Service						
	Sprinkler heads	**1,027**	ea	115.00	118,105		
	Main sprinkler piping	**1,951**	lf	55.00	107,305		
	Standpipe sprinkler piping	**780**	lf	55.00	42,900		
	Branch sprinkler piping	**11,297**	lf	40.00	451,880		
	Miscellaneous						
	Coordination & BIM	**1**	ls	33,000.00	33,000		
	Hydraulic calculations	**1**	ls	7,500.00	7,500		
	Coring, sleeves & fire stopping	**1**	ls	20,000.00	20,000		
	Shop drawings	**1**	ls	9,500.00	9,500		
	Commissioning of system	**1**	ls	2,500.00	2,500		
	Fees & permits	**1**	ls	12,929.10	12,929		
	SUBTOTAL					874,869	
	TOTAL - FIRE PROTECTION						**$874,869**
D50	***ELECTRICAL***						
D5010	**ELECTRICAL SYSTEMS**						
	Gear & Distribution						
	Normal power distribution system						
	2500AF 2000AT gear and distribution	**97,800**	gsf	9.00	880,200		
	Power monitoring	**1**	ls	15,000.00	15,000		
	Emergency power						
	Emergency Generator; 300 kW Diesel	**1**	ls	165,000.00	165,000		
	Emergency power gear and distribution	**97,800**	gsf	6.00	586,800		
	Photovoltaic						
	PV system infrastructure for future system	**1**	ls	20,000	20,000		
	Equipment Wiring						
	Feeders + electrical to equipment	**97,800**	gsf	4.00	391,200		
	SUBTOTAL					2,058,200	
D5020	**LIGHTING & POWER**						
	Lighting, controls + power	**97,800**	gsf	21.00	2,053,800		
	SUBTOTAL					2,053,800	
D5030	**COMMUNICATION & SECURITY SYSTEMS**						
	Telecommunications						
	Telcom rough-in, devices and cabling	**97,800**	gsf	5.50	537,900		
	Network switches and Handsets, allow				assume By others		
	Master Clock & PA						
	Master Clock & PA	**97,800**	gsf	1.50	146,700		
	2 Way Communications						
	2 Way Communications system	**1**	ls	20,000.00	20,000		
	Audio Visual Systems						
	Gym sound system	**1**	ls	50,000.00	50,000		
	Cafeteria sound system	**1**	ls	50,000.00	50,000		
	Rough-in: general building	**97,800**	sf	0.75	73,350		
	Stage Systems:						
	Cafetorium stage lighting and dimming package, allow	**1**	ls	100,000.00	100,000		
	Speech Reinforcement						

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.1 - New Construction at Upper Field							
	Speech Reinforcement System	**32**	loc	3,500.00	112,000		
	Fire Alarm						
	FA system	**97,800**	gsf	3.50	342,300		
	BDA/DAS	**97,800**	gsf	1.25	122,250		
	Security System						
	Security system	**97,800**	gsf	5.00	489,000		
	SUBTOTAL					2,043,500	
D5040	**OTHER ELECTRICAL SYSTEMS**						
	Lightning protection	**1**	ls	75,000.00	75,000		
	Common Work Results for Electrical	**1**	ls	625,000.00	625,000		
	Temporary power & lighting				Included above		
	Coordination & management				Included above		
	Fees & permits				Included above		
	SUBTOTAL					700,000	
	TOTAL - ELECTRICAL						**$6,855,500**
E10	***EQUIPMENT***						
E10	**EQUIPMENT, GENERALLY**						
112000	*LOADING DOCK EQUIPMENT*						
	Loading dock equipment	**1**	ls	10,000.00	10,000		
110620	*THEATRICAL EQUIPMENT*						
	Cafetorium rigging & stage curtains	**1**	ls	75,000.00	75,000		
	Cafetorium lighting system	**1**	ls		see electrical		
	Cafetorium fixture package including controls	**1**	ls		see electrical		
113100	*APPLIANCES*						
	Residential appliances - allowance	**1**	ls	30,000.00	30,000		
114000	*FOOD SERVICE EQUIPMENT*						
	Kitchen equipment -allowance	**1**	ls	650,000.00	650,000		
115300	*EDUCATIONAL EQUIPMENT*						
	Kiln	**1**	ea	5,000.00	5,000		
115213	*PROJECTION SCREENS*						
	Motorized projection screen - allowance	**1**	ls	20,000.00	20,000		
116600	*GYM EQUIPMENT*						
	Basketball backstops	**6**	ea	10,000.00	60,000		
	Scoreboard	**1**	ea	20,000.00	20,000		
	Shot timer	**1**	ea	5,000.00	5,000		
	Gym wall pads	**1,800**	sf	17.00	30,600		
	Wall pads in OT/PT	**300**	sf	17.00	5,100		
	Volleyball equipment	**1**	ls	5,000.00	5,000		
	Divider curtain (1#)	**1**	ea	27,000.00	27,000		
	Climbing wall - allow	**1**	ls	75,000.00	75,000		
	Allowance for built-in indoor play equipment	**1**	ls	50,000.00	50,000		
126000	*SEATING*						
	Bleachers in gym				No scope		
	SUBTOTAL					1,067,700	
	TOTAL - EQUIPMENT						**$1,067,700**
E20	***FURNISHINGS***						
E2010	**FIXED FURNISHINGS**						
122100	*WINDOW TREATMENT*						
	Window treatments - allowance	**12,500**	sf	10.00	125,000		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.1 - New Construction at Upper Field							
123553	*CASEWORK*						
	Casework package	**97,800**	gsf	10.00	978,000		
	SUBTOTAL					1,103,000	
E2020	**MOVABLE FURNISHINGS**						
	All movable furnishings to be provided and installed by owner						
	SUBTOTAL					NIC	
	TOTAL - FURNISHINGS						**$1,103,000**
F10	***SPECIAL CONSTRUCTION***						
F10	**SPECIAL CONSTRUCTION**						
	SUBTOTAL					-	
	TOTAL - SPECIAL CONSTRUCTION						
F20	***SELECTIVE BUILDING DEMOLITION***						
F2010	**BUILDING ELEMENTS DEMOLITION**						
	SUBTOTAL					-	
F2020	**HAZARDOUS COMPONENTS ABATEMENT**						
	See main summary for HazMat allowance				See Summary		
	SUBTOTAL						
	TOTAL - SELECTIVE BUILDING DEMOLITION						
	SUBTOTAL						**$48,948,929**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.1 - New Construction at Upper Field							
	G SITEWORK						
	G10 SITE PREPARATION & DEMOLITION						
311000	*GENERAL CONDITIONS*						
	6' high site construction fence	**4,000**	lf	35.00	140,000		
	6' high site construction fence double gate	**2**	loc	5,000.00	10,000		
	Site construction entrance and removal/restoration	**2**	loc	12,000.00	24,000		
	Mobilization & Demobilization	**1**	ea	80,000.00	80,000		
	Temp laydown areas	**1**	ls	10,000.00	10,000		
	Wheel wash rack	**1**	ls	10,000.00	10,000		
	Concrete washout area	**1**	ea	2,500.00	2,500		
	Snow removal - allowance	**1**	ls		Excluded		
	Winter conditions - allowance	**1**	ls		Excluded		
	Police details	**1**	ls		Excluded		
	Site security	**1**	ls		Excluded		
	Job site construction trailer	**1**	ls		Excluded		
	Temp utilities for job trailer	**1**	ls		Excluded		
311000	*PHASING*						
	Allowance for phasing	**1**	ls	350,000.00	350,000		
311000	*SITE SALVAGE ITEMS*						
	Allowance to salvage any items on site	**1**	ls	10,000.00	10,000		
311000	*SITE DEMOLITION AND RELOCATIONS*						
	Demolish existing paving	**37,869**	sf	1.25	47,336		
	Demolish landscape curbing	**1,256**	lf	12.00	15,072		
	Demolish existing concrete walk	**1,563**	sf	1.50	2,345		
	Demolish existing pavers	**321**	sf	1.50	482		
	Demolish existing infield mix	**13,461**	sf	0.50	6,731		
	Demolish existing playground mulch	**16,007**	sf	1.50	24,011		
	Demolish existing fencing	**270**	lf	5.00	1,350		
	Demolish existing walls	**170**	lf	95.00	16,150		
	Demolish playground equipment	**7**	loc	2,500.00	17,500		
	Remove misc. site furnishings - benches, sheds, storage containers, etc	**1**	ls	50,000.00	50,000		
311000	*UTILITY DEMOLITION*						
	Demolish existing utility lines	**2,057**	lf	25.00	51,425		
	Demolish existing utility structures	**17**	ea	500.00	8,500		
	Remove and fill leach field	**925**	cy	55.00	50,875		
	Pump and remove septic tanks	**1**	ls	10,000.00	10,000		
311000	*ROADWAY WORK - allowance for utility connection*						
	Sawcut	**282**	lf	8.25	2,327		
	Remove pavement	**649**	sf	3.50	2,272		
	Temp pavement patching	**649**	sf	8.00	5,192		
	Steel plates	**1**	ls	2,500.00	2,500		
	Police details	**7**	dy	850.00	5,950		
	Permanent pavement patch	**649**	sf	10.00	6,490		
311000	*VEGETATION & TOPSOIL MANAGEMENT*						
	Tree clearing	**4**	acre	8,000.00	32,000		
	Stump removal	**4**	acre	4,000.00	16,000		
	Vegetation protection fencing - allowance	**1**	ls	2,500.00	2,500		
	Strip + stockpile topsoil	**3,151**	cy	11.50	36,237		
312000	*EROSION & SEDIMENT CONTROL*						
	Silt Fence; installation and removal - allow	**4,000**	lf	15.00	60,000		
	Silt Sacks; installation and removal - allow	**10**	ea	250.00	2,500		
	Erosion Control monitoring & maintenance	**1**	ls	30,000.00	30,000		
	SUBTOTAL					1,142,245	
312000	*BUILDING EARTHWORK*				w/ Building		
	SUBTOTAL					-	
312000	*SITE EARTHWORK*						
312000	*SOIL DISPOSAL - conversion factor 1.7 to tons*						
	Site cut to design subgrade	*25,750*	*cy*				
	Cut	**25,750**	cy	10.00	257,500		
	Stockpile/screen for reuse - assume 25%	**6,438**	cy	10.00	64,380		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.1 - New Construction at Upper Field							
312000	*SOIL DISPOSAL - conversion factor 1.7 to tons*	*19,312*	*cy*				
	Load excess soils for disposal	**19,312**	cy	2.50	48,280		
	Less than RCS-1 - clean non-regulated	**32,830**	tn	23.00	755,090		
	Site fill to design subgrade	*14,248*	*cy*				
	Fill - from cut	**6,438**	cy	12.00	77,256		
	Fill - imported	**9,763**	cy	46.00	449,098		
	Gravel fill at demo-ed building - basements, foundations, pits etc	**2,176**	cy	46.00	100,096		
312000	*ROCK REMOVAL*						
	Rock removal allowance	**1,500**	cy	100.00	150,000		
312000	*ESTABLISHING GRADE*						
	Sub grade establishment	**525,000**	sf	0.15	78,750		
	Fine grading throughout the site	**525,000**	sf	0.25	131,250		
312000	*HAZARDOUS MATERIALS*						
	UST removal allowance - possibly two 10,000G tanks			assume included in Abatement budget			
	SUBTOTAL					2,111,700	
	TOTAL - SITE PREPARATION						**$3,253,945**
G20	**SITE IMPROVEMENTS**						
320000	***ROADWAYS AND PARKING LOTS***						
	Asphalt Paving; parking lots and roadway	*114,535*	*sf*				
	gravel base; 12" thick	**4,242**	cy	50.00	212,100		
	asphalt top; 1.5" thick	**1,095**	tns	180.00	197,100		
	asphalt binder; 2.5" thick	**1,822**	tns	130.00	236,860		
320000	*CURBING*						
	Concrete curb - service road/fire lane	**2,278**	lf	38.00	86,564		
	Vertical granite curb	**5,040**	lf	52.00	262,080		
	ADA Curb cuts - allowance	**1**	ls	10,000.00	10,000		
320000	*ROAD MARKINGS AND SIGNS*						
	Parking spot	**118**	ea	85.00	10,030		
	Parking spot ADA	**5**	ea	250.00	1,250		
	Sign allowance	**1**	ls	20,000.00	20,000		
	Pavement markings allowance	**1**	ls	20,000.00	20,000		
	Crosswalk hatching - allowance	**1**	ls	10,000.00	10,000		
	SUBTOTAL					1,065,984	
320000	***PEDESTRIAN PAVING***						
	Outdoor learning areas	**3,010**	sf	20.00	60,200		
	Gym runaround	**9,485**	sf	20.00	189,700		
	Concrete sidewalks	*10,700*	*sf*				
	gravel base; 8" thick	**266**	cy	50.00	13,300		
	Broom finish concrete paving; 4" thick	**10,700**	sf	12.00	128,400		
	Entrance plaza premiums - allowance	**6,000**	sf	20.00	120,000		
	Concrete pads - allowance	*500*	*sf*				
	gravel base; 12" thick	**19**	cy	50.00	950		
	Broom finish concrete paving; 8" thick	**500**	sf	17.00	8,500		
	Bituminous concrete walkways	*1,250*	*sf*				
	gravel base; 8" thick	**31**	cy	50.00	1,550		
	asphalt top; 1" thick	**8**	tns	180.00	1,440		
	asphalt binder; 1.5" thick	**12**	tns	130.00	1,560		
	SUBTOTAL					525,600	
320000	***SITE IMPROVEMENTS***						
320000	*SITE FURNISHINGS - allowances*						
	Bollards allowance for utilities	**10**	ea	1,100.00	11,000		
	Decorative bollard allowance	**30**	ea	1,800.00	54,000		
	Site furnishings - allowance for new site furnishings at outdoor and play areas	**1**	ls	75,000.00	75,000		
	Terraced seating allowance - utilize sloped areas when possible	**1**	ls	150,000.00	150,000		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.1 - New Construction at Upper Field							
	Bike racks - allowance	**20**	ea	850.00	17,000		
	Flagpole - 30' Ht. - allowance	**1**	ea	7,000.00	7,000		
	Flagpole foundation	**1**	ea	4,500.00	4,500		
	Trash and Recycling receptacles - allowance	**8**	ea	2,500.00	20,000		
320000	*PLAY AREAS - allowance*						
	Playground - pour-in-place safety surfacing	8,700	*sf*				
	gravel base; 8" thick	**216**	cy	50.00	10,800		
	Pour-in-place safety surface	**8,700**	sf	36.00	313,200		
	Edging	**250**	lf	45.00	11,250		
	Allowance for play equipment	**1**	ls	250,000.00	250,000		
320000	*ATHLETIC EQUIPMENT*						
	Soccer goals	**8**	ea	4,500.00	36,000		
320000	*SERVICE AREAS - Allowance*						
	Loading dock landing	*1,500*	*sf*				
	gravel base; 6" thick	**28**	cy	50.00	1,400		
	Broom finish concrete paving; 4" thick	**1,500**	sf	12.00	18,000		
	Loading dock wall	**50**	lf		w/ building		
	Loading dock stairs, ramps, handrails, etc	**1**	ls	25,000.00	25,000		
	Dumpster pad and screen fence	**1**	ls	15,000.00	15,000		
320000	*FENCING*						
	Fencing at outdoor classrooms and play areas	**621**	lf	75.00	46,575		
	Fence gates at outdoor classrooms and play areas	**3**	ea	1,500.00	4,500		
	Vehicular gate	**2**	ea	25,000.00	50,000		
	SUBTOTAL					1,120,225	
329900	*SITE WALLS*						
	Segmental Wall- 4' ht.	*882*	*lf*				
	Large block wall	**4,410**	sf	55.00	242,550		
	Excavate and prepare wall base	**196**	cy	100.00	19,600		
	Backfill wall - crushed stone	**131**	cy	65.00	8,515		
	Backfill-controlled placement; above grade - on-site soils no geogrid	**523**	cy	35.00	18,305		
	Geotextiles	**6,615**	sf	2.50	16,538		
	Wall drain	**882**	lf	22.00	19,404		
	4' Ht. CLF	**346**	lf	65.00	22,490		
	SUBTOTAL					347,402	
	Landscaping						
329900	*TOPSOIL*						
	Screen topsoil	**3,151**	cy	7.50	23,633		
	Export tailings from screening process - assume clean rock	**945**	cy	8.50	8,033		
	Amend/Place	**2,206**	cy	20.00	44,120		
	Topsoil - imported 6" thick; swell 25%	**4,020**	cy	65.00	261,300		
	Soil and mulch at planting areas; 12" thick - allowance	**500**	cy	65.00	32,500		
	Allowance to repair existing field from drainage work	**1**	ls	50,000.00	50,000		
329900	*LAWN AND SEED*	*193,796*	*sf*				
	Topsoil - imported 6" thick; swell 25%	**4,486**	cy		incl. above		
	Power rake and hydroseed disturbed areas	**190,530**	sf	0.35	66,686		
320000	*ATHLETIC LANDSCAPING*	*40,424*	*sf*				
	Topsoil - imported 6" thick; swell 25%	**936**	cy		incl. above		
	Lawn seeding	**40,424**	sf	0.55	22,233		
	Irrigation	**40,424**	sf	2.00	80,848		
329900	*TREES/SHRUBS/PLANTINGS*						
	Allowance for all plantings	**1**	ls	150,000.00	150,000		
328400	*IRRIGATION*						
	Allowance for irrigation - lawn and planting	**1**	ls		Assume NR		
	SUBTOTAL					739,353	
	TOTAL - SITE IMPROVEMENTS						**$3,798,564**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.1 - New Construction at Upper Field							
G30	**CIVIL MECHANICAL UTILITIES**						
210000	*FIRE PROTECTION*						
	8" CLDI	**2,500**	lf	80.00	200,000		
	6" CLDI	**50**	lf	49.64	2,482		
	Fire department connection	**1**	ea	2,500.00	2,500		
	Gate valve	**13**	ea	1,200.00	15,600		
	Fire hydrant	**4**	ea	6,500.00	26,000		
	Thrust blocks - allowance	**8**	ea	500.00	4,000		
331000	*WATER UTILITIES*						
	4" CLDI	**50**	lf	67.50	3,375		
331000	*CONNECTIONS*						
	Connect to water lines	**2**	ea	10,000.00	20,000		
312000	*EXCAVATION & BACKFILL*	*2,600*	*lf*				
	DI gravity piping excavation	**2,311**	cy	46.75	108,039		
	Trench bedding	**520**	cy	38.00	19,760		
	Pressure test & chlorinate	**2,600**	lf	5.00	13,000		
	Allowance for temporary water service				NR		
	Allowance for temporary support of existing utilities				NR		
	SUBTOTAL					414,756	
333000	*SANITARY SEWER*						
	Sewer force main - 3"	**200**	lf	30.00	6,000		
	6" PVC	**100**	lf	36.00	3,600		
	SMH - 0-5' deep	**4**	ea	4,800.00	19,200		
	Leaching area	**8,400**	sf	30.00	252,000		
	Grease trap - 5,000 gal.	**1**	ea	15,000.00	15,000		
	Septic tank; 5,500 gal - in series	**2**	ea	20,000.00	40,000		
	Pump chamber; 5,500 gal	**1**	ea	20,000.00	20,000		
	Pump system	**1**	ls	125,000.00	125,000		
312000	*EXCAVATION & BACKFILL - force main*	*200*	*lf*				
	Force main piping excavation- assume shallow	**119**	cy	46.75	5,563		
	Trench bedding	**59**	cy	38.00	2,242		
312000	*EXCAVATION & BACKFILL - Gravity*	*100*	*lf*				
	PVC gravity piping excavation	**89**	cy	46.75	4,161		
	Trench bedding	**30**	cy	38.00	1,140		
	Pressure testing	**100**	lf	4.00	400		
	Allowance for temporary sewer service				NR		
	Allowance for temporary support of existing utilities				NR		
	SUBTOTAL					494,306	
334000	*STORM DRAINAGE*						
	Drain lines	**3,000**	lf	125.00	375,000		
	Rood drains	**400**	lf	60.00	24,000		
	Clean structures and pipe network in existing car loop and parking	**1**	ls	25,000.00	25,000		
	Foundation drain at new school building	**1,510**	lf	23.00	34,730		
	4' Dia. DMH - 0-5' deep	**18**	ea	4,200.00	75,600		
	CB - 4' Dia.	**21**	ea	3,800.00	79,800		
	WQU	**5**	ea	12,000.00	60,000		
	WQU - doghouse	**1**	ea	18,000.00	18,000		
	FES	**3**	ea	2,500.00	7,500		
	Roof drain connections	**2**	ea	500.00	1,000		
	Allowance for rain gardens and swales	**1**	ls	100,000.00	100,000		
	Athletic fields						
	Flat panel drains	**3,865**	lf	7.50	28,988		
	Collector piping	**1,000**	lf	55.00	55,000		
	Underground recharger	*10,670*	*sf*				
	Infiltration chambers	**167**	ea	750.00	125,250		
	End caps	**40**	ea	350.00	14,000		
	Excavate and reuse on-site	**3,557**	cy	25.00	88,925		
	Load excess soils for disposal	**3,557**	cy	2.50	8,893		
	Less than RCS-1 - clean non-regulated	**6,047**	tn	23.00	139,081		
	Install stone base; 12" thick	**652**	tn	65.00	42,380		
	Fine grade base	**10,670**	sf	0.25	2,668		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.1 - New Construction at Upper Field							
	Back-fill infiltration bed with 1-2" crushed stone; 9.1cy/ea	**2,508**	tn	50.00	125,400		
	Geotextile fabrics	**26,675**	sf	0.75	20,006		
334000	*CONNECTIONS*						
	Connect to existing structure (inside site)	**1**	ea	5,000.00	5,000		
	SUBTOTAL					1,456,221	
220001	*NATURAL GAS*						
312000	*EXCAVATION & BACKFILL*	*750*	*lf*				
	Gas piping excavation	**333**	cy	46.75	15,568		
	Trench bedding	**150**	cy	38.00	5,700		
	SUBTOTAL					21,268	
	TOTAL - SITE MECHCANICAL UTILITIES						**$2,386,551**
G40	**ELECTRICAL UTILITIES**						
	Primary ductbank, empty, allow	**1,000**	lf	90.00	90,000		
	Secondary ductbank -2000A, allow	**50**	ls	900.00	45,000		
	Telcom services, empty 4-4", allow	**1,050**	lf	180.00	189,000		
	Manhole, allowance	**4**	ea	10,000.00	40,000		
	Site lighting, allow at roadways	**35**	ea	5,000.00	175,000		
	Site lighting, allow at parking areas	**25**	ea	5,000.00	125,000		
	Site security, allow	**1**	ls	100,000.00	100,000		
	Electric vehicle charging station (10% day one 2-40A provisions for future)	**20**	ea	7,500.00	150,000		
	Sports field Lighting						
	Sports field Lighting				NIC		
	SUBTOTAL					914,000	
	TOTAL - SITE ELECTRICAL UTILITIES						**$914,000**
G90	**TRAFFIC MITIGATION**				Assume NR		
	SUBTOTAL					-	
	TOTAL - SITE MITIGATION						**$0**
	TOTAL - SITE DEVELOPMENT						**$10,353,060**

PM&C

Shaker Lane Elementary School 22-Oct-24
Littleton, MA

PSR Options Cost Estimate GFA 97,800

CONSTRUCTION COST SUMMARY

OPTION 3.2 - New Construction at Lower Field

	BUILDING SYSTEM		*SUB-TOTAL*	*TOTAL*	*$/SF*	*%*
A10	**FOUNDATIONS**					
	A1010	Standard Foundations	$2,397,763			
	A1020	Special Foundations	$0			
	A1030	Lowest Floor Construction	$936,964	**$3,334,727**	$34.10	6.8%
A20	**BASEMENT CONSTRUCTION**					
	A2010	Basement Excavation	$0			
	A2020	Basement Walls	$0	**$0**	$0.00	0.0%
B10	**SUPERSTRUCTURE**					
	B1010	Upper Floor Construction	$2,434,662			
	B1020	Roof Construction	$2,789,300	**$5,223,962**	$53.41	10.7%
B20	**EXTERIOR CLOSURE**					
	B2010	Exterior Walls	$3,928,254			
	B2020	Windows	$2,600,177			
	B2030	Exterior Doors	$97,800	**$6,626,231**	$67.75	13.6%
B30	**ROOFING**					
	B3010	Roof Coverings	$1,950,000			
	B3020	Roof Openings	$45,000	**$1,995,000**	$20.40	4.1%
C10	**INTERIOR CONSTRUCTION**					
	C1010	Partitions	$3,507,550			
	C1020	Interior Doors	$924,300			
	C1030	Specialties/Millwork	$1,239,500	**$5,671,350**	$57.99	11.6%
C20	**STAIRCASES**					
	C2010	Stair Construction	$345,000			
	C2020	Stair Finishes	$70,000	**$415,000**	$4.24	0.8%
C30	**INTERIOR FINISHES**					
	C3010	Wall Finishes	$782,400			
	C3020	Floor Finishes	$1,173,600			
	C3030	Ceiling Finishes	$1,173,600	**$3,129,600**	$32.00	6.4%
D10	**CONVEYING SYSTEMS**					
	D1010	Elevator	$182,400	**$182,400**	$1.87	0.4%
D20	**PLUMBING**					
	D20	Plumbing	$2,749,743	**$2,749,743**	$28.12	5.6%

PM&C

Shaker Lane Elementary School 22-Oct-24
Littleton, MA

PSR Options Cost Estimate GFA 97,800

CONSTRUCTION COST SUMMARY

	BUILDING SYSTEM		*SUB-TOTAL*	*TOTAL*	*$/SF*	*%*
OPTION 3.2 - New Construction at Lower Field						
D30	**HVAC**					
	D30	HVAC	$9,633,586	**$9,633,586**	$98.50	19.7%
D40	**FIRE PROTECTION**					
	D40	Fire Protection	$874,869	**$874,869**	$8.95	1.8%
D50	**ELECTRICAL**					
	D5010	Complete System	$6,855,500	**$6,855,500**	$70.10	14.0%
E10	**EQUIPMENT**					
	E10	Equipment	$1,067,700	**$1,067,700**	$10.92	2.2%
E20	**FURNISHINGS**					
	E2010	Fixed Furnishings	$1,103,000			
	E2020	Movable Furnishings	NIC	**$1,103,000**	$11.28	2.3%
F10	**SPECIAL CONSTRUCTION**					
	F10	Special Construction	$0	**$0**	$0.00	0.0%
F20	**HAZMAT REMOVALS**					
	F2010	Building Elements Demolition	$0			
	F2020	Hazardous Components Abatement	$0	**$0**	$0.00	0.0%
TOTAL DIRECT COST (Trade Costs)				***$48,862,668***	*$499.62*	*100.0%*

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.2 - New Construction at Lower Field							
	GROSS FLOOR AREA CALCULATION						
	Level 1			55,000			
	Level 2			42,800			
	TOTAL GROSS FLOOR AREA (GFA)				**97,800** ***sf***		
	A10 FOUNDATIONS						
	A1010 STANDARD FOUNDATIONS						
	Strip footings - perimeter; 30"x12"						
	Formwork	**3,000**	sf	20.00	60,000		
	Re-bar	**15,000**	lbs.	2.00	30,000		
	Concrete material	**146**	cy	175.00	25,550		
	Placing concrete	**146**	cy	130.00	18,980		
	Typical foundation walls						
	Formwork	**12,000**	sf	20.00	240,000		
	Re-bar	**48,000**	lbs.	2.00	96,000		
	Concrete material	**310**	cy	175.00	54,250		
	Placing concrete	**310**	cy	130.00	40,300		
	Form shelf	**1,500**	lf	10.00	15,000		
	Spread Footings; allow 5'-6"x5'-6"x18" exterior						
	Formwork	**1,980**	sf	20.00	39,600		
	Re-bar	**23,850**	lbs.	2.00	47,700		
	Concrete material	**106**	cy	175.00	18,550		
	Placing concrete	**106**	cy	130.00	13,780		
	Set anchor bolts grout plates	**60**	ea	250.00	15,000		
	Spread Footings; allow 7'-6"x7'-6"x22" interior						
	Formwork	**2,745**	sf	20.00	54,900		
	Re-bar	**95,000**	lbs.	2.00	190,000		
	Concrete material	**200**	cy	175.00	35,000		
	Placing concrete	**200**	cy	130.00	26,000		
	Set anchor bolts grout plates	**50**	ea	250.00	12,500		
	Piers/Pilasters	**34**	cy	1,400.00	47,600		
	Grade beams, 2x2						
	Formwork	**4,050**	sf	20.00	81,000		
	Re-bar (65lbs/lf)	**43,875**	lbs.	2.00	87,750		
	Concrete material	**105**	cy	175.00	18,375		
	Placing concrete	**105**	cy	130.00	13,650		
	Cafetorium ramps and elevation changes -allowance	**1**	ls	50,000.00	50,000		
	Elevator Pits						
	Walls, 12" thick	**1**	ea				
	Formwork	**320**	sf	20.00	6,400		
	Re-bar	**800**	lbs.	2.00	1,600		
	Concrete material	**6**	cy	175.00	1,050		
	Placing concrete	**6**	cy	130.00	780		
	Mat slab at pits, 24" thick	**100**	sf	35.00	3,500		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Damproofing at foundation wall				assume NR		
	Waterproofing at elevator pit	**340**	sf	14.00	4,760		
072100	*THERMAL INSULATION*						
	Foundation wall insulation	**6,000**	sf	5.50	33,000		
312000	*EARTHWORK*						
	Strip footings/ fdn wall						
	Excavation & reuse on site	**1,667**	cy	40.00	66,680		
	Spread footings						
	Excavation & reuse on site	**1,335**	cy	40.00	53,400		
312000	*BUILDING EARTHWORK - allowances*						
	Cut - over excavated 4' of fill beneath building	**10,185**	cy	15.00	152,775		
	Fill - import structural - 25% swell	**4,375**	cy	55.00	240,625		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.2 - New Construction at Lower Field							
312000	*SOIL DISPOSAL - conversion factor 1.7 to tons*						
	Load excess soils for disposal	**10,185**	cy	2.50	25,463		
	Less than RCS-1 - clean non-regulated	**17,315**	tn	23.00	398,245		
	Miscellaneous						
	Perimeter drain	**1,500**	lf	32.00	48,000		
	Underslab drainage	**55,000**	sf		Assume NR		
	Dewatering for foundation work	**1**	ls	30,000.00	30,000		
	SUBTOTAL					2,397,763	
A1020	**SPECIAL FOUNDATIONS**						
	Structural fill/Ground Improvements allowance				Not anticipated		
	SUBTOTAL					-	
A1030	**LOWEST FLOOR CONSTRUCTION**						
033000	*CONCRETE*						
	Vapor barrier	**55,000**	sf	1.50	82,500		
	Slab on grade	*55,000*	*sf*				
	WWF reinforcement	**63,250**	sf	1.85	117,013		
	Concrete - 5" thick	**877**	cy	175.00	153,475		
	Placing concrete	**877**	cy	100.00	87,700		
	Finishing and curing concrete	**55,000**	sf	4.00	220,000		
	Control joints - saw cut	**55,000**	sf	0.10	5,500		
	Miscellaneous						
	Equipment pads	**1**	ls	15,000.00	15,000		
	Loading dock	**1**	ls	30,000.00	30,000		
	Radon system				Excluded; NR		
072100	*THERMAL INSULATION*						
	Under slab insulation, 2" @ perimeter for 4'	**6,000**	sf	3.00	18,000		
312000	*EARTHWORK*						
	Gravel base, 12"	**2,037**	cy	48.00	97,776		
	Compact existing sub-grade	**55,000**	sf	0.50	27,500		
	Underslab E&B for plumbing	**55,000**	sf	1.50	82,500		
	SUBTOTAL					936,964	
	TOTAL - FOUNDATIONS						**$3,334,727**
A20	***BASEMENT CONSTRUCTION***						
A2010	**BASEMENT EXCAVATION**						
	No Work in this section						
	SUBTOTAL					-	
A2020	**BASEMENT WALLS**						
	No Work in this section						
	SUBTOTAL					-	
	TOTAL - BASEMENT CONSTRUCTION						
B10	***SUPERSTRUCTURE***						
		14.0	*lbs/sf*				
B1010	**FLOOR CONSTRUCTION**	*685*	*tns*	excluding canopies + roof screens			
		$6,634	*$/Ton*				
033000	*CONCRETE*						
	WWF reinforcement	**49,220**	sf	1.85	91,057		
	Concrete fill to metal deck; normal weight, total thickness 5 1/2"	**749**	cy	175.00	131,075		
	Place and finish concrete	**42,800**	sf	3.50	149,800		
	Rebar to decks	**12,840**	lbs	2.00	25,680		
051200	*STRUCTURAL STEEL FRAMING*						
	Structural steel framing; 14 lbs per SF	**300**	tns	5,400.00	1,620,000		
	Shear studs	**10,700**	ea	3.50	37,450		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.2 - New Construction at Lower Field							
	2" metal galvanized floor deck	**42,800**	sf	7.00	299,600		
	Expansion joints	**1**	ls	50,000.00	50,000		
078100	*FIREPROOFING/FIRESTOPPING*						
	Fire proofing to columns and beams; 2 hr				Assume NR		
	Intumescent paint @ architecturally exposed beams and columns - allow	**1**	ls	30,000.00	30,000		
	SUBTOTAL					2,434,662	
B1020	**ROOF CONSTRUCTION**						
033000	*CONCRETE*						
	Concrete deck at low roofs and at mechanical equipment pads - allow	**7,500**	sf	10.00	75,000		
051200	*STRUCTURAL STEEL FRAMING*						
	Structural steel framing; 14 lbs per SF	**385**	tns	5,400.00	2,079,000		
	Canopies - 20#/sf	**20**	tns	5,800.00	116,000		
	Roof screens - allow 100#/lf	**1**	tns	5,800.00	5,800		
	Dunnage - allowance	**5**	tns	5,800.00	29,000		
	Decking						
	1 1/2" galvanized metal deck, typical	**55,000**	sf	6.50	357,500		
	Premium for acoustic (Gymnasium)	**6,000**	sf	7.00	42,000		
	Canopy decking	**2,000**	sf	6.50	13,000		
078100	*FIREPROOFING/FIRESTOPPING*						
	Fireproofing to columns, beams and deck				Assume NR		
	Intumescent paint @ architecturally exposed primary members in Gymnasium - allow (if required)	**6,000**	sf	12.00	72,000		
	SUBTOTAL					2,789,300	
	TOTAL - SUPERSTRUCTURE						**$5,223,962**
B20	***EXTERIOR CLOSURE***						
B2010	**EXTERIOR WALLS**	*50,000*	Total closure area				
	Exterior Wall Area - 75% solid	*37,500*	*sf total area solid*				
042000	*MASONRY*						
	Mockup	**1**	ls	50,000.00	50,000		
	Brick veneer; 90%	**33,750**	sf	45.00	1,518,750		
	4" Polyiso at masonry	**33,750**	sf	4.80	162,000		
	Miscellaneous flashings and sealants	**37,500**	sf	1.50	56,250		
	Staging to exterior wall	**37,500**	sf	4.00	150,000		
055000	*MISC. METALS*						
	Misc. metals at masonry including loose lintels (relieving angles included in steel tns)	**37,500**	sf	1.50	56,250		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Air barrier	**37,500**	sf	9.50	356,250		
	Air barrier/flashing at openings	**4,167**	lf	6.00	25,002		
	Miscellaneous sealants to closure	**37,500**	sf	1.00	37,500		
072100	*THERMAL INSULATION*						
	3 1/2" Batt insulation in stud	**37,500**	sf	3.00	112,500		
	Insulation at glazed openings	**4,167**	lf	6.00	25,002		
076400	*CLADDING*						
	Metal panel (Alucobond or equal); 10% (including insulation)	**3,750**	sf	90.00	337,500		
	Equipment Screen (allow 100lf)	**100**	lf	900.00	90,000		
	EXPANSION JOINT COVERS						

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.2 - New Construction at Lower Field							
	Expansion joints	**1**	ls	25,000.00	25,000		
092900	*GYPSUM BOARD ASSEMBLIES*						
	Framing and sheathing at canopies	**2,000**	sf	15.00	30,000		
	Exterior wall;						
	6" Stud backup	**37,500**	sf	16.00	600,000		
	Gypsum sheathing	**37,500**	sf	3.50	131,250		
	Drywall lining to interior face of stud backup	**37,500**	sf	4.00	150,000		
101400	*SIGNAGE*						
	Exterior signage - allowance	**1**	ls	15,000.00	15,000		
	SUBTOTAL					3,928,254	
B2020	**WINDOWS**						
	Exterior Wall Area; 25%	*12,500*	sf				
061000	*ROUGH CARPENTRY*						
	Wood blocking at openings	**4,167**	lf	10.00	41,670		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Air barrier/flashing at windows	**4,167**	lf	10.00	41,670		
	Backer rod & double sealant	**4,167**	lf	11.00	45,837		
080001	*METAL WINDOWS*						
	Windows/Storefront; triple glazed (25%)	**12,500**	sf	185.00	2,312,500		
	Horizontal aluminum fin sunshades @ south facing windows - allowance	**1**	ls	150,000.00	150,000		
089000	*LOUVERS*						
	Louvers	**100**	sf	85.00	8,500		
	SUBTOTAL					2,600,177	
B2030	**EXTERIOR DOORS**						
	Allowance for exterior doors	**97,800**	gsf	1.00	97,800		
	SUBTOTAL					97,800	
	TOTAL - EXTERIOR CLOSURE						**$6,626,231**
B30	***ROOFING***						
055000	*MISCELLANOUS METALS*						
	Allowance for roof ladders	**1**	ls	15,000.00	15,000		
061000	*ROUGH CARPENTRY*						
	Rough carpentry and blocking @ roof	**57,000**	sf	1.50	85,500		
070002	*ROOFING AND FLASHING*						
	EPDM roof membrane system, complete	**55,000**	sf	28.00	1,540,000		
	Membrane roofing at canopies	**2,000**	sf	25.00	50,000		
	Premium for outdoor balconies at 2nd floor	**1,200**	sf	50.00	60,000		
	Miscellaneous Roofing						
	Miscellaneous flashings/copings/walkway pads etc.	**57,000**	sf	3.50	199,500		
	SUBTOTAL					1,950,000	
B3020	**ROOF OPENINGS**						
086300	*ROOF SKYLIGHTS*						
	Allowance for roof hatches	**1**	ls	5,000.00	5,000		
	Skylights; 16'x8'	**2**	ea	20,000.00	40,000		
	SUBTOTAL					45,000	
	TOTAL - ROOFING						**$1,995,000**
C10	***INTERIOR CONSTRUCTION***						

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.2 - New Construction at Lower Field							
C1010	**PARTITIONS**						
040001	*MASONRY*						
	Elevator shaft, 2hr	**1,400**	sf	44.00	61,600		
	Firewall, 2 hr	**3,750**	sf	50.00	187,500		
061000	*ROUGH CARPENTRY*						
	Backer panels in electrical closets	**1**	ls	5,000.00	5,000		
	Wood blocking at interiors	**97,800**	gsf	0.50	48,900		
078400	*FIREPROOFING/FIRESTOPPING*						
	Fire stopping including slab edges and core	**97,800**	gsf	0.75	73,350		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Miscellaneous sealants throughout building	**97,800**	gsf	1.00	97,800		
078150	*EXPANSION JOINTS*						
	Allowance for expansion joint covers	**1**	ls	25,000.00	25,000		
081110	*INTERIOR GLAZING*						
	Allowance for interior glazing	**97,800**	gsf	2.00	195,600		
	Lightwell glazing (2 loc)	**1,800**	sf	150.00	270,000		
092900	*GYPSUM BOARD ASSEMBLIES*						
	Allowance for GWB partitions	**97,800**	gsf	26.00	2,542,800		
	SUBTOTAL					3,507,550	
C1020	**INTERIOR DOORS**						
	Doors, frames, hardware; complete	**97,800**	gsf	6.00	586,800		
	8' sliding glass pocket doors at typical classrooms	**27**	ea	12,500.00	337,500		
	SUBTOTAL					924,300	
C1030	**SPECIALTIES / MILLWORK**						
055000	*MISCELLANEOUS METALS*						
	Miscellaneous metals throughout building	**97,800**	gsf	4.00	391,200		
061000	*ROUGH CARPENTRY*						
062000	*INTERIOR ARCHITECTURAL WOODWORK*						
	Interior millwork package	**97,800**	gsf	5.00	489,000		
101100	*VISUAL DISPLAY SURFACES*						
	Markerboard and tackboard package	**97,800**	gsf	1.50	146,700		
101400	*SIGNAGE*						
	Room identification, directional & safety signage, building directory + environmental graphics	**97,800**	gsf	1.00	97,800		
102110	*TOILET/ CHANGING/SHOWER COMPARTMENTS*						
	Toilet compartments	**97,800**	gsf	0.50	48,900		
102800	*TOILET ACCESSORIES*						
	Toilet accessories	**97,800**	gsf	0.50	48,900		
104400	*FIRE PROTECTION SPECIALTIES*						
	Fire extinguisher cabinets	**1**	ls	15,000.00	15,000		
	AED cabinets	**1**	ls	2,000.00	2,000		
105000	*LOCKERS*			assume NR - cubbies in classrooms			
	SUBTOTAL					1,239,500	
	TOTAL - INTERIOR CONSTRUCTION						**$5,671,350**
C20	***STAIRCASES***						
C2010	**STAIR CONSTRUCTION**						

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.2 - New Construction at Lower Field							
033000	*CONCRETE*						
	Concrete to stairs	**4**	flt	5,000.00	20,000		
055000	*MISCELLANEOUS METALS*						
	Egress stairs including rails and handrails	**2**	flt	50,000.00	100,000		
	Learning stair w/ partial integrated ramp	**1**	flt	150,000.00	150,000		
	Lobby stair framing and rails	**1**	flt	75,000.00	75,000		
	SUBTOTAL					345,000	
C2020	**STAIR FINISHES**						
090005	*RESILIENT FLOORS*						
	Stair finishes - egress	**2**	flts	5,000.00	10,000		
	Stair finishes @ lobby stair	**1**	flts	20,000.00	20,000		
	Stair finishes @ Learning stair and ramp	**1**	flts	40,000.00	40,000		
	SUBTOTAL					70,000	
	TOTAL - STAIRCASES						**$415,000**
C30	***INTERIOR FINISHES***						
C3010	**WALL FINISHES**						
	Wall finishes; allowance	**97,800**	gsf	8.00	782,400		
	SUBTOTAL					782,400	
C3020	**FLOOR FINISHES**						
	Floor finishes complete package	**97,800**	gsf	12.00	1,173,600		
	SUBTOTAL					1,173,600	
C3030	**CEILING FINISHES**						
	Ceiling finishes, complete package	**97,800**	gsf	12.00	1,173,600		
	SUBTOTAL					1,173,600	
	TOTAL - INTERIOR FINISHES						**3,129,600**
D10	***CONVEYING SYSTEMS***						
D1010	**ELEVATOR**						
055000	*MISCELLANEOUS METALS*						
	Pit ladder and miscellaneous metals	**1**	ea	900.00	900		
	Sill angles	**1**	ls	1,500.00	1,500		
142100	*ELEVATOR*						
	Elevator, 2 stop	**1**	ea	180,000.00	180,000		
	SUBTOTAL					182,400	
	TOTAL - CONVEYING SYSTEMS						**$182,400**
D20	***PLUMBING***						
D20	**PLUMBING, GENERALLY**						
	Equipment						
	Reduced pressure backflow preventer, main	**1**	ea	6,500.00	6,500		
	Water meter assembly	**1**	ea	3,500.00	3,500		
	Electric Water Heaters, 100 gallons	**2**	ea	28,000.00	56,000		
	Expansion tank	**1**	ea	5,000.00	5,000		
	Air separator	**1**	ea	3,500.00	3,500		
	Thermal mixing valve	**1**	ea	18,500.00	18,500		
	Hot water recirculation pump	**1**	ea	2,800.00	2,800		
	Sub Metering	**1**	ea	2,500.00	2,500		
	Interior grease interceptor	**1**	ea	8,000.00	8,000		
	Elevator pit sump pump with oil separator	**1**	ea	5,500.00	5,500		
	Roof drain	**24**	ea	2,200.00	52,800		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	OPTION 3.2 - New Construction at Lower Field						
	Overflow roof drain	**24**	ea	2,200.00	52,800		
	Floor drain	**28**	ea	1,800.00	50,400		
	Kitchen floor drain	**4**	ea	1,800.00	7,200		
	Kitchen floor sink	**4**	ea	2,400.00	9,600		
	Hose bibb, allow	**10**	ea	500.00	5,000		
	Freezeproof hose bibb, allow	**8**	ea	850.00	6,800		
	Rough-in & connection to kitchen equipment	**1**	ls	25,000.00	25,000		
	Miscellaneous plumbing equipment	**97,800**	sf	0.50	48,900		
	Plumbing Fixtures & Specialties						
	All Fixture Counts are Assumed based on Similar Projects	**97,800**	sf	4.50	440,100		
	Water closet				included in cost/sf		
	Lavatory wall hung or drop in				included in cost/sf		
	Classroom sink				included in cost/sf		
	Music room sink				included in cost/sf		
	Cafeteria sink				included in cost/sf		
	Classroom Sink - Art Room w/solids interceptor				included in cost/sf		
	Kitchenette - Staff Dining				included in cost/sf		
	Shower				included in cost/sf		
	Nurses Sink				included in cost/sf		
	Janitors Closet				included in cost/sf		
	Drinking fountain				included in cost/sf		
	Safety Shower/Eyewash				included in cost/sf		
	Dishwasher connection - assumed at Kitchenette sink				included in cost/sf		
	Coffee machine connection - assumed at Kitchenette sink				included in cost/sf		
	Refrigerant connection - assumed at Kitchenette sink				included in cost/sf		
	Fixture Rough In	**1**	ls	44,010.00	44,010		
	Misc. plumbing fixtures	**97,800**	sf	0.25	24,450		
	Domestic Water						
	Copper pipe type L w/fittings & hangers	**10,395**	lf	60.00	623,700		
	Valves & accessories	**1**	ls	112,266.00	112,266		
	Pipe Insulation						
	Domestic water pipe insulation	**10,395**	lf	10.00	103,950		
	Sanitary Waste						
	Sanitary W&V UG, SV Cast Iron Pipe	**800**	lf	48.00	38,400		
	Sanitary W&V AG, Hubless Cast Iron Pipe	**8,280**	lf	55.00	455,400		
	Grease Waste						
	Grease W&V UG, SV Cast Iron Pipe	**400**	lf	48.00	19,200		
	Grease W&V AG, Hubless Cast Iron Pipe	**400**	lf	55.00	22,000		
	Storm Water						
	Storm Drainage UG, SV Cast Iron Pipe	**97,800**	sf	0.50	48,900		
	Storm Drainage AG, Hubless Cast Iron Pipe	**97,800**	sf	1.50	146,700		
	Pipe insulation on horizontal runs	**97,800**	sf	0.20	19,560		
	Secondary Storm Drainage AG, Hubless Cast Iron Pipe	**97,800**	sf	1.00	97,800		
	Secondary Pipe insulation on horizontal runs	**97,800**	sf	0.20	19,560		
	Natural Gas Piping						
	Natural Gas Piping				Not Required		
	Miscellaneous						
	Coordination & BIM	**1**	ls	78,240.00	78,240		
	Coring, sleeves & fire stopping	**1**	ls	6,960.72	6,961		
	Hydraulic lifts/rigging	**1**	ls	24,450.00	24,450		
	Commissioning support	**1**	ls	6,200.00	6,200		
	Testing and sterilization	**1**	ls	8,802.00	8,802		
	Fees & permits	**1**	ls	38,794.44	38,794		
	SUBTOTAL					2,749,743	
	TOTAL - PLUMBING						**$2,749,743**
D30	***HVAC***						
D30	**HVAC, GENERALLY**						
	Equipment						
	Modular air source heat pump chillers	**14**	ea	126,000.00	1,764,000		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	OPTION 3.2 - New Construction at Lower Field						
	Redundant Module for back-up (per narrative)	**1**	ea	126,000.00	126,000		
	Electric Boiler, 450 kW, back-up	**550**	kw	72.00	39,600		
	Expansion tanks	**2**	ea	12,500.00	25,000		
	Air Separators	**2**	ea	9,600.00	19,200		
	Buffer tanks	**2**	ea	25,000.00	50,000		
	HEX-1, Heat Exchangers	**1**	ea	75,000.00	75,000		
	HEX-2, Heat Exchangers	**1**	ea	55,000.00	55,000		
	Radiant heating/cooling/perimeter	**97,800**	gsf	2.00	195,600		
	Unit heaters and cabinet heaters	**12**	ea	1,800.00	21,600		
	Split systems/heat pumps (IT, electric, elev machine rooms)	**6**	ea	12,500.00	75,000		
	Misc. Mech equipment	**97,800**	gsf	1.00	97,800		
	Pumps						
	Primary hot water, includes redundant	**5**	ea	9,800.00	49,000		
	Secondary hot water, includes redundant	**5**	ea	15,500.00	77,500		
	Primary chilled water, includes redundant	**5**	ea	12,000.00	60,000		
	Secondary chilled water, includes redundant	**5**	ea	16,500.00	82,500		
	Pump VFD	**20**	ea	4,500.00	90,000		
	Air distribution						
	RTU-A, Admin, energy recovery, HW/CW coils	**7,000**	cfm	24.00	168,000		
	RTU-B, Cafetorium, energy recovery, HW/CW coils	**4,750**	cfm	24.00	114,000		
	RTU-C, Kitchen, energy recovery, HW/CW coils	**2,000**	cfm	24.00	48,000		
	RTU-D,Classroom, energy recovery, HW/CW coils	**8,250**	cfm	24.00	198,000		
	RTU-E, Gym, energy recovery, HW/CW coils	**7,500**	cfm	24.00	180,000		
	RTU-F, Classroom, energy recovery, HW/CW coils	**22,000**	cfm	24.00	528,000		
	RTU-G, Classrooms, energy recovery, HW/CW coils	**10,500**	cfm	24.00	252,000		
	RTU-H, Media, energy recovery, HW/CW coils	**2,250**	cfm	24.00	54,000		
	RTU-I, Classroom, energy recovery, HW/CW coils	**23,500**	cfm	24.00	564,000		
	MAU-1, Kitchen makeup air	**3,000**	cfm	24.00	72,000		
	Fans						
	Exhaust fans, cfm TBD	**97,800**	gsf	1.00	97,800		
	KEF-1, Kitchen exhaust fan	**1,500**	cfm	4.00	6,000		
	Sheet metal & Accessories						
	Galvanized ductwork	**78,240**	lbs	18.00	1,408,320		
	Black steel exhaust ductwork	**1,500**	lbs	26.00	39,000		
	Duct insulation	**50,856**	sf	6.50	330,564		
	Duct insulation, fire wrap	**900**	sf	22.00	19,800		
	Dishwasher exhaust	**800**	lbs	26.00	20,800		
	Registers, grilles & diffusers	**97,800**	gsf	0.75	73,350		
	VAV's w/coil	**97,800**	gsf	1.00	97,800		
	Sound attenuators	**1**	ls	50,000.00	50,000		
	Misc. Duct accessories	**97,800**	gsf	0.85	83,130		
	Mech. Piping						
	Hot/Chilled water, supply and return	**10,295**	lf	65.00	669,175		
	Refrigerant piping - split systems	**800**	lf	50.00	40,000		
	Condensate drain piping with fittings & hangers	**782**	lf	45.00	35,190		
	Valves & accessories	**1**	ls	89,323.80	89,324		
	Piping insulation	**11,095**	lf	14.00	155,330		
	Automatic Temperature Controls						
	Automatic temperature controls DDC	**97,800**	gsf	8.50	831,300		
	Balancing						
	System testing & balancing	**97,800**	sf	0.85	83,130		
	Miscellaneous						
	Coring, cutting, sleeves & fire stopping	**1**	ls	16,000.00	16,000		
	Vibration isolation and supports	**1**	ls	30,000.00	30,000		
	Hydraulic lifts/rigging	**1**	ls	60,000.00	60,000		
	Coordination / BIM / ENG Support / As-Builts	**1**	ls	146,700.00	146,700		
	Commissioning Support	**1**	ls	25,000.00	25,000		
	Fees & permits	**1**	ls	145,072.80	145,073		
	SUBTOTAL					9,633,586	
	TOTAL - HVAC						**$9,633,586**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.2 - New Construction at Lower Field							
D40	***FIRE PROTECTION***						
D40	**FIRE PROTECTION, GENERALLY**						
	Fire Protection Equipment						
	Fire water service entrance	**1**	ea	12,500.00	12,500		
	Double check valve assembly	**1**	ea	8,500.00	8,500		
	Wet alarm check valve assembly	**1**	ea	5,500.00	5,500		
	Floor control valve assembly	**6**	ea	2,700.00	16,200		
	Fire department connection	**1**	ea	1,600.00	1,600		
	Electric bell	**1**	ea	500.00	500		
	Fire pump, incl jockey pump (TBD)				NIC		
	Misc. Fire Protection Equipment	**97,800**	gsf	0.25	24,450		
	Fire Protection Service						
	Sprinkler heads	**1,027**	ea	115.00	118,105		
	Main sprinkler piping	**1,951**	lf	55.00	107,305		
	Standpipe sprinkler piping	**780**	lf	55.00	42,900		
	Branch sprinkler piping	**11,297**	lf	40.00	451,880		
	Miscellaneous						
	Coordination & BIM	**1**	ls	33,000.00	33,000		
	Hydraulic calculations	**1**	ls	7,500.00	7,500		
	Coring, sleeves & fire stopping	**1**	ls	20,000.00	20,000		
	Shop drawings	**1**	ls	9,500.00	9,500		
	Commissioning of system	**1**	ls	2,500.00	2,500		
	Fees & permits	**1**	ls	12,929.10	12,929		
	SUBTOTAL					874,869	
	TOTAL - FIRE PROTECTION						**$874,869**
D50	***ELECTRICAL***						
D5010	**ELECTRICAL SYSTEMS**						
	Gear & Distribution						
	Normal power distribution system						
	2500AF 2000AT gear and distribution	**97,800**	gsf	9.00	880,200		
	Power monitoring	**1**	ls	15,000.00	15,000		
	Emergency power						
	Emergency Generator; 300 kW Diesel	**1**	ls	165,000.00	165,000		
	Emergency power gear and distribution	**97,800**	gsf	6.00	586,800		
	Photovoltaic						
	PV system infrastructure for future system	**1**	ls	20,000	20,000		
	Equipment Wiring						
	Feeders + electrical to equipment	**97,800**	gsf	4.00	391,200		
	SUBTOTAL					2,058,200	
D5020	**LIGHTING & POWER**						
	Lighting, controls + power	**97,800**	gsf	21.00	2,053,800		
	SUBTOTAL					2,053,800	
D5030	**COMMUNICATION & SECURITY SYSTEMS**						
	Telecommunications						
	Telcom rough-in, devices and cabling	**97,800**	gsf	5.50	537,900		
	Network switches and Handsets, allow				assume By others		
	Master Clock & PA						
	Master Clock & PA	**97,800**	gsf	1.50	146,700		
	2 Way Communications						
	2 Way Communications system	**1**	ls	20,000.00	20,000		
	Audio Visual Systems						
	Gym sound system	**1**	ls	50,000.00	50,000		
	Cafeteria sound system	**1**	ls	50,000.00	50,000		
	Rough-in: general building	**97,800**	sf	0.75	73,350		
	Stage Systems:						
	Cafetorium stage lighting and dimming package, allow	**1**	ls	100,000.00	100,000		
	Speech Reinforcement						

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.2 - New Construction at Lower Field							
	Speech Reinforcement System	**32**	loc	3,500.00	112,000		
	Fire Alarm						
	FA system	**97,800**	gsf	3.50	342,300		
	BDA/DAS	**97,800**	gsf	1.25	122,250		
	Security System						
	Security system	**97,800**	gsf	5.00	489,000		
	SUBTOTAL					2,043,500	
D5040	**OTHER ELECTRICAL SYSTEMS**						
	Lightning protection	**1**	ls	75,000.00	75,000		
	Common Work Results for Electrical	**1**	ls	625,000.00	625,000		
	Temporary power & lighting				Included above		
	Coordination & management				Included above		
	Fees & permits				Included above		
	SUBTOTAL					700,000	
	TOTAL - ELECTRICAL						**$6,855,500**
E10	***EQUIPMENT***						
E10	**EQUIPMENT, GENERALLY**						
112000	*LOADING DOCK EQUIPMENT*						
	Loading dock equipment	**1**	ls	10,000.00	10,000		
110620	*THEATRICAL EQUIPMENT*						
	Cafetorium rigging & stage curtains	**1**	ls	75,000.00	75,000		
	Cafetorium lighting system	**1**	ls		see electrical		
	Cafetorium fixture package including controls	**1**	ls		see electrical		
113100	*APPLIANCES*						
	Residential appliances - allowance	**1**	ls	30,000.00	30,000		
114000	*FOOD SERVICE EQUIPMENT*						
	Kitchen equipment -allowance	**1**	ls	650,000.00	650,000		
115300	*EDUCATIONAL EQUIPMENT*						
	Kiln	**1**	ea	5,000.00	5,000		
115213	*PROJECTION SCREENS*						
	Motorized projection screen - allowance	**1**	ls	20,000.00	20,000		
116600	*GYM EQUIPMENT*						
	Basketball backstops	**6**	ea	10,000.00	60,000		
	Scoreboard	**1**	ea	20,000.00	20,000		
	Shot timer	**1**	ea	5,000.00	5,000		
	Gym wall pads	**1,800**	sf	17.00	30,600		
	Wall pads in OT/PT	**300**	sf	17.00	5,100		
	Volleyball equipment	**1**	ls	5,000.00	5,000		
	Divider curtain (1#)	**1**	ea	27,000.00	27,000		
	Climbing wall - allow	**1**	ls	75,000.00	75,000		
	Allowance for built-in indoor play equipment	**1**	ls	50,000.00	50,000		
126000	*SEATING*						
	Bleachers in gym				No scope		
	SUBTOTAL					1,067,700	
	TOTAL - EQUIPMENT						**$1,067,700**
E20	***FURNISHINGS***						
E2010	**FIXED FURNISHINGS**						
122100	*WINDOW TREATMENT*						
	Window treatments - allowance	**12,500**	sf	10.00	125,000		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.2 - New Construction at Lower Field							
123553	*CASEWORK*						
	Casework package	**97,800**	gsf	10.00	978,000		
	SUBTOTAL					1,103,000	
E2020	**MOVABLE FURNISHINGS**						
	All movable furnishings to be provided and installed by owner						
	SUBTOTAL					NIC	
	TOTAL - FURNISHINGS						**$1,103,000**
F10	***SPECIAL CONSTRUCTION***						
F10	**SPECIAL CONSTRUCTION**						
	SUBTOTAL					-	
	TOTAL - SPECIAL CONSTRUCTION						
F20	***SELECTIVE BUILDING DEMOLITION***						
F2010	**BUILDING ELEMENTS DEMOLITION**						
	SUBTOTAL					-	
F2020	**HAZARDOUS COMPONENTS ABATEMENT**						
	See main summary for HazMat allowance				See Summary		
	SUBTOTAL						
	TOTAL - SELECTIVE BUILDING DEMOLITION						
	SUBTOTAL						**$48,862,668**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.2 - New Construction at Lower Field							
	G SITEWORK						
G10	**SITE PREPARATION & DEMOLITION**						
311000	*GENERAL CONDITIONS*						
	6' high site construction fence	**4,000**	lf	35.00	140,000		
	6' high site construction fence double gate	**2**	loc	5,000.00	10,000		
	Site construction entrance and removal/restoration	**2**	loc	12,000.00	24,000		
	Mobilization & Demobilization	**1**	ea	80,000.00	80,000		
	Temp laydown areas	**1**	ls	10,000.00	10,000		
	Wheel wash rack	**1**	ls	10,000.00	10,000		
	Concrete washout area	**1**	ea	2,500.00	2,500		
	Snow removal - allowance	**1**	ls		Excluded		
	Winter conditions - allowance	**1**	ls		Excluded		
	Police details	**1**	ls		Excluded		
	Site security	**1**	ls		Excluded		
	Job site construction trailer	**1**	ls		Excluded		
	Temp utilities for job trailer	**1**	ls		Excluded		
311000	*PHASING*						
	Allowance for phasing	**1**	ls	350,000.00	350,000		
311000	*SITE SALVAGE ITEMS*						
	Allowance to salvage any items on site	**1**	ls	10,000.00	10,000		
311000	*SITE DEMOLITION AND RELOCATIONS*						
	Demolish existing paving	**37,869**	sf	1.25	47,336		
	Demolish landscape curbing	**1,256**	lf	12.00	15,072		
	Demolish existing concrete walk	**1,563**	sf	1.50	2,345		
	Demolish existing pavers	**321**	sf	1.50	482		
	Demolish existing infield mix	**13,461**	sf	0.50	6,731		
	Demolish existing playground mulch	**16,007**	sf	1.50	24,011		
	Demolish existing fencing	**270**	lf	5.00	1,350		
	Demolish existing walls	**170**	lf	95.00	16,150		
	Demolish playground equipment	**7**	loc	2,500.00	17,500		
	Remove misc. site furnishings - benches, sheds, storage containers, etc	**1**	ls	50,000.00	50,000		
311000	*UTILITY DEMOLITION*						
	Demolish existing utility lines	**2,057**	lf	25.00	51,425		
	Demolish existing utility structures	**17**	ea	500.00	8,500		
	Remove and fill leach field	**925**	cy	55.00	50,875		
	Pump and remove septic tanks	**1**	ls	10,000.00	10,000		
311000	*ROADWAY WORK - allowance for utility connection*						
	Sawcut	**282**	lf	8.25	2,327		
	Remove pavement	**649**	sf	3.50	2,272		
	Temp pavement patching	**649**	sf	8.00	5,192		
	Steel plates	**1**	ls	2,500.00	2,500		
	Police details	**7**	dy	850.00	5,950		
	Permanent pavement patch	**649**	sf	10.00	6,490		
311000	*VEGETATION & TOPSOIL MANAGEMENT*						
	Tree clearing	**4**	acre	8,000.00	32,000		
	Stump removal	**4**	acre	4,000.00	16,000		
	Vegetation protection fencing - allowance	**1**	ls	2,500.00	2,500		
	Strip + stockpile topsoil	**3,151**	cy	11.50	36,237		
312000	*EROSION & SEDIMENT CONTROL*						
	Silt Fence; installation and removal - allow	**4,000**	lf	15.00	60,000		
	Silt Sacks; installation and removal - allow	**10**	ea	250.00	2,500		
	Erosion Control monitoring & maintenance	**1**	ls	30,000.00	30,000		
	SUBTOTAL					1,142,245	
312000	*BUILDING EARTHWORK*				w/ Building		
	SUBTOTAL					-	
312000	*SITE EARTHWORK*						
	Site cut to design subgrade	*23,611*	*cy*				
	Cut	**23,611**	cy	10.00	236,110		
	Stockpile/screen for reuse - assume 25%	**5,903**	cy	10.00	59,030		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.2 - New Construction at Lower Field							
312000	*SOIL DISPOSAL - conversion factor 1.7 to tons*	*17,708*	*cy*		-		
	Load excess soils for disposal	**17,708**	cy	2.50	44,270		
	Less than RCS-1 - clean non-regulated	**30,104**	tn	23.00	692,392		
	Site fill to design subgrade	*14,248*	*cy*				
	Fill - from cut	**5,903**	cy	12.00	70,836		
	Fill - imported	**10,431**	cy	46.00	479,826		
	Gravel fill at demo-ed building - basements, foundations, pits etc	**2,176**	cy	46.00	100,096		
312000	*ROCK REMOVAL*						
	Rock removal allowance	**1,500**	cy	100.00	150,000		
312000	*ESTABLISHING GRADE*						
	Sub grade establishment	**480,000**	sf	0.15	72,000		
	Fine grading throughout the site	**480,000**	sf	0.25	120,000		
312000	*HAZARDOUS MATERIALS*						
	UST removal allowance	**1**	ls	50,000.00	50,000		
	SUBTOTAL					2,074,560	
	TOTAL - SITE PREPARATION						**$3,216,805**
G20	**SITE IMPROVEMENTS**						
320000	***ROADWAYS AND PARKING LOTS***						
	Asphalt Paving; parking lots and roadway	*81,989*	*sf*				
	gravel base; 12" thick	**3,037**	cy	50.00	151,850		
	asphalt top; 1.5" thick	**784**	tns	180.00	141,120		
	asphalt binder; 2.5" thick	**1,304**	tns	130.00	169,520		
320000	*CURBING*						
	Concrete curb - service road/fire lane	**1,800**	lf	38.00	68,400		
	Vertical granite curb	**3,544**	lf	52.00	184,288		
	ADA Curb cuts - allowance	**1**	ls	10,000.00	10,000		
320000	*ROAD MARKINGS AND SIGNS*						
	Parking spot	**108**	ea	85.00	9,180		
	Parking spot ADA	**5**	ea	250.00	1,250		
	Sign allowance	**1**	ls	20,000.00	20,000		
	Pavement markings allowance	**1**	ls	20,000.00	20,000		
	Crosswalk hatching - allowance	**1**	ls	10,000.00	10,000		
	SUBTOTAL					785,608	
320000	***PEDESTRIAN PAVING***						
	Outdoor learning areas	**5,150**	sf	20.00	103,000		
	Gym runaround	**4,120**	sf	20.00	82,400		
	Concrete sidewalks	*4,810*	*sf*				
	gravel base; 8" thick	**119**	cy	50.00	5,950		
	Broom finish concrete paving; 4" thick	**4,810**	sf	12.00	57,720		
	Entrance plaza premiums - allowance	**1,000**	sf	20.00	20,000		
	Concrete pads - allowance	*500*	*sf*				
	gravel base; 12" thick	**19**	cy	50.00	950		
	Broom finish concrete paving; 8" thick	**500**	sf	17.00	8,500		
320000	Bituminous concrete walkways - access to fields allowance	*750*	*sf*				
	gravel base; 8" thick	**19**	cy	50.00	950		
	asphalt top; 1" thick	**5**	tns	180.00	900		
	asphalt binder; 1.5" thick	**7**	tns	130.00	910		
	SUBTOTAL					281,280	
320000	***SITE IMPROVEMENTS***						
320000	*SITE FURNISHINGS - allowances*						
	Bollards allowance for utilities	**10**	ea	1,100.00	11,000		
	Decorative bollard allowance	**30**	ea	1,800.00	54,000		
	Site furnishings - allowance for new site furnishings at outdoor and play areas	**1**	ls	75,000.00	75,000		
	Terraced seating allowance - utilize sloped areas when possible	**1**	ls	150,000.00	150,000		

	CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
		OPTION 3.2 - New Construction at Lower Field						
125		Bike racks - allowance	**20**	ea	850.00	17,000		
126		Flagpole - 30' Ht. - allowance	**1**	ea	7,000.00	7,000		
127		Flagpole foundation	**1**	ea	4,500.00	4,500		
128		Trash and Recycling receptacles - allowance	**8**	ea	2,500.00	20,000		
129	*320000*	*PLAY AREAS - allowance*						
130		Playground - pour-in-place safety surfacing	7,900	*sf*				
131		gravel base; 8" thick	**196**	cy	50.00	9,800		
132		Pour-in-place safety surface	**7,900**	sf	36.00	284,400		
133		Edging	**250**	lf	45.00	11,250		
134		Allowance for play equipment	**1**	ls	250,000.00	250,000		
135	*320000*	*ATHLETIC EQUIPMENT*						
136		Soccer goals	**8**	ea	4,500.00	36,000		
137	*320000*	*SERVICE AREAS - Allowance*						
138		Loading dock landing	*1,530*	*sf*				
139		gravel base; 6" thick	**28**	cy	50.00	1,400		
140		Broom finish concrete paving; 4" thick	**1,530**	sf	12.00	18,360		
141		Loading dock wall	**50**	lf		w/ building		
142		Loading dock stairs, ramps, handrails, etc	**1**	ls	25,000.00	25,000		
143		Dumpster pad and screen fence	**1**	ls	15,000.00	15,000		
144	*320000*	*FENCING*						
145		Fencing at outdoor classrooms and play areas	**524**	lf	75.00	39,300		
146		Fence gates at outdoor classrooms and play areas	**3**	ea	1,500.00	4,500		
147		Vehicular gate	**2**	ea	25,000.00	50,000		
148		SUBTOTAL					1,083,510	
149								
150	*329900*	*SITE WALLS*						
151		Segmental Wall- 4' ht.	*971*	*lf*				
152		Large block wall	**4,855**	sf	55.00	267,025		
153		Excavate and prepare wall base	**216**	cy	100.00	21,600		
154		Backfill wall - crushed stone	**144**	cy	65.00	9,360		
155		Backfill-controlled placement; above grade - on-site soils no geogrid	**575**	cy	35.00	20,125		
156		Geotextiles	**7,283**	sf	2.50	18,208		
157		Wall drain	**971**	lf	22.00	21,362		
158		4' Ht. CLF	**971**	lf	65.00	63,115		
159		SUBTOTAL					420,795	
160								
161		**Landscaping**						
162	*329900*	*TOPSOIL*						
163		Screen topsoil	**2,000**	cy	7.50	15,000		
164		Export tailings from screening process - assume clean rock	**600**	cy	8.50	5,100		
165		Amend/Place	**1,400**	cy	20.00	28,000		
166		Topsoil - imported 6" thick; swell 25%	**4,970**	cy	65.00	323,050		
167		Soil and mulch at planting areas; 12" thick - allowance	**500**	cy	65.00	32,500		
168		Allowance to repair existing field from drainage work	**1**	ls	50,000.00	50,000		
169	*329900*	*LAWN AND SEED*	*191,810*	*sf*				
170		Topsoil - imported 6" thick; swell 25%	**4,440**	cy		incl. above		
171		Power rake and hydroseed disturbed areas	**190,530**	sf	0.35	66,686		
172	*320000*	*ATHLETIC LANDSCAPING*	*40,424*	*sf*				
173		Topsoil - imported 6" thick; swell 25%	**936**	cy		incl. above		
174		Lawn seeding	**40,424**	sf	0.55	22,233		
175		Irrigation	**40,424**	sf	2.00	80,848		
176	*329900*	*TREES/SHRUBS/PLANTINGS*						
177		Allowance for all plantings	**1**	ls	150,000.00	150,000		
178	*328400*	*IRRIGATION*						
179		Allowance for irrigation - lawn and planting	**1**	ls		Assume NR		
180		SUBTOTAL					773,417	
181								
182		***TOTAL - SITE IMPROVEMENTS***						**$3,344,610**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.2 - New Construction at Lower Field							
G30	**CIVIL MECHANICAL UTILITIES**						
210000	*FIRE PROTECTION*						
	8" CLDI	**1,800**	lf	80.00	144,000		
	6" CLDI	**50**	lf	49.64	2,482		
	Fire department connection	**1**	ea	2,500.00	2,500		
	Gate valve	**13**	ea	1,200.00	15,600		
	Fire hydrant	**4**	ea	6,500.00	26,000		
	Thrust blocks - allowance	**8**	ea	500.00	4,000		
331000	*WATER UTILITIES*						
	4" CLDI	**50**	lf	67.50	3,375		
331000	*CONNECTIONS*						
	Connect to water lines	**2**	ea	10,000.00	20,000		
312000	*EXCAVATION & BACKFILL*	*1,900*	*lf*				
	DI gravity piping excavation	**1,689**	cy	46.75	78,961		
	Trench bedding	**380**	cy	38.00	14,440		
	Pressure test & chlorinate	**1,900**	lf	5.00	9,500		
	Allowance for temporary water service				NR		
	Allowance for temporary support of existing utilities				NR		
	SUBTOTAL					320,858	
333000	*SANITARY SEWER*						
	Sewer force main - 3"	**200**	lf	30.00	6,000		
	6" PVC	**100**	lf	36.00	3,600		
	SMH - 0-5' deep	**4**	ea	4,800.00	19,200		
	Leaching area	**8,400**	sf	30.00	252,000		
	Grease trap - 5,000 gal.	**1**	ea	15,000.00	15,000		
	Septic tank; 5,500 gal - in series	**2**	ea	20,000.00	40,000		
	Pump chamber; 5,500 gal	**1**	ea	20,000.00	20,000		
	Pump system	**1**	ls	125,000.00	125,000		
312000	*EXCAVATION & BACKFILL - force main*	*200*	*lf*				
	Force main piping excavation- assume shallow	**119**	cy	46.75	5,563		
	Trench bedding	**59**	cy	38.00	2,242		
312000	*EXCAVATION & BACKFILL - Gravity*	*100*	*lf*				
	PVC gravity piping excavation	**89**	cy	46.75	4,161		
	Trench bedding	**30**	cy	38.00	1,140		
	Pressure testing	**100**	lf	4.00	400		
	Allowance for temporary sewer service				NR		
	Allowance for temporary support of existing utilities				NR		
	SUBTOTAL					494,306	
334000	*STORM DRAINAGE*						
	Drain lines	**3,000**	lf	125.00	375,000		
	Rood drains	**300**	lf	60.00	18,000		
	Clean structures and pipe network in existing car loop and parking	**1**	ls	25,000.00	25,000		
	Foundation drain at new school building	**1,415**	lf	23.00	32,545		
	4' Dia. DMH - 0-5' deep	**11**	ea	4,200.00	46,200		
	CB - 4' Dia.	**15**	ea	3,800.00	57,000		
	WQU	**5**	ea	12,000.00	60,000		
	WQU - doghouse	**1**	ea	18,000.00	18,000		
	FES	**3**	ea	2,500.00	7,500		
	Roof drain connections	**2**	ea	500.00	1,000		
	Allowance for rain gardens and swales	**1**	ls	100,000.00	100,000		
	Athletic fields						
	Flat panel drains	**3,865**	lf	7.50	28,988		
	Collector piping	**1,000**	lf	55.00	55,000		
	Underground recharger	*10,670*	*sf*				
	Infiltration chambers	**133**	ea	750.00	99,750		
	End caps	**30**	ea	350.00	10,500		
	Excavate and reuse on-site	**3,557**	cy	25.00	88,925		
	Load excess soils for disposal	**3,557**	cy	2.50	8,893		
	Less than RCS-1 - clean non-regulated	**6,047**	tn	23.00	139,081		

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 3.2 - New Construction at Lower Field							
	Install stone base; 12" thick	**652**	tn	65.00	42,380		
	Fine grade base	**10,670**	sf	0.25	2,668		
	Back-fill infiltration bed with 1-2" crushed stone; 9.1cy/ea	**1,997**	tn	50.00	99,850		
	Geotextile fabrics	**26,675**	sf	0.75	20,006		
334000	*CONNECTIONS*						
	Connect to existing structure (inside site)	**1**	ea	5,000.00	5,000		
	SUBTOTAL					1,341,286	
220001	*NATURAL GAS*						
312000	*EXCAVATION & BACKFILL*	*500*	*lf*				
	Gas piping excavation	**222**	cy	46.75	10,379		
	Trench bedding	**100**	cy	38.00	3,800		
	SUBTOTAL					14,179	
	TOTAL - SITE MECHCANICAL UTILITIES						**$2,170,629**
G40	**ELECTRICAL UTILITIES**						
	Primary ductbank, empty, allow	**1,000**	lf	90.00	90,000		
	Secondary ductbank -2000A, allow	**50**	ls	900.00	45,000		
	Telcom services, empty 4-4", allow	**1,050**	lf	180.00	189,000		
	Manhole, allowance	**4**	ea	10,000.00	40,000		
	Site lighting, allow at roadways	**35**	ea	5,000.00	175,000		
	Site lighting, allow at parking areas	**25**	ea	5,000.00	125,000		
	Site security, allow	**1**	ls	100,000.00	100,000		
	Electric vehicle charging station (10% day one 2-40A provisions for future)	**20**	ea	7,500.00	150,000		
	Sports field Lighting						
	Sports field Lighting				NIC		
	SUBTOTAL					914,000	
	TOTAL - SITE ELECTRICAL UTILITIES						**$914,000**
G90	**TRAFFIC MITIGATION**					Assume NR	
	SUBTOTAL						
	TOTAL - SITE MITIGATION						**$0**
	TOTAL - SITE DEVELOPMENT						**$9,646,044**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
D30	***HVAC***						
D30	**HVAC, GENERALLY**						
	ADD / RENO HVAC OPTION - VRF SYSTEMS						
	Baseline Estimate Option 2.1 Add (Air source heat pump chiller 10 modules)	**1**	ls	(6,170,040.00)	(6,170,040)		
	Baseline Estimate Option 2.1 Reno (Air source heat pump chiller 2 modules)	**1**	ls	(2,852,246.00)	(2,852,246)		
	HVAC Demolition						
	HVAC demolition, phased planning, per narrative	**1**	ls	36,000.00	36,000		
	Equipment						
	VRF Air Source Heat Pumps	**120**	tons	4,000.00	480,000		
	Indoor Units	**80**	ea	3,000.00	240,000		
	Radiant heating/cooling/perimeter	**94,850**	gsf	0.50	47,425		
	Unit heaters and cabinet heaters	**12**	ea	1,800.00	21,600		
	Split systems/heat pumps (IT, electric, elev machine rooms)	**6**	ea	12,500.00	75,000		
	Misc. Mech equipment	**94,850**	gsf	1.00	94,850		
	Air distribution						
	Air Handling Equipment - DOAS Units	**45,800**	cfm	35.00	1,603,000		
	Fans						
	Exhaust fans, cfm TBD	**94,850**	gsf	1.00	94,850		
	KEF-1, Kitchen exhaust fan	**1,500**	cfm	4.00	6,000		
	Sheet metal & Accessories						
	Galvanized ductwork	**75,880**	lbs	18.00	1,365,840		
	Black steel exhaust ductwork	**1,500**	lbs	26.00	39,000		
	Duct insulation	**49,322**	sf	6.50	320,593		
	Duct insulation, fire wrap	**900**	sf	22.00	19,800		
	Dishwasher exhaust	**800**	lbs	26.00	20,800		
	Registers, grilles & diffusers	**94,850**	gsf	0.75	71,138		
	Sound attenuators	**1**	ls	50,000.00	50,000		
	Misc. Duct accessories	**94,850**	gsf	0.85	80,623		
	Mech. Piping						
	Refrigerant piping - VRF	**11,000**	lf	75.00	825,000		
	Condensate drain piping with fittings & hangers	**4,065**	lf	45.00	182,925		
	Valves & accessories	**1**	ls	181,426.50	181,427		
	Piping insulation	**11,000**	lf	14.00	154,000		
	Automatic Temperature Controls						
	Automatic temperature controls DDC	**94,850**	gsf	8.50	806,225		
	Balancing						
	System testing & balancing	**94,850**	gsf	0.85	80,623		
	Miscellaneous						
	Coring, cutting, sleeves & fire stopping	**1**	ls	16,000.00	16,000		
	Vibration isolation and supports	**1**	ls	30,000.00	30,000		
	Hydraulic lifts/rigging	**1**	ls	60,000.00	60,000		
	Coordination / BIM / ENG Support / As-Builts	**1**	ls	142,275.00	142,275		
	Commissioning Support	**1**	ls	25,000.00	25,000		
	Fees & permits	**1**	ls	157,000.00	157,000		
	SUBTOTAL					(1,695,292)	
	TOTAL - HVAC	***ADD***					**($1,695,292)**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
D30	**HVAC, GENERALLY**						
	ADD / RENO HVAC OPTION - GEOTHERMAL						
	Baseline Estimate Option 2.1 Add (Air source heat pump chiller 10 modules)	**1**	ls	(6,170,040.00)	(6,170,040)		
	Baseline Estimate Option 2.1 Reno (Air source heat pump chiller 2 modules)	**1**	ls	(2,852,246.00)	(2,852,246)		
	HVAC Demolition						
	HVAC demolition, phased planning, per narrative	**1**	ls	36,000.00	36,000		
	Equipment						
	Closed loop type quad-loop ground source geothermal wells, 550ft deep (4 ton per well)	**66**	ea	34,000.00	2,244,000		
	Vault and main distribution	**1**	ea	50,000.00	50,000		
	Modular ground water source to water simultaneous heating/cooling heat pump chillers with heat recovery, 6 x 50 ton modules	**350**	tons	3,600.00	1,260,000		
	Geothermal water pumps	**2**	ea	25,000.00	50,000		
	Expansion tanks	**2**	ea	12,500.00	25,000		
	Air Separators	**2**	ea	9,600.00	19,200		
	Buffer tanks	**2**	ea	25,000.00	50,000		
	Radiant heating/cooling/perimeter	**94,850**	gsf	0.50	47,425		
	Unit heaters and cabinet heaters	**12**	ea	1,800.00	21,600		
	Split systems/heat pumps (IT, electric, elev machine rooms)	**6**	ea	12,500.00	75,000		
	Misc. Mech equipment	**94,850**	gsf	1.00	94,850		
	Pumps						
	Primary hot water, includes redundant	**5**	ea	9,800.00	49,000		
	Secondary hot water, includes redundant	**5**	ea	15,500.00	77,500		
	Primary chilled water, includes redundant	**5**	ea	12,000.00	60,000		
	Secondary chilled water, includes redundant	**5**	ea	16,500.00	82,500		
	Pump VFD	**22**	ea	4,500.00	99,000		
	Air distribution						
	Air Handling Equipment - DOAS Units	**45,800**	cfm	35.00	1,603,000		
	Fans						
	Exhaust fans, cfm TBD	**94,850**	gsf	1.00	94,850		
	KEF-1, Kitchen exhaust fan	**1,500**	cfm	4.00	6,000		
	Sheet metal & Accessories						
	Galvanized ductwork	**81,571**	lbs	18.00	1,468,278		
	Black steel exhaust ductwork	**1,500**	lbs	26.00	39,000		
	Duct insulation	**53,021**	sf	6.50	344,637		
	Duct insulation, fire wrap	**900**	sf	22.00	19,800		
	Dishwasher exhaust	**800**	lbs	26.00	20,800		
	Registers, grilles & diffusers	**94,850**	gsf	0.75	71,138		
1	VAV's w/coil	**94,850**	gsf	1.00	94,850		
	Sound attenuators	**1**	ls	50,000.00	50,000		
	Misc. Duct accessories	**94,850**	gsf	0.85	80,623		
	Mech. Piping						
	Hot/Chilled water, supply and return	**12,647**	lf	65.00	822,055		
	Refrigerant piping	**800**	lf	75.00	60,000		
	Condensate drain piping with fittings & hangers	**780**	lf	45.00	35,100		
	Valves & accessories	**1**	ls	165,087.90	165,088		
	Piping insulation	**13,447**	lf	14.00	188,258		
	Automatic Temperature Controls						
	Automatic temperature controls DDC	**94,850**	gsf	9.00	853,650		
	Balancing						
	System testing & balancing	**94,850**	gsf	0.85	80,623		
	Miscellaneous						
	Coring, cutting, sleeves & fire stopping	**1**	ls	16,000.00	16,000		
	Vibration isolation and supports	**1**	ls	30,000.00	30,000		
	Hydraulic lifts/rigging	**1**	ls	60,000.00	60,000		
	Coordination / BIM / ENG Support / As-Builts	**1**	ls	142,275.00	142,275		
	Commissioning Support	**1**	ls	25,000.00	25,000		
	Fees & permits	**1**	ls	175,000.00	175,000		
	SUBTOTAL					1,864,814	
	TOTAL - HVAC	***ADD***					**$1,864,814**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	D30 HVAC						
D30	**HVAC, GENERALLY**						
	UPPER FIELD HVAC OPTION - VRF SYSTEMS						
	Baseline Estimate Option 3.1 (Air source heat pump chiller 14 modules)	**1**	ls	(9,685,801.00)	(9,685,801)		
	Equipment						
	VRF Air Source Heat Pumps	**145**	tons	4,000.00	580,000		
	Indoor Units	**90**	ea	3,000.00	270,000		
	Radiant heating/cooling/perimeter	**97,800**	gsf	0.50	48,900		
	Unit heaters and cabinet heaters	**12**	ea	1,800.00	21,600		
	Split systems/heat pumps (IT, electric, elev machine rooms)	**6**	ea	12,500.00	75,000		
	Misc. Mech equipment	**97,800**	gsf	1.00	97,800		
	Air distribution						
	Air Handling Equipment - DOAS	**58,650**	cfm	35.00	2,052,750		
	Fans						
	Exhaust fans, cfm TBD	**97,800**	gsf	1.00	97,800		
	KEF-1, Kitchen exhaust fan	**1,500**	cfm	4.00	6,000		
	Sheet metal & Accessories						
	Galvanized ductwork	**78,240**	lbs	18.00	1,408,320		
	Black steel exhaust ductwork	**1,500**	lbs	26.00	39,000		
	Duct insulation	**50,856**	sf	6.50	330,564		
	Duct insulation, fire wrap	**900**	sf	22.00	19,800		
	Dishwasher exhaust	**800**	lbs	26.00	20,800		
	Registers, grilles & diffusers	**97,800**	gsf	0.75	73,350		
	Sound attenuators	**1**	ls	50,000.00	50,000		
	Misc. Duct accessories	**97,800**	gsf	0.85	83,130		
	Mech. Piping						
	Refrigerant piping - VRF	**12,200**	lf	75.00	915,000		
	Condensate drain piping with fittings & hangers	**4,191**	lf	45.00	188,595		
	Valves & accessories	**1**	ls	198,647.10	198,647		
	Piping insulation	**12,200**	lf	14.00	170,800		
	Automatic Temperature Controls						
	Automatic temperature controls DDC	**97,800**	gsf	8.50	831,300		
	Balancing						
	System testing & balancing	**97,800**	gsf	0.85	83,130		
	Miscellaneous						
	Coring, cutting, sleeves & fire stopping	**1**	ls	16,000.00	16,000		
	Vibration isolation and supports	**1**	ls	30,000.00	30,000		
	Hydraulic lifts/rigging	**1**	ls	60,000.00	60,000		
	Coordination / BIM / ENG Support / As-Builts	**1**	ls	146,700.00	146,700		
	Commissioning Support	**1**	ls	25,000.00	25,000		
	Fees & permits	**1**	ls	165,000.00	165,000		
	SUBTOTAL					(1,580,815)	
	TOTAL - HVAC	***ADD***					**($1,580,815)**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
D30	**HVAC, GENERALLY**						
	UPPER FIELD HVAC OPTION - Geothermal						
	Equipment						
	Baseline Estimate Option 3.1 (Air source heat pump chiller 14 modules)	**1**	ls	(9,685,801.00)	(9,685,801)		
	Closed loop type quad-loop ground source geothermal wells, 550ft deep (4 ton per well)	**66**	ea	34,000.00	2,244,000		
	Vault and main distribution	**1**	ea	50,000.00	50,000		
	Modular ground water source to water simultaneous heating/cooling heat pump chillers with heat recovery, 7 x 50 ton modules	**350**	tons	3,600.00	1,260,000		
	Geothermal water pumps	**2**	ea	25,000.00	50,000		
	Expansion tanks	**2**	ea	12,500.00	25,000		
	Air Separators	**2**	ea	9,600.00	19,200		
	Buffer tanks	**2**	ea	25,000.00	50,000		
	Radiant heating/cooling/perimeter	**97,800**	gsf	0.50	48,900		
	Unit heaters and cabinet heaters	**12**	ea	1,800.00	21,600		
	Split systems/heat pumps (IT, electric, elev machine rooms)	**6**	ea	12,500.00	75,000		
	Misc. Mech equipment	**97,800**	gsf	1.00	97,800		
	Pumps						
	Primary hot water, includes redundant	**5**	ea	9,800.00	49,000		
	Secondary hot water, includes redundant	**5**	ea	15,500.00	77,500		
	Primary chilled water, includes redundant	**5**	ea	12,000.00	60,000		
	Secondary chilled water, includes redundant	**5**	ea	16,500.00	82,500		
	Pump VFD	**22**	ea	4,500.00	99,000		
	Air distribution						
	Air Handling Equipment - DOAS Units	**58,650**	cfm	35.00	2,052,750		
	Fans						
	Exhaust fans, cfm TBD	**97,800**	gsf	1.00	97,800		
	KEF-1, Kitchen exhaust fan	**1,500**	cfm	4.00	6,000		
	Sheet metal & Accessories						
	Galvanized ductwork	**84,108**	lbs	18.00	1,513,944		
	Black steel exhaust ductwork	**1,500**	lbs	26.00	39,000		
	Duct insulation	**54,670**	sf	6.50	355,355		
	Duct insulation, fire wrap	**900**	sf	22.00	19,800		
	Dishwasher exhaust	**800**	lbs	26.00	20,800		
	Registers, grilles & diffusers	**97,800**	gsf	0.75	73,350		
1	VAV's w/coil	**97,800**	gsf	1.00	97,800		
	Sound attenuators	**1**	ls	50,000.00	50,000		
	Misc. Duct accessories	**97,800**	gsf	0.85	83,130		
	Mech. Piping						
	Hot/Chilled water, supply and return	**13,040**	lf	65.00	847,600		
	Refrigerant piping	**800**	lf	75.00	60,000		
	Condensate drain piping with fittings & hangers	**780**	lf	45.00	35,100		
	Valves & accessories	**1**	ls	169,686.00	169,686		
	Piping insulation	**13,840**	lf	14.00	193,760		
	Automatic Temperature Controls						
	Automatic temperature controls DDC	**97,800**	gsf	9.00	880,200		
	Balancing						
	System testing & balancing	**97,800**	gsf	0.85	83,130		
	Miscellaneous						
	Coring, cutting, sleeves & fire stopping	**1**	ls	16,000.00	16,000		
	Vibration isolation and supports	**1**	ls	30,000.00	30,000		
	Hydraulic lifts/rigging	**1**	ls	60,000.00	60,000		
	Coordination / BIM / ENG Support / As-Builts	**1**	ls	146,700.00	146,700		
	Commissioning Support	**1**	ls	25,000.00	25,000		
	Fees & permits	**1**	ls	175,000.00	175,000		
	SUBTOTAL					1,755,604	
	TOTAL - HVAC	***ADD***					**$1,755,604**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
D30	***HVAC***						
D30	**HVAC, GENERALLY**						
	LOWER FIELD HVAC OPTION - VRF SYSTEMS						
	Baseline Estimate Option 3.2 (Air source heat pump chiller 14 modules)	**1**	ls	(9,633,586.00)	(9,633,586)		
	Equipment						
	VRF Air Source Heat Pumps	**140**	tons	4,000.00	560,000		
	Indoor Units	**90**	ea	3,000.00	270,000		
	Radiant heating/cooling/perimeter	**97,800**	gsf	0.50	48,900		
	Unit heaters and cabinet heaters	**12**	ea	1,800.00	21,600		
	Split systems/heat pumps (IT, electric, elev machine rooms)	**6**	ea	12,500.00	75,000		
	Misc. Mech equipment	**97,800**	gsf	1.00	97,800		
	Air distribution						
	Air Handling Equipment - DOAS	**55,000**	cfm	35.00	1,925,000		
	Fans						
	Exhaust fans, cfm TBD	**97,800**	gsf	1.00	97,800		
	KEF-1, Kitchen exhaust fan	**1,500**	cfm	4.00	6,000		
	Sheet metal & Accessories						
	Galvanized ductwork	**78,240**	lbs	18.00	1,408,320		
	Black steel exhaust ductwork	**1,500**	lbs	26.00	39,000		
	Duct insulation	**50,856**	sf	6.50	330,564		
	Duct insulation, fire wrap	**900**	sf	22.00	19,800		
	Dishwasher exhaust	**800**	lbs	26.00	20,800		
	Registers, grilles & diffusers	**97,800**	gsf	0.75	73,350		
	Sound attenuators	**1**	ls	50,000.00	50,000		
	Misc. Duct accessories	**97,800**	gsf	0.85	83,130		
	Mech. Piping						
	Refrigerant piping - VRF	**12,200**	lf	75.00	915,000		
	Condensate drain piping with fittings & hangers	**4,191**	lf	45.00	188,595		
	Valves & accessories	**1**	ls	198,647.10	198,647		
	Piping insulation	**12,200**	lf	14.00	170,800		
	Automatic Temperature Controls						
	Automatic temperature controls DDC	**97,800**	gsf	8.50	831,300		
	Balancing						
	System testing & balancing	**97,800**	gsf	0.85	83,130		
	Miscellaneous						
	Coring, cutting, sleeves & fire stopping	**1**	ls	16,000.00	16,000		
	Vibration isolation and supports	**1**	ls	30,000.00	30,000		
	Hydraulic lifts/rigging	**1**	ls	60,000.00	60,000		
	Coordination / BIM / ENG Support / As-Builts	**1**	ls	146,700.00	146,700		
	Commissioning Support	**1**	ls	25,000.00	25,000		
	Fees & permits	**1**	ls	170,000.00	170,000		
	SUBTOTAL					(1,671,350)	
	TOTAL - HVAC	***ADD***					**($1,671,350)**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
D30	**HVAC, GENERALLY**						
	LOWER FIELD HVAC OPTION - Geothermal						
	Equipment						
	Baseline Estimate Option 3.2 (Air source heat pump chiller 14 modules)	**1**	ls	(9,685,801.00)	(9,685,801)		
	Closed loop type quad-loop ground source geothermal wells, 550ft deep (4 ton per well)	**66**	ea	34,000.00	2,244,000		
	Vault and main distribution	**1**	ea	50,000.00	50,000		
	Modular ground water source to water simultaneous heating/cooling heat pump chillers with heat recovery, 7 x 50 ton modules	**350**	tons	3,600.00	1,260,000		
	Geothermal water pumps	**2**	ea	25,000.00	50,000		
	Expansion tanks	**2**	ea	12,500.00	25,000		
	Air Separators	**2**	ea	9,600.00	19,200		
	Buffer tanks	**2**	ea	25,000.00	50,000		
	Radiant heating/cooling/perimeter	**97,500**	gsf	0.50	48,750		
	Unit heaters and cabinet heaters	**12**	ea	1,800.00	21,600		
	Split systems/heat pumps (IT, electric, elev machine rooms)	**6**	ea	12,500.00	75,000		
	Misc. Mech equipment	**97,500**	gsf	1.00	97,500		
	Pumps						
	Primary hot water, includes redundant	**5**	ea	9,800.00	49,000		
	Secondary hot water, includes redundant	**5**	ea	15,500.00	77,500		
	Primary chilled water, includes redundant	**5**	ea	12,000.00	60,000		
	Secondary chilled water, includes redundant	**5**	ea	16,500.00	82,500		
	Pump VFD	**22**	ea	4,500.00	99,000		
	Air distribution						
	Air Handling Equipment - DOAS Units	**55,000**	cfm	35.00	1,925,000		
	Fans						
	Exhaust fans, cfm TBD	**97,500**	gsf	1.00	97,500		
	KEF-1, Kitchen exhaust fan	**1,500**	cfm	4.00	6,000		
	Sheet metal & Accessories						
	Galvanized ductwork	**83,850**	lbs	18.00	1,509,300		
	Black steel exhaust ductwork	**1,500**	lbs	26.00	39,000		
	Duct insulation	**54,503**	sf	6.50	354,270		
	Duct insulation, fire wrap	**900**	sf	22.00	19,800		
	Dishwasher exhaust	**800**	lbs	26.00	20,800		
	Registers, grilles & diffusers	**97,500**	gsf	0.75	73,125		
1	VAV's w/coil	**97,500**	gsf	1.00	97,500		
	Sound attenuators	**1**	ls	50,000.00	50,000		
	Misc. Duct accessories	**97,500**	gsf	0.85	82,875		
	Mech. Piping						
	Hot/Chilled water, supply and return	**13,000**	lf	65.00	845,000		
	Refrigerant piping	**800**	lf	75.00	60,000		
	Condensate drain piping with fittings & hangers	**780**	lf	45.00	35,100		
	Valves & accessories	**1**	ls	169,218.00	169,218		
	Piping insulation	**14,580**	lf	14.00	204,120		
	Automatic Temperature Controls						
	Automatic temperature controls DDC	**97,500**	gsf	9.00	877,500		
	Balancing						
	System testing & balancing	**97,500**	sf	0.85	82,875		
	Miscellaneous						
	Coring, cutting, sleeves & fire stopping	**1**	ls	16,000.00	16,000		
	Vibration isolation and supports	**1**	ls	30,000.00	30,000		
	Hydraulic lifts/rigging	**1**	ls	60,000.00	60,000		
	Coordination / BIM / ENG Support / As-Builts	**1**	ls	146,250.00	146,250		
	Commissioning Support	**1**	ls	25,000.00	25,000		
	Fees & permits	**1**	ls	177,000.00	177,000		
	SUBTOTAL					1,626,482	
	TOTAL - HVAC	***ADD***					**$1,626,482**

PDP Options Cost Estimate

Shaker Lane Elementary School

Littleton, MA

PM&C LLC
20 Downer Avenue, Suite 5
Hingham, MA 02043
(T) 781-740-8007
(F) 781-740-1012

Prepared for:

Studio G

July 26, 2024

INTRODUCTION

NOTE: The costs for the various PDP Options indicated above are intended to be an analysis of the relative costs between options and NOT a prediction of the actual final cost of any individual option. Major variables such as geotechnical, site grading, structural system and final MEP systems have yet to be designed and costs will vary significantly from the benchmark cost estimating included as part of this PDP cost analysis. The costs outlined in this report should not be represented as the FINAL construction budget.

This PDP Design Submission cost estimate was produced from a Design + Site Selection Document dated July 10, 2024 prepared by Studio G and their design team.

This estimate includes all direct construction costs, General Contractors OH+P and design contingency. Cost escalation assumes start dates indicated.

Bidding conditions are expected to be public bidding under 149 of the Massachusetts General Laws to pre-qualified general contractors, and pre-qualified sub-contractors, open specifications for materials and manufacturers.

The estimate is based on prevailing wage rates for construction in this market and represents a reasonable opinion of cost. It is not a prediction of the successful bid from a contractor as bids will vary due to fluctuating market conditions, errors and omissions, proprietary specifications, lack or surplus of bidders, perception of risk, etc. Consequently the estimate is expected to fall within the range of bids from a number of competitive contractors or subcontractors, however we do not warrant that bids or negotiated prices will not vary from the final construction cost estimate.

ITEMS NOT CONSIDERED IN THIS ESTIMATE

Items not included in this estimate are:

- All professional fees and insurance
- Building Permit costs
- Rock excavation
- Land acquisition, feasibility, and financing costs
- All Furnishings, Fixtures and Equipment
- Items identified in the design as Not In Contract (NIC)
- Items identified in the design as by others
- Owner supplied and/or installed items (e.g. draperies, furniture and equipment)
- Utility company back charges, including work required off-site
- Work to City streets and sidewalks, (except as noted in this estimate)

PM&C

Shaker Lane Elementary School
Littleton, MA

26-Jul-24

PDP Options Cost Estimate

PDP PRICING OPTIONS

MAIN CONSTRUCTION COST SUMMARY

	Gross Floor Area	$/sf	Estimated Construction Cost - DBB	Estimated Construction Cost - CMr
OPTION 1 - Code Upgrade of Existing Building	62,000	$592.90	**$36,759,679**	**$38,965,260**
OPTION 2.1 - Renovation + Addition to East of Existing SLS	70,970	$848.26	**$60,200,694**	**$63,812,736**
OPTION 2.2 - Renovation + Addition to North of Existing SLS	71,120	$865.85	**$61,578,900**	**$65,273,634**
OPTION 3.1 - New Construction at Upper Field	73,850	$876.74	**$64,747,209**	**$68,632,042**
OPTION 3.2 - New Construction at Lower Field	73,850	$858.67	**$63,412,506**	**$67,217,256**
OPTION 4.1 - New Construction at Whitcomb Field	73,850	$840.59	**$62,077,804**	**$65,802,472**

PM&C

Shaker Lane Elementary School
Littleton, MA

26-Jul-24

PDP Options Cost Estimate

MAIN CONSTRUCTION COST SUMMARY

	Start Date		Gross Floor Area	$/sf	Estimated Construction Cost
OPTION 1 - Code Upgrade of Existing Building					
CODE UPGRADES TO EXISTING SCHOOL			62,000	$350.00	$21,700,000
REMOVE HAZARDOUS MATERIALS - PMC Allowance $15 per SF					$930,000
SITEWORK - Allowance (code upgrades only)					$1,000,000
SUB-TOTAL	Sep-26		62,000	$381.13	$23,630,000
ESCALATION TO START DATE	9.30%				$2,197,590
DESIGN AND PRICING CONTINGENCY	15.0%				$3,544,500
SUB-TOTAL			62,000	$473.74	$29,372,090
GENERAL CONDITIONS		36	MTHS	$100,000	$3,600,000
GENERAL REQUIREMENTS	2.00%				$587,442
PHASING	5.00%				$1,468,605
BONDS	0.75%				$220,291
INSURANCES	1.50%				$440,581
PERMIT					Excl
SUB-TOTAL					$35,689,009
OH+P	3.0%				$1,070,670
MODULAR CLASSROOMS					Excluded
TOTAL OF ALL CONSTRUCTION			62,000	$592.90	**$36,759,679**

PM&C

Shaker Lane Elementary School
Littleton, MA

26-Jul-24

PDP Options Cost Estimate

MAIN CONSTRUCTION COST SUMMARY

	Start Date		Gross Floor Area	$/sf	Estimated Construction Cost
OPTION 2.1 - Renovation + Addition to East of Existing SLS					
NEW ADDITION			49,170	$450.00	$22,126,500
RENOVATE EXISTING SCHOOL			21,800	$420.00	$9,156,000
DEMOLITION			40,200	$8.00	$321,600
REMOVE HAZARDOUS MATERIALS - PMC Allowance $15 per SF					$930,000
SITEWORK					$9,000,000
SUB-TOTAL	Sep-26		70,970	$585.23	$41,534,100
ESCALATION TO START DATE	9.30%				$3,862,671
DESIGN AND PRICING CONTINGENCY	15.0%				$6,230,115
SUB-TOTAL			70,970	$727.45	$51,626,886
GENERAL CONDITIONS		30	MTHS	$100,000	$3,000,000
GENERAL REQUIREMENTS	2.00%				$1,032,538
PHASING	3.00%				$1,548,807
BONDS	0.90%				$464,642
INSURANCES	1.50%				$774,403
PERMIT					Excl
SUB-TOTAL					$58,447,276
OH+P	3.0%				$1,753,418
MODULAR CLASSROOMS					Excluded
TOTAL OF ALL CONSTRUCTION			70,970	$848.26	**$60,200,694**

PM&C

Shaker Lane Elementary School
Littleton, MA

26-Jul-24

PDP Options Cost Estimate

MAIN CONSTRUCTION COST SUMMARY

	Start Date		Gross Floor Area	$/sf	Estimated Construction Cost
OPTION 2.2 - Renovation + Addition to North of Existing SLS					
NEW ADDITION			49,170	$450.00	$22,126,500
RENOVATE EXISTING SCHOOL			21,950	$420.00	$9,219,000
DEMOLITION			40,050	$8.00	$320,400
REMOVE HAZARDOUS MATERIALS - PMC Allowance $15 per SF					$930,000
SITEWORK					$10,000,000
SUB-TOTAL	Sep-26		71,120	$598.93	$42,595,900
ESCALATION TO START DATE	9.30%				$3,961,419
DESIGN AND PRICING CONTINGENCY	15.0%				$6,389,385
SUB-TOTAL			71,120	$744.47	$52,946,704
GENERAL CONDITIONS		30	MTHS	$100,000	$3,000,000
GENERAL REQUIREMENTS	2.00%				$1,058,934
PHASING	3.00%				$1,588,401
BONDS	0.75%				$397,100
INSURANCES	1.50%				$794,201
PERMIT					Excl
SUB-TOTAL					$59,785,340
OH+P	3.0%				$1,793,560
MODULAR CLASSROOMS					Excluded
TOTAL OF ALL CONSTRUCTION			71,120	$865.85	**$61,578,900**

PM&C

Shaker Lane Elementary School
Littleton, MA

26-Jul-24

PDP Options Cost Estimate

MAIN CONSTRUCTION COST SUMMARY

	Start Date		Gross Floor Area	$/sf	Estimated Construction Cost
OPTION 3.1 - New Construction at Upper Field					
NEW CONSTRUCTION			73,850	$450.00	$33,232,500
DEMOLITION			62,000	$8.00	$496,000
REMOVE HAZARDOUS MATERIALS - PMC Allowance $15 per SF					$930,000
SITEWORK					$12,000,000
SUB-TOTAL	Sep-26		73,850	$631.80	$46,658,500
ESCALATION TO START DATE	9.30%				$4,339,241
DESIGN AND PRICING CONTINGENCY	15.0%				$6,998,775
SUB-TOTAL			73,850	$785.33	$57,996,516
GENERAL CONDITIONS		24	MTHS	$100,000	$2,400,000
GENERAL REQUIREMENTS	2.00%				$1,159,930
PHASING					NR
BONDS	0.75%				$434,974
INSURANCES	1.50%				$869,948
PERMIT					Excl
SUB-TOTAL					$62,861,368
OH+P	3.0%				$1,885,841
TOTAL OF ALL CONSTRUCTION			73,850	$876.74	**$64,747,209**

Shaker Lane Elementary School
Littleton, MA

26-Jul-24

PDP Options Cost Estimate

MAIN CONSTRUCTION COST SUMMARY

	Start Date		Gross Floor Area	$/sf	Estimated Construction Cost
OPTION 3.2 - New Construction at Lower Field					
NEW CONSTRUCTION			73,850	$450.00	$33,232,500
DEMOLITION			62,000	$8.00	$496,000
REMOVE HAZARDOUS MATERIALS - PMC Allowance $15 per SF					$930,000
SITEWORK					$11,000,000
SUB-TOTAL	Sep-26		73,850	$618.26	$45,658,500
ESCALATION TO START DATE	9.30%				$4,246,241
DESIGN AND PRICING CONTINGENCY	15.0%				$6,848,775
SUB-TOTAL			73,850	$768.50	$56,753,516
GENERAL CONDITIONS		24	MTHS	$100,000	$2,400,000
GENERAL REQUIREMENTS	2.00%				$1,135,070
PHASING					NR
BONDS	0.75%				$425,651
INSURANCES	1.50%				$851,303
PERMIT					Excl
SUB-TOTAL					$61,565,540
OH+P	3.0%				$1,846,966
TOTAL OF ALL CONSTRUCTION			73,850	$858.67	**$63,412,506**

Shaker Lane Elementary School
Littleton, MA

26-Jul-24

PDP Options Cost Estimate

MAIN CONSTRUCTION COST SUMMARY

	Start Date		Gross Floor Area	$/sf	Estimated Construction Cost
OPTION 4.1 - New Construction at Whitcomb Field					
NEW CONSTRUCTION			73,850	$450.00	$33,232,500
DEMOLITION			62,000	$8.00	$496,000
REMOVE HAZARDOUS MATERIALS - PMC Allowance $15 per SF					$930,000
SITEWORK					$10,000,000
SUB-TOTAL	Sep-26		73,850	$604.72	$44,658,500
ESCALATION TO START DATE	9.30%				$4,153,241
DESIGN AND PRICING CONTINGENCY	15.0%				$6,698,775
SUB-TOTAL			73,850	$751.67	$55,510,516
GENERAL CONDITIONS		24	MTHS	$100,000	$2,400,000
GENERAL REQUIREMENTS	2.00%				$1,110,210
PHASING					NR
BONDS	0.75%				$416,329
INSURANCES	1.50%				$832,658
PERMIT					Excl
SUB-TOTAL					$60,269,713
OH+P	3.0%				$1,808,091
TOTAL OF ALL CONSTRUCTION			73,850	$840.59	**$62,077,804**

3.8 MHC Project Notification Form Response

RECEIVED
AUG 0 1 2024
MASS. HIST. COI
RC.75374

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A
MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

Project Name: Shaker Lane Elementary School

Location / Address: 35 Shaker Lane

City / Town: Littleton, Massachusetts 01460

Project Proponent

Name: Studio G Architects, c/o Gail Sullivan, Principal

Address: 179 Boylston Street

City/Town/Zip/Telephone: Jamaica Plain, Massachusetts 02130

After review of MHC files and the materials you submitted, it has been determined that ~~this project is unlikely to affect significant~~ historic or archaeological resources.

RC.75374
8/23/24
Joshua Dorin Date
Preservation Planner
~~Massachusetts Historical Commission~~

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name	Type of License or funding (specify)
Massachusetts School Building Authority	

Project Description (narrative):

New construction or addition and renovation to the existing Shaker Lane Elementary School in Littleton, MA. The existing 70,000 square foot elementary school building comprises the original 1959 construction, a small 1962 addition, and a 1998 addition and renovation.

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

If the new construction option is selected, the existing building will be demolished in its entirety. If the addition and renovation option is selected, portions of the building will be entirely demolished based upon an in-depth review of accessibility, life safety, structural, and useful-life analysis.

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.

If the new construction option is selected, there will be no rehabilitation of any existing buildings. If the addition and renovation option is selected, portions of the existing building will be substantially renovated and rehabilitated to bring the building up to current accessibility, structural, life safety, and fire protection standards.

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

If the new construction option is selected, the entire project will consist of a new 72,000 square foot, two-story elementary school located on the existing site parcel, or alternate town-owned parcel. If the addition and renovation option is selected, a new multi-story academic wing will be constructed to replace and extend inadequate areas of the existing school.

APPENDIX A (continued)

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.

No.

What is the total acreage of the project area?

Woodland	±18 acres	Productive Resources:	
Wetland	±2.75 acres	Agriculture	acres
Floodplain	acres	Forestry	acres
Open space	±5.5 acres	Mining/Extraction	acres
Developed	±5.5 acres	Total Project Acreage	31.75 acres

What is the acreage of the proposed new construction? ±6 acres

What is the present land use of the project area?

Public School

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

Attached

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of Person submitting this form: _____ Date: July 29, 2024

Name: Gail Sullivan, FAIA

Address: 179 Boylston Street

City/Town/Zip: Jamaica Plain, Massachusetts 02130

Telephone: 617-525-5558

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

COMMERCIAL CONSTRUCTION

APPLICATION CHECKLIST

This checklist is designed to aid in the preparation of the permit application package to be submitted to the Littleton Building Department and not a substitute to the requirements of the Ninth Edition of the Massachusetts State Building Code, 780 CMR, local rules or regulations

Permit Application §105.3

The permit application form as provided by the Littleton Building Department shall be filled out completely or completed online. Section omissions may result in delays when processing the permit. Note if the application is made by other than the owner, a written authorization by the owner shall accompany the application. Buildings subject to *Construction Control* *§107.0 shall, in addition to other requirements, be accompanied by the following documents ;

- **Owner Authorization** {§105.3}
- **Building Evaluation** {Chapter 34}
- **Soil Evaluation / Seismic analysis** {Chapter 18, Chapter 16}
- **Fire Protection Narrative Analysis**
- **Structural Test & Inspection Summary** {Chapter 17}
- **Structural Peer Review** {§105.9}
- **HVAC / Energy Code Analysis** {2015 IECC w/ amendments-Stretch Code}
- **Action on Application** {§105.3.1}
- **Filed Plans** {§105.3 (2) complete sets required, one electronic}
- **Designer Affidavits** {§107.0; for each discipline if entire project is not covered by a single licensed architect or engineer}
- **Building Data Summary** see page 2 of this document
- **Accessibility Analysis**
- **Treasurer Verification of paid taxes** { MGL 40, §57}
- **Worker Compensation Insurance Affidavit**
- **Elevator Permit**
- **Project Directory** [AIA G807]

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* **Construction Control §107.0**

All buildings and structures are required to meet the provisions of §116.0 unless exempt as follows;

1). Any building containing less than 35000 cubic feet of enclosed space, measured to exterior surfaces of walls and roofs and to the top of a ground supported floor, or in the case of a crawl space, to the bottom surface of the crawl space. In the case of basement floors or levels, the calculation of enclosed space shall include such spaces.

2).Any single or two family dwelling or any accessory building thereto;

3).Any building used exclusively for farm purposes (this exemption does not apply if the building is to be used for large assemblies of people or uses other than farm purposes; and

4).Retaining walls less than ten feet in height at all points along the wall as measured from the base of the footing to the top of wall.

➔ **Zoning Board of Appeals**
All Variances and Special Permits granted for this project, certified by the Town Clerk as a true copy that no appeal has been taken along with a copy of the filing with the Registry of Deeds.

➔ **Planning Board**
Endorsed drawings of Site Plan, ANR & Subdivisions and all documents ie; deeded easements, special permits, decisions, etc. pertaining to the approval, certified by the Town Clerk as a true copy that no appeal has been taken along with a copy of the filing with the Registry of Deeds.

➔ **Conservation Commission Approval**
If the construction is within 100 feet of a Wetland or within a designated Flood Plain, a signed order of conditions and approved drawings certified by the Town Clerk as a true copy.

➔ **Flood Plain Construction Approval**
In addition to the Conservation Order of Conditions, a Special Permit from the Littleton Board of Appeals is required

➔ **DPW Approvals**
Signed Curb Cut from the Littleton Highway Department or the Massachusetts Department of Public Works; Water Connection permits from the Littleton Water Department

➔ **Board of Health**
Signed permit and copy of engineered septic plan for all subsurface systems and treatment plants. This permit must be in the owners name and not more than 2 years old.

➔ **Well Water**
For projects not serviced by public water, a copy of a well test showing the Coliform Bacterial count either "ABSENT" or "0/ml".

➔ **Railroad Right of Way**
Railroad right of way permit (111.3 MSBC)

➔ **Building Demolition Permit for Historically Significant Buildings**
Chapter 65 of the Code of Littleton requires review and approval by the Littleton Historical Commission.

➔ **Fire Department** permit required for dumpster containers 6 yards or more

➔ **EPA** permit for projects that disturb more than 1 acre or more of land (http://www.envcap.org/statetools/swrl/swrl.cfm?st=MA)

Building Data Summary Sheet

📖 **Construction Type:** 1A 1B 2A 2B 2C 3A 3B 4 5A 5B

📖 **Occupancy Group:** A1 A2 A3 A4 A5 B E F1 F2 H1 H2 H3 H4 I1 I2 I3 M R1 R2 R3 R4 R5 S1 S2 U ✵

📖 **Height & Area Computations** for each use group & construction type

📖 **Superstructure Type** narrative

📖 **Floor/Ceiling/Wall/Roof** schedules with fire ratings, analysis, wall legend

📖 **Special Use** analysis

📖 **Fire Protection** analysis, copy to the Littleton Fire Department

📖 **Occupant Load/Egress Width/Travel Distance** analysis, schedule of occupant load per space & total #

📖 **Energy Conservation** analysis... IECC 2015

📖 **Accessibility**

📖 **Design Loads** design analysis

📖 **Seismic Construction** design analysis,

📖 **Emergency Power/Lighting/Signage** type, location

📖 **Special Construction** analysis, location

🗁 =Building Permit File ✵ = SUO {chapter 4}

🗎 =Project Document 📖 = Code Data Sheet

C:\Program Files\MSPUB\comchk.pub

3.8 Permitting Memorandum

CIVIL PERMITTING MEMORANDUM

Re: Shaker Lane Elementary School – Littleton, MA

SCI File #54025.00

To: Meryl Nistler, Senior Project Manager
Studio G Architects

From: Drew Garvin, Civil Project Manager
Stephen Garvin, PE, LEED AP

August 2, 2024

The following memo describes some anticipated permitting requirements, regulations, and estimated timelines for the Shaker Lane Elementary School in Littleton, MA.

Littleton Conservation Commission

Conservation Bylaw regulation

Wetlands resource areas are protected by the Massachusetts Wetlands Protection At, Massachusetts Wetlands Protection Act Regulations, and Town of Littleton Conservation Bylaw. Per the Littleton Conservation Bylaw, to prevent wetlands loss, in the judgment of the Commission, any new activity (other than travel by foot or non-motorized vehicle or removal of invasive vegetation using proper methods) or structure within 50 feet of a Bank or Bordering vegetated wetland (BVW) is likely to alter the Bank or BVW. No new activity or structure (other than the aforesaid travel or removal of invasive vegetation) shall be allowed within the No-Disturbance Area(s) set forth below except under a Waiver as provided in Section 1.4 of these Regulations (or as otherwise provided in these Regulations). This is the minimum distance for the No-Disturbance Area; the distance may be extended further by the Commission if deemed necessary for the protection of the Interests of the Bylaw, up to the outer extent of the Buffer Zone as established in the Bylaw.

a) No-Disturbance Area: This is any area within the BVW or Bank and the first 50 feet of the Buffer Zone from BVW or Bank. No activities or work is permitted other than passive (foot or non-motorized vehicle) passage and removal of invasive vegetation if done in compliance with these Regulations. Except as noted, no vegetation may be disturbed, and the area should remain unchanged from its pre-project state.

b) Marking the No-Disturbance Area: The commission may require the limits of No-Disturbance be marked prior to construction.

Jurisdiction:

Lands within 200 feet of rivers (Riverfront Area), and lands within 100 feet of other resource areas are presumed important to the protection of these resources because activities undertaken in close proximity to resource areas have a high likelihood of adverse impact upon the wetland or other resource, either immediately, as a consequence of construction, or over time as a consequence of daily operation or existence of the activities.

Filing a Notice of Intent will be required due to the site's immediate proximity to known resources areas, specifically BVW areas A through D (and associated Buffer Zones) and an Inland Bank line (perennial stream) and associated 200-foot Riverfront Area.

Samiotes Consultants, Inc.
Civil Engineers + Land Surveyors

20 A Street
Framingham, MA 01701-4102

T 508.877.6688
F 508.877.8349

www.samiotes.com

Flood Plain
According to FEMA Flood Insurance Rate Maps, the site is not located within a regulated flood plain and is in an area of minimal flood hazard.

NHESP Priority Habitats of Rare Species and Rare Wildlife
The site is not located within Estimated/Priority Habitat for Rare Species according to the Massachusetts Natural Heritage & Endangered Species Program (MaNHESP). However, the U.S. Fish & Wildlife Service's Information for Planning and Consultation (IPaC) GIS mapping database indicated that the existing site may potentially be habitat for the Monarch Butterfly and the Northern Long-eared Bat. An additional study may be required to determine if the site contains habitats for these two endangered species and if the project requires additional consultation with the US Fish and Wildlife Service.
The site is not located within an Area of Critical Environmental Concern.

The Conservation Commission meetings are scheduled on the first and third Thursday of each month. The deadline for submission of a complete application is typically a minimum of two (2) weeks prior to the public hearing date on the posted filing deadline. We would start this work at the end of Design Development (DD) and expect it to take 2-3 months after submission to gain approvals.

Littleton Planning Board

Littleton Zoning Bylaw
Site Plan Review (SPR) by the Planning Board is required for the creation of, addition to, or substantial alteration of all non-residential and non-agricultural structures, of a parking area having eight or more spaces, and for any substantial deviation from an approved site plan, or when any of the above situations is subject to a change of use. In addition, the Building Commissioner may require a site plan review if he/she deems it necessary in order to determine zoning compliance. The site plan review application requires essential details such as property location and adherence to zoning regulations, building specifications with elevation drawings, parking and access plans, site topography, utility systems, lighting, signs, proposed landscaping, buffers. Additionally, traffic impact data and environmental impact studies may be required by the Planning Board.

Stormwater Management Permit Regulation
All construction, development and redevelopment activities involving land disturbance of one acre or more or will disturb less than one acre of land but which is part of a larger common plan of development or sale which will ultimately disturb equal to or greater than one acre of land will require a Stormwater Management Permit (SMP).

The SMP application requires the preparation of an Erosion and Sedimentation Control Plan to address temporary stormwater runoff and erosion control during construction and a stormwater management plan for post-development stormwater control. Applicants will develop the stormwater management plan in accordance with the goals of the USEPA General Construction Permit, Massachusetts Stormwater Handbook, Massachusetts Wetlands Protection Act, M.G.L. Chapter 131, Section 40, and Town of Littleton Stormwater Management Permit Regulation.

An informal meeting with the Town Planner is recommended to review the permitting process and ensure all Littleton board requirements are met. The Town Planner may request other town staff attendance to review permitting impacts as required. Planning Board meetings are scheduled on the first Thursday of each month. The deadline for submission of a complete application is typically a minimum of four (4) weeks prior to the public hearing date on the posted filing deadline. The SPR and SMP can be filed concurrently and would start at the end of Design Development (DD). We expect it to take 3-4 months after submission to gain approvals.

Board of Health

Any updated or new sewage disposal system will be required to meet 310 CMR 15.00 Septic Systems Policy and Town of Littleton Board of Health (BOH) Title 5 supplement regulations. In addition to the septic system application, it is required to include design plans and soil evaluations. An Operation and Maintenance plan may be needed, with a focus on record-keeping and ongoing compliance for environmental protection. Title 5 inspectors must be DEP and Town of Littleton BOH certified. The Littleton BOH uses the Nashoba Associated Boards of Health (NABH) as their permitting authority to review and approve all plans.

BOH meetings are scheduled on the second and fourth Wednesday of each month. The deadline for submission of a complete application is typically a minimum of two (2) weeks prior to the meeting date. We would begin this permitting at the end of Design Development (DD) and expect it to take 2-3 months after submission to gain approvals.

301 CMR 11.00: MEPA Regulations

Depending on the size and scope of the any new development, MEPA permitting may be required for the site. If the scope exceeds thresholds for an ENF (or an EIR for more significant land development impacts,) including but not limited to the following:

1. Direct alteration of 25 or more acres of land.
2. Creation of five or more acres of impervious area.
3. Alteration requiring a variance in accordance with the Wetlands Protection Act.
4. New withdrawal or Expansion in withdrawal of: 2,500,000 or more gpd from a surface water source.

A full review of thresholds shall be completed once the project is approved. Additionally, if a Project requires MEPA review in accordance with 301 CMR 11.01(2) and one or more Environmental Justice Populations are located within the Designated Geographic Area around the Project (within one mile of the project), measures shall be undertaken to provide public involvement opportunities for Environmental Justice Populations.

NPDES SWPPP

National Pollutant Discharge Elimination System Stormwater Pollution Prevention Plan will need to be developed by the contractor and filed with the Environmental Protection Agency (EPA) 14-days prior to the start of any construction activity.

Building Permit

Civil plans will need to be included with the building permit submission by the construction manager (CM).

If you have any questions or comments regarding this memo, please call or email me at dgarvin@samiotes.com 508-877-6688 (ext 25) or Stephen Garvin, PE at sgarvin@samiotes.com (ext 13).

Littleton Public Schools

Educational Plan

Shaker Lane Elementary School Project



MODULE 3: PRELIMINARY DESIGN PROGRAM

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1. INTRODUCTION
    a. Educational Visioning Process
    b. Mission, Core Values, and Vision
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4. SCHOOL SCHEDULING METHODS
5. TEACHING METHODOLOGY AND STRUCTURE
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21. TYPICAL DAY AND WEEK IN THE LIFE OF A STUDENT

INTRODUCTION

EDUCATIONAL VISIONING PROCESS

District Visioning Team

The district completed a series of school tours, observation days, visioning sessions, and programming meetings with Educational Planner Mike Pirollo and Educational Consultant Paul White from MLP Integrated Design, along with Studio G Architect as part of the visioning effort for the Shaker Lane School building project. Over 40 stakeholders participated, including parents, community members, school committee members, staff, and school and district administrators.

Anna Dyadko	Adjustment Counselor
Kerryn Fitzpatrick	Administrative Assistant
Rebecca Deacon	Assistant Principal
Katie Sapp	BCBA
Steve Mark	Business Manager
Lyn Snow	Director of Student Services
Elizabeth Steele	Director of Teaching and Learning
Sharon Kampersal	ELL Teacher
Jillian Anderson	Executive Assistant
Allyson Bullock	Grade 1 Teacher
Jessica Dussi	Grade 1 Teacher
Karen Giles	Grade 1 Teacher
Maggie Munnelly	Grade 1 Teacher
Rebecca Roper	Grade 1 Teacher
Casey Ward	Grade 2 Teacher
Cheryl Pratt	Grade 2 Teacher
Shayna Garlisi	Grade 2 Teacher
Vanessa Holm	Grade 2 Teacher
Julie Lord	Instructional Tech Coordinator
Raina Sturtz	Integrated Preschool Teacher
Katie Linehan	K-2 PACE SPED
Heidi MacGregor	K-5 STEM Integration Specialist

Kelli Harte	Kindergarten Teacher
Michelle Barth	Kindergarten Teacher
Michelle Hurley	Kindergarten Teacher
Kris Hevenor	Library Tutor
Beth Moore	Math Interventionist
Mary Ethier	Occupational Therapist
Kari Eckley	Parent & SEPAC Representative
Rebecca Craven	Parent & SEPAC Representative
Tasha Clark	Parent, PTA, Substitute Teacher
Mark Bentley	Physical Education Teacher
Melissa Sloan	Preschool PACE SPED
Kristen Mamos	Preschool SPED Teacher
Michelle Kane	Principal
Rebecca Mawn	Reading Specialist
Jeanine Wood	School Committee Member
Danya Sciar	School Psychologist
Alli Gilman	Special Ed Administrator
Rosaria Cochis	Special Education Teacher
Haley Lowney	SPED
Crystal Hutchins	Speech Language Pathologist
Sherri Susser	Speech Language Pathologist
Kelly Clenchy	Superintendent of Schools
Perry Kenney	Unified Arts Teacher

Highlighted names indicate District representatives primarily responsible for developing this educational program.

Goals, Priorities, and Guiding Educational Principles

Through the visioning sessions, constituents determined the following as our Overarching Goals and Priorities, as well as our Guiding Educational Principles. A safe and secure environment is a primary requirement of any school within the Littleton Public Schools. Our guiding principles drive the design patterns to support our philosophy on teaching and learning. The design patterns stem from the identified design features including a welcoming and child centered design, community engagement, flexible and varied spaces, classroom neighborhoods, quiet spaces, breakout and collaborative spaces, inclusive learning spaces, appropriate teacher spaces, indoor/outdoor connections, hallway learning, display and exhibition, centralized dining with flexible spaces, branding, and history and storytelling.

Overarching Goals and Priorities

- A Developmentally- and Socially-Emotionally-Responsive School
- Happy Kids Learning through Hands-On Learning, Agency, and Play
- Flexibility to Support Academic Break-Out and Future Growth
- Supporting Community, Connection, and Collaboration
- Inclusion, Accessibility, and Efficiency in a Universally-Designed Building
- Embracing the Outside-Inside Connection
- Opportunities and Space for Professional Growth and Work
- Building as School and Community Resource

Guiding Educational Principles

- Inclusion of closing circles as a part of dismissal – establishing a strong sense of community
- Learning as a flexible, fluid experience that embeds play
- With end goals in sight, students have choice and autonomy in how to get there; learning is shown in different outcomes and tangible product
- Sustained work on collaborative, child-led projects
- Arrival includes basic needs being met (safety, belonging, community, and play)
- Importance of student choice, including during lunch and at recess
- Inclusion of “down time” choices based on students knowing what they need
- Inclusion of co-teaching (vertical, horizontal, and across disciplines)
- Through this project, we will define what play looks like in all forms
- Embedding thoughtful and purposeful transitions
- Inclusion of outdoor learning and experiences

As we closed out our visioning sessions with staff and community representatives, we outlined the vision of The Future Shaker Lane below:

THE FUTURE SHAKER LANE	
Child Development ● Learning through fun, hands-on experience/play ● Need big and small movement opportunities, activity ● Consistency, rules, routines, repetition, predictability, structure ● Increase student talk time, decrease teacher talk time ● Giving opportunities to teach/lead/model	**Collaboration, Inclusion, and Play** ● Allow more opportunities for choice and exploration ● Play and connections to learning, interests, strengths ● Incorporating purposeful and intentional play/learning ● Communal space accessible to all ● Meeting students where they are at
Social-Emotional Wellness ● Sense of belonging and community ● Sensory experiences in common spaces/entry points ● Break spaces all throughout the school and not isolated ● Student choice around self-regulation ● More natural spaces throughout the building to serve variety of proactive/reactive regulation needs	**Empowering Learners** ● Choice of learning experiences, modes of engagement ● Student choice, voice, autonomy ● Provide support needed ● Value all learning styles ● Opportunities to showcase work

Community and collaboration are the building blocks of Shaker Lane and that was reiterated time and time again throughout our visioning process. Throughout our Educational Program you will notice the language of several collaborative learning spaces that meet our philosophy. The following are definitions of these collaborative spaces.

- ***Den Learning Space*** - This space refers to the desire of a common learning area that is created in the middle of each grade level PreK - 2. All classrooms within the grade level will have access to this shared space throughout the school day as it is designed to be a spill out area beyond the traditional classroom walls. Additionally, dens may act as the classroom itself, where teachers gather students from one or multiple classes to do a direct instruction mini-lesson before students spill into different classrooms within the grade level. Den Learning Spaces at the heart of each grade level will provide the opportunity for classrooms to collaborate and co-teach lessons, provide a space for presentations to multiple classrooms at one time, and create a communal location for cross grade level activities to take place. These large Den Learning Spaces will also allow for service providers to provide small group services in an extended classroom setting.
    - In terms of staffing and scheduling, the den learning spaces are intended to be shared throughout the day, allowing teachers to work collaboratively to determine when portions of or the whole den space may be “reserved” for a multi-class activity or when students can spill out from multiple classes because a specific lesson or activity is not planned for that day. There is no staff member that owns this space, which is intentional as it will encourage grade level staff and specialists to intentionally plan in ways they haven’t before when only teaching in siloed classrooms.
    - Each Den Learning Space will have a shared Google Calendar to reserve various zones within the den throughout the school day. As all classrooms are adjacent to this space, supervision will be provided by the classroom teachers.
    - The Den Learning Space allows multiple classrooms to gather for a collaborative

experience that our current building design does not offer and a larger general classroom would also not offer. Currently, our grade levels combine into a small classroom limiting activities and experiential learning that would be capitalized upon in the Den Learning Space. Such learning that could be enhanced in the Dens include science experiments through our FOSS program, STEM projects, and other tactile and kinesthetic experiences encouraged by our curriculum.
    - A large shared Den Learning Space would allow for pooling of teacher resources to save space and money. These resources include large or costly educational materials such as book collections, dramatic play modules, STEM equipment, water exploration apparatus, and gross motor gear.
    - In terms of supervision and visibility, we envision a direct connection between classrooms and the den space so classroom teachers and specialists will have a full view of students working in these large spaces. As the project progresses, we will work closely with the design team to decide on the type of visual and spatial connections classrooms have with the den space.
- ***Small Group Learning Space*** - As the design of Shaker Lane will incorporate 8 classrooms for Kindergarten (one of which includes Transitional) and 7 classrooms for grades 1 and 2 ~~per grade level~~, a small classroom/small group learning space between classrooms is desired. This shared space will be utilized for small group services by our special education staff and math interventionists. Providing support for students that is close to their classroom will allow for students to efficiently receive services in their classroom environment. This space also allows for students in adjoining classrooms to be serviced at the same time while remaining next to their learning environment to quickly return and remain informed on any teacher information. Should privacy be needed in these small group learning spaces, doors and shade-type coverings will be easily accessible.
- ***Clinical Suite*** - Our special education team collaborates frequently throughout the day. As the earliest level of intervention in Littleton, our PreK-2 service providers work together to develop Individual Education Programs (IEPs) and goals for students. The creation of a Clinical Suite allowing for a central communal space for our Speech & Language Pathologists, BCBA, School Psychologist, contracted specialists, and Special Education Administrator would create a supportive and collaborative environment where service providers can discuss goals, objectives, and benchmarks in developing IEPs. The design of this space should include comfortable seating and work stations as well as allow for space to include itinerant specialists who provide consultation to building staff throughout the year (orientation, vision, and mobility specialist, adaptive physical education consultant, speech and language augmentation specialist). A small group room connected to the Clinical Suite would be utilized by our services providers for evaluating students. In addition to a small group room, a small conference room connected to this suite would provide a gathering space where staff could meet and discuss programming as well as provide a location for Student Success Team meetings (SST). Positioning this suite on the second floor would provide a central location for staff to quickly access students across grade levels.

The Littleton Public School District is a high-performing school district that places an emphasis on academic achievement, social-emotional learning, universal design for teaching and learning (UDL), multi-tiered systems of support for all learners (MTSS) as well as diversity, equity, inclusion, and belonging (DEIB). Our continued commitment to analyzing student achievement data to inform curriculum and support targeted individualized instruction within our classrooms remains a priority for our school district. From year to year, our administrators and educators consistently focus on data analysis to monitor individual student and sub-group academic growth. Data from the 2023 Massachusetts Comprehensive Assessment System provides evidence that our district continues to grow significantly toward achievement targets and that our student achievement aligns with that of

other high-performing school districts within the state. Our administration and educators continue to be involved in detailed and extensive data analyses of MCAS results and incorporate key findings when preparing students for the next MCAS administration. We are incredibly excited for the opportunity to re-envision educational opportunities at our Prek-2 Shaker Lane School and are grateful for the opportunity to explore a building project that aligns with our district mission, vision, strategic goals, and philosophy that will provide a 21st-century learning experience for our youngest learners.

The Littleton Public Schools' **MISSION** is to foster a community of learners who strive for excellence and prepare each student to be a successful, contributing citizen in a global society. As a district, we commit to evolving together as a diverse community through education, accountability, and compassion.

OUR CORE VALUES: In order to achieve our vision and mission, Littleton Public Schools administration faculty, staff, and students will model and advance the following values:

Respect **Integrity** **Accountability** **Responsibility**

OUR VISION: The vision is a guiding statement that the Littleton Public Schools use as the basis for all strategic planning, policy, and budget decisions. The Littleton Public Schools:

- Promotes high academic standards for staff & students.
- Challenges all students to achieve their full potential.
- Prepare students to be life-long learners, critical thinkers enabling them to become contributing citizens.
- Maintains a commitment to continuous improvement of student achievement through the offering of school programs that are diverse & challenging.
- Communicates a clear set of standards regarding what students should know and be able to do at the end of each grade.
- Provides continued support to our staffs to enhance instructional strategies that promote student learning.
- Strives to meet each individual student's needs while considering that cognitive, social, physical, and emotional development varies.
- Promotes an inclusive culture and climate that honors diversity and equity, models respect, responsibility, integrity and accountability.
- Continues to encourage staff professional growth by providing the tools, support, and resources to be successful.
- Provides support to teachers and administrators in using data to assess and inspire their own skills and effectiveness.
- Includes the community as an active and contributing partner in the education and schooling of each child.
- Provides frequent communication between our schools and community regarding opportunities, accomplishments and progress of educational goals.
- Continues to foster a partnership of students, teachers, support staff, administrators, and the community, excelling at what they do and acting with strong conviction and deep commitment to bring about a higher quality of education within our schools.

OUR BELIEFS:

- The purpose of education is to enable students to become self-reliant learners and productive, responsible citizens in a complex and challenging world.
- Everyone has the right to learn in a safe and secure environment.
- Education is the shared responsibility of our schools, students, their families, and the community.
- All students can achieve at high levels and learn at different rates and in different ways.

- Teachers are the most important factor in student achievement within the school.
- All students have abilities and talents worthy of recognition.
- Student achievement is not solely the result of student ability.
- Literacy and numeracy are the foundations upon which learning is built.

We have recently reviewed our strategic plan with our staff, community, and school committee and have developed a new strategic plan (2028) that consists of five standards: **Curriculum/ Instruction/ Assessment, Professional Development, Community, Engagement/Communication, Climate/Culture, and Technology.** Our school SIPs and educator, and administrator goals align with our strategic plan which acts as a green print as we continue to enhance learning opportunities for students and staff. Our strategic plan is also utilized as a key driver in the formation of the district's budget. Below, please find a summary table listing our district's goals within each standard.

DISTRICT STRATEGIC PLAN 2023-2028 STANDARDS AND GOALS

	STANDARD #1: Curriculum/ Instruction/ Assessment **Align and enhance curriculum, instruction and assessment to continually improve student achievement.**	**STANDARD #2: Professional Development** **Provide staff with a variety of professional development opportunities that are connected to the district Strategic Plan and Individual School Improvement Plans.**	**STANDARD #3: Community Engagement/ Communication** **Preserve and enhance communication strategies between a the school district and its constituents**	**STANDARD #4: Climate/Culture** **Foster a respectful and responsive culture that provides a safe, secure learning and work environment.**	**STANDARD #5: Technology** **Preserve and enhance the integration and utilization of technology for students and staff PK-12.**
GOAL #1	Implement standards-based Pk-12 curriculum that is aligned with State Frameworks and is well articulated vertically and horizontally.	Offer a comprehensive professional development program for all staff which includes district programs and site-based programs, college courses, workshops and/or conferences.	Effectively communicate the district's core values, vision, mission, and beliefs within the Community	Review, maintain and modify protocols and procedures that provide all students and staff with a safe and secure learning and work environment	Align school and district-based technology planning with current state, national and international technology Standards
GOAL #2	Develop and implement a five-year curriculum review cycle to enhance and/or refine curriculum, Pk-5 and 6-12.	Establish and sustain partnerships with higher education and professional organizations to provide expanded learning opportunities for staff and students.	Creatively and effectively utilize technology and media to communicate with all LPS constituents.	Ensure the district and schools are free from discrimination and harassment and support Student wellness.	Continue to improve staff/administrative utilization and integration of technology.
GOAL #3	Use multiple forms of data to measure and evaluate student achievement.	Foster a culture of professional learning aligned with State Guidelines that promotes growth and innovation.	Strengthen partnerships with business, civic organizations and community members at large.	Review and revise the District Maintenance Plan	Continue to improve student utilization and integration of technology for college and career readiness.
GOAL #4	Identify and implement effective instructional practices to support the academic achievement and social-emotional skills of diverse learners.			Continue to support the district's energy and environmental conservation initiatives.	Provide all staff and students with appropriate access to technology

GOAL #5	Implement a comprehensive multi-tiered system of support that equitably supports all students.			Formalize a comprehensive staff recruitment, selection, and retention program.	

21st-Century Learning Goals: The Littleton Public Schools are committed to the development of the whole child with an emphasis on ensuring that our students are future-ready; the 21st-century skill sets we modified from the original lists to incorporate areas of focus gleaned from the visioning sessions.

Communication and Collaboration
Teamwork
Communication Skills
Community Connections
Digital Literacy

Passion and Engagement
Ownership for Learning
Self-directed learning
Active Engagement
Prioritizing and Managing Time

Social and Emotional Intelligence
Empathy and Caring
Cultural Awareness
Global Awareness
Citizenship and Ethics
Kindness and Inclusion

Creativity and Entrepreneurship
Curiosity and Innovation
Flexible Learning
Inventive Thinking
Imagination and Play
Active Engagement

Problem Solving
Critical Thinking
Problem Solving
Analytic Thinking

Agility and Adaptability
Perseverance
Open Mindset, Flexible Thinking
Self- Awareness, Risk-taking

Portrait of A Learner: Our district is currently in the process of developing a Portrait of a Learner which will reflect key qualities and attributes that align with our district's mission statement. As we think about the design and space requirements for a reimagined Shaker Lane School, a portrait of a learner will continue to help guide our decisions in the design and space requirements that are necessary to provide a 21st-century learner experience for our students.

Shaker Lane School Mission: ***We are building a safe, caring, and ready-to-learn community.*** This mission statement was the result of a year-long building-wide effort in defining our beliefs at Shaker Lane. This mission along with the long-standing core values of H.E.A.R.T. are at the foundation of all our decisions.

H is for Honesty in one's actions and words.
E stands for Effort in both one's work and play.
A is for Acceptance of the likeness and differences in everyone in our community.
R stands for Respect for learning, for oneself, for others, and for our environment.
T stands for Taking responsibility for what you do and say and for each other.

Through direct teaching and modeling, along with constant visual and verbal reminders throughout our school community, it is our hope that these core values become embedded in our culture. They are a

clear representation of what we believe in as a school community. H.E.A.R.T. sets high expectations for learning and behavior for both students and faculty.

GRADE & SCHOOL CONFIGURATION POLICIES

Current

The Shaker Lane School educates students in grades PreK through Grade 2. There is currently one full-time preschool classroom, two half-day preschool classrooms, six kindergarten classrooms, one transitional classroom, six first-grade classrooms, and six second-grade classrooms. The table below accounts for the students in each grade level during the 2023 - 2024 school year.

PreK	48	Grade 1	126
Kindergarten & Transitional	136	Grade 2	136

Proposed

There are no proposed grade configurations outside of our current model.

CLASS SIZE POLICIES

Current

The district does not have a policy that governs class size. Research indicates that class size is an important factor in a well articulated educational program and will, whenever possible be subject to space availability and all other educational considerations , to ensure that class size creates effective learning environments for students and staff. The desirable range for class size shall be between 18-22 students. Currently, our Kindergarten classrooms are all at 20 students per teacher. Our transitional classroom has 13 students, which is typical for this classroom. The transitional class is purposefully created for students that are not yet ready to meet the rigorous standards of grade 1, but ready to be challenged beyond a second year of kindergarten. For the purposes of reporting to the Department of Elementary and Secondary Education, students in the transitional classroom are reported as Kindergarten students. Our grade one classrooms range between 19-21 students. Our second grade classrooms range between 21-22 students per teacher. The addition of another classroom to each grade should help create and maintain class sizes within the specified range.

Proposed

The proposed grade configuration for the new/renovated Shaker Lane School allows for one additional classroom in kindergarten, grade 1, and grade 2. An additional classroom at the K, grade 1, and grade 2 levels, will allow for the growth of the community as well as smaller class sizes. The Town of Littleton is expecting to significantly increase its population with the proposed addition of 700+ apartments at the prior, now vacant, IBM building. The influx of residents may lead to overcrowded classrooms where an additional classroom will be needed. The MSBA guidelines call for more general classrooms that the existing school currently has, so these “additional” classrooms are still within the MSBA guidelines, with

the exception of one more classroom so that first and second grade can have equal quantities of classrooms (14 total vs the MSBA guideline of 13).

SCHOOL SCHEDULING METHOD

Current

Creating an effective building schedule is a complex task that involves balancing various priorities and constraints. The time on learning schedule is overseen by the building principal and assistant principal. Creation of the schedule is managed by the assistant principal in collaboration with the school's Leadership Team to other staff members. Grade levels are grouped into two cohorts of three educators to allow for some common planning time.

Priority Scheduling Blocks:	**Intervention Blocks:**	**Challenges and Constraints:**
• High priority curricula of math, literacy, science, and social studies are scheduled first to allow for some crossover time amongst the six grade level classrooms to maximize intervention services. • Alignment of academic blocks across three grade-level classrooms to maximize support staff time.	• Five 30-minute intervention blocks per week for each grade level. • Ensure students receive related services (Academic, Speech, OT, PT) without missing new academic instruction.	• Math Interventionist and Literacy Specialists sharing one space for instruction makes it difficult with scheduling and instruction of different core subjects. • Special Education Teacher and ELL Teacher sharing one space makes it very challenging to schedule and service students in a space that is potentially overstimulating.

Balancing these elements requires careful planning and often creative solutions to ensure that all students and staff have the resources and time they need for effective teaching and learning. Below is the allotted time on learning per subject area.

ELA/ Reading/ Writing	The ELA block is 75 minutes a day in Kindergarten/Transitional and 90 minutes a day in Grades 1 & 2. Reading and writing take place within this ELA block time. Phonics is scheduled for 30 minutes across K-2 classrooms.
Math	Mathematics is 65 minutes a day in Kindergarten/Transitional and 70-75 minutes a day in Grades 1 & 2.
Science	Science is taught for 40 minutes a week in Kindergarten and 50-60 minutes in Grades 1 & 2. Teachers have the opportunities to teach science twice a week or can alternate science and social studies instruction within units (month by month, for example) to provide time for projects and experiments without teaching on alternating days.
Social Studies	Social Studies is taught for 40 minutes a week in Kindergarten and 50-60 minutes in Grades 1 & 2. Teachers have the opportunities to teach science twice a week or can alternate science and social studies instruction within units (month by month, for example) to provide time for projects and experiments without teaching on alternating days.
Unified Arts	Each grade level, K-2, has one period of Unified Arts each day for 45 minutes. Unified Arts consists of one period a week of Art, Music, Physical Education, Library, and SEL.
Lunch/ Recess	Recess and lunch are scheduled for a combined 40 minute block. Students have a 20 minute recess followed by a 20 minute lunch. Each grade level has their own recess and lunch periods. On early release days, families have the option to order a bag lunch.

Shaker Lane Elementary School Education Program

As of August 14, 2024

Social-Emotional Learning	Second Step SEL curriculum is taught once a week for 20 minutes in Kindergarten and 25-30 minutes in Grades 1 & 2. At times throughout the year, SEL classroom instruction may vary if students are engaged in their trimester SEL block as their Unified Arts.

2024-2025 Shaker Lane School Schedule

	Kindergarten	Kindergarten	Transitional	Transitional	1st Grade	1st Grade	2nd Grade	2nd Grade
	Barth Furbus Harte	Hurley Duarte Bell	M, Tu, Th, F	W	Dussi Roper Munnelly	Bullock Vachan Giles	Madyda Pratt Warnock	Ward Holm Garlisi
8:45	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival	Arrival
	8:40 - 8:55	8:40 - 8:55	8:40 - 8:55	8:40 - 8:55	8:40 - 8:55	8:40 - 8:55	8:40 - 8:55	8:40 - 8:55
	8:55 - 9:10	8:55 - 9:10	8:55 - 9:10	8:55 - 9:10	8:55 - 9:10	8:55 - 9:10	8:55 - 9:10	8:55 - 9:10
9:00	Morning Mtg	Morning Mtg	Morning Mtg	Morning Mtg	Morning Mtg	Morning Mtg	Morning Mtg	Morning Mtg
	15min	15min	15min	15min	15min	15min	15min	15min
	9:10 - 10:25	9:10 - 10:25	9:10 - 10:25	9:10 - 10:25	9:10 - 9:35	9:10 - 10:20	9:10 - 10:40	9:10 - 9:40
9:15	ELA	ELA	ELA	ELA	Science	Math	ELA	FUNdations
	75 min	75 min	75 min	75 min	SS/SEL	70 min	90 min	30 min
					20 min			
9:30								
					9:35 - 10:20			
					Special			9:40-11:10
9:45					45 min			ELA
								90 min
10:00								
10:15								
					10:20 - 11:35	10:20-11:05		
	10:25 - 10:55	10:25 - 10:55	10:25 - 10:55	10:25 - 10:55	Math	Special		
10:30	AM break	AM break	AM break	AM break	75 min	45 min		
	30 min	30 min	30 min	30 min				
							10:40 - 11:10	
10:45							FUNdations	
							30 min	
	10:55 - 12:00	10:55 - 12:00	10:55 - 12:00	10:55 - 11:35				
11:00	Math	Math	Math	Math				
	65 min	65 min	65 min	40 min		11:10 - 11:35		
						WIN	11:10 - 11:55	11:10 - 12:25
11:15						30 min	Special	Math
							45 min	75 min
11:30								
				11:35 - 11:55	11:35 - 11:55	11:35 - 11:55		
				Recess	Recess	Recess		
11:45				20 min	20 min	20 min		
				11:55 - 12:15	11:55 - 12:15	11:55 - 12:15	11:55 - 12:25	
12:00	12:00 - 12:20	12:00 - 12:20	12:00 - 12:20	Lunch	Lunch	Lunch	WIN	
	Recess	Recess	Recess	20 min	20 min	20 min	30 min	
	20 min	20 min	20 min					
12:15				12:15 - 1:00	12:15 - 1:45	12:15 - 12:45		
	12:20 - 12:40	12:20 - 12:40	12:20 - 12:40	Special	ELA	FUNdations		
	Lunch	Lunch	Lunch	45 min	90 min	30 min	12:25 - 12:45	12:25 - 12:45
12:30	20 min	20 min	20 min				Recess	Recess

Shaker Lane Elementary School Education Program

As of August 14, 2024

							20 min	20 min
	12:40 - 1:00	12:40 - 1:00	12:40 - 1:00					
12:45	Science/	Science/	Science/			12:45 - 2:15	12:45 - 1:05	12:45 - 1:05
	SS/SEL	SS/SEL	SS/SEL			ELA	Lunch	Lunch
	20 min	20 min	20 min			90 min	20 min	20 min
1:00	1:00 - 1:45	1:00 - 1:30	1:00 - 1:30	1:00 - 1:25				
	Special	FUNdations	FUNdations	Math (con't)			1:05 - 2:15	1:05 - 1:30
	45 min	30 min	30 min	25 min			Math	Science/
1:15							70 min	SS/SEL
								25 min
				1:25 - 1:55				
1:30		1:30 - 1:45	1:30 - 1:45	WIN				1:30 - 2:00
		WIN	WIN	30 min				WIN
		15 min	15 min					30 min
1:45	1:45 - 2:15	1:45 - 2:30	1:45 - 2:30		1:45 - 2:00			
	FUNdations	Special	Special		PM Break			
	30 min	45 min	45 min	1:55 - 2:25				
2:00				FUNdations	2:00 - 2:30			2:00 - 2:15
				30 min	FUNdations			Closing Circle
					30 min			15 min
2:15	2:15 - 2:45					2:15 - 2:45	2:15 - 2:30	2:15 - 2:30
	WIN					Science/	PM break	PM break
	30 min			2:25 - 2:45		SS/SEL	15 min	15 min
2:30		2:30 - 2:45	2:30 - 2:45	Science/	2:30 - 3:00	30 min	2:30 - 3:00	2:30 - 3:15
		WIN (con't)	WIN (con't)	SS/SEL	WIN		Science/	Special
		15 min	15 min	20 min	30 min		SS/SEL	45 min
2:45	2:45 - 3:00	2:45 - 3:00	2:45 - 3:00	2:45 - 3:00		2:45 - 3:00	30 min	
	Choice	Choice	Choice	Choice		PM break		
	15 min	15 min	15 min	15 min		15 min		
3:00	3:00 - 3:20	3:00 - 3:20	3:00 - 3:20	3:00 - 3:20	3:00 - 3:20	3:00 - 3:20	3:00 - 3:20	
	Closing Circle	Closing Circle	Closing Circle	Closing Circle	Closing Circle	Closing Circle	Closing Circle	
	Dismissal	Dismissal	Dismissal	Dismissal	Dismissal	Dismissal	Dismissal	
3:15	20 min	20 min	20 min	20 min	20 min	20 min	20 min	3:15 - 3:20 Dismissal

Proposed

Time on learning minutes for core academics are expected to remain the same in either building design, however, collaborative learning opportunities would be enhanced with a Den Learning Space located in each grade level. These large gathering spaces would allow for cross classroom experiences that focus on a Universal Design for Learning approach that our district has been focused on for the past three years. In a true UDL fashion, these shared learning spaces will reduce barriers to learning since they will be shared by all grade level educators, STEM Specialist and other educators to provide intervention and services to students. As students use these spaces they will be supervised by the educators facilitating the activity, whether it be the STEM Specialist or the classroom teachers for example. This space will allow for educators to facilitate varied learning experiences and now open those learning experiences not only to the students in their class, but to students in other classes that would benefit from that type of learning. For example, during a literacy lesson, one educator could facilitate an activity using our Fundations white boards, while another an activity with book writing, and yet another writing letters with manipulatives. When these educators extend their activities into the Den Learning Space, then students from other classes can select which activity is best for their learning.

METHODOLOGIES AND STRUCTURE

Administrative and Academic Organization

Current

The heart of Shaker Lane is focused around community and collaboration. Each K-2 grade level team consists of six classroom teachers. At each grade level there is a special education teacher who provides support both in and out of the classroom. Common planning time amongst all of grade level staff members takes place once a week. These meetings enhance collaboration, inquiry, and reflection among teachers.

Currently there are six classrooms in Kindergarten, Grade 1 and Grade 2, as well as one Transitional classroom. Currently, each grade level is split into two cohorts of three, allowing for three classroom teachers to have common planning time together, five days a week for 45 minutes, while the students attend their unified arts. The Transitional classroom attends Unified Arts at the same time as Kindergarten. During these smaller meetings, teachers work together to improve teaching and learning in their cohorts. Should another classroom be added to each of the grade levels, K-2 in the future, we still see a configuration of cohorts continuing to exist. The configuration of the cohorts will depend on staffing, budget, and student service needs.

There is a principal-led 60-minute meeting once a month to review student data in addition to a 60-minute staff meeting that is utilized for PD, staff training, and other data review meetings.
The school faces a challenge with very limited common meeting space for grade-level meetings, professional development workshops, or school-wide meetings. Meetings typically occur in classrooms due to the lack of dedicated meeting areas. Each grade level team is supported by special education, reading and math interventionists, and ELL teachers. However, there is a significant need for more break-out space for support teachers to meet with students.

Administratively, the school has both a principal and an assistant principal, each with designated office space. Their offices are separated by a hallway making it somewhat challenging to collaborate easily. Two administrative assistants share an office connected to the principal creating ease of collaboration when needed. The medical suite is connected to the administrative assistant office, providing the school nurse with additional support when necessary. The guidance office is located away from the main offices making it challenging to work closely to support students in need. There is a full-time school psychologist and BCBA located at Shaker Lane that are in proximity of each other.
Overall, the school has very limited common meeting space outside of the library which is insufficient for professional development or whole-staff meetings.

Staff Personnel	Current	Proposed
Principal	1	1
Assistant Principal	1	1
Administrative Assistant	2	2

Special Education Administrator	.5	.5
Nurse	1	1
School Adjustment Counselor	1	1
School Psychologist	1	1
BCBA	1	1
Teacher - K & Transitional	7	8
Teacher - Gr 1	6	7
Teacher - Gr 2	6	7

Proposed

Walking through the front doors of Shaker Lane should feel warm and inviting. We pride ourselves in collaboration amongst all our constituents. This should be reflected the moment you enter Shaker Lane with an open and inviting main office. Administrative Assistants should be visible to all who enter the building as the first point of contact. Having the principal and assistant principal's offices located near this area is essential for both operational efficiency and safety. Additionally, it allows the administrators to be more engaged with students, which is ideal for creating a welcoming and supportive school environment.

The nurse is a central part of the office administration and must be located adjacent to this space. Proximity facilitates immediate communication between the nurse and administrative staff, ensuring timely response to emergencies or urgent requests. In the nurse's absence, administrative staff can easily monitor the nurse's line or handle basic inquiries, minimizing disruptions to operations. The nurse's space must be accessible to students via the hallway as well as staff through the main office to ensure both children and adults can conveniently gain entry in a timely manner.

In a collaborative building like Shaker Lane, having a shared office space as defined in the Introduction as the Clinical Suite is desired (see Section 16 for additional information). This group of staff includes those who work together to support students, create IEPs, and collaborate on treatment plans. Currently, these individuals are scattered throughout the building, which can hinder effective collaboration and communication. A dedicated shared office space for clinical staff would provide several benefits:

- **Improved Collaboration:** Bringing clinical staff together in one space would facilitate easier and more frequent collaboration, allowing for more cohesive and comprehensive support for students.
- **Efficient Communication:** Proximity would enhance communication among clinical staff, leading to quicker and more coordinated responses to student needs.
- **Enhanced Workflow:** A shared office space would streamline the workflow for creating IEPs and treatment plans, making the process more efficient and effective.
- **Supportive Environment:** Being in a common space would foster a sense of community and support among clinical staff, contributing to a more positive and productive work environment.

Curriculum Delivery Methods and Practices

Current

At Shaker Lane, the shared commitment to Universal Design for Learning (UDL) drives the creation of inclusive and supportive learning environments. UDL principles ensure that lessons are designed to cater to a diverse range of student needs, promoting accessibility and engagement for all learners.

Our current method of curriculum delivery is primarily based in individual classrooms with some aspects of academics taking place in our outdoor classroom. There are limited spaces for classrooms to combine for shared learning experiences and other cross-grade level or school-wide meetings. Some cross-grade level experiences occur through a reading experience with Grade 2 and Kindergarten classrooms. In this instance, a Kindergarten classroom and Grade 2 classroom combine to have a shared reading lesson that matches students up with a peer from another classroom. Two classrooms squeeze into one room to have this shared experience. Other cross grade level experiences have included showcasing student work to other grade levels where the same room constraints are present. Grade-level In-house presentations are currently set up in a classroom displacing that class to others while the grade level rotates through the room.

Each grade level team is supported by special education teacher and shared reading and math interventionists and ELL teachers support across the three grade levels. There is limited break-out space for support teachers to meet with students, which includes significant travel throughout the building taking away from instructional support time. To address these challenges, the school community creatively repurposes existing spaces, using hallways, closets, and shared offices for instructional purposes.

Proposed

Current classroom spaces are not designed for the collaborative, differentiated instruction model employed at Shaker Lane. Teachers and support staff often face challenges in finding appropriate spaces for small group work and individualized instruction. As the school plans for future renovations or new construction, incorporating flexible, multipurpose learning spaces will be crucial. These spaces titled *Den Learning Space*, *Small Group Learning Space*, and *Clinical Suite* are listed and defined in the introduction and will continue to be referred to in subsequent sections.

Creating multiple designated whole group teaching areas within the classroom for specific subjects enhances instructional efficiency and organization. Having multiple dedicated spaces for different subjects helps to maintain a structured and organized learning environment. Students can more easily transition between subjects when there are clear visual cues and designated areas. By keeping materials specific to each subject in their designated area, teachers can save time on setup and cleanup. Creating visually appealing and well-organized learning spaces can contribute to increased student interest and participation.

The idea of large Den Learning Spaces located in each grade level, would foster collaborative learning experiences by providing flexible, open areas within hallways or common areas. These spaces can accommodate multiple classes, promoting both same-grade and cross-grade learning interactions. By

incorporating these spaces, we could create a dynamic learning environment that supports various instructional activities without disrupting classroom learning and promotes integration amongst classrooms. Examples of use for this space are as follows:

- Whole group and small group lessons that involve multiple classrooms
- Break out groups for students to work together from different classrooms increasing community and collaboration
- Cross discipline instruction from Unified Art Specialists, STEM Integration Specialist, Interventionists, other support staff
- Large in-house presentations from outside agencies
- Cross grade level learning experiences in this large gathering area could include cooperative learning activities and interdisciplinary projects fostering a sense of community and collaboration among students of different ages

In terms of adjacencies, first and second grade should be stacked vertically above kindergarten and preschool, with stairs connecting the Dens to facilitate these interactions.

English Language Arts/Literacy

Current

Shaker Lane recently adopted Great Minds Wit and Wisdom's comprehensive English Language Arts curriculum. After an extensive exploration of several ELA curriculums, this program best aligned with the vision statement from the Curriculum Review Committee:

We believe that all students can achieve at high levels through access to evidenced-based, universally-designed, data-informed, and structured instructional tools and practices.

We believe access to diverse literature positively impacts children as readers and as people and that students of all races, genders, religions, languages, abilities, interests, and beliefs should have the opportunities to have affirmative literary experiences.

These fundamental shared beliefs guide our engagement of students in English Language Arts classrooms. Students develop the necessary skills in reading, writing, speaking, and listening that are the foundations for creative and purposeful expression in language. To develop rich vocabulary and promote comprehension, students engage with high-quality, complex text and participate in writing and discussions anchored in evidence from the text. Students apply these skills while reading independently and see themselves as readers and writers who persevere in the face of challenging work.

This knowledge based program will be part of the foundation of building successful readers, writers, and communicators. Our already existing phonics program, Fundations, along with decodable texts, Geodes, will complement our new ELA program. Through this new program, staff will lead students through Modules that have focus questions to deepen their knowledge on a variety of topics. Writing is embedded in the Wit and Wisdom program as an integral approach to learning.

Proposed
The ongoing adoption of the Wit and Wisdom curriculum will shift the focus toward a knowledge-based approach. This new program emphasizes collaborative conversations, and a new, larger Den learning space is desired to facilitate these opportunities. For example, it will allow for gathering multiple classrooms to discuss topics that have been previously introduced in the individual classrooms, provide whole group and small group instruction across classrooms and enhance collaborative learning experiences. These opportunities align with our philosophy of community and collaboration.

Our redesigned Shaker Lane School will have ~~seven~~ eight classrooms for Kindergarten, First Grade, and Second Grade. Integrating a small group learning space between traditional classrooms is a desire.

In all learning spaces we want to continue to reduce barriers to learning by offering varied seating options to promote student collaboration ranging from shareable desks, variable table designs, and flexible seating choices such as large pillows, couches, bean bags, stools, etc. This is a current practice that we want to add to and enhance in our new environment. These types of varied seating options have proven to add to student comfort and productivity.

Mathematics

Current
Shaker Lane aims to build a strong foundation in mathematical knowledge while also empowering students to think critically and apply that knowledge in real-world scenarios. Through the guidance of the Massachusetts State Frameworks, students are given the tools to become mathematically proficient. Through their study of mathematics, students are instructed upon the domains of operations and algebraic thinking, numbers and operations in base ten and fractions, measurement and data, and geometry.

In our mathematics classrooms, we strive to build confident mathematically proficient students by using real world applications in order to empower and prepare students to apply mathematics flexibly as they develop their future path. In our classrooms, we believe in:

- **Student-Centered Learning:** Students take ownership to acquire and demonstrate skills through choice, teacher support, collaboration, and inquiry. Students see themselves as capable problem-finders and problem-solvers who do computations, persevere through challenging questions, reason abstractly and quantitatively and communicate their ideas.
- **Connected Learning:** Students learn the hows and whys of math by treating new concepts as extensions of what our students have learned in previous units and grades. Our students develop a concrete and conceptual understanding of key mathematical concepts, including how and why topics are connected and how and why they can apply multiple skills to the problems they tackle in class and in the real world.
- **Deeper Learning:** Students achieve deeper learning in carefully selected core topics. Deeper learning allows for multiple experiences to build math confidence and competence in order to prepare each student to succeed in a changing world.

The district utilizes the *HMH Into Math* program to help students build problem solving skills and apply knowledge to higher-level mathematics. Each lesson has a Learning Objective that is shared with students and begins with a whole group warm up activity titled *Spark Your Learning*. Through this activation warm up, teachers guide students through an interactive question where they explain, illustrate, and share their thinking. This collaborative experience prepares students for more in-depth learning. Students learn together in the *Build Understanding* part of the lesson followed by *On Your Own* independent learning that reinforces the concepts introduced in the lesson. Differentiated small group instructional plans are provided to target students at their level of learning. While these groups are taking place, students are engaged in independent or partner activities. These activities are grounded in the UDL framework and can range from prior learning experiences that students have mastered or continued work on an introduced concept.

Proposed

In our third year of *HMH Into Math*, staff have become confident in the program structure and are seeking more collaboration during instructional periods. In a large spill out Den Learning Space, a number of learning experiences could take place to enhance learning. This could range from the following:

- Classrooms can combine for multiple parts of the mathematics lesson. This could be a short mini-lesson and then break out into classroom and Den Learning Space for further instruction or classroom mini-lessons with the Den Learning Space utilized for cross classroom work.
- Den Learning Spaces would allow for a collaborative experience that could include multiple classrooms receiving whole group instruction from two teachers. They could facilitate a mini-lesson in this space and then break out within the Den Learning Space and their classrooms for independent and group work.
- Our math interventionist would have the ability to support multiple students across different classrooms in this space increasing productivity. The proximity of these Den Learning Spaces would also allow for flexibility of staff to pull students in a flexible model.

Small Group Learning Spaces built into classrooms would provide a location for efficient support from our interventionists as well as other special education supports. Students would be able to receive support within their classroom setting allowing for any teacher directions to be heard, provide a sense of belonging to their classroom while receiving support, and minimize travel time to one location within the building as is our current configuration.

Science

Current

Shaker Lane currently utilizes the *Full Option Science System (FOSS)* that focuses on students as active investigators. Lessons are aligned with the Massachusetts State Frameworks integrating physical, earth and life sciences into the classroom. The *FOSS* curriculum is designed as a laddered series of experiences that cumulatively develop student knowledge and scientific thinking across all three dimensions. This approach ensures that students build a comprehensive understanding of science through hands-on investigations, critical thinking, and real-world applications. The *FOSS* curriculum will continue to be the curriculum of choice moving forward for Shaker Lane.

Grade level teachers share 2 *FOSS* kits amongst 6 classrooms. This is challenging with regard to planning and instruction where staff need to coordinate when they will be utilizing specific materials with their classroom. The opportunity to be in sync with lesson instruction is nonexistent. Even with the proposed addition of a classroom, the teachers will continue to share 2 *FOSS* kits amongst themselves, with no additional kits needed to be ordered.

The K-5 STEM Integration Specialist is instrumental in fostering a comprehensive STEAM (Science, Technology, Engineering, Arts, and Mathematics) education. By embedding STEM practices across all content areas, including literacy and social studies, this role significantly enhances student learning and critical thinking skills. Currently, students have the opportunity to visit what we call the Imagatorium to work on projects. The Imagatorium is a classroom where students can visit when they are actively working on a STEM project. While the Imagatorium provides an exceptional dedicated space for immersive STEAM experiences, the specialist's primary focus is on empowering teachers to integrate STEAM elements into their daily instruction. This approach ensures that students develop a deep understanding of STEAM concepts through authentic, real-world connections. Due to this philosophy, we advocate that STEM can and should be embedded throughout a student's day and experience at Shaker Lane School. Thus, we have included more information about our STEM program in the Instructional Technology section.

Proposed

Den Learning Spaces designed for collaboration and instruction offer a multitude of benefits for both teachers and students. The shared space allows teachers to team-teach Science lessons, combining their expertise and pedagogical approaches leading to more dynamic and engaging learning experiences for students. Teachers can utilize the Dens for collaborative lesson planning and sharing best practices fostering a community of learning and innovation among the staff. These dens can be designated areas for ongoing experiments, allowing students to observe, record data, and collaborate on drawing conclusions. This fosters a hands-on, inquiry-based learning approach. The collaborative environment encourages students to share their knowledge and observations, leading to deeper understanding and richer learning experiences.

Breaking down our Imagatorium space and dispersing it into each Den Learning Space will allow for all classrooms to access this makerspace learning style quickly and collaboratively. Currently, the Imagatorium is a destination that one classroom attends at a time. By incorporating the Imagatorium into the Den Learning Spaces multiple classrooms will be able to access this space at the same time increasing collaboration amongst grade level students and staff. For example, two classrooms could work collaboratively on a STEM project in the Den Learning Space. There would be a large area for whole group instruction to take place and then breakout areas within the Den Learning Space that can be easily supervised by our STEM Integration Specialist and classroom teachers. Once in this space, a designated area where Imagatorium creations could be displayed will be collaboratively decided upon by each grade level.

Den Learning Spaces should be flexible spaces that can house common materials and technology, eliminating the need for duplication and streamlining access for teachers across different classrooms. An area in the Den Learning Space should be outfitted with a sink, counter/shelf space to store science experiments, and electrical outlets. Consideration of additional sinks will be discussed throughout the

planning project. The space can accommodate flexible student groupings for differentiated instruction based on student learning preferences and needs. The students should be able to easily access any materials needed for a project and seamlessly transport those materials to any space throughout the den to work either on the floor or table tops. There will be enough space and materials for multiple classrooms to spread out and complete a STEM project individually or together.

Social Studies

Currently in grades K and 1, students learn social studies standards through trade books that allow for discussions and relevant hands-on activities. Grade 2 students use the TCI curriculum. Across the grades at Shaker Lane, students learn about leadership, citizenship, communities and map skills through hands-on activities. At Shaker Lane social studies instruction takes place during 20-30 minute blocks of time. Most teachers alternate between science units and social studies units during the course of the school year.

Proposed

Den Learning Spaces will allow students to collaboratively learn about the social studies standards, and more importantly learn to live out the social studies standards by being good citizens in a shared community. In the Dens, students will have opportunities to take on leadership roles outside of their classrooms since they will be working in mixed groupings.

Our new literacy curriculum will also lend itself to more social studies exposure and deeper learning as it is a knowledge-building curriculum. Various social studies topics will be embedded into the literacy curriculum allowing us to further our UDL practices and encourage more cross curricular projects in a project-based learning model.

Having direct shared access to the trade books will be of critical importance for our social studies learning at the future Shaker Lane. The Dens will allow for the further sharing of these books as well as a larger community in which to engage as good citizens.

World Languages

Current

Shaker Lane does not currently offer any world languages.

Proposed

No changes are proposed at this time. Time outside of dedicated academics are devoted to social-emotional development notably our Second Step Curriculum and Choice Time.

Academic Support Programming Spaces (e.g., EL academic coaches, etc.) i.

Current

Shaker Lane currently has one math interventionist supporting students in grades one and two. Students are evaluated for intervention through three methods: 1:1 interviews, *HMH Into Math* Growth Measure scores, and teacher recommendation. Students who qualify for services are supported by our

math interventionist in a push in model and pull out model when needed. The math interventionist moves between multiple classrooms throughout the day to support students. At times the math interventionist does 1:1 interviews or screening assessments in the hallway outside of classrooms. This can be very distracting for the student since other classes and individuals are moving through the hallways at all times.

Shaker Lane has two reading specialists supporting students across grades K-2. These staff members play integral parts in assessing students, analyzing reports, and providing intervention services. Our reading specialists collaborate daily discussing teaching practices and student performance. Throughout the day, reading specialists can be seen supporting students and providing consultation to staff during their preparation times.

Both math interventionists and reading specialists share a learning space where they support students. The location of this one space impacts learning time as students have to travel throughout the building to receive services.

Proposed

Providing a dedicated Academic Suite for our Math Interventionist and Reading Specialists would provide a shared space for these individuals to plan and design interventions for students. Located adjacent to this Academic Suite would be a small room for intervention purposes. ~~Staff would have the capability of working with students in their classroom and the attached small room~~. We currently have two Reading Specialists and one Math Interventionist. These three staff members would share the Academic Suite for small group instruction as well as the small room adjacent to this suite for more private instruction as needed. This small group space would be scheduled and staffed by the interventionists. Examples of instruction in this space include remediation of skills and an extension of learned skills by students. Oftentimes this instruction includes manipulatives with which learners engage. Positioning this suite on the second floor would provide a central location for staff to quickly access students across grade levels.

Intervention staff could also potentially utilize the Den Learning Spaces and Small Group Learning Spaces at times throughout the year. When interventionists are providing in-class support to classrooms, these spaces would allow quick access and support students without disrupting the flow of the main lesson. This minimizes wasted time in travel and setup. Students from shared classrooms could be supported in the Small Group Learning Space maximizing delivery of services. Intervention either in the classroom as a push in model or in the small group rooms between two classrooms for pull out minimizes disruption for both the student receiving support and their classmates. This can help maintain a focused learning environment for everyone. Having intervention specialists readily available within classrooms and Den Learning Spaces can facilitate smoother communication and collaboration between the specialist and classroom teacher regarding student progress and support strategies.

English Learner Education Programs

Multilingual Learners

As the demographics of Massachusetts continue to shift, with a growing population of multilingual learners, the need for equitable and adequate space for these students becomes increasingly critical. In small districts experiencing rapid diversification, the disproportionate impact on existing infrastructure is particularly pronounced.

To ensure that multilingual learners receive educational opportunities commensurate with their peers in general education, it is imperative that school facilities provide appropriate space for specialized instruction, small group support, and collaborative learning environments. Currently, the Shaker Lane School struggles to accommodate the growing number of multilingual learners within existing classroom structures, which can lead to overcrowding, inadequate resources, and compromised educational outcomes.

By investing in appropriate space for multilingual learners, the Massachusetts School Building Authority can contribute to creating inclusive and equitable learning environments that empower students from diverse linguistic backgrounds to reach their full potential.

Current

Currently, the model supporting our multi-lingual learners in grades PK-2 is a combined push-in and pull-out model. With the lack of adequate learning spaces, the pull-out English Language Education services are delivered in a shared space.

English Learners (EL) are students who are not proficient in speaking English and are developing language acquisition skills to better access the current curriculum. This is done through consultation with teachers, as well as both a push in and pull out model of instruction. Teachers identify possible ELs based on home language surveys. The WIDA Screener is given to students who speak and understand a language or languages other than English. Qualified students receive comprehensive English language development instruction in all language domains: listening, speaking, reading, and writing. Students at all levels of English proficiency receive instruction that is rooted in researched based methods and uses a variety of resources. Students are given many and varied opportunities to hear, speak, read, and write English.

Proposed

Dedicated space for multilingual learners is essential to:

- **Facilitate effective instruction:** Provide specialized learning environments tailored to the unique needs of multilingual students.
- **Support language acquisition:** Create spaces for small group and individualized language instruction.
- **Foster cultural competence:** Cultivate environments that celebrate diversity and promote cross-cultural understanding.
- **Promote collaboration:** Enable effective collaboration among teachers, students, and families.
- **Enhance student achievement:** Provide the necessary resources and conditions for multilingual learners to succeed academically.

Design changes needed in a new Elementary School to support and enhance this programming include the following:

- (1) half-sized classroom
- Flexible seating to allow for individualized learning and collaboration
- Technology and space for small groups, 1:1 and station work commensurate with general education classrooms
- Easy access to whiteboards in a variety of areas to support instruction

The district has carefully considered the need for dedicated space to support English Language Learners/Multilingual Learners (ELLs/MLLs). An MLL classroom is essential to provide effective and equitable instruction for our growing MLL population. This dedicated space will allow for specialized instruction tailored to the unique needs of MLL students. It will provide a quiet and focused environment for small group and individual instruction, promoting language acquisition and academic achievement. The classroom will serve as a resource center, equipped with language learning materials, technology, and other tools to support MLL students. This will empower students to engage in learning and participate in collaborative activities. This learning space will be designed to accommodate various learning preferences and activities, including small group instruction, one-on-one tutoring, and project-based learning. By providing a dedicated MLL classroom and adequate staffing, we are committed to creating a welcoming and inclusive learning environment for all students, regardless of their language background.

To ensure optimal utilization of this space, we propose the following scheduling and staffing plan:

- Core Instruction: During core instructional time, the MLL classroom will be used for small group instruction, led by certified ELL teachers. These sessions will focus on language development, literacy, and content area instruction.
- Intervention and Enrichment: After core instruction, the classroom will be used for targeted intervention and enrichment activities, such as small group tutoring, language labs, and cultural clubs.
- Flexible Use: The classroom can also be used for other purposes, such as parent-teacher conferences, MLL student meetings, ACCESS testing, screening and evaluations.
- To support the MLL program, the district currently employs two full-time ELL teachers.

Student Guidance and Support Services (e.g., social support, METCO, after-school programs, anti-bullying programs, etc.)

Current

Shaker Lane currently has one school adjustment counselor, one school psychologist and one BCBA (Board Certified Behavior Analyst).

~~Shaker Lane currently has one school adjustment counselor, one school psychologist and one BCBA (Board Certified Behavior Analyst). The school psychologist and adjustment counselor provide multiple services and support to our students which include small group work and individual treatment. The school psychologist and the BCBA typically only provide support services to students in special education. The school psychologist holds both individual and small group sessions for students. The school adjustment counselor provides general education services through snack and lunch bunch groups throughout grades K-2 on a daily basis.~~

~~The school adjustment counselor is the only provider that currently has a space large enough to accommodate both her office and student working spaces. The school psychologist and the BCBA have offices in storage space/closets. All three office spaces do not have exterior windows. The adjustment counselor's space has one interior window on the door.~~
~~The school psychologist has to find alternative space to hold her group sessions as her office space is too small. In addition, the school psychologist provides students with art therapy. She utilizes the art room or the Imagatorium space for these projects. She uses storage space down the hall from her office or her home for storage of materials for art therapy purposes.~~

~~The school adjustment counselor also leads the Special Education 504 process. These meetings are held in the singular conference room within the school.~~

~~The BCBA provides support to students and families through a consult model. The BCBA hosts multiple parent consult meetings per week as delineated on student's IEPs, primarily on a virtual basis. She travels throughout the building to join and lead student consult meetings on a daily basis as well.~~

The school psychologist is an integral piece of the referral process for special education. This person conducts all psychoeducational evaluations to determine eligibility for special education services. When a student has been determined eligible for special education services, direct services in the form of school based counseling, social skills instruction or other clinical services may be a component of the student's Individualized Education Program (IEP) service delivery. In the case that a student requires clinical services or support as part of their IEP, the school psychologist would provide direct services to both individuals and/or small groups of students to work on IEP goals.

The school adjustment counselor provides services to both special education and general education students. The school adjustment counselor is also Shaker Lane's Special Education 504 Coordinator, determining whether a students' disability qualifies he/she for specific accommodations that are in addition to the DCAP (District Curriculum Accommodation Plan) and is determined to be eligible for a 504 Accommodation Plan. These meetings typically take place in the conference room due to the number of individuals involved in such a meeting. On a daily basis, the school adjustment counselor ultimately supports the entire school population by responding to support calls during the school day in all grade levels, running snack and lunch social groups, providing scheduled one on one counseling sessions as well as handling "pop up" social/emotional situations that come up.

The Board Certified Behavior Analyst (BCBA) plays a crucial role in promoting positive behavior, academic success, social-emotional development and addressing behavioral challenges and enhancing learning opportunities for students with complex needs. The BCBA at the Shaker Lane School primarily provides ongoing behavioral support and consultative services to students with disabilities who have behavioral goals on their IEPs. Additionally, the BCBA conducts functional behavior assessments and assists the evaluation teams with other relevant assessments, while also collecting, reviewing and analyzing behavioral data. The BCBA provides consultation services to parents and families as well as staff who directly work with the children on IEPs. The BCBA may also be accessed for general consultation for community peer students who are displaying a wide range of behaviors.

The school adjustment counselor is the only provider that currently has a space large enough to accommodate both her office and student working spaces. The school psychologist and the BCBA have offices in storage space/closets. All three office spaces do not have exterior windows. The adjustment counselor's space has one interior window on the door.

The school psychologist has to find alternative space to hold her group sessions as her office space is too small. In addition, the school psychologist provides students with art therapy. She utilizes the art room or the Imagatorium space for these projects. She uses storage space down the hall from her office or her home for storage of materials for art therapy purposes.

Proposed
The School Adjustment Counselor should have a large space located near the administrative offices. This space should provide a calming and supportive environment for students while also giving the School Adjustment Counselor a private area to complete administrative tasks and make phone calls. It should be outfitted with a sink for art projects, varied and comfortable furniture for students, and other tools that support student regulation. The thoughtful design of this space will help ensure that it meets the needs of both the students and the counselor.

Please note, additional support service providers including our BCBA and School Psychologist are addressed in the Clinical Suite in Section 16.

TEACHER PLANNING

Current
K-2 teachers have a 45-minute prep period each day. This time takes place when students are attending their unified arts class. On early release days, the planning block is 35 minutes in duration.

The current setup at Shaker Lane presents significant challenges for teacher workspace and related needs:

- A copier and other necessary resources for teachers are located on a stage, which is separated by a curtain from the physical education area. This arrangement is far from ideal as it compromises privacy and creates distractions. This also does not allow for stage use in any other capacity.
- Another copier is located on a landing at the top of the stairs on the second floor, which is not a dedicated or private workspace.
- The lack of teacher workspace creates an isolated environment for staff where they are not able to gather in a shared space.

Proposed
In order to increase productivity, each floor must have dedicated workrooms, equipped with necessary resources such as copiers, printers, and office supplies. These workrooms should provide a quiet and comfortable environment for teachers to plan, collaborate, and complete their tasks.

Locating teacher workrooms near classrooms will minimize time spent traveling back and forth, allowing teachers to maximize their planning and preparation time. With flexibility in mind, these workspaces can

also be used for multiple purposes, such as individual work, small group meetings, collaborative planning and professional development sessions, which include movable furniture to accommodate different needs and configurations.

Creating dedicated and well-equipped workspaces for teachers, Shaker Lane can significantly enhance their productivity, satisfaction, collaboration and overall effectiveness in delivering high-quality education to students.

PROFESSIONAL DEVELOPMENT

Current
Littleton Public Schools is committed to providing effective, ongoing, embedded, and meaningful professional development to our staff. Professional Development (PD) within Littleton Public Schools takes many forms including:

- 10 early release days throughout the school year to work across the district, within buildings, or within departments.
- Half of the early release days provided throughout the school year are faculty-led sessions in which educators can personalize their professional development.
- A full day of professional learning in the fall.
- Opportunities to attend professional conferences and workshops offered outside of the district.
- Opportunities to participate in graduate level courses offered by many colleges, universities and educational organizations.
- An induction and mentoring program for educators new to Littleton Public Schools.
- Opportunities to observe colleagues in their professional spaces.
- Many other specific training sessions.

Over the past three years, we have focused professional development opportunities on the topic of Universal Design for Learning (UDL). As a district we have studied the UDL Framework and how we can apply it to our daily practice. This knowledge will support upcoming shifts required to transition to a new building that will allow for more collaboration and reduce barriers.

Additionally, we have offered professional development in the curricular areas of writing, math and soon literacy. A major emphasis during these PD sessions has been collaboration with colleagues. We continue to emphasize collaboration among colleagues and grade level teams with the intention of this collaboration further continuing to students.

Within current district structures, we feel confident that we will be able to start to support teaching and learning adjustments that will be required in transitioning to an updated learning space.

Proposed
Education has changed drastically since our current Shaker Lane School was built. Therefore, we recognize that we have an opportunity to adjust our teaching and learning practices to align more effectively with an updated learning environment. We recognize the importance of supporting staff in building a collaborative and inclusive culture in the new environment. A major aim is to increase

collaboration among staff to have a more effective impact on all students. This will require teaching staff how to use new spaces, such as the Den Learning Spaces.

As of now we have discussed and are planning for further partnership with MLP Integrated Design, the educational planning and consultant team who lead the visioning efforts and can work to ensure teachers are fully prepared to implement that vision, particularly in terms of teaching and learning practices. This partnership will be multi-year in order to build opportunities for staff to connect and collaborate in different configurations with varied educational purposes such as community building, social emotional, and academic. We will plan for professional development to be an iterative process that will allow us to maximize best practices in a more collaborative and reduced barriers environment. In collaboration with MLP Integrated Design we are already planning and running professional learning for our educators to adapt teaching and learning practices to prepare for and better utilize a newly designed facility. Currently, we have two educators and their classes at each grade level partnering to create a collaborative learning experience for their students. In Kindergarten the educators will offer varied learning experiences during choice time, while in grades 1 and 2, educators will offer varied ways to offer and participate in morning meetings. The purpose of this current and focused professional learning is to begin to develop thought partners and strategies of how we can utilize common collaborative learning spaces that will be prevalent in a newly designed facility. The plan is for this professional learning to expand to other educators within each grade level and to expand into other areas of the school day particularly into curricular collaboration.

As we implement a new literacy curriculum this year, it is an opportune time for us to consider and learn how we can develop cross-classroom and cross-curricular experiences for and with our students. These opportunities will continue to expand and be enhanced through our commitment to on-going professional development that has already begun and will continue past the opening of a newly designed school building. Whenever we add or change curriculum such as we are doing now with literacy, we consider how we can generate new collaborations, applications, and approaches within the curriculum and with other curricula already in place.

Once we have moved into a newly designed learning space, our educators will be able to see the benefits of the professional development and will be able to continue to model for each other and for other educators in our district the approach to collaborative teaching and learning. Using this workshop model beyond the move-in date will allow all learners to benefit from a full understanding of how we can utilize the new space while actually being in the new space.

As we continue to progress forward, we would like to participate and create model lessons and spaces with furniture and materials that will help our educators to learn and understand how they can optimize learning in collaborative spaces.

PRE-KINDERGARTEN (e.g., Special Education only, tuition programs, locations, full day, half day, if applicable)

Current
Shaker Lane currently offers one full-day Integrated Pre-K classroom, two half-day Integrated Pre-K classrooms, and one full-day PACE (Personalized Academic & Comprehensive Education) Pre-K

classroom. The Integrated Pre-K and PACE programs currently take place Monday - Thursday from 9:00 am - 2:30 pm and Friday from 9:00 am - 11:30 am. The two morning half-day programs take place Monday - Thursday from 9:00 am - 11:30 am and Fridays from 9:00 am - 11:30 am. The two afternoon programs take place Monday - Thursday from 12:00 pm - 2:30 pm. All students eat snack in their classrooms and for students that are present all day, eat lunch within their classrooms.Enrollment of PreK is 48 as seen on the chart on the Grade and School Configuration Policies section.

Teachers currently instruct in their classrooms for the entire length of the Pre-K school day. Within each classroom, there are designated areas for whole group instruction, dramatic play, sand/water table, blocks etc. The students also eat lunch within the classroom at the same tables they work at. At times two preschool classrooms ~~with some~~ combine~~d~~ for choice time among the two half-day classrooms.This gives the students an opportunity to play with a larger number of peers. Students in the PACE classroom integrate into the integrated Pre-K classrooms based on their individualized ability level. Students in the PACE classroom also participate in a 30-minute adaptive physical education class each week. The only time our preschool students are outside of the classroom is for their outdoor recess time and to utilize bathrooms.

The preschool team at Shaker Lane holds regular meetings on Friday afternoons to discuss various topics related to supporting students. These meetings are crucial for collaboration, planning, and addressing specific needs within the preschool program and include but are not limited to arena evaluations, IEP meetings, student consults, and curriculum and program planning.

Proposed

While the current plan does not explicitly request additional classrooms for Pre-Kindergarten, Littleton Public Schools acknowledges the evolving landscape of early childhood education in Massachusetts. We are aware of the increasing demand for public school pre-kindergarten programs and the growing complexity of needs among children aged 3-5.

Therefore, while the current proposal maintains its focus on providing a high-quality, comprehensive Pre-Kindergarten program within the existing design, we remain committed to flexibility and adaptability as the needs of our community evolve. We will continue to monitor enrollment trends, emerging educational standards, and best practices in early childhood education to ensure that our program remains responsive to the needs of our youngest learners.

We are confident that the proposed design, with its emphasis on creating flexible and adaptable learning spaces, can accommodate potential future growth and changes in our Pre-Kindergarten program. We will work closely with educators and community partners to refine our program and ensure that it meets the evolving needs of our students.

The current number of Pre-K classrooms is 3, and the proposed number of Pre-K classrooms is 3. There are no immediate planned changes to the curriculum, but 3 properly-designed general classrooms is adequate to accommodate future flexibility. The current and expected future enrollment is 48, but 3 classrooms provides flexibility to accommodate additional students in the future.

While we understand that our proposal for a Pre-Kindergarten Den Learning Space exceeds MSBA guidelines, we believe this collaborative, centrally located area is essential to promote student and staff collaboration. With the number of preschool students in attendance, a larger space is needed for the students to collaborate as a grade level which a smaller classroom cannot accommodate. By providing a dedicated, flexible learning space, we can create a more dynamic, engaging, and developmentally appropriate early childhood learning environment that will benefit our youngest learners for years to come.

The Pre-K Den Learning Space will be utilized to accommodate multiple classroom gatherings for meetings, large group instruction such as story time, read-alouds, science experiments, performances, and art projects, as well as special events and celebrations. The Den Learning Space should include access to water and sand for sensory play, a dramatic play area, and soft flooring for movement. Moving towards a more collaborative approach for students at this level will develop their skills when they transition to kindergarten.

The flexible learning space will be supervised by qualified early childhood educators, including teachers and teaching assistants. The staffing ratio will align with state and local regulations to ensure the safety and well-being of all children. In order for staff to utilize the Den Learning Space a Google Calendar will be shared with team members.

~~The creation of a safe, sensory, and universally designed Den Learning Space for Pre-K teachers to bring students together for choice time would promote student and staff collaboration. This type of shared space could be utilized by multiple classrooms during a choice time in addition to indoor recess. This Den Learning Space should include access to water and sand for sensory play, a dramatic play area, and soft flooring for movement. Moving towards a more collaborative approach for students at this level will develop their skills when they transition to kindergarten.~~

Create a safe and easily accessible playground that connects directly to the building's exit to enhance the safety and convenience for students at Shaker Lane. This design will ensure that students can go directly from the building to the playground without needing to navigate through gates or other barriers. Direct access from the building to the playground minimizes the risk of students wandering off or encountering traffic, increases safety, and ensures that staff can easily supervise students as they transition between the building and the playground.

KINDERGARTEN (e.g., full day, half day, locations, if applicable)

Current
Shaker Lane offers a full-day kindergarten. ~~The seven kindergarten classrooms are all supported by a full-time Educational Support Professional.~~ There are six kindergarten classrooms that are all supported by a full-time Educational Support Professional (ESP). The seventh classroom, transitional, that is reported to DESE as having kindergarten students, does not have an ESP.

The current curriculum in kindergarten incorporates ELA which includes writing, phonics and phonemic awareness, Math, Science, Social Studies, and a Unified Arts block consisting of Art, Music, Physical Education, Library, and SEL.

Proposed
To ensure the best learning environment for our young learners, large spacious classrooms that allow for a variety of activities, including group work, individual tasks, and physical activities are desired. Rooms that provide natural bright light, multiple teaching areas, and a calming space will enhance teacher instruction and student learning.

Shaker Lane's scheduling model prioritizes collaboration among classroom teachers, interventionists, and special educators to support all students within an inclusive environment. The new design for Shaker Lane aims to enhance this approach by integrating smaller learning spaces for focused and targeted instruction that are within the kindergarten classrooms. By integrating strategically placed small learning spaces within each classroom, Shaker Lane can ensure that all students receive the support they need in a conducive and inclusive environment, optimizing learning opportunities and enhancing overall educational outcomes. These spaces can also be utilized for students who require a quieter environment for concentration, such as those with sensory sensitivities or attention difficulties.

Redesigning the Shaker Lane School with a Den Learning Space would create a learning neighborhood fostering interconnected learning communities to enhance the educational experience for all students. This layout would create an inclusive, dynamic, and collaborative environment where teachers can easily co-teach and plan interdisciplinary projects.

LUNCH PROGRAMS (e.g., number of servings, District kitchen, full-service kitchens, warming kitchens, etc.)

Current
The lunch program consists of three lunch seatings; K/T, Grade 1, and Grade 2 with five minutes in between lunch sessions. Each lunch session seats approximately 120 students. Our full-day Pre-K students are also eligible for hot lunch but they eat in their classroom. Students have a 20-minute lunch block. The cafeteria has one main entrance and exit, with an additional set of exit doors to the outside in the back of the cafeteria, as well as an exit on the loading dock.

Shaker Lane prepares free daily breakfast bags, in accordance with the Federal Breakfast Program for any student who wishes to have one. These are prepared by the cafeteria staff and sent home by the classroom teacher at the end of each school day for the following morning's breakfast at home.

Shaker Lane has its own full-service kitchen, currently staffed by four personnel, one of which is the supervisor. All food is prepared in-house and made fresh daily. All food and beverages are consistent with the School Lunch Program national guidelines. There is one serving station with one entrance and one exit. This serving station is not being used currently due to its insufficiency.

This school year, the staff created stations for students to pick up a variety of ordered items. Once the food is prepared it is moved from the food preparation/kitchen area to make it more streamlined for the students once they enter the cafeteria. This was in response to students not having enough time to eat their lunch as the lines were taking too long to serve the food.

Many students choose to get school lunch as there are multiple options offered on a daily basis, including the hot lunch of the day, pizza, bagels, salad, and PBJ. As a school that participates in the National School Lunch Program, all students enjoy a tasty, nutritious lunch daily at no cost to their families. Free breakfast is also provided to all students at schools as we participate in the School Breakfast Program. Staff are also eligible to order lunch on a daily basis for a small cost.

The kitchen has limited space (warming trays/ovens) to keep meals warm. The kitchen staff are prepping food trays prior to the students coming into the cafeteria so that they don't have to wait, which tends to let the food cool before eating. Since there is only one serving station, the cafeteria staff is unable to serve food to each student as they pass by.

The current kitchen space is small and shared by four staff. Storage of food items is limited within the kitchen area. Many food items are stored out back on the "loading dock," making supplies less accessible to cafeteria staff for food prep.

The cafeteria eating space itself is a large open area with a stage at one end and many windows for natural light and brightness. Round foldable portable tables, with attached seats, can be moved for cleaning and presentation purposes. The tables are not conducive to any child in need of a wheelchair or with physical impairments such as needing a seat back for support. Mini split AC units were installed a few years ago for temperature control. There is also an audio system and a small TV mounted on the wall to view presentations.

Currently, we have provided two different seating options for children who need a quieter space for lunch, due to overstimulation. One long table is at the entrance of the cafeteria, around the corner from the main seating area. The other is outside the doors of the cafeteria all together.

The cafeteria is located on the first floor in the main lobby area and is accessible to all, including a ramp to the stage.

LPS has partnered with some local farms to provide fresh food, farm to table, options for students.

The bathrooms, when needed, are located outside of the cafeteria and down the hallway creating a safety concern with supervision of students.

The cafeteria houses one drink/ bottle refilling station.

Proposed

In the proposed building, the number of lunch servings is expected to be three. We do not foresee intermingling the three different grade levels for lunch seatings. At this time, the students will continue to have a 20 minute lunch eating session. There is a dedicated lunch block for every grade level in a single school day that is outlined in the daily schedule in the prior section. This lunch block is highly coordinated and cross referenced with the Unified Arts Schedule and the K-2 Academic schedule to accommodate the best and least disruptive flow to the school day.

Improve egress in and out of the cafeteria by creating more than one accessible entrance and exit inside the school building. Our current configuration has one egress in the building and one that goes outside the building. We do not use the egress to the outside other than emergency situations as students have to walk around the building to regain access to the cafeteria. Multiple entrances and egresses within the school building will allow for a maximizing student transitions in and out of the cafeteria and a quicker and safer exit in emergency situations.

With a variety of students who have sensory needs, we want to incorporate an environment where these students can access the cafeteria in an integrated manner. Improve lighting and acoustics to provide a more sensory friendly environment for all students. Including many sensory-supportive options for students is imperative; noise reduction measures, proper audio/visual equipment for size of space. We currently have students who sit outside the cafeteria, in the main office, or in the principal's or assistant principal's office for a quieter setting.

The creation of a Quiet Cafe would provide support for students to be within the cafeteria during the lunch time, but in a space that feels safe and less stimulating for them. The quiet cafe can be a small room attached to the larger cafeteria with a wall of windows. This allows students to see and feel like they are part of the cafeteria, while in a sensory-supportive environment that is better for them. The glass wall allows this space to be supervised by staff who are monitoring lunch periods. Modifications such as these will allow students who are experiencing difficulty in the larger cafeteria setting to be part of the group with the intent to integrate into the larger cafeteria space over time.

Embedding an additional smaller Quiet Cafe within the larger cafeteria space will also allow our School Adjustment Counselor to hold "lunch bunch" sessions in the intended dining area. Currently, lunch bunch takes place in the School Adjustment Counselor's office. This arrangement will allow the School Adjustment Counselor to hold these sessions in a more natural dining environment, rather than in the counselor's office.

Locating the cafeteria adjacent or close to the outdoor play area to reduce transition time would be optimal. Currently, staff on duty take away recess minutes to allow for a 5 minute transition into the school for lunch. Having the cafeteria located next to the outdoor space will provide students more time to consume their lunch and keep their whole playing time.

Provide areas for alternative seating to accommodate students with a variety of needs. This includes but is not limited to alternative seating for students with physical disabilities/wheelchairs, back-supported seats, standing options, and smaller breakout spaces within the cafeteria for students with social/emotional/behavioral needs. Seating arrangements with separate chairs and tables are desired. Currently, our tables do not provide equitable access for students with varying disabilities due to the fact that the seats are attached to the tables.

Lightweight tables and chairs that can be moved easily for cleaning and storage purposes. Currently, our chairs and tables are attached and are very heavy to move.

Include bathrooms and large hand washing stations within the cafeteria itself. This will improve supervision of students utilizing these areas as well as being able to monitor the number of students

increasing safety. Currently, our bathrooms are located down the hall from the cafeteria which does not allow for proper supervision of students.

Self-contained industrial style kitchen with multiple stoves, ovens, freezers, refrigerators, warming stations, dishwashers (reusable trays and silverware), deep sinks etc.
Some of our current kitchen appliances are old and small to accommodate the number of students we are trying to prepare meals for as well as clean up after.

Ample storage for all kitchen supplies. Currently, most of our kitchen supplies are stored on the loading dock, outside of the kitchen space on shelves near an exit door. Kitchen supplies need to be closer to the kitchen for accessiblitly and flow of food preparation.

Office space for cafeteria supervisor within the cafeteria/kitchen space to include lockers for storage of personal items. Staff currently leave their personal items on a table in the cafeteria cooking space and the supervisor has a small table to sit at the front of the cafeteria.

An outdoor dining area for students attached to the cafeteria with sliding glass doors to extend the space will provide a calm and quiet setting for students. Having a location in nature will provide an alternative visible setting for students while still providing continuity and supervision. Currently, we do not have an outdoor dining space.

An outdoor dining option for staff with picnic table style seating would further collaborative time for staff in a non-academic setting.

Our redesigned cafeteria must provide two serving stations with their own designated entrance and exit for students. Student waiting time in lines will be decreased as well as congestion. This will allow for students to move quickly through two lines increasing their time to have lunch and socialize.

TECHNOLOGY INSTRUCTION POLICIES AND PROGRAM REQUIREMENTS (e.g., labs, in the classroom, Media Center, required infrastructure, etc.)

Current
Littleton Public Schools acknowledges the critical role that technology plays in the education of all learners, adults and students, alike. Shaker Lane has a robust infrastructure and network that allows all staff members and students to use devices anywhere at all times. All staff members have either a MacBook or Chromebook device. We use G-Suite for Education and our staff are adept in enhancing teaching and learning by using Google Documents, Slides, Sheets, and Drives.

Our district wide 1:1 program expanded significantly over the past couple of years. Pre-K classes have access to a set of iPads. All Kindergarten and grade 1 students have access to iPads for use during the school day. Each classroom has a charging cart for the iPads that currently is stationed in the hallway outside of the classroom. All grade 2 students are assigned a Chromebook for use during the school day. Each grade 2 classroom shares a charging cart for the Chromebooks that is also currently stationed in the hallway outside of the classroom.

Our teaching staff transitioned from MacBooks to touchscreen Chromebooks. This transition has allowed us to pair these devices nicely with our ClearTouch Interactive Panels that can be found in all general education classrooms. The interactive panels have allowed students and teachers to engage with lessons and virtual manipulatives better. In addition to the ClearTouch Interactive Panels, our educators have document cameras that connect to the panels to allow for projected images of books, workbooks, or objects. Our educators have responded favorably to the interactive panels and utilize them in a way that engages our students.

Instructional technology within our district is supported by our Technology Team which includes an Instructional Technology Coordinator, a Technology Systems Coordinator, an IT Systems Specialist, and two Technology Specialists. In addition to this Technology Team, Shaker Lane has a Technology Teacher Leader. The Technology Teacher Leader is a stipend position to assist teachers, primarily through peer-to-peer coaching and modeling of best practices, to integrate technology into instruction and their professional practice. Professional Development opportunities are timely and relevant for instructional technology. The Technology Teacher Leader will offer before or after-school sessions on various topics. Our STEM Integration Specialist and Instructional Technology Coordinator will also offer PD opportunities for staff on pertinent topics including for example the use of interactive panels and AI technology.

Technology is integrated into daily practice at Shaker Lane School. Our STEM program is also an integrated approach within our elementary schools. We have a K-5 STEM Integration Specialist who collaborates with all other educators to create and facilitate lessons for students in all grades at Shaker Lane School. Each classroom completes three digital citizenship lessons at the beginning of each school year. Additionally, each trimester all classes complete at least one STEM project that centers around the Engineering Design Process. Our STEM Integration Specialist also collaborates with Unified Arts Educators to integrate STEM into SEL lessons and more. Currently, we have a shared classroom that hosts our makerspace as well as other UA classes as needed. Our maker-space is called the Imagatorium. This space holds a charging cart for small programmable robots and iPads, a lego wall, a green screen, a wind tunnel, a laser cutter, as well as various creation tools such as cardboard, tape, fasteners and other such supplies.

Proposed

As a district, we believe strongly in the integration of educational technology to enhance and support the teaching and learning for all. We will continue with the 1:1 program, which will require a continued robust network and infrastructure. Students utilize the devices at school only at this time. Devices are left in carts or storage spaces within the school overnight to charge for each school day. If there is a request or a need, a student can bring a device home, however, this is not frequent at this time. Many students are able to access a device at home and through communication with families, we are able to ensure that all have access to internet at home. The Littleton Public Schools strives to ensure the protection of our students' privacy while encouraging innovative uses of technology to support teaching and learning. We maintain a thorough vetting process whenever we engage with third party vendors to ensure student data privacy. Littleton Public Schools works with The Education Cooperative (TEC) to facilitate the execution of data privacy agreements with all vendors.

Further, for iPads (PK, K, T, Grade 1) we utilize:

JAMF MDM: We utilize JAMF as a Mobile Device Management (MDM) solution to centrally manage and distribute licensed applications to iPads. This ensures that all apps are deployed with valid licenses and are accessible to students

For Chromebooks (Grade 2) we utilize:
Web-based Applications: The majority of applications used in Grade 2 are web-based, eliminating the need for individual device licensing.

Rostering for Licensed Access: We roster students for licensed access to specific web-based applications.

We envision a STEM-rich learning environment where students explore, innovate, and problem-solve across all grade levels. To achieve this, we propose designing our Den Learning Spaces into dynamic hubs for STEM integration. This means taking our current Imagatorium and dispersing it into each grade level's learning den. These ~~spaces~~ grade-level Imagatorium learning zones will serve as the cornerstone of our STEM initiative, fostering curiosity, creativity, and collaboration.

- **Flexible Learning Spaces**: Areas for brainstorming, designing, building, and showcasing student work will foster creativity and critical thinking.
- **Essential Equipment**: Sinks, storage, charging stations, and durable furniture will provide the infrastructure necessary for experimentation and project-based learning.
- **Technology Integration**: Green screen walls and an Interactive Screen with a small stage area will enable students to showcase.

To illustrate the potential of STEM integration, we present the following sample projects that are currently part of our STEM program that will take place in the grade level Imagatorium zone:

- **Storytelling with Robots**: Combining coding, language arts, and technology.
- **Three Little Pigs: Paper and Wood Exploration**: Integrating engineering, science, and math through design, construction and simulation (Wind Tunnel)
- **Lego Wind Car Challenge:** Exploring physics and engineering principles through a hands-on challenge.
- **Simple Machines at the Zoo**: Applying science concepts to real-world scenarios.
- **Robot Team Building**: Fostering collaboration and problem-solving through robotics.

Successful STEM projects thrive on collaboration between teachers and our STEM specialist who will utilize a shared google calendar to schedule, use and supervise this learning zone. A properly designed space will facilitate teamwork, allowing projects to continue even in the absence of the specialist. When students are collaborating on STEM projects they are either supervised by the STEM specialist or classroom educator. STEM projects are integrated into the curriculum, thus the collaboration between educators allows for scheduling of this space for students. This fosters a more sustainable and impactful STEM program.

The Den Learning Spaces would be a perfect environment for our K-5 STEM Integration Specialist to maximize impact on students. Having dedicated Den Learning Spaces allows the K-5 STEM Integration

Specialist to work with multiple classrooms concurrently. This eliminates the need to travel between classrooms or to the Imagatorium and set up materials repeatedly, freeing up valuable time to work more with students. The space can be configured to accommodate different group sizes and project needs. The K-5 STEM Integration Specialist can work with small groups for focused instruction or larger groups for collaborative activities. Beyond these advantages, Den Learning Spaces can foster collaborative experiences between the K-5 STEM Integration Specialist and classroom teachers through teamwork and shared expertise.

For effective STEM integration into the Den Learning Spaces we require a designated area to park two charging carts for our programmable robots and iPads. Storage for building materials and in-progress projects is essential as most projects are works in progress for a week or two. The learning space should be open and easily adaptable to various project needs. This means having tables and seating options that are easy to reconfigure or move out of the way for floor-based work. As previously mentioned, sinks will be essential equipment for this space. Sinks at an age-appropriate student height and spread apart in the physical area will be essential.

Additionally, a presentation space or stage area would be beneficial. This presentation space could also function as a projection screen with green screen capabilities. In order for learners of all ages and hearing abilities to fully benefit from all that we have shared, we will consider what assistive listening technology can be utilized in each classroom and learning space.

In accordance with the MSBA's recommendation for best practices for K-12 STEM Learning Spaces, the general classrooms will be equipped with sinks and other recommended amenities. The Imagatorium spaces are specifically for deeply imbedded, collaborative, multi-classroom STEM projects and curriculum that goes beyond the general classrooms' capabilities. The space summary for these spaces has not been modified in the updated version.

To further expand STEM learning opportunities, we propose integrating outdoor education. Outdoor learning spaces will provide students with hands-on experiences in natural environments, fostering scientific inquiry and observation. Another proposed change would be a separate STEM specialist preparation and fabrication space titled The Creation Station. This space would be supervised and only utilized by the STEM specialist and other staff members trained to use the equipment. This space will be primarily used by STEM specialists for fabrication, resource creation and lesson planning. This space will be viewable to students to allow students to see how their projects and ideas are created by use of the tools within this space. This space would be equipped with fabrication tools (Laser Cutter, 3D printer, etc) and would showcase these advanced manufacturing technologies, inspiring students to envision the possibilities for their projects. The Creation Station will give students who are passing by an opportunity to observe how various machines work to create projects. However, it will not be a space where scheduled times are designated for students or staff, other than the STEM Integration Specialist. . The machines include a laser cutter and 3D printer, which are not suitable for student use, so a room with provisions for safe, supervised student observation will allow this key part of project manufacturing and production to be meaningfully included in the STEM curriculum. The space summary for these spaces has not been modified in the updated version.

Ongoing professional development will continue for technology. PD opportunities will include before/after school sessions, during school support, as well as peer and tech specialist coaching. Considering the building process is a few years out, many instructional technology changes will take place between now and then. Thus some form of digital display or smart technology will be determined for all educational spaces. This will require professional development for all staff to ensure proper and effective use of such technology.

MEDIA CENTER/LIBRARY

Current

Currently, our library is configured as a traditional model with students having access to just books as a resource. Our library is staffed by a .8 library tutor who provides a weekly 45-minute unified arts session to K-2 students. During this block of time, the library tutor begins by reading students a story, followed by a short activity/conversation about the book, then provides time for students to select a book, and ends with students reading their book or working on a puzzle or coloring page.

The library is widely utilized by staff before, during, and after the school day when it is available. Staff utilize this location to hold meetings such as IEP, SST, parent, PD, leadership, and others. This space is also a location for meetings amongst the larger Shaker Lane Community which includes School Council, PTA, District PLCs, and family presentations. This is a highly desired location for meetings to take place.

The Littleton community also utilizes this space for both afterschool and the evening purposes. Some of the organizations that make use of this space are Boy Scouts, Girl Scouts, and Parks & Recreation.

Proposed

As part of our visioning process, Littleton staff explored several newly constructed educational environments to observe effective practices firsthand. Beyond these tours, we reviewed various library media models, from traditional enclosed spaces to those fully integrated within the school. Each discussion helped shape our vision for the future of library media. We noticed that the library experience has evolved from a distinct destination to an integral part of everyday academic life. Modern library/media experiences now include book collections, spaces for creative activities, and presentation areas not only in one library destination but also within grade level team areas.

With this in mind, Shaker Lane is looking to create a more integrated library/media experience where the Media Center remains mostly a destination but is located in such a way that it is physically connected to other programs (e.g., art, grade-level neighborhoods) to support a more collaborative, interdisciplinary approach to education. Currently, our library sits alone at the main entrance of the building. We envision relocating it to a more academically central location, between grade level learning communities and adjoining other collaborative spaces.This new space should offer movable book stacks and comfortable, adaptable seating for various activities and group sizes, encouraging students to explore and work together in a relaxed environment. The library will continue to be staffed throughout the week to provide a Unified Arts experience for K-2 students for 45 minute sessions. This staff member will collaborate with grade level teachers in order to gather library media materials that support the current curriculum theme. To support this staff member's skills related to curriculum, he/she is

offered and encouraged to attend all district PD as well as other trainings that are found to be applicable to this position. This staff member will be instrumental in dispersing the media materials throughout the Den Learning Spaces on the movable stacks. ~~This new space should offer movable book stacks and comfortable, adaptable seating for various activities and group sizes, encouraging students to explore and work together in a relaxed environment.~~

A key theme that surfaced early in our visioning was the idea of a hybrid media model, extending beyond the typical weekly library visit. This hybrid model would include both a weekly visit by each class to the media center to engage in a planned lesson in conjunction with ~~Our goal is to~~ positioning resources ~~and media staff~~ close to students and teachers to access when needed or wanted, making media and literacy central and accessible to all within our school environment. In such a hybrid model the library media center will be a destination and a traveling destination for students to access books more easily and closely to their learning spaces. Additionally, students will be able to use the library media center as a place to collaboratively learn, create and have experiential learning experiences that will deepen learning for all. We aim for students to interact with books and other media resources daily as they navigate their learning communities and the school, passing by books and student projects in progress. We are already engaging in this endeavor by creating diverse libraries within each classroom which include posting information and showcasing books in hallways for families to view as they visit our building. These posters highlight a targeted diversity reading which includes the theme of the book, highlights important vocabulary to review with children, the rationale on why it is important to read it to your child and other supporting topics that can be discussed to further learn about the topic of the book. Our Literacy Promotion Group is focused on families reading to their children highlighting events such as The Masked Reader and our annual Book Swap. Our goal is to build a culture of literacy and inquiry that lives throughout every space at Shaker Lane immersing students in a rich literacy environment. Our visioning sessions emphasized the importance of making physical books easily accessible to students throughout the building. Our vision is to maintain the majority of our allocated media square footage (equivalent to a large classroom size) for a central media space that can serve as the home base for our media staff and continue to support media as a unified art. The remaining portion of our allowable media square footage will be disbursed as satellite media areas within the Den Learning Space of each grade level neighborhood. We will include movable bookshelves to distribute books conveniently across different areas. In our Den Learning Spaces, media resources could be placed at the entrances, enabling students to access them as needed for cross-disciplinary lessons. A Media Center/Library that is academically embedded in Shaker Lane, with a central location and satellite capabilities, will offer a space for media activities and seamless access to materials, blurring the lines between the library and learning neighborhoods.

As we refine the design, ensuring clear lines of sight and smooth transitions between classrooms and extended learning areas is crucial. This will allow teachers to comfortably send students beyond traditional classroom walls to access resources. Ultimately, teachers and support staff will collaborate with media specialists and tech integrators to create numerous cross-disciplinary learning opportunities. Throughout the day, the library media center would be utilized in a number of ways. Students engaged in their Unified Arts lesson would receive their read aloud in this setting while also selecting literature to take home. With a centralized location connected to other programs, students could engage in multi-disciplinary learning. For example, students participating in library and art could have an interdisciplinary experience where they collaborate together on a project across the two or more

curriculum areas. Coordination and collaboration on these lessons can enhance classroom instruction creating a deeper learning experience for students.

Due to the high use of the library media center during the school day for structured library lessons, collaborative and experiential learning, the space will typically be closed to the public during non-school hours to preserve the on-going learning in that space. Library media center use during non-school hours could be scheduled for special circumstances through the district's scheduling platform with approval from district administration.

VISUAL ARTS PROGRAMS (e.g., in-classroom, specialized area, etc.)

Current

At Shaker Lane School, all students in kindergarten through second grade attend weekly art classes, currently this is 381 students. There are 25 art periods per academic cycle. Students travel from their classroom to the art room for a 45-minute art class instructed by a MA DESE licensed educator. Our elementary art program follows the MA 2019 Arts Framework and places emphasis on the Ten Guiding Principles for Effective Arts Education. Art class is intended to teach and demonstrate that all students can be artists. Our aim is for students to be excited to try new ideas and experiment with materials and mediums in each art class. Literature plays a key role in art as well. Art history, techniques, and expression is learned by reading books in art class.

Proposed

To continue to develop artists at Shaker Lane, a dedicated art classroom will be required. While being accessible, welcoming, innovative and inspiring, this art space should include:

- Two sinks
- Several durable workspace tables
- Flexible and varied seating options
- Significant storage and space for supplies and materials
- Multiple zones to facilitate direct instruction and demonstrations, large-scale projects, group work, and stations
- Ample storage for student work
- Outdoor access to allow for environmental art as well as opportunities to use the landscape for potential projects
- Space to hang instructional visuals and exemplars
- Opportunity to expand to digital and graphic art

Currently in art, students already complete non-kiln 3D art. Such projects include creating 3D scenes of food, nature, and abstract art by using items found in the environment, modeling clay, and paper. In addition to the art room, a kiln room will be needed that also contains large open shelves for drying student work. For the safety of everyone it is essential that the kiln room can be secured and have a window or external "in-use" light. Additionally, the storage for art will also need to be secure and appropriately ventilated for toxic and hazardous materials and include an accessible file of safety data sheets. Lastly, many dedicated spaces to showcase both 2D and 3D student artwork throughout the building will be important.

PERFORMING ARTS PROGRAMS (e.g., music, dance, drama theater, in-classroom, specialized area)

Current

All students in grades K through second participate in a weekly 45 minute music class. This class is instructed by a MA DESE licensed educator. Like our art program, our elementary music program follows the MA 2019 Arts Framework and places emphasis on the Ten Guiding Principles for Effective Arts Education. In grades K through two, students have access to a general music class in which they learn about singing, rhythm, and movement.

Adequate space for music class is very difficult at Shaker Lane School. Currently, students travel from their classroom to another space where music class takes place. Music class occurs on the stage in the cafeteria, in the Imagatorium, or in the library. The space in which the class occurs depends on what other classes are being taught at the same time. The materials for music class are stored in either the art room or the Imagatorium at this time. The teacher is required to travel with necessary materials to meet the class at the designated location.

Proposed

To properly develop musicians and a love for music at Shaker Lane, a dedicated space is required for music class. In addition to a warm and welcoming space, this classroom should have the following:

- Proper soundproofing so as not to negatively impact other surrounding spaces
- Location close to the stage to allow for performance practice
- Wide doors for moving instruments and equipment in and out as needed
- Location on the ground floor to be able to move instruments and equipment in and out
- Storage space for instruments and materials
- Various learning zones to allow for small and whole-group instruction

Any instruments used at Shaker Lane School will be shared and non-wind instruments. The music educator will educate students how proper sanitization of shared instruments like other shared educational materials may be needed. This would require having sanitary wipes to clean any shared instruments.

PHYSICAL EDUCATION PROGRAMS

Current

The physical education program within Shaker Lane provides students with the knowledge, skills, and opportunity to develop their physical, mental, and social well being. PE classes are designed to teach movement, team building, and social skills to provide all students a strong foundation for healthy and active lives. All kindergarten through grade two students have a 45 minute PE class per week. Our PE classes are taught by a MA DESE licensed educator who is currently transitioning to use the recently released 2023 Comprehensive Health and Physical Education Framework.

Students travel from their classroom to the gymnasium for class. Depending on the weather, the PE class may then go outside for class. If the class goes outside, they typically facilitate class on the grass field behind the school.

Just this year we were able to add two rolling basketball hoops to our Shaker Lane gymnasium. This enhanced our students' ability to practice very specific shooting and target aiming skills. While this is wonderful, it does not provide enough opportunity for all students, thus we are still using tape to place squares on the wall to mimic a basketball hoop for students.

Our PE educator also offers adaptive PE classes to allow access to physical education for all students. Currently, these classes are small and can range from two to six students. Having these classes in the large gymnasium is very overwhelming and overstimulating for these students.

Proposed

In order to effectively offer physical education classes at Shaker Lane, we will require a gymnasium that has the following:

- Six basketball hoops
- Designated area for visual instruction (whiteboard and digital display technology)
- Large scale projection capability and sound for school assemblies, presentations, etc.
- Designated are for instructional visuals
- Adequate storage space for equipment
- Lines and wayfinders on the floor to support PE units
- Quality sound system
- Adequate electrical outlets
- Storage container outside or ability to easily bring materials between inside and outside
- An office space for our PE educator to design and plan lessons
- Be of a sufficient size to allow for expanded community use

The need for an Adapted Physical Education (APE) space would be a huge benefit to all of the students in the PACE programs. Without a dedicated adaptive PE space, students with disabilities often experience limited access to appropriate equipment and facilities, difficulty participating in mainstream PE activities, feelings of isolation and exclusion, and reduced opportunities for physical activity and skill development. The creation of an APE space would include the following:

- **Enhanced Accessibility:** A dedicated space allows for the implementation of specialized equipment, adaptive technology, and modifications necessary to accommodate diverse needs.
- **Improved Inclusion:** By creating a welcoming and inclusive environment, students with disabilities can feel valued and supported, fostering a sense of belonging.
- **Individualized Instruction:** An adaptive PE space enables teachers to provide tailored instruction and support, maximizing student progress and achievement.
- **Health and Wellness:** Regular physical activity is crucial for overall health, and an adaptive PE space empowers students with disabilities to develop lifelong healthy habits.
- **Skill Development:** Through specialized activities and equipment, students can acquire essential motor skills, coordination, and balance, leading to increased independence.

Physical education provides opportunities for social interaction and cooperation, fostering friendships and teamwork among students with diverse abilities. The addition of a second smaller gymnasium, used primarily as an APE classroom, would be less stimulating for students of all abilities. APE class sizes can be anywhere from two to six students. A smaller, less overwhelming, less stimulating environment can help each individual child feel more comfortable in the space. This space will be

attached to the gymnasium for easy access between the main gymnasium and the APE classroom. As we currently run APE in the large gymnasium, acoustics and overstimulating sensory input hinders students from accessing this program.

The PACE programs currently provide whole class gross motor groups multiple times each week that currently occur inside the classroom which presents a multitude of limitations and safety concerns as well as inefficiencies with set up/break down of activities (obstacle courses, etc.). Our Pre-K classrooms have approximately 10 students who participate in APE 40 - 45 minutes per week. Our Physical Education Teacher consults with the district's Adaptive Physical Education Consultant to create experiences that are modified to meet the needs of students in our PACE classrooms. Limitations in the large gym setting are acoustics, sensory issues, and scheduling with other classrooms. A smaller APE space attached to the larger gymnasium would be utilized as a more age appropriate learning area for certain activities and games in their integrated Pre-K PE class.

By having this additional APE classroom space adjoining the gymnasium we can have a space that is utilized by every student in the school whether they are in a PACE, Pre-K, Kindergarten, 1st grade or 2nd grade class. Locating the gym, OT/PT room, and APE room adjacent to one another with the potential of opening spaces up to one another is our vision to allow for levels of differentiation and collaboration within physical education for all students. The connections of these three spaces would also allow for sharing of materials amongst the two spaces. Creating a storage space adjacent to the APE room would provide a location for materials to be utilized by the physical education teacher and the OT & PT service providers in an efficient manner.

Another proposed change to the PE program is to start introducing preschool classes to physical education. This will mean having our PE educator create appropriate and accessible lessons for our youngest learners, which will be more effective and impactful with an Adapted Physical Education space.

SPECIAL EDUCATION PROGRAMS (e.g., in-house, collaborative, facility restrictions)

Current
Littleton Public Schools adheres to federal and state laws and regulations that guarantee the rights of all students access to general education curriculum. Littleton Public Schools emphasizes a particular focus on the inclusion of students with disabilities in all aspects of school life, including educational programming for students in the least restrictive environment to the fullest extent possible. This is actualized through the development of a well articulated continuum of services and supports that includes development and ongoing expansion of in-district programming & supports including:

- **Inclusion** Special Education Services & Support: Direct, individualized 1:1 and small group specialized instruction
- **Moderate Special Education** Services & Support: Increased opportunities for delivery of specialized instruction in a pull-out setting
- **Therapeutic Learning Space (TLS)**: Direct, individualized 1:1 and small group behavioral support and academic support
- **Specialized, Substantially Separate Programs:**

  - Personalized Academic and Comprehensive Education Program (PACE) Grades PK- Age 22
  - Language Based Learning Disabilities (LBLD)

  Grades 3-8
- **Related Therapies, Assessment, Evaluation, Counseling and Consultation:**
  - In-District Staff: Speech and Language Pathology (SLP), Occupational Therapy (OT/COTA), Physical Therapy (PT/PTA), School Psychologist, Board Certified Behavior Analyst (BCBA).
  - Contracted Services: Assistive Technology (AT), Augmentative and Alternative Communication (AAC), Teacher of the Visually Impaired (TVI), Orientation and Mobility (O&M), Teacher of the Deaf (TOD), Adaptive Physical Education Consultant (APE), Clinical Consultation

Special Education services at the elementary level include inclusion models, partial inclusion models, and substantially separate programming. Service models include 1:1, small group, and whole class instruction.

Current deficiencies include the lack of adaptable and flexible learning spaces to meet the changing needs of our student population and limited appropriate spaces for staff offices and meeting spaces.

- The PACE Programs lack proper space for lessons to support the learning and generalization of life skills, including hygiene, cooking, cleaning, and toileting.
- Multiple special education and/or related therapies staff are required to share rooms or are relegated to inadequately sized spaces due to the lack of available space. This means that multiple and varied lessons can be going on in the same space, creating a loud learning environment and inflexibility with the setup of the learning space to meet the needs of the students.
- Special education and related therapies spaces are not within proximity or adjacent to programs or where the service needs are higher or within the general education learning areas.
- There is a lack of dedicated office/collaborative space for special education staff and related service providers to meet with staff and/or parents and test students.
- There is a lack of office space for the Elementary Special Education Administrator to meet with parents and staff. A dedicated special education team meeting space is inconsistent.
- Learning centers and program rooms lack access to the same technologies as the general education classrooms.
- The current school does not provide the appropriate space to facilitate Adaptive Physical Education and gross motor activities for students.

Provision of the high quality programming is contingent upon the availability of multiple spaces that can be used flexibly throughout the day and provide state of the art accessibility, assistive technology, and pedagogical resources. At this time, spaces for specialized services are shared amongst multiple service providers or are utilizing small, confined inadequately sized spaces without access to natural light, which can impact the efficiency of services and creates a level of noise that can impact students' abilities to remain focused on their specialized instruction, impacting the learning and progression of skills. While Littleton Public Schools provides all necessary equipment for individual student needs, the District relies on less efficient portable sound-field systems for amplification and fabric light coverings for dimming. Not all special education learning spaces include the same technology access as the general education classrooms do. There are limitations to accessibility for students requiring

wheelchairs or with physical impairments impacting mobility in regards to areas of the buildings in which their general education peers are able to access. Examples of this include limited bathroom access, inefficient access to the stage, and limited access to outdoor play spaces.

Special education services are provided to eligible students and are designed to remediate deficit areas, support the development of new skills, and allow students to gain the skills to access the general education curriculum in the least restrictive environment possible. The services and staffing are allocated annually based on the service delivery needs identified on the Individual Education Programs (IEPs) of the special education population being served. 18% of elementary students K-5 are identified as Students with Disabilities (SWDs) requiring an Individual Education Program (IEP). Of the number of students identified as needing special education services, only 2% require an out of district (OOD) placement.

Inclusion
The majority of students that receive Special Education services receive them as a combination of pull out and within the general education classroom setting, as outlined by each student's Individual Education Program (IEP). Inclusion supports are provided by special education teachers, teaching assistants, and related therapies staff (e.g. OT, SLP). With well-designed classroom spaces and alternative, acoustically diverse small group and breakout spaces adjacent and accessible from the classrooms and learning community, the district will be able to increase the level of inclusion that our students with disabilities can access.

Design needs for the inclusion special education program would be:

- Small group rooms between grade level classrooms to provide instructional options within a collaborative teaching model and instructional support model
- Open breakout space within learning neighborhoods so support small groups that may not require acoustic separation
- Flexible learning spaces within the classroom and outside the classroom for direct instruction and support in 1:1 and small group options
- Learning Centers within proximity to grade levels to limit transition time between general education and special education services for pull out model

Moderate Special Education
Special education teachers support students with a variety of disabilities within an inclusive model of learning. Students with disabilities, as defined by their Individual Education Programs may receive special education support within the general education classroom or within the learning center. Services within the general education classroom may include collaborative teaching between the general educator and special educator and/or specific instructional support and generalization of taught skills. Services with the special education teacher includes specialized instruction in the areas of reading, written language, math, organization and executive function skills. Instructional models include 1:1 and small group. Educational Support Professionals (ESP) may also provide support to students within the general education classroom.
Design needs for Special Education rooms would be:

- One half-sized Learning Center (resource room) space per neighborhood for tier 3 interventions and additional supports
- Flexible space to accommodate small group testing (ie: MCAS)
- Adjacent space for assessments
- Access to same technologies as general education classrooms
- Adjustable lighting

Therapeutic Learning Space
The Therapeutic Learning Space (TLS) is a sensory friendly therapeutic space, addressing the emotional, behavioral and learning needs of students who present with an emotional impairment and accompanying behaviors and social challenges and have a specific need for access to a separate space identified in their Individualized Education Program. While we have created sensory spaces throughout the building, this level of support is needed for students who require additional support.

The Therapeutic Learning Space provides a soothing environment for students to receive therapeutic and behavioral supports and to engage in academic growth while supporting emotional needs, a student breakout space, as well as inclusion opportunities with space to process and gain support.

Design needs for the special education Therapeutic Learning Space would be:

- Centrally located between grade level teams
- Connected calming space for students to de-escalate, as needed, and rejoin class
- Acoustics need to be considered to limit noise disruptions to adjacent learning spaces
- Close proximity to counseling

Specialized, Substantially Separate Program
Personalized Academic Comprehensive Education Program (PACE)
The PACE Program is a district program that supports students across all grades at Shaker Lane (PreK through grade 2). This program is a substantially separate highly individualized intensive learning program with the ability to include students for specials, activities as well as other learning opportunities with the general education grade level classroom, as outlined within each student's Individual Education Programs. The Personalized Academic Comprehensive Education Program provides a highly individualized and modified curriculum for students with Autism spectrum disorders, developmental disability, intellectual impairment, and social communication impairments. In addition, students in this program exhibit significant impairment in some or all of the following areas:

- verbal communication
- social interaction and pragmatic skills
- comprehension
- functional academics
- behavioral and emotional regulation
- adaptive daily living skills
- ability to acquire new skills

The program utilizes a multi-disciplinary approach to enhance communication, socialization and sensory integration. Visual symbols and augmentative communication are used throughout the

classroom to assist students in understanding of classroom activities, schedules and rules. Emphasis on behavioral-based methodologies (i.e. discrete trial, applied behavioral analysis, multi-sensory, etc) and the development/strengthening of functional skills are integral components of the program. Low student-to-teacher staff ratios maximize the learning of new skills and reinforces appropriate behaviors. Students are integrated into the general education setting on an individual basis as determined by the team. Students practice activities of daily living, hygiene, access and mobility, and travel training. Opportunities for inclusion should be beneficial, meaningful, and tolerated by the student. A District BCBA, School Psychologist, Occupational therapist, Physical therapist, and Speech and Language pathologist provide direct services in addition to consultative support to the program regularly. Contracted services providers consult to the program on a regular basis and/or provide direct instruction, as outlined in student IEPs, in the areas of Orientation and Mobility, Teacher of the Visually Impaired, Augmentative and Alternative Communication (AAC), Assistive Technology (AT) and Adaptive Physical Education (APE).

Design needs for the PACE program would be:

- See Proposed Program Space Description below
    - Two classrooms to split the students based on level of need and in accordance with DESE age requirements; movable acoustic partitions to allow for the rooms to be divided into smaller spaces as appropriate for individual/dyad teaching and whole program activities. Include multiple partitioned spaces for 1:1 programs and discrete trial work.
    - Adjacent small group room to create divided 1:1 discrete trial areas.
    - Acoustics need to be considered for sensory, hearing impairment, and language processing.
- Flexible classroom space and furniture
    - Space designed for flexibility in seating and table options, and to include academic instruction, 1:1 discrete trial areas, small group instruction, and morning meeting/movement space
- Each classroom can support up to 10 students and up to 8 staff.
- Restrooms for toileting needs.
- Calming space for students to de-escalate, take breaks and regroup to rejoin the class.
- Proximity to related therapies (OT, PT, SLP).
- Access to an outdoor, enclosed or fenced-in shaded/covered area for movement, play and outdoor learning opportunities.
- Dedicated sensory room accessed from within the PACE Program

Related Therapies, Assessment, Evaluation, Counseling and Consultation:
Speech
Speech and Language services are designed to facilitate growth in the areas of communication and language skills including speech sounds, language and literacy, social communication, pragmatic skills, cognitive communication, stuttering, and voice. Speech and Language services are pivotal to supporting all of our students with Language and Communication needs, including our students participating in district programs. Speech and Language Pathologists provide services to include consultation with school staff and parents, screenings and evaluations, and direct services. Direct services include whole class language instruction within classrooms, small group services, and 1:1

instruction. Small group and 1:1 services may take place within the program classroom, general education classroom, or embedded small group rooms within learning neighborhoods to support interventions in close proximity to students. Co-treats may also take place with other service providers such as the school counselor for social skills and pragmatics and the Occupational Therapist for communication, language and literacy, and comprehension.

Occupational Therapy and Physical Therapy
Occupational Therapy (OT) services are designed to provide support in the areas of sensory and motor development, manipulation and hand use, visual-perceptual skills, motor planning and coordination, daily living skills, work skills, organization, and the use of assistive technology and adaptive equipment.

The Physical Therapy (PT) services are designed to provide support in the areas of motor development, manipulation and hand use, motor planning/coordination, and implementation and supported use of adaptive equipment. These therapies aid students in movement (gait and balance), flexibility, muscle strengthening, and range of motion.

As reflected in the physical education section, an alternative smaller movement space (APE Space) should be considered a “must have” in the new building to support adaptive PE and additional OT/PT services for Special Education in addition to the school community as a whole. In terms of ideal location and adjacency, the movement space would be adjacent and visually connected to the larger gym so that students who struggle in larger group settings would have a smaller space to engage in the same physical activities in a smaller, quiet setting. Students who struggle with indoor recess or social interactions at recess could also benefit from access to this space. This space would benefit from having a mini-trampoline, and possibly sensory stimuli on the walls but should be separate from a “sensory room”.

OT/PT could also support Adaptive Physical Education (APE) and would need access to the gym or similar space to include a variety of equipment to meet the needs of our students. Swings with adaptable seating and positioning and other suspension equipment along with cushioned flooring to accommodate activities of stretching, yoga, and potential for falls.

School Psychologist
School psychologists currently provide individual and small group counseling services, conduct psychological evaluations and provide consultation to special education staff and general education staff, as needed.

Assistive Technology
Assistive technology services directly assist with the selection, acquisition or use of technology devices such as: equipment or product system (software) that can be used to increase, maintain, or improve the functional capabilities of a student with disabilities. Currently, AT evaluations and services are contracted.

Design needs for Assistive Technology would include space to store and control devices as needed or to meet with students or teaching assistants to collaborate and provide instruction in new programs or tools.

Applied Behavior Analysis Services
Individualized programming for children with Autism Spectrum Disorders using the principles of applied behavior analysis to increase skill acquisition and decrease maladaptive behaviors is provided within the Personalized Academic Comprehensive Education program (PACE). The district's Board Certified Behavior Analyst (BCBA) regularly consults with our Integrated Preschool Program, Special Education Teachers, and classroom teachers to provide strategies for behaviors, support with behavior plans, review of data, individual programs development, and training for teaching staff and teaching assistants.

Design needs for ABA Services will need space to meet with staff to discuss individual students and review data, meet with parents, as needed, for consultation. Proximity to the PACE Program and the Therapeutic Learning Space will be especially important as these programs are the main focus of the services.

Contracted Services
Assistive Technology (AT), Augmentative and Alternative Communication (AAC), Teacher of the Visually Impaired (TVI), Orientation and Mobility (O&M), and Adaptive Physical Education Consultant (APE) all provide clinical consultation.
Students with disabilities at the Shaker Lane School require a comprehensive array of specialized services to maximize their academic and developmental potential. To effectively deliver these critical services, the district engages with contracted service providers, including Assistive Technology (AT) specialists, Augmentative and Alternative Communication (AAC) experts, Teachers of the Visually Impaired (TVI), Orientation and Mobility (O&M) specialists, Adaptive Physical Education Consultants (APE), and Clinical Consultants, which necessitates adequate and appropriate workspace.
Currently, the Shaker Lane School faces challenges in providing dedicated space for these essential professionals. Shared spaces, often overcrowded and lacking necessary equipment, compromise the quality and efficiency of service delivery. A lack of private consultation rooms hinders confidential student assessments, goal-setting, and parent conferences. Moreover, the absence of specialized equipment storage and preparation areas impacts service provider productivity and the overall effectiveness of interventions.

Dedicated space for contracted service providers is essential to:

- Enhance service delivery: Provide a conducive environment for focused consultations, assessments, and interventions.
- Improve student outcomes: Facilitate timely and effective implementation of specialized services.
- Optimize resource utilization: Ensure efficient use of equipment and materials.
- Support professional collaboration: Create opportunities for interdisciplinary teamwork.
- Maintain confidentiality: Protect sensitive student information.

Providing dedicated space for contracted service providers can significantly contribute to improving educational outcomes for students with disabilities, fostering a more inclusive learning environment, and optimizing the utilization of specialized expertise.

Shaker Lane Elementary School Education Program

As of August 14, 2024

Program	Number of rooms	Students per class	Total students	Number of FTE staff
Preschool PACE Program	1	5	5	1.0
Integrated Preschool Program	3	5-16	48	3.0
Special Education K-2	4	1-6	69	4.0
K-2 PACE program	1	6	6	1.0
English Learner Education Program	Shared space	1-6	12	2.0
Speech/Language	2	1-4	76	2.0
Occupational Therapy	Shared space with PT	1-4	32	1.8
Physical Therapy	Shared space with OT	1-4	12	.8 (district)
School Psychologist	1	1-6	All students	1.0
Counseling (Adjustment Counselor)	1	1-6	All students	1.0
BCBA	1	–	27	1.0
Other (Contracted Service Providers): TVI, TODHH, O&M, AAC, AT, APE	0	1-2	10	Per diem

*information based on the 2023-2024 school year, total numbers fluctuate throughout the school year.

Currently the facilities and classrooms for students accessing services are not adequate to maximize inclusion throughout the life of the schools. Students with mobility challenges have difficulty accessing school facilities and navigating the building. For example, for students with wheelchairs or walkers, it is very difficult for the student and a staff member to fit in the lift at the same time. If a student requires their wheelchair to be guided by a staff member, it may mean that the student and staff have to exit the building and walk around the outside to access a different floor. The hallways can be loud and crowded throughout the day, which can be difficult for students with vision and/or mobility challenges to navigate. Although DESE did not identify formal findings through the review process, the district has had to reconfigure multiple spaces throughout the school year to meet requirements.

Ensuring Access

The current facilities and classrooms for eligible students do not maximize their inclusion into the life of the school. The current configuration does not provide fluid opportunities for providing students with within class direct instruction with an efficient return to whole group instruction. While eligible students do have access to all school facilities including, but not limited to, those areas necessary to implement the student's IEP, crucial minutes are lost with transitioning students to and from therapy spaces. Resource rooms and separate classrooms for students in the current configuration can be counterproductive to learning for students who may require specialized equipment, distraction free environments and/or individual spaces for direct instruction (ABA-based teaching sessions, individual or small group reading tutorials). The current configuration is not conducive to universal design as it relates to optimizing acoustics and lighting treatments in order to remove physical communication barriers for students who are visually impaired, deaf or hearing impaired.

Ensuring Equity
The facilities and classrooms serving only students with disabilities are currently not equal in all physical respects to the average standards of general education facilities and classrooms

Proposed
There are no new programs proposed as part of the design plan. However, the proposed design plans take into account that the needs of students with disabilities are becoming more complex and with the proper accommodations, supports and services are able to be successfully integrated into their community school. In addition, the district's substantially separate programs are growing and are housed in increasingly inadequate spaces, limiting our capacity to serve students. Currently, the spaces for our substantially separate programs are not adequate for space and meeting the needs of our most disabled students.

A new or renovated facility would support dedicated space for student services and Special Education and a more effective positioning of rooms used for the delivery of services to students throughout the school. The District's goal for its future educational program is to create instructional spaces for special education that are designed into or adjoining grade level classrooms whenever possible. When separate pull out spaces are required, they should be physically distributed throughout the building.

The proposed spaces allow for required ADA specifications and support Universal Design for Learning through flexibilities within the learning environment that are not currently available.

Program	**Number of rooms**	**Students per class**	**Total students**	**Number of FTE staff**
Preschool PACE Program	1	10	10	4.0
Integrated Preschool Program	3	5-16	48	6.8
Special Education K-2	4	1-6	69	4.0
K-2 PACE program	1	10	10	4.0
English Learner Education Program	1	1-6	16	2.0
Speech/Language	Clinical suite	1-4	76	2.0
Occupational Therapy	1 (shared with PT)	1-4	32	1.8
Physical Therapy	1 (shared with OT)	1-4	12	.8 (district)
School Psychologist	Clinical Suite	1-6	All students	1.0
Counseling (Adjustment Counselor)	1	1-6	All students	1.0
BCBA	Clinical Suite	–	25	1.0

Other (Contracted Service Providers): TVI, TODHH, O&M, AAC, AT, APE	Clinical Suite	1-2	12	Per diem

Collaboration amongst service providers is paramount to ensuring Individual Education Programs (IEPs) are accurate and well developed for each child. To create an environment where this can take place, we are proposing a Clinical Suite Model for specific staff (BCBA, School Psychologist, SLP, Special Education Administrator). We are looking to create a space where enhanced collaboration amongst service providers is possible as well as servicing students and the many other administrative responsibilities can be completed.

- **Clinical Suite:** A common area with comfortable seating and workstations where service providers can come together to discuss student progress, strategies, and interventions. This area should be equipped with technology to facilitate easy access to student data and resources. The suite would serve as the home base for these staff, where each provider would have a dedicated desk space with appropriate storage for testing kits, materials, etc. Co-locating related services staff will allow for collaboration and deeper conversations about students given how often this group of staff share the same students on their caseload. Attached to the clinical suite would be two flexible small group rooms for confidential meetings, testing, or working with students in a more private setting. It is important to note that though students may meet staff in these small group spaces, the ultimate goal would be for staff to push into classrooms and learning neighborhoods to minimize student travel time and maximize the inclusion of students.

- **Small Learning Area:** A dedicated space where service providers can work with students individually or in small groups will be attached to the Clinical Suite. This area should be flexible, with moveable furniture and various learning tools and resources to support diverse needs.

- **Conference Room:** A small conference room for IEP meetings, team meetings, Student Success Meetings (SST), and consultations with parents and other stakeholders. This room should have a large table, comfortable seating, and necessary technology for virtual meetings and presentations.

- **Storage and Resources:** Adequate storage for materials, resources, and student files. This can include cabinets, shelves, and secure storage solutions for sensitive information.

By implementing this suite model, service providers can work more efficiently and collaboratively, leading to better outcomes for students with IEPs.

A separate space will be needed for our occupational therapist, the certified occupational therapist assistant and the physical therapist. This space will have a multi-purpose use that is large enough for equipment such as climbing structures and a swing, mats on the floor for exercises, and space for students to work at tables. In addition to a space to support students, this room should be outfitted with teacher workstations to complete administrative responsibilities related to IEP development.

VOCATIONS & TECHNOLOGY PROGRAMS

Non-Chapter 74 Programming (e.g., vocational, technical, enrichment, STEM/STEAM, project-based programming) : Please see our Technology Instruction Policies and Program Requirements section above for information regarding our STEM/STEAM programming.

Chapter 74 Programming : Not applicable.

TRANSPORTATION POLICIES

Current
Student transportation to and from school is provided by bus or parent/guardian vehicle. Families have the opportunity to register for bus transportation services each year. Seven bus routes are offered during a.m. and p.m. drop-off and pick-up times. Parent drop-off and pick-up are located on the road closest to the cafeteria. Buses utilize the other access road to the school and pick-up and drop-off occurs on the road directly in front of the school building. The administration and staff have done an excellent job of creating pick-up and drop-off locations within a very congested area.

Proposed
The district would keep the current transportation system in place but would prefer a greater separation between vehicles and buses, which would allow for a safer and less congested area than we currently have.

During the 2018-2019 school year, we partnered with Safe Routes to School to develop our current arrival and dismissal pattern. At that time, car rider drop off was located in the Shaker Lane School parking lot. This posed not only an issue with cars trying to park but also the safety of students moving through a parking lot on their own as well as crossing in front of the bus lane. Our current arrival and dismissal procedures were an improvement but still pose safety and timeliness concerns.

Due to the car rider line being located in front of the bus line, this poses a safety issue during arrival and dismissal. At the start of the school day, car rider students unload at the sidewalk and walk across the front driveway passing in front of buses. Multiple staff are on duty to ensure student safety which involves stopping buses from departing or holding students on one side of the crosswalk until it is safe to cross. At the end of the school day, students move in the reverse direction across the crosswalk into their cars. Buses are often ready to begin departing which leads to staff having to halt dismissal for car riders. Arrival and dismissal accounts for all staff to be on duty to ensure students are safe. The development of two separate car rider and bus lanes would promote a safer arrival and dismissal for students, decrease traffic back up, and create a more timely dismissal of students.

FUNCTIONAL & SPATIAL RELATIONSHIPS

We envision our Prek-2 school to be organized into grade level neighborhoods with Den Space adjacent to classrooms as well as four small group rooms between classrooms. Each grade level neighborhood would also house a grade level special education office. The media center, cafeteria and gymnasium would be centralized around each grade level neighborhood. There would be collaborative

meeting spaces located between the administrative offices and the clinical suite which would be used for larger group meetings.

As students move throughout the building, opportunities to engage in sensory activities should be embedded in all spaces. This would include tactile experiences that students can engage with as they walk the halls, small cut out spaces for students to sit, and visually stimulating graphics to guide students to locations throughout the building. As a PreK-2 building, sensory opportunities must be built school-wide to help support student regulation throughout the school day.

Outdoor classrooms would also be integrated into the learning environment. A stage for performances would be located in the cafeteria and have the centralized space located in the center of the school.

Littleton Public Schools enjoy a high parent/guardian participation rate within its schools, with high levels of participation at the Shaker Lane School. The stage needs to be located in a location that allows for large and small audiences, the cafeteria would house larger audiences, the centralized space would be designed for smaller audiences.Our school design is specifically driven by our guiding principles and include:

Every community has a history and we view this building project as a way to engage our youngest learners in establishing an understanding of the communities history and develop the foundation to establish a sense of pride for their community. We can also provide opportunities to make learning more visible with plexiglass walls that allow our students to see the building at work, whether it be the Heating and Cooling System as well as other areas that allow students to learn about energy conservation.

Other areas that align with our guiding principles include:

- Ample parking to accommodate increased attendance at school and community events
- Traffic flow patterns that are safe and intuitive for users
- Separate entrances for busses and car traffic to maximize student and staff safety
- Separate points of entrance for Prek, K and grades one and two to promote small grade level communities
- Outdoor/Green Spaces that are easily accessible by grade level neighborhoods
- Developmentally appropriate Play Structures
- Opportunities to promote intergenerational collaboration

The Educational Program for Shaker Lane has been collaboratively developed by school, district, and town constituents through multiple meetings, visioning sessions, and school site visits. This process has allowed us to reflect on current practices and identify opportunities for enhancement through a redesigned building. Below is a concise summary of our vision for a reimagined Shaker Lane School that has been interwoven throughout the educational plan.

Guiding Principles	Design Patterns
1. Purposeful Innovation ● Adaptability and Flexibility	● Flexible and Varied Spaces ● Variety/Options

● Extended Learning- The World is Your Classroom ● Varied Spaces ● Embedded Technology	● Agile Classrooms ● Den Learning Spaces ○ Directly Adjacent to Classrooms ○ Spaces Separate from Hallway traffic ● Media Space as Gathering Hub-auxiliary spaces as needed ● Extended Learning Spaces ● Informal and Formal Collaboration areas for staff and students
2. Educating the Whole Child ● Developmentally Appropriate ● Inquiry-Based and Real-World Learning ● Curiosity and Discovery ● Joy and Play (defining play) ● Learning as a flexible fluid experience that embeds play ● With end goals in sight, students have choice and autonomy to accomplish goals ● Learning is shown in different outcomes and tangible products ● Child led projects ● Student Choice ● Inclusion of unstructured time choices based on student awareness of needs ● Inclusion of Outdoor learning and experiences	● Display and Exhibition ● Screens in Lobby with Upcoming Events ● Visible Learning ● Quiet Spaces within classrooms and throughout the school ● Learning Nooks/sensory spaces ● Breakout and Collaborative Spaces ● Small Group Learning Spaces (between classrooms) ● Developmentally, socially and emotionally responsive school ● Happy Students learning through Hands on Learning, Agency and Play ● Inclusive Learning Spaces ● Push in Special Education/ Separate spaces when appropriate (small working group spaces) ● Creation-Station incorporated into the media center
3. Learning Communities ● Small School Feel, Large School Pride ● Inclusive and Equitable Learning Practices ● Collaboration and Connections ● Warm, Welcoming and Child-Scaled ● Neighborhoods and Learning Corridors ● Inclusion of co-teaching (vertical, horizontal, cross discipline) ● Thoughtful and Purposeful Transitions	● Grade Level Neighborhoods ● Den Learning Spaces/ Small working group spaces within each Grade Level Neighborhood ● Welcoming Entry ● Child Scaled- designed for students ● Distributed Dining ● Branding and Identity ○ Zones by Color ● Flexibility to Support Academic Breakout and Future Growth ● Inclusion, Accessibility, and Efficiency in a Universally Designed Building ● Design includes spaces for Tigers Den (afterschool program) ● Incorporation of preschool into the school design ● Importance of Choice during Lunch and Recess
4. Sustainability and High Performance ● Practical and Efficient	● Connection to Nature ● Natural Light

● Energy Efficient Systems ● Student centered building ● Abundant Natural Light	● Opportunities for students to understand operations of energy efficiency systems
5. Community Connections ● School as Community Collaborator and Resource ● Intergenerational – Connecting Kids, Families, Adults and Seniors ● Reflecting Town History – Historic ● References and Aesthetic	● Community Engagement, Connection and Collaboration ● Building as a school and community resource ● Family Resource Space ● Community Spaces ● Community Access ● Safety and Security ○ Office to View Arrival and Dismissal ○ Security Systems o Welcoming Internal and External Design ● History and Storytelling
6. Outdoor Connections ● School Connections to Natural Environment ● Age Appropriate Outdoor Play and Learning ● Outdoor Gardens ● Safe Drop-Off and Pick-Up	● Outdoor Learning ● Outdoor Gardens ● Engaged Outdoor Play ● Embracing the Outside/Inside Connection

SECURITY & VISUAL ACCESS REQUIREMENTS

Security features shall include:

- Inner lockdown options incorporated into the building design
- One entrance for Prek, k and grades one and two
- Security screener for all visitors
- Security cameras located throughout the school to monitor all common and administrative areas and hallways throughout the building as well as entrance and exit cameras; external cameras that monitor playgrounds and fields
- Double access doors
- Separate dismissal options
- Separate bus loop for parent drop off/pickup
- Key fob entry system for administration and staff
- Opportunities to communicate with whole building and outside community from each classroom and/or learning space

Indicate the date of the most recent Medical Emergency Response Plan that was submitted to DESE.
Medical Emergency Plans were submitted to DESE on July 14, 2023.

Describe the Physical and Operational requirements (ex. Main entrance design and how it is to function/be managed, classroom and hardware features, visibility, alternative entries, surveillance and lines of sight etc)

- A welcoming and inviting entrance
- Double set of security doors with reception area
- Fob access to entry doors
- External cameras at each entry point.
- Cameras to monitor playgrounds, fields and parking lot
- Security cameras located throughout the school to monitor all common and administrative areas and hallways throughout the building as well as entrance and exit cameras

TYPICAL DAY & WEEK IN THE LIFE OF A STUDENT

Activity or Subject	Program Details and Educational Benefit
Morning Meeting 15 min	All classrooms take part in a Morning Meeting each day. This communal classroom gathering allows the teacher the ability to check in with students, gives students the opportunity to greet their classmates, and sets the stage for outlining the day and what will be accomplished. During this time, a team building activity takes place, creating stronger classroom bonds amongst students and their teacher.
ELA/Literacy 105 - 120 min	The ELA/Literacy block consists of up to 90 minutes of core programming which includes writing, 30 minutes of phonics, and phonemic awareness programming.
Mathematics 65 - 75 min	The math block consists of whole group and small group instruction. At times, the Math Interventionist will support classroom instruction in a co-teach model and to support students on her caseload.
Snack/Break 15 min	At the primary level, students need time to socialize in an unstructured environment. Breaks from academic work allow students to relax and recharge, reducing stress and improving focus when they return to their academics.
Social Studies 2x per week 40 - 60 min	Social Studies takes place two times a week and alternates with our Science instruction. Teachers focus on the state standards of history and social science frameworks.
Science 2x per week 40 - 60 min	Science takes place on the opposite days of Social Studies, two times a week. Lessons are hands-on and focus on Physical, Earth and Life Sciences.
WINN (What I Need Now) 30 min	During this 30 min block, students are engaged in educational support tailored to their needs. This may include support from interventionists/special educators, specialized instruction by the classroom teacher, or other individualized needs. This is a dedicated time where students are given the intervention needed to continue to
Unified Arts 45 min	Each student engages in a 45 minute Unified Arts block each day ranging from Art, Music, Physical Education, Library, or Social-Emotional Learning lesson. These sessions are vital for fostering well-rounded development, enabling students to explore and develop skills beyond core academics.
Recess/Lunch 20 min each	K-2 students' daily schedule includes a 20-minute recess followed by a 20-minute lunch. These periods are structured to allow an entire grade level to participate together, providing valuable opportunities for students to interact with peers outside of their immediate classroom environment. We pride ourselves in community building where interacting with a broader group of peers helps students develop social skills and build relationships across the grade level.
Social Emotional Learning 1x per week 20 - 30 min	Shaker Lane utilizes the Second Step Elementary Program to support the social-emotional development of students. Students receive a directed lesson once a week by their classroom teacher. Integrating this program into our weekly instruction supports the social-emotional growth of our students to help prepare them for success both in and out of the classroom.

Throughout the week students may engage in a variety of other events and activities. This could include a school-wide Community Meeting, in-house presentation or a field trip. Students also visit our Imagatorium and work with our K-5 STEM Integration Specialist. The Imagatorium is a specialized space designed to foster creativity, collaboration, and STEM learning. Here, students have access to various resources and tools that allow them to explore and experiment with different concepts.

4.6 Municipal Projects

TOWN OF LITTLETON

OFFICE OF THE

SELECT BOARD

37 SHATTUCK STREET, P.O. BOX 1305
LITTLETON, MASSACHUSETTS 01460
(978) 540-2460

December 6, 2024

Dear MSBA Preferred Schematic Report Panel:

MSBA has requested, as part of our preferred schematic report submission, to provide a list of other municipal projects currently planned, or in progress. The following is a list of substantive capital projects the Town is currently engaged with, or is in the planning stages for:

Capital Projects - In Progress

- $19.5 million Center on Shattuck Street (Senior Center) project. Projected completion date, March 2025.
- $6.9 million purchase and rehabilitation of the former Indian Hill Music School (36 King Street). The proposed use of the renovated facility is to host the Littleton School Department administrative staff and the Town's Parks, Recreation, and Community Education (PRCE) Department. Projected completion date, May 2025.

Capital Projects – Planned

- The Town has engaged an engineering firm to inspect the Department of Public Works (DPW) facility and make recommendations regarding renovation of the existing building or construction of a new facility. Projected study completion date, Summer 2025.
- $30,000 has been set aside in a warrant article for the Cemetery Commission to hire an architect to evaluate and make recommendations to renovate the cemetery administrative building.
- The Littleton School Department is proposing to replace the roof at Littleton High School in the Fiscal Year 2027-2028 timeframe. The estimated cost is $4,450,000. The Town intends to apply for the MSBA Repair Program to help offset the cost of this project.
- Other notable school-based capital projects include:
    - $550,000 in FY28-30 for the replacement of HVAC units at the Littleton Middle School.
    - $2,000,000 in FY27 for the replacement of the Russell Elementary School roof.
    - $2,000,000 in FY28 for the replacement of the Littleton Middle School roof.

The Town is currently working on plans to mitigate the impact of the projected cost of the Town's preferred schematic design for the new Shaker Lane Elementary School. The Select Board and Finance Committee agree that based on the current cost estimate, the Town will need to pursue a debt exclusion vote to support the construction of a new Shaker Lane Elementary School. Current plans call for regular contributions to the newly established School Building Stabilization Fund, approved as Article 26 at the May 7, 2024 Annual Town Meeting, which currently has a fund balance of $1.18 million.

Sincerely,

Ryan Ferrara

Ryan Ferrara
Town of Littleton, Assistant Town Administrator/Director of Finance and Budget

Budget Statement for Preferred Schematic - Expenditures

As reported on the school district's most recent three end of year information, please updated to the 3 latest fiscal year periods and complete the fields below.

Category	2021-2022 FY2022 Staff (FTE)	2021-2022 FY2022 Budget	2022-2023 FY2023 Staff (FTE)	2022-2023 FY2023 Budget	2023-2024 FY2024 Staff	2023-2024 FY2024 Budget	Change from Previous Year Staff (FTE)	Change from Previous Year Budget	estimated for 2028-2029 Post-Constuction Budget projected - average 20% increase over 5 years Staff	estimated for 2028-2029 Post-Constuction Budget projected - average 20% increase over 5 years Budget	New Facility vs. Current Staff (FTE)	New Facility vs. Current Budget
Salaries												
Administration												
Admin. Secretary	4.00	136,964	4.00	141,072	4.00	145,657	0.00	4,585	4.00	174,788	0.00	29,131
Assistant Principal	4.00	362,755	4.00	373,637	4.00	385,780	0.00	12,143	4.00	462,936	0.00	77,156
Business Office	4.50	303,244	4.50	312,341	4.50	322,492	0.00	10,151	4.50	386,990	0.00	64,498
Curriculum Director/Coord.	2.00	162,519	2.00	167,394	2.00	172,834	0.00	5,440	2.00	207,401	0.00	34,567
Custodians/Maintenance Staff	9.00	515,605	9.00	531,073	10.00	565,000	1.00	33,927	14.00	738,000	4.00	173,000
Executive Secretary	4.00	205,445	4.00	211,608	4.00	218,486	0.00	6,878	4.00	262,183	0.00	43,697
Facilities Manager	1.00	62,000	1.00	63,860	1.00	65,935	0.00	2,075	1.00	79,122	0.00	13,187
Guidance										-		
Adjustment Counselor	1.00	85,000	1.00	87,550	1.00	90,395	0.00	2,845	1.00	108,474	0.00	18,079
Guidance Counselors	4.00	400,531	4.00	444,546	4.00	425,954	0.00	(18,592)	4.00	511,145	0.00	85,191
Guidance Director	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Legal	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Nurse	5.00	325,870	5.00	335,646	5.00	346,554	0.00	10,908	5.00	415,865	0.00	69,311
Other	1.00	82,131	1.00	84,594	1.00	87,344	0.00	2,750	1.00	104,813	0.00	17,469
Principal	4.00	544,132	4.00	560,456	4.00	578,670	0.00	18,214	4.00	694,404	0.00	115,734
Special Education Admin	3.00	284,024	3.00	292,544	5.00	498,052	2.00	205,508	5.00	597,662	0.00	99,610
Superintendent/Asst. Superintendent	2.00	263,835	2.00	271,750	2.00	280,581	0.00	8,831	2.00	336,697	0.00	56,116
Transportation	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Treasurer	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Total Administration	**48.50**	**3,734,055**	**48.5**	**3,878,071**	**51.5**	**4,183,734**	**3.00**	**305,663**	**55.50**	**5,080,481**	**4.00**	**896,747**
Instruction - Teaching Services												
Arts	5.00	388,124	5.00	399,767	5.00	412,760	5.00	12,993	5.00	495,312	0.00	82,552
Business	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Communications	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Coping Instructor	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Culinary Arts	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
ELL	1.00	84,000	1.00	86,520	1.00	89,331	1.00	2,811	1.00	107,197	0.00	17,866
English Language	9.00	793,551	9.00	817,357	9.00	843,921	9.00	26,564	9.00	1,012,705	0.00	168,784
Family Consumer Services	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Foreign Language	7.00	623,213	7.00	641,909	7.00	662,771	7.00	20,862	7.00	795,325	0.00	132,554
Health Services	2.00	172,066	2.00	177,227	2.00	182,987	2.00	5,760	2.00	219,584	0.00	36,597
History & Social Science	7.00	544,087	7.00	560,409	7.00	578,622	7.00	18,213	7.00	694,346	0.00	115,724
Instructional Assistant/Paraprofessionals	42.50	1,170,808	42.50	1,205,932	42.50	1,245,125	42.50	39,193	42.50	1,494,150	0.00	249,025
Library/Media	3.50	196,793	3.50	202,696	3.50	209,284	3.50	6,588	3.50	251,141	0.00	41,857
Mathematics	10.00	798,238	10.00	822,185	10.00	848,906	10.00	26,721	10.00	1,018,687	0.00	169,781
MCAS	0.00		0.00		0.00	-	0.00	-	0.00	-	0.00	-
Music	3.00	215,340	3.00	221,800	3.00	229,008	3.00	7,208	3.00	274,810	0.00	45,802
Other - elem teachers (preK-5 teaching staff)	46.00	3,434,790	46.00	3,537,833	46.00	3,652,813	46.00	114,980	46.00	4,383,376	0.00	730,563
Physical Education	4.00	310,309	4.00	319,618	4.00	330,005	4.00	10,387	4.00	396,006	0.00	66,001
Reading	4.00	352,038	4.00	362,599	4.00	374,383	4.00	11,784	4.00	449,260	0.00	74,877
School Adjustment Counselor	3.00	253,666	3.00	261,275	3.00	269,767	3.00	8,492	3.00	323,720	0.00	53,953
Science			0.00		0.00	-	0.00			-		
Biology	5.00	387,633	5.00	399,261	5.00	412,237	5.00	12,976	5.00	494,684	0.00	82,447
Botany	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Chemistry	4.00	336,849	4.00	346,954	4.00	358,230	4.00	11,276	4.00	429,876	0.00	71,646
Geology	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Physics	1.00	101,369	1.00	95,000	1.00	98,087	1.00	3,087	1.00	117,704	0.00	19,617
Special Education	20.00	1,773,739	20.00	1,826,951	20.00	1,886,327	20.00	59,376	20.00	2,263,592	0.00	377,265
Substitute Teachers	28.00	297,691	26.00	306,621	27.00	325,000	27.00	18,379	28.00	390,000	1.00	65,000
Technology	2.00	180,505	2.00	185,920	2.00	191,962	2.00	6,042	2.00	230,354	0.00	38,392
Vocational Tech	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-	0.00	-
Total Instruction - Teaching Services	**207.00**	**12,414,809**	**205.00**	**12,777,834**	**208.00**	**13,201,528**	**1.00**	**423,692**	**207.00**	**15,841,831**	**1.00**	**2,640,305**
Total Salaries Administration & Instruction	**255.50**	**16,148,864**	**253.50**	**16,655,905**	**257.50**	**17,385,260**	**4.00**	**729,355**	**262.50**	**20,922,312**	**5.00**	**3,537,052**
Employee Benefits												
All employee-related fringe (health insurance, retirement etc)		**4,382,067**		**4,371,804**		**4,556,727**		**184,923**		**5,695,909**		**1,139,182**
Materials & Services												
Materials												
Audio-Visual Materials		-		-		-		-		-		-
Culinary Arts Materials		-		-		-		-		-		-
General Office Supplies		86,708		83,252		84,917		1,665		101,951		17,034
Information technology		-		-		-		-		-		-
Hardware		21,800		203,789		105,000		(98,789)		132,236		27,236
Software		29,399		5,559		24,000		18,441		23,583		(417)
Library Materials		3,500		3,800		3,876		76		4,470		594
Non info-tech equipment		5,500		6,800		3,800		(3,000)		6,440		2,640

Budget Statement for Preferred Schematic - Expenditures

Category	2021-2022 FY2022 Staff (FTE)	2021-2022 FY2022 Budget	2022-2023 FY2023 Staff (FTE)	2022-2023 FY2023 Budget	2023-2024 FY2024 Staff	2023-2024 FY2024 Budget	Change from Previous Year Staff (FTE)	Change from Previous Year Budget	Post-Constuction Budget projected - average 20% increase over 5 years Staff	Post-Constuction Budget projected - average 20% increase over 5 years Budget	New Facility vs. Current Staff (FTE)	New Facility vs. Current Budget
Testing Materials & Supplies		28,548		16,666		16,999		333		24,885		7,886
Textbooks		169,067		168,401		101,993		(66,408)		175,784		73,791
Vocational Program Materials		-		-		-		-		-		-
Total Materials		**344,522**		**488,267**		**340,585**		**(147,682)**		**469,350**		**128,764**
Services												
Athletics		390,116		406,029		442,913		36,884		495,623		52,710
Attendance		-		-		-		-		-		-
Food Service		647,093		995,308		1,092,526		97,218		1,093,971		1,445
Health Services		225,000		336,129		285,000		(51,129)		338,452		53,452
Legal Services		60,000		68,000		85,000		17,000		85,200		200
Other Student Activities		82,523		92,416		98,500		6,084		109,376		10,876
Psychological Services		31,262		33,145		622,696		589,551		274,841		(347,855)
School Security		52,000		105,553		63,250		(42,303)		88,321		25,071
SPED Out of District Tuition		1,310,249		1,256,743		1,213,451		(43,292)		1,512,177		298,726
Student Transportation		1,133,620		1,418,270		2,020,377		602,107		1,828,907		(191,470)
Total Services		**3,931,863**		**4,711,593**		**5,923,713**		**616,421**		**5,826,868**		**(96,845)**
Total Material & Services		**4,276,385**		**5,199,860**		**6,264,298**		**468,739**		**6,296,217**		**31,919**
Facility Costs & Capital Improvements												
Facility Costs												
Custodial Supplies		332,534		338,658		345,125		6,467		406,527		61,402
Electricity		418,698		473,519		455,052		(18,467)		538,908		83,856
Heating Oil		-		-		-		-		-		-
Maintenance												
Building Security Maintenance		83,184		85,000		78,000		(7,000)		98,474		20,474
Elevator		26,348		18,500		16,500		(2,000)		24,539		8,039
Equipment Maintenance		16,502		69,582		58,500		(11,082)		57,834		(666)
Exterminating		4,563		5,500		5,500		-		6,225		725
Facility Maintenance		462,827		599,303		579,283		(20,020)		656,565		77,282
Fire Alarm		6,800		6,200		6,550		350		7,820		1,270
Fire Extinguisher Inspection		3,800		3,800		3,950		150		4,620		670
Generator		12,828		13,250		13,750		500		15,931		2,181
HVAC Maintenance		255,336		265,850		270,000		4,150		316,474		46,474
Other		631,298		650,000		625,000		(25,000)		762,519		137,519
Site Maintenance (Grouds)		479,329		608,303		305,701		(302,602)		557,333		251,632
Technology		32,881		35,800		65,000		29,200		53,472		(11,528)
Trash Removal		57,381		60,250		63,500		3,250		72,452		8,952
Natural Gas		232,974		243,493		265,934		22,441		296,960		31,026
Snow Removal - performed by DPW Department		-		-		-		-		-		-
Telephone		71,569		73,890		68,000		(5,890)		85,384		17,384
Water/Sewer		82,173		86,187		73,500		(12,687)		96,744		23,244
Total Facility Costs		**3,211,025**		**3,637,085**		**3,298,845**		**(338,240)**		**4,058,782**		**759,937**
Captial Improvements												
Captial Improvements		**475,000**		**385,000**		**425,000**		**40,000**		**500,000**		**75,000**
Total Facility Costs & Capital Improvements		**3,686,025**		**4,022,085**		**3,723,845**		**(298,240)**		**4,558,782**		**834,937**
Debt Service												
Short-term		-		-		-		-		-		-
Long-term		1,456,453		1,350,500		1,158,204		(192,296)		4,500,000		3,341,796
Total Debt Service		**1,456,453**		**1,350,500**		**1,158,204**		**(192,296)**		**4,500,000**		**3,341,796**
Total Budget & Staff	**255.50**	**29,949,794**	**253.50**	**31,600,154**	**257.50**	**33,088,334**	**4**	**892,481**	**263**	**41,973,220**	**5**	**8,884,886**

4.6 Local Authorization Process

TOWN OF LITTLETON

OFFICE OF THE

SELECT BOARD

37 SHATTUCK STREET, P.O. BOX 1305
LITTLETON, MASSACHUSETTS 01460
(978) 540-2460

December 6, 2024

Dear MSBA Preferred Schematic Report Panel:

MSBA has requested, as part of our preferred schematic report submission, to provide a description of the local process for authorization and funding for the MSBA Shaker Lane Elementary School Project. The Shaker Lane School Building Committee consists of the following individuals:

1. Stephen M Moore, Chair, Permanent Municipal Building Committee
2. Kelly Clenchy, Vice Chair, Superintendent of Schools
3. Stacy Lynn Desmarais, Clerk, School Committee Member
4. Charles Decoste, Select Board Member
5. Steven Venuti, Finance Committee Member
6. Ryan Ferrara, Assistant Town Administrator/Budget and Finance Director, Town Administrator Designee
7. Robert Romilly, Permanent Municipal Building Committee Member
8. Michael Scaduto, Permanent Municipal Building Committee Member
9. Michelle Kane, Shaker Lane Elementary School Principal

All meetings are posted and open to the public in accordance with the open meeting law. Throughout this process and since the project team was formed the Shaker Lane Elementary School Building Committee (Committee) has worked diligently to maintain an open and transparent process for the public.

The Committee has held multiple community informational forums and meetings to include: The Permanent Municipal Building Committee, School Committee, Finance Committee, and Select Board. During these meetings community feedback has been requested and received. A project website has been created and updated on regular basis.

As the project continues to move through the balance of the Feasibility and Schematic Design all meetings will continue in the same vein with particular attention to community informational forums to keep the project transparent and the community informed. Currently this project is scheduled for MSBA Board of Directors consideration of the Project Scope and Budget in August 2025. Thereafter, Littleton will hold its Special Town Meeting in fall 2025 followed by a ballot question.

The Committee approved the submittal of the Preferred Schematic Report during their meeting on November 19, 2024. Please refer to approval certificates, progress schedule, meeting log and minutes within this report.

Sincerely,

Ryan Ferrara

Ryan Ferrara
Town of Littleton, Assistant Town Administrator/Director of Finance and Budget

RECEIVED
SEP 12 2024
By AS @ 4:00 PM

AGENDA

Shaker Lane School
Building Committee Meeting
Wednesday, September 18, 2024
7:00PM

Below are the Zoom webinar credentials for the SLSBC's upcoming meeting of 9/18/24 @ 7:00pm.

You are invited to a Zoom webinar.

When: Sep 18, 2024 07:00 PM Eastern Time (US and Canada)

Topic: Shaker Lane Building Committee

Please click the link below to join the webinar:

https://littletonma.zoom.us/j/81205343709?pwd=BmKvEpkmTRG0ivcS8djRyOtZVvMLPq.1

VIDEO OR CALL WILL BE MUTED UPON JOINING MEETING.
Please use the "RAISE YOUR HAND" feature in the Zoom meeting to ask to speak.
PARTICIPANTS/ATTENDEES ARE REMINDED THAT BY JOINING THIS MEETING, YOU CONSENT TO YOUR LIKENESS AND AUDIO BEING USED AND REBROADCAST BY LCTV
This Rebroadcast meeting can be viewed online at LCTV On-Demand at https://littleton.vod.castus.tv/vod

7:00 p.m.

1. **Approve prior meeting minutes**
2. **Review/Approve Invoices**
3. **Studio G:**
   a. *SLSBC meeting length time*
   b. *Workplan update for PSR*
   c. *Establish subcommittee for community outreach*
   d. *FAQ review for website*
   e. *Draft building footprint*
4. **TTH - Budget & Schedule Update**
5. **Community Input**
6. **Adjourn**

Next meeting(s) scheduled for October 16, 2024 and October 23, 2024
Littleton Police Department Community meeting Room

Shaker Lane Building Committee Minutes

Date 9/18/2024
7 pm

Attending

Stacy Demarais
Michelle Kane
Steve Venuti
Ryan Ferrara
Kelly Clenchy
Mike Scaduto
Brian Pasquale
Studio G
Mark Stafford
Meryl Nistler
Suresh
Bob Romily

Approving Invoices

1. TTH for services provided in August: 18,678 & $45,000 approved by all members
2. Amendment #1: SLBC is supposed to approve upcoming costs before completion however some services were completed outside the scope of basic services that are reimbursable; traffic, site study, hazardous material surveys etc. Looking for $51,398 approval to include scope of reimbursable services to Studio G. This amendment wasn't in the Warrant Kelly made motion Bob Romiily seconded. Motion approved
3. Approval of Invoice for $37,372.50 for Studio G services presented, Stacy made a motion and Kelly seconded. Motion approved
4. Amendment #2: $29,700 for civil soil testing and geotech survey. Motion to approve work not to exceed $29,700 for Studio G to execute work in document, contingent upon town approval of alternate options presented in amendment. Kelly made motion, approved by all. Motion approved.

Merlyee presentation

Community Outreach Subcommittee : students, community members, teachers and educators, LPS, Town Departments need to establish a subcommittee. Jeaneane Wood from the school committee has offered to help.

Motion to create subcommittee core members kelly, michelle, ryan ferra as core working group with support by additional participants, Ryan motion to approve, Brian seconded, approved by all.

Turner & Townsend Heery

300 Brickstone Square
Suite 201
Andover, MA 01810
www.turnerandtownsend.com

September 18, 2024

Ryan Ferrara
Assistant Town Administrator/Director of Finance and Budget
Town of Littleton
37 Shattuck Street
Littleton, MA 01460

Shaker Lane Elementary School MSBA
Cost Code 202101580005
Contract Amendment for Designer Services Period
September 1, 2024, through September 30, 2024

Dear Mr. Ferrara:

Please find Contract Amendment #02 from Studio G as a reimbursable expense for services related to Preliminary Soil testing and Test Pit Observations.

We have reviewed these reimbursable expenses and acknowledge Studio G is coordinating these services as outlined in their proposal that was reviewed and approved during the 09/18/24 SLSBC meeting. These services are being tracked under Studio G contract Amendment #02.

We therefore are submitting these two proposals for review and consideration in the total amount of Twenty-Nine Thousand Seven Hundred Dollars and Zero Cents ($29,700.00) as itemized on the attached proposals.

If you have any questions, or require additional information, please contact me at 781.733.7310.
or mark.stafford@turntown.com

Sincerely,

Mark A. Stafford

Mark A. Stafford
Senior Project Manager

Turner & Townsend Heery, Inc.

C: File

ATTACHMENT F

CONTRACT FOR DESIGNER SERVICES

AMENDMENT NO. 02

WHEREAS, the Town of Littleton ("Owner") and Studio G Architects, Inc., (the "Designer") (collectively, the "Parties") entered into a Contract for Designer Services for the Shaker Lane Project (MSBA Project Number 202101580005) at the Shaker Lane Elementary School on June 3, 2024 "Contract"; and **WHEREAS**, effective as of September 18, 2024, the Parties wish to amend the Contract:

NOW, THEREFORE, in consideration of the promises and the mutual covenants contained in this Amendment, and other good and valuable consideration, the receipt and legal sufficiency of which are hereby acknowledged, the Parties, intending to be legally bound, hereby agree as follows:

1. The Owner hereby authorizes the Designer to perform additional design services *[Refer to MSBA section 4.11 Additional Tests and Surveys, and Article 9: Reimbursable Expenses]* as outlined in the table below identified as Amendment #02 for Preliminary Soil Testing and Geotechnical. (Attachment)

2. For the performance of services required under the Contract, as amended, the Designer shall be compensated by the Owner in accordance with the following Fee for Basic Services:

Description of Services	Original Contract Fee	Changes by Previous Amendments	Changes by This Amendment	Amendment (date)
Feasibility Study Phase - PDP/PSR	$360,000.00	$0.00	$0.00	
Schematic Design Phase	$290,000.00	$0.00	$0.00	
Additional Services				
Preliminary Soil Testing (Samiotes)	$0.00	-	$6,600.00	#02 (9/18/24)
Allowance for Additional day of Soil Testing (Samiotes)	$0.00	-	$3,300.00	#02 (9/18/24)
Geotechnical Engineering Services through SD (GeoEngineers)	$0.00	-	$13,200.00	#02 (9/18/24)
Add Alternate 2: Allowance for Additional day of Test Pit Excavation with Excavator (GeoEngineers)	$0.00	-	$6,600.00	#02 (9/17/24)
Site Survey at Shaker Lane School	$0.00	$22,825.00	-	#01 (9/18/24)
Traffic Study at Shaker Lane School	$0.00	$17,600.00	-	#01 (9/18/24)
Hazardous Material Survey at Shaker Lane School	$0.00	$10,973.00	-	#01 (9/18/24)
TOTAL FEE	**$650,000.00**	**$51,398.00**	**$29,700.00**	**$731,098.00**

This Amendment is a result of:
Additional services for Preliminary Soil testing (dated September 12, 2024; OPM approved 9/13/2024), and Geotechnical Engineering Services through SD (dated 9/13/2024; OPM approved 9/16/2024) per attached proposals. Fee submitted within Module 3, as shown.

3. The Construction Budget shall be as follows:

Original Budget:	$ Not Applicable at this Time
Amended Budget	$ Not Applicable at this Time

4. The Project Schedule shall be as follows:

Original Schedule:	June 2024 thru August 2025
Amended Schedule	No Change

5. This Amendment contains all of the terms and conditions agreed upon by the Parties as amendments to the original Contract. No other understandings or representations, oral or otherwise, regarding amendments to the original Contract shall be deemed to exist or bind the Parties, and all other terms and conditions of the Contract remain in full force and effect.

IN WITNESS WHEREOF, the Owner, with the prior approval of the Authority, and the Designer have caused this Amendment to be executed by their respective authorized officers.

OWNER	DESIGNER
_____	Gail Sullivan
(print name)	(print name)
	Studio G Architects,
_____	President and Managing Principal
(print title)	(print title)
By:_____	By:_____ 
(signature)	(signature)
Date:_____	Date: September 17, 2024

September 12, 2024

Studio G Architects
Attn: Meryl Nistler, AIA, WELL AP, LEED AP, MCPPO, NCARB
Senior Project Manager
179 Boylston Street
Jamaica Plain, MA 02130

RE: Shaker Lane Elementary School - Little SCI# 54025.00
Addendum #1 (Preliminary Soil Testing)

Dear Meryl:

Samiotes Consultants, Inc. (Samiotes) is pleased to present this addendum for civil engineering services for the Shaker Lane Elementary School project located at 35 Shaker Lane, Littleton, Massachusetts. Our addendum is as follows:

I – SCOPE OF WORK / TASKS

A. **Preliminary Soil Testing:** Samiotes will conduct preliminary soil testing at the site which will include up to two (2) days, eight (8) hours per day, on-site with a representative of the firm present. This testing is required as part of the Massachusetts Stormwater Management Policy to determine the soil type / water table for drainage / site design / septic and infiltration determination (Not Environmental Testing). Note: For planning purposes, it is anticipated that up to five (5) test pits will be completed per day based on site conditions. This task will also include coordination with the Excavator, Geotechnical Engineer, and Dig-Safe Markings for testing by Samiotes. *NOTE: Excavator Fees are the responsibility of the Client / Owner and are NOT included in the Fee. Most excavating companies require payment on the day that services are provided.*

Samiotes Soil Testing Fee is $3,000.00 per day.

II – FEE FOR SERVICES *(Invoice Tasks in Italics)*

A. **Preliminary Soil Testing** *(Task 21)*
Fixed Fee – $6,000.00 (**Note: Assumes 2 days of testing; Excavator Fees are NOT included in the Fee**)
Method of Billing – Lump Sum billed monthly on a percentage of task completion basis.

EXPENSES: Reimbursable Expenses are included in the fees listed above with the exception of overnight mailings and courier services when requested by Client.

III – RATE SCHEDULE

Hourly work and Additional Services will be billed hourly at the following rates. These rates are subject to change as a result of fluctuating market conditions:

Principal/President	$285.00 per Hour
Expert Witness	$350.00 per Hour
Director of Engineering	$235.00 per Hour
Senior Project Manager	$195.00 per Hour
Director of Land Surveying	$205.00 per Hour
Registered Professional Engineer	$180.00 to $190.00 per Hour

Samiotes Consultants, Inc.
Civil Engineers + Land Surveyors

20 A Street
Framingham, MA 01701-4102

T 508.877.6688
F 508.877.8349

www.samiotes.com

Registered Professional Land Surveyor	$180.00 per Hour
Survey Field Crew (2-person)	$195.00 per Hour
Survey Field Crew (1-person)	$155.00 per Hour
2-Person Survey Field Crew (Construction Layout)	$3,250.00 per Day
	$1,900.00 per one-half Day
Civil Project Manager	$170.00 per Hour
Survey Project Manager	$150.00 per Hour
Soil Evaluator	$150.00 per Hour
3D Scan Processing	$150.00 per Hour
Certified Arborist	$140.00 per Hour
Project Engineer (I, II, III)	$115.00, $125.00, $135.00 per Hour
Project Surveyor (I, II, III)	$105.00, $115.00, $125.00 per Hour
Survey Technician	$95.00 per Hour
Professional Staff	$85.00 per Hour
Administrative Staff	$80.00 per Hour
Archive Retrieval Fee (Up to 1 hour)	$150.00 Flat Fee

AUTHORIZATION TO PROCEED: Execution of this document constitutes Authorization to Proceed. Work will not proceed until a signed copy is returned to this office.

VALIDITY: The prices quoted are valid for sixty (60) days.

COST: Rates are re-evaluated on an annual basis. Once the document is signed, the fees and terms shall remain in effect until the end of the calendar year. If the project continues beyond that time, Samiotes' hourly rates will be revised to conform to Samiotes' standard hourly rates for that calendar years. If Additional Services are contracted, the Client will be notified of the updated rate schedule.

ACCEPTANCE: This Document for Professional Consulting Services is hereby accepted and executed by a duly authorized signatory who, by execution hereof, warrants that he/she has full authority to act in the name of and on behalf of

STUDIO G ARCHITECTS

By: _____ Title: _____

Printed Name: _____ Date: _____

Agreed:

SAMIOTES CONSULTANTS, INC.

By: _____ Title: President / Principal
Stephen R. Garvin, PE, LEED AP

By: _____ Title: Director of Civil Engineering
Stephen Powers, PE

Please return a copy of the executed document as Authorization to Proceed. Thank you for this request for Samiotes' services.

GeoEngineers USA
239 Causeway Street, Suite 400
Boston, Massachusetts 02114
617.749.9220

September 13, 2024

Studio G Architects, Inc.
179 Boylston Street, Suite P
Jamaica Plain, Massachusetts 02130

Attention: Meryl Nistler, AIA, WELL AP, LEED AP, MCPPO, NCARB

Subject: Proposal
Geotechnical Engineering Services through Schematic Design (SD)
Shaker Lane Elementary School
Littleton, Massachusetts
File No. 27534-001-00

Introduction and Project Understanding

GeoEngineers USA, PC (GeoEngineers) is pleased to submit this proposal to Studio G Architects, Inc. (Studio G) to provide geotechnical engineering services through SD for the proposed Shaker Lane Elementary School project in Littleton, Massachusetts (the Site). This proposal has been prepared in response to your request for proposal (RFP) via e-mail on September 10, 2024.

Based on the conceptual plans provided to us by you, we understand the 35 Shaker Lane property owned by the Town of Littleton for the existing Shaker Lane School has multiple design options for renovations; an addition to the existing building or new construction. Additionally, the Town of Littleton has considered a second location at 57 Russell Street in Littleton, Massachusetts, as an option to construct the new Shaker Lane Elementary School.

Scope of Services

TASK 1 – DESKTOP REVIEW AND GEOTECHNICAL SUMMARY MEMORANDUM *(ALREADY COMPLETED)*

GeoEngineers will review existing site plans, drawings, and subsurface information provided by the Town of Littleton or publicly available online. We will summarize our findings and geotechnical recommendations to support the proposed design alternatives.

TASK 2 – PARTICIPATION IN MEETINGS AND CONFERENCE CALLS

We have included an allowance for up to six (6) hours of Associate/Senior Project Manager time to attend meetings and/or conference calls to review design alternatives and discuss geotechnical considerations.

TASK 3 – TEST PIT EXCAVATION OBSERVATION

GeoEngineers will provide a field representative to observe and log one (2) days of test pit excavations. We have assumed that up to eight (8) test pits can be completed in one day, pending field conditions and access considerations. The subsurface information will be reviewed and incorporated into a revision of our summary memorandum described above. **Please note that for this task we have assumed that the Town of Littleton would provide the excavator and operator. No geotechnical laboratory testing is included in this task.**

1.1.1. Add Alternate 1: Daily Rate for Test Pit Excavation Observation

The cost table below includes a daily rate for test pit excavation observation, in the event that additional time is needed to observe the proposed test pit explorations**.**

1.1.2. Add Alternate 2: Test Pit Excavation with Excavator

If additional test pit explorations are considered necessary, GeoEngineers will retain a test pit excavation subcontractor for one (1) day to advance up to eight (8) test pits. We will provide a field representative to observe and log subsurface conditions observed in the test pits. The information will be reviewed and incorporated into a revision of our summary memorandum described above. **Please note that this add alternate includes the subcontractor costs for the equipment and operator. No geotechnical laboratory testing or pavement restoration is included in this add alternate.**

TASK 4 – REVISED GEOTECHNICAL SUMMARY MEMORANDUM

GeoEngineers will revise our geotechnical summary memorandum dated August 13, 2024. The revised memorandum will summarize our findings and geotechnical information collected during the exploration program, including a description of the existing conditions and subsurface conditions at the Site, an exploration location plan and exploration logs.

Terms, Fee Estimate and Schedule

We are prepared to begin work on this project immediately after receiving your authorization to proceed. Our revised geotechnical summary memorandum will be issued within three (3) weeks after the conclusion of the field program.

Our services will be completed in accordance with mutually agreeable terms currently under review. Our scope of work will be completed as a lump sum fee of **$12,000 (excluding Add Alternate scope items)**, and a budget summary table is provided below for reference. We will keep you apprised of project status and conditions that may significantly affect our scope and estimate.

TASK	GEOENGINEERS LABOR	SUBCONTRACTOR COSTS AND EXPENSES	SUBTOTAL
Task 1 – Desktop Review and Geotechnical Summary Memorandum	$3,500	-	$3,500
Task 2 – Meetings and Conference Calls (6 hours of Associate/Senior Project Manager time)	$1,500	-	$1,500
Task 3 – Test Pit Excavation Observation (2 days)	$5,000	-	$5,000
Task 4 – Revised Geotechnical Summary Memorandum	$2,000	-	$2,000
Lump Sum Fee	**$12,000**	**-**	**$12,000**
Add Alternate 1: *Test Pit Excavation Observation (Daily Rate)*	*$2,500*	-	*$2,500*
Add Alternate 2: *Test Pit Excavation with Excavator (1 day)*	*$2,500*	*$3,500*	*$6,000*

There are no intended third-party beneficiaries arising from the services described in this proposal and no party other than the party executing this proposal shall have the right to legally rely on the product of our services without prior written permission of GeoEngineers.

This proposal is valid for a period of 60 days commencing from the first date listed above and subject to renegotiation by GeoEngineers USA, PC, after the expiration date.

Client's oral authorization to initiate services shall be considered by both parties as formal acceptance of the scope of services and all the terms and conditions of this Agreement unless otherwise agreed to in writing by Client and GeoEngineers.

Thank you for the opportunity to submit this proposal. Please call us at 617.749.9214 if you have any questions.

Sincerely,
GeoEngineers USA, PC

Heidi P. Cashman, PE
Associate Geotechnical Engineer

HPC:nl

Attachments:
None
One copy submitted electronically

Meryl Nistler
Senior Project Manager
Studio G Architects

Sept. 16, 2024

File No. 27534-001-00

GeoEngineers USA



Design Agenda

1. SLSBC Meeting Length
2. Preferred Schematic Report (PSR) Workplan Update
3. Community Outreach Subcommittee
4. FAQ for Website
5. Design Update
6. District Action Items

studio g architects | Turner & Townsend Heery | ATLANTIC CONSTRUCTION & MANAGEMENT, INC.

School Building Committee Meeting

Shaker Lane School Project • Littleton Public Schools • Town of Littleton, MA

September 18, 2024

1

Project Goals

- Respond to the Educational Program to provide **integration** of Unified Arts and Social Emotional Learning programs, and support the concept of **Learning Everywhere**
- Provide spaces that can be shared with Littleton residents to increase value and utility, and to **build community**, incorporating elements of local history and community values in the design.
- Create a **healthy, safe and secure** environment
- **Maximize flexibility and adaptability** to support a broad variety of learning experiences, and to evolve over time to **accommodate future needs**
- Use cost-effective design strategies to **maximize value**, for construction costs and life-cycle costs
- Incorporate **sustainable** technologies, energy efficiency, and environmentally-friendly practices
- Create a Universally Designed building to **maximize inclusion** and accessibility

Workplan Update for PSR

Holiday
School Building Committee Meeting
Proposed Subcommittee Meeting
Date of Note

AUGUST 27
K-12 First day of school

We are here

PDP | PSR study, analysis and documentation | compile & submit PSR report | Schematic Design

August

Su	M	Tu	W	Th	F	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

- ☑ Final tweaks to educational plan / space program
- ☑ **Joint Town Leadership meeting August 21, 2024**
- ☑ SBC vote to submit PDP to MSBA August 28, 2024
- ☑ **Submit PDP to MSBA August 30, 2024**

September

Su	M	Tu	W	Th	F	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

- ❑ **Space program refinements with school personnel September 11 & 18**
- ❑ MSBA PDP review, comments, & SGA responses
- ❑ Interior space planning options
- ❑ Community outreach
- ❑ Soil investigations

October

Su	M	Tu	W	Th	F	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

- ❑ **Reconvene Joint Town Leadership group October 16 & October 23**
- ❑ **Special Town Meeting October 29, 2024**
- ❑ Interior space planning options
- ❑ Community outreach
- ❑ Cost estimates

November

Su	M	Tu	W	Th	F	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

- ❑ Interior space planning options SBC review/ comment
- ❑ Community outreach
- ❑ SBC vote to submit PSR to MSBA November 20, 2024

December

Su	M	Tu	W	Th	F	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

- ❑ MSBA PSR review, comments, & SGA responses
- ❑ **Submit PSR to MSBA December 6, 2024**
- ❑ Begin Schematic Design December 9, 2024

January 2025

- ❑ Facility Assessment Subcommittee (FAS) January 15 or 29, 2025

February 2025

- ❑ MSBA Board Meeting - Approval of PSR February 26, 2025

Community Outreach Subcommittee

ENGAGING YOUR COMMUNITY – STAKEHOLDERS

Students
- Shaker Lane Students
- Former SL Students
  - Russell ES
  - Middle School
  - High School

Residents
- ALL Residents
- Parents + Guardians
- PTA
- Senior Citizens
- SEPAC

Teachers & Educators
- ELL Staff
- Food Services
- Facilities Maintenance
- Principal / Assistant Principal
- School Counselor
- School Nurse
- School Psychologist
- Specialists
- Teachers
- Tigers Den

Littleton Public Schools
- Business Manager
- Dir. of Student Services
- Dir. of Teaching + Learning
- District Nurse
- District Clinical Staff
- ELL Staff
- Energy Manager
- Food Services
- Heads of Clinical Team
- Littleton Public Schools
- Superintendent
- Technology Team
- Wellness Committee

Town Departments
- Building Department
- Conservation Commission
- DPW
- Fire Department
- Highway Department
- LEWLD
- Parks & Recreation
- Planning Department
- Police Department
- Reuben Hoar Library
- Select Board
- Town Administrator
- Board of Health

Feasibility Study April 2024 → Schematic Design → Vote December 2025 → DD/CD + Construction Administration → School Opens! June 2029

Our Team | Community | Options | Q1 + Q2 | Q3 | Q5 | Cost/Value | Design | Q4

FAQ for Project Website

Specific

What is the project budget?

How much will this project cost me?

What is wrong with the existing school?

Will this project be a renovation or new construction?

Did the team consider any other locations in Littleton?

Why can't we move the Shaker Lane School to be next to the Russell Street school?

When is the vote for the project?

How can I share my thoughts with the design team?

What is the project schedule?

Who is on the School Building Committee?

General

What is the MSBA?

What is a Feasibility Study?

Who conducts a Feasibility Study?

How long will the Feasibility and Schematic Design Study take?

Others?

Design Update

ROOM TYPE	EXISTING SHAKER LANE AREA SF	MSBA + SLS BASELINE	SLS BASELINE	1ST ITERATION SHAKER LANE AREA SF	SEPTEMBER 18 SHAKER LANE AREA SF	SAVINGS FROM 1ST ITERATION	COMMENTS
STUDENTS	446 PK-2	435 K-2	483-495 PK-2	483-495 PK-2	483-495 PK-2		
Core Academics	21,010	21,950 ***+ 950*** ***22,900***	• 950sf Grade 1-2 classroom	28,900	26,950	1,950	• Reduced K-2 classrooms to MSBA minimum
Special Education	4,124	4,530 ***+ 3,500*** ***8,030***	• (6) 150sf offices • 500sf ELL classroom • 900sf OT/PT • 1,200sf Pre-K PACE	11,810	10,920	890	• Reduced Pre-K and K-2 PACE classrooms to MSBA minimum • Reduced Small Group & Therapeutic Learning Spaces from 150sf to 120sf each (18 rooms) • Reduced OT/PT room from 1,200sf to 900sf (current space is 900sf) • *Exploring other potential efficiencies*
Arts & Music	1,305	2,575		2,575	2,350	225	• Removed (3) 75sf practice rooms
Health & Physical Education	2,828	6,300		6,300	6,300		
Media Center	1,614	2,628		2,628	2,628		
Dining & Food Service	4,802	6,552		6,943	6,763	180	• Reduced Quiet Cafes from 400sf total to 320sf total • Reduced Staff Lunch Room from 600sf to 500sf
Medical	502	510		690	590	100	• Removed 60sf Isolation Room (can take from Exam space)
Administration & Guidance	1,296	2,151		2,410	2,310	100	• Reduced Teacher Work Rooms from 250sf each to 200sf each • *Exploring other potential efficiencies*
Custodial & Maintenance	715	2,035		2,035	1,660	375	• Reduced Custodian Storage & Workshop from 750sf total to 375sf total
Pre-K & Other	2,928	***3,600***	• (3) 1,200sf Pre-K classrooms	4,960	4,700	260	• Reduced Pre-K classrooms to MSBA minimum • Removed Lactation Room & Admin Kitchenette (can take from grossing factor)
Net Total	-	49,231 ***+ 8,050*** ***57,281***	57,281	69,251	65,171	4,080	
GROSS TOTAL	60,790	73,845 ***+ 12,075*** ***85,922***	85,922	103,876	97,756	6,120	

Design Update



District Action Items

- ❑ Establish Community Outreach Subcommittee
- ❑ Community outreach action plan with SGA & TTH support
- ❑ Research sustainability incentives & grants
- ❑ Prepare for joint Town Leadership meetings:
  - ❑ October 16: design & status updates, sustainability overview
  - ❑ October 23: cost estimate update

Turner & Townsend Heery

300 Brickstone Square
Suite 201
Andover, MA 01810
www.turnerandtownsend.com

September 12, 2024

Ryan Ferrara
Assistant Town Administrator/Director of Finance and Budget
Town of Littleton
37 Shattuck Street
Littleton, MA 01460

Shaker Lane Elementary School MSBA
Cost Code 202101580005
Contract Amendment for Designer Services
Period August 1, 2024, through August 31, 2024

Dear Mr. Ferrara:

Please find Contract Amendment #01 from Studio G as a reimbursable expense for services related to a Site Survey, Traffic Studies, and Hazardous Material Building Survey.

We have reviewed these reimbursable expenses and acknowledge Studio G is coordinating these services as outlined in their proposal that was reviewed and approved during the 09/18/24 SLSBC meeting. These services are being tracked under Studio G contract amendment #01.

We therefore are submitting these three proposals for review and consideration in the total amount of Fifty-One Thousand Three Hundred Ninety-Eight Dollars and Zero Cents ($51,398.00) as itemized on the attached proposals.

Should there be any questions, please feel free to call me at 781.733.7310.

Sincerely,

Mark A. Stafford

Mark A. Stafford
Senior Project Manager

Turner & Townsend Heery, Inc.

C: File

ATTACHMENT F

CONTRACT FOR DESIGNER SERVICES

AMENDMENT NO. 01

WHEREAS, the Town of Littleton ("Owner") and Studio G Architects, Inc., (the "Designer") (collectively, the "Parties") entered into a Contract for Designer Services for the Shaker Lane Project (MSBA Project Number 202101580005) at the Shaker Lane Elementary School on June 3, 2024 "Contract"; and **WHEREAS**, effective as of September 18, 2024, the Parties wish to amend the Contract:

NOW, THEREFORE, in consideration of the promises and the mutual covenants contained in this Amendment, and other good and valuable consideration, the receipt and legal sufficiency of which are hereby acknowledged, the Parties, intending to be legally bound, hereby agree as follows:

1. The Owner hereby authorizes the Designer to perform additional design services *[Refer to MSBA section 4.11 Additional Tests and Surveys, and Article 9: Reimbursable Expenses]* as outlined in the table below identified as Amendment #001 for Site Survey, Hazardous Material Building Survey and Traffic Study. (Attachment)

2. For the performance of services required under the Contract, as amended, the Designer shall be compensated by the Owner in accordance with the following Fee for Basic Services:

Description of Services	Original Contract Fee	Changes by Previous Amendments	Changes by This Amendments	Amendment (date)
Feasibility Study Phase (PDP/PSR)	$360,000.00	$0.00	$0.00	
Schematic Design Phase	$290,000.00	$0.00	$0.00	
Design Development Phase	$0.00	$0.00	$0.00	
Construction Document Phase	$0.00	$0.00	$0.00	
Bidding Phase	$0.00	$0.00	$0.00	
Construction Phase	$0.00	$0.00	$0.00	
Completion Phase	$0.00	$0.00	$0.00	
Additional Services				
Site Survey at Shaker Lane School	$0.00	$0.00	$22,825.00	#01 (9/18/2024)
Traffic Study at Shaker Lane School	$0.00	$0.00	$17,600.00	#01 (9/18/2024)
Hazardous Material Survey at Shaker Lane School	$0.00	$0.00	$10,973.00	#01 (9/18/2024)
TOTAL FEE	**$650,000.00**	**$0.00**	**$51,398.00**	**$701,398.00**

This Amendment is a result of: Additional services for Site Survey (dated May 17, 2024), Hazardous Material Survey (dated July 24, 2024) and Traffic Study (dated May 10, 2024), per attached proposals. Fee submitted within Module 3, as shown.

3. The Construction Budget shall be as follows:

Original Budget:	$ Not Applicable at this Time
Amended Budget	$ Not Applicable at this Time

4. The Project Schedule shall be as follows:

Original Schedule:	June 2024 thru August 2025
Amended Schedule	No Change

5. This Amendment contains all of the terms and conditions agreed upon by the Parties as amendments to the original Contract. No other understandings or representations, oral or otherwise, regarding amendments to the original Contract shall be deemed to exist or bind the Parties, and all other terms and conditions of the Contract remain in full force and effect.

IN WITNESS WHEREOF, the Owner, with the prior approval of the Authority, and the Designer have caused this Amendment to be executed by their respective authorized officers.

OWNER

_____
(print name)

_____
(print title)

By _____
(signature)

Date_____

DESIGNER

Gail Sullivan
(print name)

President and Managing Principal
(print title)

By _____
(signature)

Date September 12, 2024

May 17, 2024

Studio G Architects
Attn: Marylee Mercy, AIA, ALEP, MCPPO, NCARB
Assistant Project Manager
179 Boylston Street
Jamaica Plain, MA 02130

RE: Shaker Lane Elementary School – Littleton (Survey) SCI# 54025.01

Dear Marylee:

Samiotes Consultants, Inc. (Samiotes) is pleased to present this proposal for land surveying and Wetland Scientist services for the Shaker Lane Elementary School project located at 35 Shaker Lane, Littleton, Massachusetts. Our proposal is as follows:

I – SCOPE OF WORK / TASKS

A. **Limited Topographic Survey & Plan**: Samiotes will conduct a limited topographic survey including topography, approximate property lines, and utility research and compilation for the above-referenced site, limited as shown on the survey limits sketch, unless listed otherwise in the Survey Schedule. Existing underground utilities, within the topographic survey limits, will be shown at a Quality Level C of the Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data (38-02) by the American Society of Civil Engineers. Existing underground utilities within the compiled GIS limits will be shown approximately from available record information. Please note that a boundary retracement survey and/or the setting of markers at lot corners are not considered a part of this service.

B. **Wetland Site Walk & Report**: Samiotes will coordinate a site walk with the Wetland Scientist. The Wetland Scientist will investigate the proposed limit of work to identify wetland resource areas. A sketch and report will be prepared detailing the results of the investigation, to be used for future Wetland Delineation and Wetland Flag Location Surveys.

II – FEE FOR SERVICES *(Invoice Tasks in Italics)*

A. **Limited Topographic Survey & Plan** *(Task 1)*
Fixed Fee – $19,000.00
Method of Billing – Lump Sum billed monthly on a percentage of task completion basis.

B. **Wetland Site Walk & Report** *(Task 2)*
Fixed Fee – $1,750.00
Method of Billing – Lump Sum billed monthly on a percentage of task completion basis.

EXPENSES: Reimbursable Expenses are included in the fees listed above with the exception of overnight mailings and courier services when requested by Client.

III – ADDITIONAL SERVICES

Additional Services are those services not listed above. This document includes an effort for industry standard plan production, team coordination, and permitting, for the proposed

Samiotes Consultants, Inc.
Civil Engineers + Land Surveyors

20 A Street
Framingham, MA 01701-4102

T 508.877.6688
F 508.877.8349

www.samiotes.com

project. The document does not anticipate unknown circumstances, extraordinarily lengthy and/ or complicated municipal reviews, subjective comments by outside consultants or other jurisdictional requirements or site related issues not disclosed or evident at the time this document was written. If necessary, Additional Services will be performed upon receipt of authorization to proceed and may include, but are not limited to, the following:

A. This contract assumes reasonable recoverability and congruity between field and record monumentation. Additional work due to an unanticipated degree of difficulty encountered in performing said services, errors/omissions in record plans, lost or disturbed monumentation, vague deeds, delay created within or by approving agencies, or unforeseen circumstances not covered by this document will be billed in accordance with our hourly rates.

B. Additional fieldwork and/or calculations due to unanticipated site constraints will be billed in accordance with our hourly rates.

C. Additional Survey Plans required for any proposed improvements to the property (e.g., Existing Conditions Plan, Certified Plot Plan, ALTA/NSPS Land Title Plan, Subdivision Plan, Easement Plans, As-Built Plan, etc.).

D. In the event of any legal action (excluding non-payment of outstanding balances) associated with the specific project, Samiotes will be reimbursed in accordance with our hourly rates for any efforts involved in preparing for and/or appearing at any court proceedings.

E. Police Details, if required.

F. Boundary Retracement Survey.

G. Wetland Delineation / Survey.

IV – CLIENT RESPONSIBILITIES

The following are the responsibilities of the Client:

A. Provide a copy of the current locus deed and mortgage survey plan (if available).

B. Provide safe access and working conditions for Samiotes employees.

C. Provide access and permission to enter the property and, if available, a place to park a company vehicle.

D. Provide copies (and/or AutoCAD drawing files if available) of plans including Permit Plans, Existing Conditions Plans, ALTA/NSPS Land Title Plans, etc. that may facilitate the most efficient performance of our work.

E. Provide all documents and information known to Client that relate to the identity, location, quantity, nature, or characteristic of any hazardous waste at, on or under the site. In addition, Client will provide reports, data, studies, plans, specifications, documents, and other information on surface and subsurface site conditions required by Samiotes for proper performance of its services. Samiotes shall be entitled to rely upon Client provided documents and information in performing the services required under this Agreement; however, Samiotes assumes no responsibility or liability for their accuracy or completeness. Client provided documents will remain the property of the Client.

V – RATE SCHEDULE

Hourly work and Additional Services will be billed hourly at the following rates. These rates are subject to change as a result of fluctuating market conditions:

Principal/President	$285.00 per Hour
Expert Witness	$350.00 per Hour
Director of Engineering	$235.00 per Hour
Senior Project Manager	$195.00 per Hour
Director of Land Surveying	$205.00 per Hour
Registered Professional Engineer	$180.00 to $190.00 per Hour
Registered Professional Land Surveyor	$180.00 per Hour
Survey Field Crew (2-person)	$195.00 per Hour
Survey Field Crew (1-person)	$155.00 per Hour
2-Person Survey Field Crew (Construction Layout)	$3,250.00 per Day
	$1,900.00 per one-half Day
Civil Project Manager	$170.00 per Hour
Survey Project Manager	$150.00 per Hour
Soil Evaluator	$150.00 per Hour
3D Scan Processing	$150.00 per Hour
Certified Arborist	$140.00 per Hour
Project Engineer (I, II, III)	$115.00, $125.00, $135.00 per Hour
Project Surveyor (I, II, III)	$105.00, $115.00, $125.00 per Hour
Survey Technician	$95.00 per Hour
Professional Staff	$85.00 per Hour
Administrative Staff	$80.00 per Hour
Archive Retrieval Fee (Up to 1 hour)	$150.00 Flat Fee

AUTHORIZATION TO PROCEED: Execution of this document constitutes Authorization to Proceed. Work will not proceed until a signed copy is returned to this office.

VALIDITY: The prices quoted are valid for sixty (60) days.

COST: Rates are re-evaluated on an annual basis. Once the document is signed, the fees and terms shall remain in effect until the end of the calendar year. If the project continues beyond that time, Samiotes' hourly rates will be revised to conform to Samiotes' standard hourly rates for that calendar years. If Additional Services are contracted, the Client will be notified of the updated rate schedule.

ACCEPTANCE: This Document for Professional Consulting Services is hereby accepted and executed by a duly authorized signatory who, by execution hereof, warrants that he/she has full authority to act in the name of and on behalf of

STUDIO G ARCHITECTS

By: _____ Title: Senior Project Manager

Printed Name: Meryl Nistler Date: June 26, 2026

Agreed:

SAMIOTES CONSULTANTS, INC.

By: _____ Title: President
Stephen R. Garvin, PE, LEED AP

By: _____ Title: Director of Survey
Dan Fleming, PLS

Please return a copy of the executed document as Authorization to Proceed. Thank you for this request for Samiotes' services.

P:\Proposals\2024 Proposals\54025.01 Shaker Lane Elementary School - Littleton (Survey).docx

SURVEY SCHEDULE

Limited Topographic Survey & Plan

In accordance with 250 CMR, Section 6.0 "Land Surveying Procedures and Standards", Paragraph 6.01 "Elements Common to all Surveys", and Paragraph 6.02 "Surveys of Lines Affecting Property Rights", Samiotes will:

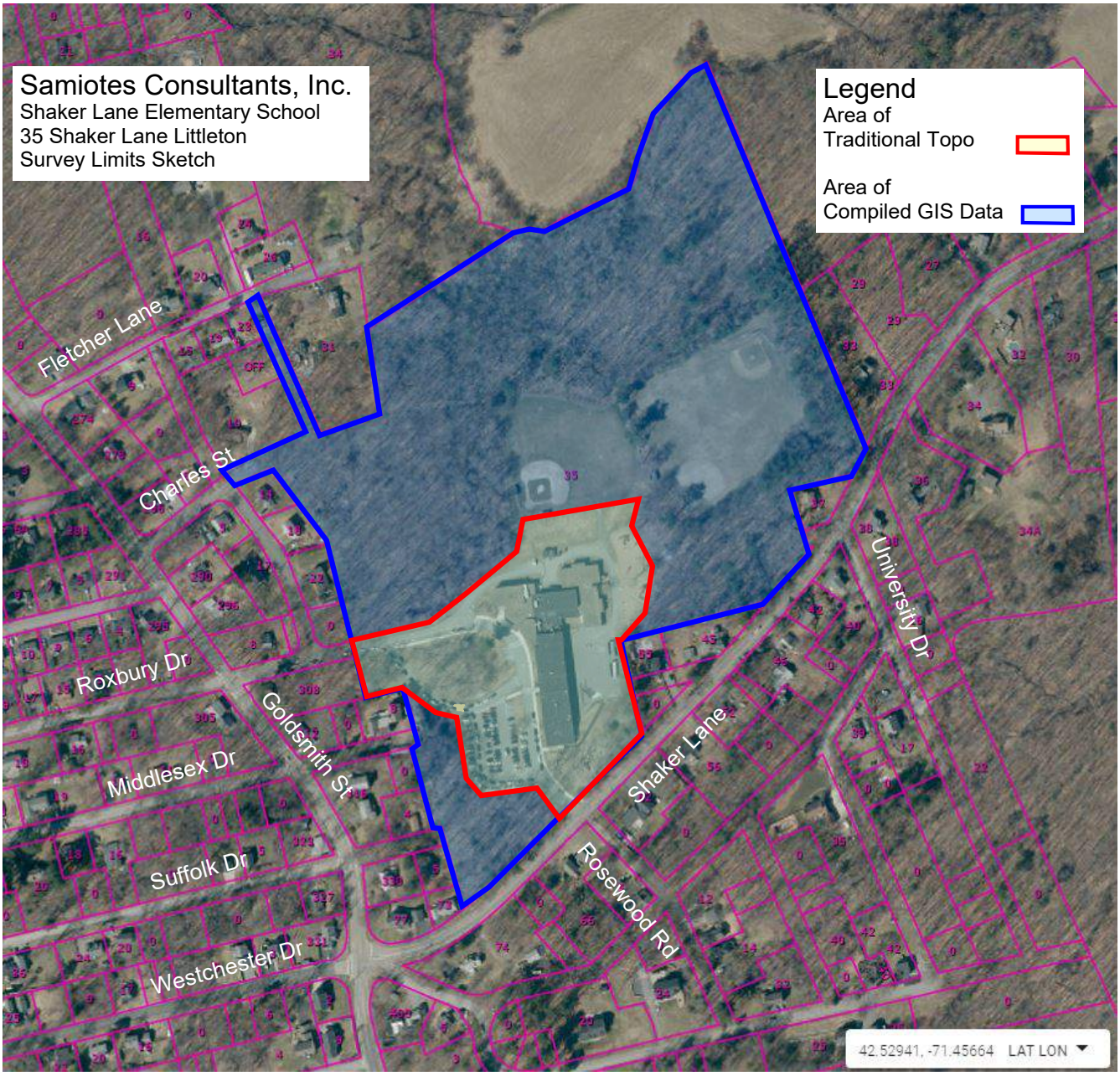
1.1 Reference the project horizontally to the Massachusetts State Plane Coordinate System North American Datum of 1983 and vertically to the North American Vertical Datum of 1988 by RTK GPS observations. Locate the following on-site observable surface features within the limits of the project area (Features will be selected to provide for accurate contouring at a one-foot contour interval):

- Buildings, sidewalks, landscape structures and street furniture
- Edges of pavement (bituminous, concrete, brick, paving blocks, cobblestone, etc.)
- Pavement markings (traffic lane striping, stop lines, crosswalks, parking spaces, etc.)
- Utility, traffic and light poles, signs and bollards
- Utility covers, meters, control boxes and other structures
- Catch basins, area drains, manholes and culverts
- Walls, curbing, tree wells, traffic islands and fences
- High and low ground points
- Trees 4" and over in open areas only with size and type (deciduous/coniferous)
- Outline of thickly wooded areas
- Limits of shrubbery & other planting areas
- Threshold or doorsill elevations at exterior entrances or exits

1.2 Reduce and verify field measurements taken. Compare computed field information with record data.

1.3 Prepare a plan entitled "Topographic Plan" showing the following information:

- Observable site features such as those listed in section above
- Vertical contours at a one-foot interval
- Spot elevations at high/low points and in areas of little or no slope
- Spot elevations at building corners, driveway corners, top & bottom of walls, top & bottom of curbing
- Subsurface utilities in the abutting streets located as accurately as possible from observable surface structures and plans of record (limited to streets adjacent to the topographic survey limits)
- Size and invert elevation of gravity flow pipes and culverts at accessible junction points
- Elevations on pavements, manholes and catch basin rims will be shown to nearest 0.01'; spot grades on pervious surfaces to the nearest 0.1'
- Location and elevation of established benchmarks; (A minimum of two benchmarks per site will be provided)
- Legend of symbols and abbreviations used on the plan
- North arrow and its basis
- Graphic scale in feet
- FEMA Flood Zone Designation on the latest Flood Insurance Rate Map (FIRM)
- Approximate property lines per GIS data
- Approximate wetlands per GIS data and available record information
- Detail within the compiled GIS limits are limited to: approximate contours, approximate outline of playing fields, approximate underground utilities from available record information


Samiotes Consultants, Inc.
Shaker Lane Elementary School
35 Shaker Lane Littleton
Survey Limits Sketch
Legend
Area of
Traditional Topo
Area of
Compiled GIS Data
Fletcher Lane
Charles St
Roxbury Dr
Middlesex Dr
Suffolk Dr
Westchester Dr
Goldsmith St
Shaker Lane
Rosewood Rd
University Dr
42.52941, -71.45664 LAT LON

The Brewery 179 Boylston Street Jamaica Plain MA 02130
T 617-524-5558
F 617-524-5544

Date: July 24, 2024

Studio G: Project #22402

Project: Shaker Lane Elementary School
35 Shaker Lane
Littleton, MA 01460

Contract for Consulting Services between Architect:
Studio G Architects, Inc.
179 Boylston Street
Jamaica Plain, MA 02130

And Traffic Consultant:
MDM Transportation Consultants, Inc.
28 Lord Road, Suite 280
Marlborough, MA 01752

Contract
As part of the design team, Studio G Architects' subconsultant contract incorporates by reference the executed Contract for Designer Services, dated June 3, 2024, by which it is governed.

Scope of Work
The Shaker Lane Elementary School project, located in Littleton, MA, will consist of designer services for the Feasibility Study and Schematic Design for an MSBA project. The design team will conduct a Feasibility Study, which will include the development and evaluation of potential alternative solutions and continue through Schematic Design Phase of the preferred alternative initially. A potential Project may include a renovation, addition, and/or new construction.

According to the RFS, the estimated construction budget for a potential Project may range from $15 million to $75 million, depending upon the solution agreed upon by the Owner and the MSBA, and which is ultimately approved by a vote of the MSBA's Board of Directors.

Consultant's Responsibilities
Consultant's responsibilities, as described in attached MDM proposal for Traffic Consulting, dated May 10, 2024, to include:

1. Feasibility Study Phase – Preliminary Design Program (PDP)
    a. Data collection as described in attached MDM proposal
    b. Transportation analysis and design principles technical memo as described in attached MDM proposal
2. Feasibility Study Phase – Preferred Schematic Response (PSR)
    a. Revisions to narrative if required
3. Schematic Design Phase (SD): not in scope

Project Schedule
This is an approximate overall schedule provided by the OPM and is subject to change. See attached Master Schedule dated June 13, 2024 for milestones.

- Preliminary Design Program (PDP): 11 weeks 6/11/2024 – 8/30/2024
- Preferred Schematic Report (PSR): 15 weeks 8/21/2024 – 12/6/2024
- Schematic Design Submission (SD): 20 weeks 12/9/2025 – 4/30/2025

Compensation
Compensation is based on the following:

Services	**Fee**
Feasibility Study – Fixed Fee	$11,000
On-Call Services – T&M Not to Exceed	$5,000
Total:	$16,000

*All expenses (travel, sustenance, telephone, copying/ printing, facsimiles, electronic mails, postage, and delivery expenses) associated with the Project are within the fee noted above.

Invoicing
Fee is to be billed monthly as a percentage of phase/task completion. Invoices are due the first week of the following month. Payments will be made shortly after the Architect is paid by the Town of Littleton.

Additional Services must be pre-approved by the Client or will not be considered. When Additional Services are performed hourly, the invoices for such services shall be accompanied by a breakdown listing the name, payroll title, date, number of hours by day, hourly rate and extended amount, per specific task of Additional Services performed.

Reporting Design Team Workforce Labor
In accordance with MSBA Project Advisories 66 (Workforce Participation Goals for Minorites and Women) and 68 (Update to MSBA OPM Report Monthly Submittal), as of March 1, 2021, OPM monthly reports are contractually required to include the Design team's workforce labor hours (total, minority, female). All consultants are required to provide the workforce hours regardless of the individual firm's MBE or WBE status.

All consultants are required to provide to Studio G the following data for the prior month, by the 2nd day of each month. A report is required even if the consultant did not work during the month being reported, stating same.

- Total Project labor hours worked to date
- Total Project labor hours worked to date by minority employees
- Total Project labor hours worked to date by female employees
- Total Monthly labor hours worked
- Total Monthly labor hours worked by minority employees
- Total Monthly labor hours worked by female employees

Insurance Requirements
The Consultant shall meet the insurance requirements as specified in the Contract for Designer Services, Section 15.8, attached.

Governing Law
This Agreement shall be governed by and construed under the laws of the Commonwealth of Massachusetts without regard to conflict of law rules.

Indemnification
The Consultant shall indemnify and hold the Architect and the Architect's officers and employees harmless from and against damages, losses, judgments, fees, costs and expenses incurred by the Architect, arising from claims by third parties against the Architect to the extent the third-party claims allege negligent acts or omissions or breach of contract relating to activities of the Consultant, its employees and its consultants on the Project.

The Architect shall indemnify and hold the Consultant and the Consultant's officers and employees harmless from and against damages, losses, judgments, fees, costs and expenses incurred by the Consultant arising from claims by third parties against the Consultant relating to the Project, to the extent the third-party claims allege negligent acts or omissions of or breach of contract by the Architect.

"Third party claims" shall include but not be limited to claims by the Client or other parties to the Contract for Designer Services between the Town of Littleton, MA and Studio G Architects, dated June 3, 2024.

Termination
To the fullest extent permitted by law, this agreement may be terminated on five (5) days' notice should the contract be cancelled or put on hold by the Client. This agreement may be terminated by either party upon thirty (30) days written notice should one party fail to perform in accordance with the terms and conditions through no fault of the other.

Any fees for services provided by the subconsultant prior to the termination date shall be paid in a timely manner provided that the services were adequately delivered. If the services were not adequate, the Architect will deduct a reasonable amount from the fee to be paid, in order to cover the cost of the Architect or another party completing the services required.

Mediation
In an effort to resolve any conflicts that arise during the design and construction of the Project or following the completion of the Project, the Architect and the Consultant agree that all disputes between them arising out of, or relating to this Agreement or the Project shall be submitted to nonbinding mediation in the Commonwealth of Massachusetts.

Reference Materials
Existing conditions reference materials downloadable at https://tinyurl.com/367kbvdu

Attachments
The following are incorporated into the contract, by reference and attachment:

- Attached:
  - MDM proposal for Traffic Consulting, dated May 10, 2024
- Available for download at https://tinyurl.com/37mkydh6:
  - Executed Contract for Designer Services dated June 3, 2024
  - Master Schedule provided by OPM dated June 13, 2024
  - Request for Designer Services, Town of Littleton, MA, Shaker Lane Elementary School, dated January 31, 2024
- MSBA Guidelines: Module 3 – Feasibility Study (PDP and PSR) https://www.massschoolbuildings.org/index.php/building/feasibility
- MSBA Guidelines: Module 4 – Schematic Design (SD) https://www.massschoolbuildings.org/building/schematic

This agreement entered into as of the day and year: 7.24.24

Architect: Gail Sullivan, AIA
President
Studio G Architects, Inc.

Consultant: Robert Michaud
Principal
MDM Transportation Consultants, Inc.

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

PRINCIPALS
Robert J. Michaud, P.E.
Daniel J. Mills, P.E., PTOE

May 10, 2024

Meryl Nistler, AIA, WELL AP, LEED AP, MCPPO, NCARB
Studio G Architects
179 Boylston Street
Jamaica Plain, MA 02130

Re: Shaker Lane Elementary School – Feasibility and Schematic Design Phases
Littleton, Massachusetts

Dear Meryl:

MDM Transportation Consultants, Inc. (MDM) is pleased to submit this proposal for transportation consulting services to support the Feasibility and Schematic Design Phase for the Shaker Lane Elementary School in Littleton, Massachusetts. The enclosed Scope of Services outlines on-call tasks that may be associated with the advancement of the project design.

If you are in agreement with the attached Scope of Services and Terms and Conditions of Agreement, please countersign the original and return it to our office.

We look forward to providing responsive planning and engineering service to you on this important project.

Sincerely,

MDM TRANSPORTATION CONSULTANTS, INC.

Robert J. Michaud, P.E.
Managing Principal

cc: File

28 Lord Road, Suite 280 • Marlborough, Massachusetts 01752
Phone (508) 303-0370 • Fax (508) 303-0371 • www.mdmtrans.com

AGREEMENT FOR PROFESSIONAL SERVICES

BETWEEN

MDM TRANSPORTATION CONSULTANTS, INC.

AND

STUDIO G ARCHITECTS

May 10, 2024

This Agreement is composed of Part I and Part II. Part I includes details of the services to be performed, client-furnished information, timing of the services, and compensation. Part II (attached) contains the Terms and Conditions of Agreement, which are the general terms of the engagement between Studio G Architects hereinafter called the "CLIENT" and MDM Transportation Consultants, Inc. (MDM).

PART I

PROJECT DESCRIPTION

MDM will provide traffic consulting services to CLIENT for expansion of the Shaker lane Elementary School in Littleton, Massachusetts. These services will support CLIENT preparation of the Feasibility and Schematic Design Development Phases for the school, which envisions evaluation of two development options to be evaluated by Studio G and advancement of a preferred design option to Schematic Design.

SCOPE OF SERVICES

Transportation evaluation to support feasibility and schematic design phases will include: documenting existing traffic, pedestrian, bus and parking characteristics of the Shaker Lane Elementary School; projection of trip and parking activity for future enrollment and staffing levels at the improved/expanded school; identification of key transportation design criteria including parking, access/circulation and staging area requirements for buses and pick-up/drop-off, and driveway location/orientation; and on-call design assistance/consultation relative to a preferred option and associated meetings and exhibit preparation.

1.0 Data Collection ($4,800 Lum Sum)

MDM will prepare and conduct the following traffic data collection program to support subsequent transportation evaluation and design efforts for the school:

School Pick-up/Drop-Off Activity: Conduct observations/video recording to quantify school access/egress trip activity during peak weekday morning period (7:00-9:00 AM), midday period (11:00 AM to 1:00 PM) and afternoon (2:00 to 3:00 PM) periods at Shaker Lane Elementary School. Observations shall document School-specific trip generation including vehicle types, pedestrian activity, for both school buses and passenger vehicles. Survey locations include plus internal pick-up/drop-off and bus drop-off areas at the school.

Intersection Counts: Conduct turning movement counts (TMCs) at three (3) primary school gateway intersections during weekday morning (7-9 AM), weekday midday (11AM- 1PM) and afternoon (2-6 PM) periods to quantify peak traffic volume and pedestrian volume conditions. Locations shall include:

- Goldsmith Street at Roxbury Drive
- Goldsmith Street at Westchester Drive and Shaker Lane
- Shaker Lane at School Drive

Roadway Daily Counts: Conduct a 48-hour weekday period automatic traffic recorder (ATR) count along Shaker Lane in the school vicinity to quantify hourly and daily vehicle traffic flow.

Parking Counts: On-site hourly parking demand characteristics for the Shaker Lane Elementary School will be derived from video and traffic volume data collected above for a typical weekday period between the hours of 7 AM and 6 PM.

2.0 **Transportation Analysis/Design Principles ($6,200 Lump Sum)**

MDM shall provide Transportation Engineering Consulting Services to CLIENT to support the feasibility and schematic design phases including the following anticipated tasks:

- Quantify existing school trip activity, vehicle queue conditions, travel patterns and pedestrian activity/patterns based on data collection conducted under Task 1.0. Exhibits summarizing these data shall be developed for weekday AM and afternoon periods.

- Project future traffic volume patterns for expanded enrollment option at the Shaker Lane School including changes at area gateway intersections and within the site based on observed trip rates and patterns collected under Task 1.0

- Develop design principles for vehicle queue areas, parent-drop-off/pick-up zones, school bus operations and pedestrian features to guide schematic design including anticipated queue lengths, bus storage queue lengths, parking supply requirements and pedestrian desire lines.

- Project parking demand characteristics of expanded enrollment option based on staffing and enrollment scenarios to be provided by CLIENT.

- MDM will prepare a brief technical memo summarizing key data, design principles and recommendations.

3.0 **On-Call Services ($5,000 Budget T&M)**

Community/Town meetings, school district/committee meetings or in-person meetings as requested by CLIENT will be conducted on an On-Call basis. Requested technical review/input on design options and alternatives including operational analysis, vehicle maneuvering analyses (AutoTurn), wayfinding signs, for specific schematic designs and associated exhibits for community presentation, etc. not expressly included under Task 2.0 On-Call services will be conducted on an On-Call basis. On-Call services will be billed at an hourly rate of $315 for Managing Principal, $255 for Principal, $205 for Senior Transportation Engineer, $185 for Transportation Engineer, and $125 for general administrative staff.

CLIENT-FURNISHED INFORMATION

It is understood that MDM will perform services under the sole direction of the CLIENT. In the performance of these services, MDM will coordinate its efforts with other project team members, and other consultants, as required. The CLIENT shall provide MDM with project-related technical data including, but not limited to, the following:

- Proposed site layout (electronic copy – AutoCAD format)
- Description of existing school programming for Shaker Lane Elementary School (enrollment by grade, staffing, hours, transportation bus assignment/number, after-school programs, staff travel mode summary, student travel mode summary)
- Proposed school programing (enrollment by grade and staffing)
- Proposed site plan/schematics (electronic copy – AutoCAD format)

MDM will rely upon the accuracy and completeness of CLIENT-furnished information in connection with the performance of services under this Agreement.

COMPENSATION

MDM will perform the Scope of Services contained in this Agreement on a time-and-materials basis to an estimated budget upset of $16,000 including expenses as follows:

Task	Description	Fee	Schedule	Payment Method
1.0	Initiation/Data Collection	$4,800	3 Weeks	LS
2.0	Transportation Analysis/Design Principles	$6,200	8 Weeks	LS
3.0	On-Call Services	$5,000	As Requested	T&M Budget
	Total Tasks 1.0, 2.0, 3.0	**$16,000**	Including Expenses[1]	

MDM shall be reimbursed for labor (time) charges incurred specifically for this project in accordance with the billing rate schedule in effect at the time work is performed. In addition to the above labor compensation, MDM shall be reimbursed for expenditures made specifically for the project, such as printing and reprographics, travel and subsistence, data collection, telephone charges, shipping, postage, courier service charges, purchase of maps and similar documents, etc. These direct expenses will be billed in accordance with the attached 2024 MDM Reimbursable Rate Schedule.

SERVICES NOT INCLUDED

The following services may be required at a future date but are not included in this Agreement at this time:

- Traffic Impact and Access Study
- Preparation of any engineering design
- Local or State Permits

When services are required in these areas, or areas not previously described, we will prepare a proposal or amendment, at the CLIENT's request, that contains the Scope of Services, fee, and schedule required to complete the additional items.

MDM TRANSPORTATION CONSULTANTS, INC.

By: _____

Title: _____

Date: 5/10/24

CLIENT AUTHORIZATION

The CLIENT agrees with Part I, which includes the Scope of Services, Schedule, and Compensation, and Part II, Terms and Conditions of Agreement (attached hereto and acknowledged as being received). Together they constitute the entire Agreement between MDM and the CLIENT.

Estimated Labor Fee: $16,000 labor budget upset including expenses

STUDIO G ARCHITECTS

By: _____

Title: _____

Date: _____

PART II

MDM TRANSPORTATION CONSULTANTS, INC. (MDM)
TERMS AND CONDITIONS OF AGREEMENT

The engagement of MDM Transportation Consultants, Inc. (MDM) by CLIENT is under the following terms and conditions and is an integral part of the collective Agreement between CLIENT and MDM.

1. The fee estimate for the proposed Scope of Services, attached hereto as Part I and incorporated herein by reference, is valid for thirty (30) days from the date of the proposal.

2. Full and timely payment of all amounts due and owing to MDM is the sole responsibility of CLIENT and may not be subject to any third-party agreements.

3. All time schedules set forth in Part I shall commence upon receipt of a signed Agreement and a retainer in the amount set forth below. All retainer amounts will be applied to the final invoice. **A RETAINER OF $0 IS REQUIRED BEFORE WORK CAN COMMENCE UNDER THE AGREEMENT.**

4. MDM is not obligated to perform any services not explicitly set forth in Part I. Should CLIENT request that MDM perform any services in addition to those explicitly set forth in Part I, MDM may, in its sole discretion, agree to perform such additional services. Before MDM will begin performance of any such additional services, MDM and CLIENT must enter into a written Agreement regarding the scope of, and the compensation to be paid for, such additional services.

5. MDM will render invoices monthly. All invoices are due upon receipt by CLIENT. Any invoice outstanding for more than thirty (30) days after the date of the invoice will be subject to a financing charge of 1-1/2 percent per month. MDM will render all invoices on a MDM standard form.

6. Should it become necessary to utilize legal or other resources to collect any or all monies rightfully due for services rendered under this Agreement, MDM shall be entitled to full reimbursement of all such costs, including reasonable attorney's fees, as part of this Agreement.

7. Invoice payments must be kept current for work to continue. If CLIENT fails to pay any invoice due and owing MDM within fifteen (15) days of the date of the invoice, MDM may, in its sole discretion and without waiving any other claim or right against CLIENT, pursue, without limitation, any course of action available at law or in equity, and/or any one or more of the following courses of action:

(a) Suspend all services under this Agreement until CLIENT has paid all amounts due and owing MDM and/or any of its Consultants or Subcontractors;

(b) Withhold any documents prepared by MDM and/or any of its Consultants or Subcontractors pursuant to this Agreement from CLIENT and/or any third-party;

(c) Notify any third-party to which any documents prepared by MDM and/or any of its Consultants or Subcontractors pursuant to this Agreement of CLIENT's failure to pay all amounts due and owing to MDM;

(d) Request the immediate return of all documents prepared by MDM and/or any of its Consultants or Subcontractors under this Agreement from CLIENT and/or and third-party; and/or

(e) Deliver a statement to any one or more persons it selects withdrawing support for any documents prepared by MDM and/or any of its Consultants or Subcontractors under this Agreement.

CLIENT agrees to return all documents furnished to it by MDM under this Agreement within fifteen (15) days of a request for such made by MDM.

8. MDM agrees to carry the following insurance during the term of this Agreement: Workers' Compensation, General Liability, Professional Liability, and Comprehensive Automobile Liability. For any damage on account of any error, omission or other professional negligence, MDM's liability will be limited to a sum not to exceed $25,000 or the fee received under this Agreement less third-party costs, whichever is greater. Certificates of Insurance will be furnished upon request.

9. The CLIENT shall bear the duty to defend and shall at all times indemnify and save harmless MDM and its officers, agents, employees and subconsultants on account of any claims, damages, losses, litigation, expenses, counsel fees, and compensation arising out of any claims, damages, personal injuries, property losses, and/or economic damages sustained by or alleged to have been sustained by any person or entity, and caused in whole or in part by the acts, omissions or negligence of the CLIENT, its agents, employees, or subcontractors in connection with the project.

10. This Agreement shall be governed and construed in accordance with the laws of the Commonwealth of Massachusetts.

PART II (Continued)
MDM TRANSPORTATION CONSULTANTS, INC. (MDM)
TERMS AND CONDITIONS OF AGREEMENT

11. MDM shall not be responsible for any damages arising from failure to perform, or delay in the performance of, services identified in Part I which failure or delay arises out of causes beyond MDM's control or without negligence on the part of MDM. MDM shall not be responsible for any consequential damages, including, without limitation, any delay or expense arising out of the exercise by MDM or any right provided to MDM under this Agreement, including, without limitation, the rights to suspend services, withhold documents, and withdraw support as described in paragraph 7. MDM's liability under this Agreement is limited to the total of all fees paid to MDM by CLIENT under this Agreement.

12. All documents including, without limitation, all Drawings and Specifications, prepared by MDM and/or any of its Consultants or Subcontractors pursuant to this Agreement are the copyrighted property of MDM. Any copying or distribution of such documents without prior written approval from MDM is expressly prohibited.

    MDM does not represent that any documents prepared by MDM and/or any of its Consultants or Subcontractors pursuant to this Agreement are suitable for use, and CLIENT agrees not to use such documents, in connection with any extension of the current Project or any other project.

    If CLIENT uses any such documents in violation of this paragraph 12, CLIENT shall:

    (a) Be liable for, and indemnify and hold harmless MDM from, all claims, damages, losses, and expenses, including attorney's fees, arising out of or resulting from such use, and
    (b) In addition to paying all invoices due and owing for services provided under this Agreement, pay MDM the amount of the fee estimate set forth in Part I as liquidated damages presenting a reasonable estimate of the compensation to which MDM would be entitled for generating documents for such use.

    This Agreement may only be modified by a writing signed by CLIENT and MDM. No act or failure to act by MDM waives any rights provided to MDM under this Agreement or by operation of law.

13. Either party upon giving seven (7) calendar days written notice may terminate this Agreement at any time during the life of the contract without citing any failure or default on the part of either party. In the event of termination of this Agreement by either party, the CLIENT shall within fifteen (15) calendar days of termination pay MDM for all services rendered and all reimbursable costs incurred by MDM up to the date of termination, in accordance with the payment provisions of this Agreement.

14. Neither party to this Agreement shall transfer, sublet or assign any rights under or interest in this Agreement (including but not limited to monies that are due or monies that may be due) without the prior written consent of the other party. Subcontracting to subconsultants normally contemplated by MDM shall not be considered an assignment for purposes of this Agreement.

15. The CLIENT acknowledges that construction cost estimates provided by MDM are opinions of probable construction cost and that MDM has no control over the cost or availability of labor, equipment or materials, or over market conditions or the Contractor's method of pricing. The CLIENT also acknowledges that MDM's opinions of probable construction costs are made on the basis of the MDM's professional judgment and experience. MDM makes no warranty, express or implied, that the bids or the negotiated cost of the Work will not vary from MDM's opinion of probable construction cost.

16. The CLIENT shall furnish, at the CLIENT's expense, all information, requirements, reports, data, surveys, base plans, mapping and instructions required by this Agreement. MDM may use such information, requirements, reports, data, surveys, base plans, mapping and instructions in performing its services and is entitled to rely upon the accuracy and completeness thereof.

17. Any term or provision of this Agreement found to be invalid under any applicable statute or rule of law shall be deemed omitted and the remainder of this Agreement shall remain in full force and effect.

18. Notwithstanding completion or termination of this Agreement for any reason, all rights, duties and obligations of the parties to this Agreement shall survive such completion or termination and remain in full force and effect until fulfilled.

19. It is intended by the parties to this Agreement that MDM's services in connection with the Project shall not subject MDM's individual employees, officers or directors to any personal legal exposure for the risks associated with this Project. Therefore, and notwithstanding anything to the contrary contained herein, the CLIENT agrees that as the CLIENT's sole and exclusive remedy, any claim, demand or suit shall be directed and/or asserted only against MDM, a Massachusetts corporation, and not against any of MDM's individual employees, officers or directors.

20. This Agreement constitutes the entire Agreement between CLIENT and MDM regarding the services specified in Part I. In entering into this Agreement, CLIENT has not relied upon any warranties, representations, or statements not set forth herein. No verbal warranties, representations, or statements shall be considered a part of this Agreement or a basis upon which CLIENT relied in entering into this Agreement.

MDM 2024 Reimbursable Expenses Sheet

Item	Description	Rate	Markup %
Reproduction			
Copies, B&W 811	8-1/2 x 11	$0.18/sheet	1.00
Copies, Color 811	8-1/2 x 11	$0.60/sheet	1.00
Copies, B&W 1117	11x17	$0.60/sheet	1.00
Copies, Color 811	8-1/2 x 11	$1.00/sheet	1.00
Plotting B&W 2426	24x36 B&W	$8.00/sheet	1.00
Plotting Color 2436	24x36 Color	$10.00/sheet	1.00
Plotting B&W 3648	36x48 B&W	$14.00/sheet	1.00
Plotting Color 3648	36x48 Color	$20.00/sheet	1.00
Foam Core Boards BD	Mounted 24x36 Bond	$45.00/ea	1.00
Foam Core Boards AC	Mounted 24x36 Acetate	$50.00/ea	1.00
Photographs 811	8-1/2 x 11 Color	$1.00 ea	1.00
Bound Reports 100	GBC <100 Pages	$25.00 ea	1.00
Bound Reports 200	GBC 101-200 Pages	$35.00 ea	1.00
Bound Reports 300	GBC 201-300 Pages	$45.00 ea	1.00
Data Collection			
TMCs (No Video)	Per hour	$100.00/hr	1.00
Miovision TMCs	Per hour w/video	$120.00/hr	1.00
Jamar ATRs	48-hour Min.	$300.00/day	1.00
Jamar Speeds	Radar equipped	$150.00/day	1.00
Travel			
Mileage	Per mile	$0.67/mi	1.00
Tolls	As Incurred	As Incurred	1.00
Parking	As Incurred	As Incurred	1.00
Subsistence	Night Hearings	As Incurred	1.00
Mailing/Courier			
Overnight Delivery 2	Fed-X/UPS <2 Lbs	$25.00	1.00
Overnight Delivery 4	Fed-X/UPS 2-4 Lbs	$50.00	1.00
Overnight Delivery 4+	Fed-X/UPS 4+ Lbs	$100.00	1.00
Miscellaneous			
Specialty Vendor	Data Collection	Varies	1.15
General Supplies	Misc. general office supplies	$0.015 X invoice total	1.00

The Brewery 179 Boylston Street Jamaica Plain MA 02130
T 617-524-5558
F 617-524-5544

Date: July 26, 2024

Studio G: Project #22402

Project: Shaker Lane Elementary School
35 Shaker Lane
Littleton, MA 01460

Contract for Consulting Services between Architect:
Studio G Architects, Inc.
179 Boylston Street
Jamaica Plain, MA 02130

And Hazardous Materials Consultant:
EFI Global
155 West Street, Suite 6, Wilmington, MA 01887

Contract
As part of the design team, Studio G Architects' subconsultant contract incorporates by reference the executed Contract for Designer Services, dated June 3, 2024, by which it is governed.

Scope of Work
The Shaker Lane Elementary School project, located in Littleton, MA, will consist of designer services for the Feasibility Study and Schematic Design for an MSBA project. The design team will conduct a Feasibility Study, which will include the development and evaluation of potential alternative solutions and continue through Schematic Design Phase of the preferred alternative initially. A potential Project may include a renovation, addition, and/or new construction.

According to the RFS, the estimated construction budget for a potential Project may range from $15 million to $75 million, depending upon the solution agreed upon by the Owner and the MSBA, and which is ultimately approved by a vote of the MSBA's Board of Directors.

Consultant's Responsibilities
Consultant's responsibilities, as described in attached EFI 'Proposal for Pre-Renovation/Demolition Hazardous Building Materials Survey, dated July 24, 2024, to include:

1. Feasibility Study Phase – Preliminary Design Program (PDP)
    a. Asbestos Survey
    b. Lead Paint Chip Sampling
    c. Other Hazardous Materials/Universal Waste ("OHM") Assessment
    d. Limited Microbial Assessment
    e. Radon Screening
    f. Opinion of Cost

Project Schedule
This is an approximate overall schedule provided by the OPM and is subject to change. See attached Master Schedule dated June 13, 2024 for milestones.

- Preliminary Design Program (PDP): 11 weeks 6/11/2024 – 8/30/2024
- Preferred Schematic Report (PSR): 15 weeks 8/21/2024 – 12/6/2024
- Schematic Design Submission (SD): 20 weeks 12/9/2025 – 4/30/2025

Compensation
Compensation is based on the following:

Services	Fee
Feasibility Study (PDP only) – Not to Exceed	$9,975
Total:	$9,975

*All expenses (travel, sustenance, telephone, copying/ printing, facsimiles, electronic mails, postage, and delivery expenses) associated with the Project are within the fee noted above.

Invoicing
Fee is to be billed monthly as a percentage of phase/task completion. Invoices are due the first week of the following month. Payments will be made shortly after the Architect is paid by the Town of Littleton.

Additional Services must be pre-approved by the Client or will not be considered. When Additional Services are performed hourly, the invoices for such services shall be accompanied by a breakdown listing the name, payroll title, date, number of hours by day, hourly rate and extended amount, per specific task of Additional Services performed.

Reporting Design Team Workforce Labor
In accordance with MSBA Project Advisories 66 (Workforce Participation Goals for Minorites and Women) and 68 (Update to MSBA OPM Report Monthly Submittal), as of March 1, 2021, OPM monthly reports are contractually required to include the Design team's workforce labor hours (total, minority, female). All consultants are required to provide the workforce hours regardless of the individual firm's MBE or WBE status.

All consultants are required to provide to Studio G the following data for the prior month, by the 2nd day of each month. A report is required even if the consultant did not work during the month being reported, stating same.
- Total Project labor hours worked to date
- Total Monthly labor hours worked
- Total Monthly labor hours worked by minority employees
- Total Monthly labor hours worked by female employees

Insurance Requirements
The Consultant shall meet the insurance requirements as specified in the Contract for Designer Services, Section 15.8, attached.

Governing Law
This Agreement shall be governed by and construed under the laws of the Commonwealth of Massachusetts without regard to conflict of law rules.

Indemnification
The Consultant shall indemnify and hold the Architect and the Architect's officers and employees harmless from and against damages, losses, judgments, fees, costs and expenses incurred by the Architect, arising from claims by third parties against the Architect to the extent the third-party claims allege negligent acts or omissions or breach of contract relating to activities of the Consultant, its employees and its consultants on the Project.

The Architect shall indemnify and hold the Consultant and the Consultant's officers and employees harmless from and against damages, losses, judgments, fees, costs and expenses incurred by the Consultant arising from claims by third parties against the Consultant relating to the Project, to the extent the third-party claims allege negligent acts or omissions of or breach of contract by the Architect.

"Third party claims" shall include but not be limited to claims by the Client or other parties to the Contract for Designer Services between the Town of Littleton, MA and Studio G Architects, dated June 3, 2024.

Termination
To the fullest extent permitted by law, this agreement may be terminated on five (5) days' notice should the contract be cancelled or put on hold by the Client. This agreement may be terminated by either party upon thirty (30) days written notice should one party fail to perform in accordance with the terms and conditions through no fault of the other.

Any fees for services provided by the subconsultant prior to the termination date shall be paid in a timely manner provided that the services were adequately delivered. If the services were not adequate, the Architect will deduct a reasonable amount from the fee to be paid, in order to cover the cost of the Architect or another party completing the services required.

Mediation
In an effort to resolve any conflicts that arise during the design and construction of the Project or following the completion of the Project, the Architect and the Consultant agree that all disputes between them arising out of, or relating to this Agreement or the Project shall be submitted to nonbinding mediation in the Commonwealth of Massachusetts.

Reference Materials
Existing conditions reference materials downloadable at https://tinyurl.com/367kbvdu

Attachments
The following are incorporated into the contract, by reference and attachment:

- Attached:
  - EFI Proposal for Pre-Renovation/Demolition Hazardous Building Materials Survey, dated July 24, 2024

- Available for download at https://tinyurl.com/37mkydh6 :
  - Executed Contract for Designer Services dated June 3, 2024
  - Master Schedule provided by OPM dated June 13, 2024
  - Request for Designer Services, Town of Littleton, MA, Shaker Lane Elementary School, dated January 31, 2024
- MSBA Guidelines: Module 3 – Feasibility Study (PDP and PSR) https://www.massschoolbuildings.org/index.php/building/feasibility
- MSBA Guidelines: Module 4 – Schematic Design (SD) https://www.massschoolbuildings.org/building/schematic

This agreement entered into as of the day and year: July 29, 2024

Architect: Gail Sullivan, AIA
President
Studio G Architects, Inc.

Consultant: Keith Pokorny
Senior Vice President
EFI Global, Inc.

July 24, 2024

Meryl Nistler, AIA, LEED, AP
Project Manager
Studio G Architects
179 Boylston Street, 3rd Floor
Jamaica Plain, MA 02130

VIA EMAIL: meryln@studiogarchitects.com

RE: **Proposal for Pre-Renovation/Demolition Hazardous Building Materials Survey**
Feasibility Study, Shaker Lane Elementary School
35 Shaker Lane, Littleton, Massachusetts 01460
EFI Proposal No. 2024-0270

Dear Meryl:

EFI Global, Inc. (EFI) is pleased to provide this proposal to Studio G Architects to provide hazardous building materials consulting services in support of the feasibility study for renovation/demolition of the Shaker Lane Elementary School located at 35 Shaker Lane in Littleton, Massachusetts (Site).

We understand that the original site building was constructed in 1959 with additions in 1962 and 1997. As described, the entire structure is reported to be approximately 62,000 square feet. We understand the feasibility study will include options for code upgrades/renovation of the existing building along with the possibility for demolition and construction of a new school building.

EFI will coordinate all services and access through Studio G Architects and we anticipate that the hazardous materials survey work can be completed within four work days during normal business hours.

As requested, EFI's proposed Hazardous Building Materials Survey will include the following services:

a. Asbestos-containing materials (ACM) survey
b. Lead paint testing
c. Universal Waste and other building-related hazardous/regulated materials visual inspection (including suspect mercury-containing devices and PCBs)
d. Limited microbial visual assessment
e. Radon initial screening
f. Opinion of Cost for Abatement

SCOPE OF SERVICES

Hazardous Materials Survey

a) Asbestos Survey

The asbestos survey will be performed by Massachusetts Department of Labor Standards (MA DLS) licensed asbestos inspectors and will include the following activities:

- A review of previous asbestos/hazardous materials survey reports/AHERA management plans for the Site building, as well as, project drawings, and as-built drawings, if available.

- An inspection of accessible interior and exterior areas of the Site building to record the type, quantity and condition of observed suspect ACM. EFI anticipates collecting up to 225 bulk samples of suspect ACM for asbestos analysis by a Massachusetts licensed laboratory using polarized light microscopy (PLM) with a three (3)-day turnaround time. EFI may employ the positive first stop methodology for asbestos analysis to reduce analytical costs. If the first sample of a homogeneous sample set is identified as containing greater than or equal to one percent asbestos, the remaining samples will be assumed ACM and will not be analyzed by the laboratory.

- At the client's discretion, EFI personnel will perform a limited destructive investigation using hand tools in representative interior and exterior concealed locations where "hidden ACM" may be present including areas such as multiple–layered floor systems, pipe chases, perimeter and partition walls, roofing and siding materials and above or behind plaster/gypsum ceiling systems. Note that EFI is not responsible for repairs in locations where destructive evaluations are performed. Where accessible, EFI will use hand tools to access the foundation in approximately 3-4 areas around the building to an approximate depth of 1' below grade to inspect for damp-proofing coatings, but fees for excavation (if required) to access the foundation for inspection and sampling is not included.

- EFI cannot guarantee the integrity of the roof following sampling activities and recommends a professional roofer patch sample voids. If requested, EFI will retain the services of a professional roofing contractor for an additional fee.

- EFI will prepare not-to-scale .pdf drawings indicating our approximate bulk sample locations.

- A final report of survey findings including laboratory results, as well as the type, location, condition and approximate quantity of identified ACM will be submitted within two weeks of receipt of laboratory results. The final report will also include discussion of potential areas where additional investigation may be required due to limitations at the time of site investigation.

b) Lead Paint Chip Sampling

Based upon the age of the Site building(s), EFI anticipates that paint containing lead may be present on interior or exterior surfaces. Specifically, the US EPA RCRA regulations and the OSHA Lead in Construction Standard 29 CFR 1926.62 require the proper handling and disposal of lead containing materials based upon the potential exposure to workers and the environment.

EFI will collect paint chip samples of representative painted or coated metal, wood, concrete and plaster surfaces from interior and exterior areas of the Site building for total lead analysis using atomic absorption spectrometry (AAS). EFI proposes to collect up to 15 paint chip samples for analysis with a standard 3-day turnaround time.

EFI's lead testing findings will be presented in our Final Report, indicating the locations of identified lead painted/coated materials and recommendations for safe handling and disposal during construction/renovation/demolition work. Waste characterization sampling and analysis by the Toxicity Characteristic Leaching Procedure (TCLP) for disposal will not be performed at this time but can be performed at a later stage in the project.

c) Other Hazardous Materials/Universal Waste ("OHM") Assessment

As part of our building survey, EFI's inspectors will perform a visual assessment and prepare an inventory of building-related hazardous/regulated materials requiring special handling or disposal prior to building renovation/demolition. This inventory will include items such as Universal Waste (light bulbs, ballasts), and Other Hazardous Materials (OHMs) such as mercury-containing thermostats/switches, PCB-containing equipment, switches, breakers, building materials and stored items. Our final report will provide an inventory and estimated quantities of these materials. EFI's evaluation excludes waste characterization sampling and air or surface sampling for mercury. Bulk sampling and analysis of items such as caulks, glazing and other sealants for PCBs can be performed at a later stage in the project; however, suspect PCB bulk products will be listed in our inventory in the final report.

d) Limited Microbial Assessment

EFI's Senior Industrial Hygienist will perform a visual assessment of accessible interior building areas for evidence of suspect fungal (mold) growth. The limited microbial inspection will include visual observations (with supporting direct-reading moisture measurements to supplement our visual inspection) in locations where suspect fungal growth is observed. The limited microbial assessment is intended to provide a general overview of existing conditions and is not intended to be a comprehensive evaluation of all surfaces in the building. No destructive inspection techniques will be used to view the interior of wall/ceiling cavities in locations where suspect fungal growth is observed. Surface samples and air samples are not included in our scope of work.

Our final report will include photo documentation of representative instances of suspect fungal growth, recommendations for additional inspection using destructive methods and corrective action, if warranted.

Following the submittal of a report of findings, EFI has the staff and resources available to prepare a mold remediation plan, assist with the bidding/selection of a restoration contractor and providing final visual/air testing following remediation events. These services would be provided for additional fees and presented in supplemental proposals, if requested.

e) Radon Screening

EFI proposes to perform an initial radon screen in the building(s). The short-term radon testing will be performed using dual cannister liquid scintillation radon test kits measured on a liquid scintillation counter using approved EPA testing protocols for radon in air. EFI proposes to collect ten (10) samples during the initial screening. Test kits will be placed in the lowest occupied level of the building in representative locations with an exposure time of approximately 48 hours. After the exposure period is complete, EFI will return to the site to collect the test kits for transport to the laboratory. Each of the test kits will be sent under chain of custody documentation to EMSL Analytical (EMSL) in Cinnaminson, New Jersey for radon analysis on a standard 5-7 business day turn-around time.

Upon receipt of the analytical laboratory results of the radon sampling, EFI will prepare a report which summarizes the results of the short-term radon testing. The report may include recommendations for additional action, if warranted based on the initial screening results.

f) Opinion of Cost

EFI's final report will include an opinion of cost for removal of the identified materials included in our scope of work. The opinion of cost will be a general order of magnitude cost and will include associated costs for additional inspection if recommended based on the findings of this survey.

PROPOSED FEES FOR SERVICES

EFI is prepared to initiate project activity immediately upon receiving written authorization. The hazardous materials survey will be completed for the following lump sum fee breakdown.

HAZARDOUS MATERIALS SURVEY

Hazardous Materials Survey & Report (Fixed Fee)	$6,700
Opinion of Cost – Separate Letter (Fixed Fee)	$500
Asbestos Bulk Samples (225 PLM samples @ $10/each – 5-day turnaround)	$2,250
Lead Paint Chip Samples (15 samples @ $15/each – 3-day turnaround)	$225
Radon Sampling (10 samples @ $30/each – 7 day turnaround)	$300
Estimated Not-to-Exceed Total:	**$9,975**

LIMITATIONS

Destructive Testing: When specifically requested as *'destructive testing'*, and in accordance with industry standards, EFI uses destructive investigation techniques to identify if suspect asbestos-containing materials exist within areas not immediately observable from interior building spaces, (termed 'hidden' or 'inaccessible' areas). EFI's destructive investigations are conducted with hand tools on *representative* interior wall and ceiling systems and pipe chases that appear to be homogenous in the judgment of the inspector and are not intended to impact the structural integrity or safety of the building. Therefore, not all hidden or inaccessible areas may be accessed during destructive testing. This process is a part of the investigation effort to establish homogenous building areas based upon observable, quantifiable construction materials used.

Below Grade Exclusions: EFI's survey methods do not included an evaluation of underground asbestos cement water or sewage piping, underground steam lines, or subsurface foundation damp-proofing that would require the use of heavy equipment to excavate. Our subsurface inspection is limited to using hand tools to access the foundations in 2-3 locations per building in accessible areas to a depth of ~1 foot below grade, unless specific access to the foundation is provided to EFI.

AUTHORIZATION

EFI's scope of work will be performed in accordance with the Studio G contract for consulting services and EFI will be bound by the Prime Agreement between Studio G and the Town of Littleton.

We thank you for consideration and look forward to providing assisting Studio G with this assignment. If you have any questions or require further information regarding this proposal, please contact either of the undersigned.

Sincerely,
EFI Global, Inc.

Jennifer L. Archacki
Environmental Service Line Principal
Cell: 978-447-3122
jennifer.archacki@efiglobal.com

Robin Decker
Principal Environmental Advisor
Cell: 978-382-6754
robin.decker@efiglobal.com

ACCEPTED in accordance with the terms of this proposal (#2024-0270):

By: _____
(Signature)

_____
(Print Name)

_____
(Date)

3. The Construction Budget shall be as follows:

Original Budget:	$ Not Applicable at this Time
Amended Budget	$ Not Applicable at this Time

4. The Project Schedule shall be as follows:

Original Schedule:	June 2024 thru August 2025
Amended Schedule	No Change

5. This Amendment contains all of the terms and conditions agreed upon by the Parties as amendments to the original Contract. No other understandings or representations, oral or otherwise, regarding amendments to the original Contract shall be deemed to exist or bind the Parties, and all other terms and conditions of the Contract remain in full force and effect.

IN WITNESS WHEREOF, the Owner, with the prior approval of the Authority, and the Designer have caused this Amendment to be executed by their respective authorized officers.

OWNER

_____
(print name)

_____
(print title)

By _____
(signature)

Date _____

DESIGNER

Gail Sullivan
(print name)

President and Managing Principal
(print title)

By _____
(signature)

Date September 12, 2024

Turner & Townsend Heery

Shaker Lane Elementary School ACTUAL MONTHLY CASH FLOW
Period January 2024 through October 2025 - Rev 09/10/24

#	Period	Estimated Designer Invoice Value	ACTUAL Designer Invoice Value	Estimated OPM Invoice Value	ACTUAL OPM Invoice Value	Estimated Owner Expenses	ACTUAL Owner Expenses	Monthly Total Cost	Actual Percentage per Month
	FS/SD	$650,000		$285,000		$150,000		$1,085,000	0.00%
	Nov-23/Dec23	$0	$0	$8,200	$8,800	$0	$0	$8,800	2.66%
1	Jan-24	$0	$0	$8,200	$11,248	$0	$0	$11,248	3.39%
2	Feb-24	$0	$0	$8,200	$9,176	$0	$0	$9,176	2.77%
3	Mar-24	$0	$0	$8,200	$11,008	$0	$0	$11,008	3.32%
4	Apr-24	$0	$0	$8,200	$10,064	$0	$0	$10,064	3.04%
5	May-24	$0	$0	$8,200	$13,988	$0	$0	$13,988	4.22%
6	Jun-24	$90,000	$90,000	$14,500	$11,403	$30,000	$0	$101,403	30.61%
7	Jul-24	$45,000	$45,000	$14,500	$14,307	$30,000	$5,280	$64,587	19.49%
8	Aug-24	$45,000	$45,000	$14,500	$18,678	$30,000	$37,373	$101,051	30.50%
9	Sep-24	$45,000		$14,500		$20,000		$0	0.00%
10	Oct-24	$45,000		$14,500		$20,000		$0	0.00%
11	Nov-24	$45,000		$14,500		$10,000		$0	0.00%
12	Dec-24	$45,000		$14,500		$1,000		$0	0.00%
13	Jan-25	$63,500		$14,500		$1,000		$0	0.00%
14	Feb-25	$63,500		$14,500		$1,000		$0	0.00%
15	Mar-25	$63,500		$14,500		$1,000		$0	0.00%
16	Apr-25	$63,500		$14,500		$1,000		$0	0.00%
17	May-25	$24,000		$14,500		$1,000		$0	0.00%
18	Jun-25	$2,500		$14,500		$500		$0	0.00%
19	Jul-25	$2,500		$14,500		$1,000		$0	0.00%
20	Aug-25	$2,500		$12,300		$1000		$0	0.00%
21	Sep-25	$2,500		$12,300		$1000		$0	0.00%
22	Oct-25	$2,000		$8,200		$500		$0	0.00%
25	**TOTALS**	$650,000	$180,000	$285,000	$108,672	$150,000	$42,653	$331,325	100.00%

Prepared on 9/10/24 1 of 1

Shaker Lane Elementary School Project Budget

As of September 18, 2024

Turner & Townsend Heery

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
1	0000-0000	Feasibility Study Agreement								
2										
3	0001-0000	OPM - Feasibility Study	$ 285,000.00	$ 285,000.00	$ 285,000.00	$ -		$ 108,672.00	$ 176,328.00	
4		TTH PJIN003903						$ 8,800.00		01/08/24
5		TTH PJIN0039656						$ 11,248.00		02/15/24
6		TTH PJIN0039816						$ 9,176.00		03/06/24
7		TTH PJIN004040081						$ 11,008.00		04/03/24
8		TTH PJIN0040323						$ 10,064.00		05/08/24
9		TTH PJIN0040575						$ 13,988.00		06/10/24
10		TTH PJIN0040888						$ 11,403.00		07/11/24
11		TTH PJIN00411122						$ 14,307.00		08/08/24
12		TTH PJ1N0041380						$ 18,678.00		09/18/24
13										
14										
15										
16										
17										
18										
19										
20	0002-0000	A&E Feasibility Study	$ 650,000.00	$ 650,000.00	$ 650,000.00	$ -		$ 180,000.00	$ 470,000.00	
21		Studio G Invoice 0001						$ 90,000.00		06/30/24
22		Studio G Invoice 0002R						$ 45,000.00		07/31/24
23		Studio G Invoice 0004						$ 45,000.00		08/31/24
24										
25										
26										
27										
28										
29										
30										
31										
32										
33										
34										
35										
36	0003-0000	Environmental & Site	$ 140,000.00	$ 140,000.00	$ 140,000.00	$ -		$ 42,652.50	$ 97,347.50	
37		Studio G Invoice 0003						$ 5,280.00		MDM Traffic Study 7/31/24
38		Studio G Invoice 0005						$ 37,372.50		Samiotes Site Survey, EFI Global Haz Material, MDM Traffic Study 08/31/24
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										
50	0004-0000	Other	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ -		$ -	$ 10,000.00	
51										
52										
53		Feasibility Study Agreement - TOTAL	$ 1,085,000.00	$ 1,085,000.00	$ 1,085,000.00	$ -		$ 331,324.50	$ 753,675.50	
54										

Shaker Lane Elementary School Project Budget

As of September 18, 2024

Turner & Townsend Heery

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
55	Project Scope and Budget Agreement									
56										
57	0100-0000	Administration								
58										
59	0101-0000	Legal Fees						$ -	$ -	
60										
61										
62	0102-0000	Owner's Project Manager								
63										
64	0102-0400	OPM - Design Development				$ -				
65										
66										
67										
68										
69	0102-0500	OPM - Construction Contract Documents				$ -				
70										
71										
72										
73										
74										
75										
76										
77	0102-0600	OPM - Bidding				$ -				
78										
79										
80										
81	0102-0700	OPM - Construction Administration				$ -				
82										
83										
84										
85										
86										
87										
88										
89										
90										
91										
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100										
101										
102										
103										
104										
105										
106										
107										
108										
109	0102-0800	OPM - Closeout				$ -				
110										
111										
112										
113										
114										
115	0102-0900	OPM - Extra Services	$ -	$ -	$ -	$ -		$ -	$ -	
116										
117										
118	0102-1000	OPM - Reimbursable & Other Services	$ -	$ -	$ -	$ -		$ -	$ -	
119										
120	0102-1100	OPM - Cost Estimates				$ -				
121										

Shaker Lane Elementary School Project Budget

As of September 18, 2024

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
122										
123										

Shaker Lane Elementary School Project Budget

As of September 18, 2024

Turner & Townsend Heery

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
124										
125	0102-9900	OPM - Other Project Manager Costs	$ -		$ -	$ -		$ -	$ -	
126										
127	0103-0000	Advertising								
128										
129										
130										
131										
132	0104-0000	Permitting								
133										
134		Public Records								
135										
136										
137										
138		VHB Conservation Construction Phase Monitoring								
139										
140										
141										
142										
143										
144										
145										
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149										
150										
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171										
172										
173										
174										
175										
176										
177										
178										
179										
180										
181										
182		Conservation Peer Review			$ -					
183										
184										
185										
186										

Shaker Lane Elementary School Project Budget

As of September 18, 2024

Turner & Townsend Heery

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
187		Planning Board Civil/Stormwater Peer Review			$ -					
188										
189										
190										
191										
192										
193										
194										
195										
197										
198										
199										
200		Miscellaneous Permitting Expenses								
201										
202										
203										
204										
205										
206										
207										
208										
209										
210										
211	0105-0000	Owner's Insurance						$ -	$ -	
212										
213	0199-0000	Other Administrative Costs								
214										
215										
216										
217		Administration - TOTAL	$ -	$ -	$ -	$ -		$ -	$ -	
218										
219	0200-0000	Architect / Engineer								
220										
221	0201-0000	A&E - Basic Services								
222										
223	0201-0400	A&E - Design Development				$ -				
224										
225										
226										
227										
228										
229	0201-0500	A&E - Construction Contract Documents				$ -				
230										
231										
232										
233										
234										
235										
236										
237										
238										
239										
240										
241										
242	0201-0600	A&E - Bidding				$ -				
243										
244										
245										

Shaker Lane Elementary School Project Budget

As of September 18, 2024

Turner & Townsend Heery

Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget	Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
a	b	c	d	d-1	e	f	h	i	j
246	0201-0700	A&E - Construction Contract Administration				$ -			
247									
248									
249									
250									
251									
252									
253									
254									
255									
256									
257									
258									
259									
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265									
266									
267									
268									
269									
270									
271									
272									
273									
274									
275	0201-0800	A&E - Closeout				$ -			
276									
277									
278									
279									
280									
281									
282	0201-9900	A&E - Other Basic Services				$ -			
283									
284									
285									
286		Architect / Engineer Basic Services TOTAL	$ -	$ -	$ -	$ -	$ -	$ -	
287									
288	0203-0000	A&E - Reimbursable & Other Services							
289									
290	0203-0100	A&E Construction Testing	$ -	$ -	$ -	$ -	$ -	$ -	
291									
292	0203-0200	A&E - Printing (over minimum)							
293									
294									
295									
296									
297	0203-9900	A&E - Other Reimbursable Costs							
298									
299	0204-0000	A&E - Sub-Consultants							
300									
301	0204-0200	A&E - Hazardous Materials							
302									
303									
304									
305									
306									

Shaker Lane Elementary School Project Budget

As of September 18, 2024

Turner & Townsend Heery

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
307										
308	0204-0300	A&E - Geotech & Geotech Environment								
309										
310										
311										
312										
313										
314										
315										
316										
317										
318	0204-0400	A&E - Site Survey								
319		FAI Invoice 32097								
320										
321	0204-0500	A&E - Wetlands								
322										
323	0204-1200	A&E - Traffic Studies								
324										
325		A&E - Reimbursable & Other Services TOTAL	$ -	$ -	$ -	$ -		$ -	$ -	
326										
327	0500-0000	Construction Contract								
328										
329	0501-0000	Pre-Construction Services								
330										
331										
332										
333										
334										
335										
336										
337										
338										
339										
340										
341										
342	0502-0000	Construction								
343										
344										
345										
346										
347										
348										
349										
350										
351										
352										
353										
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365										

Shaker Lane Elementary School Project Budget

As of September 18, 2024

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
366										
367										
368										
369										
370										
371										
372										
373										
374										
375										
376										
377										
378										
379										
380										
381										
382										
383										
384		Construction Contract - TOTAL	$ -	$ -	$ -	$ -		$ -	$ -	
385										
386	0507-0000	Construction Contingency						$ -	$ -	
387										
388										
389										
390										
391										
392										
393										
394										
395										
396										
397										
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411										
412										
413										
414										
415										
416										
417										
418		Construction Contingency- TOTAL	$ -	$ -	$ -	$ -		$ -	$ -	
419										

Shaker Lane Elementary School Project Budget

As of September 18, 2024

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
420	0600-0000	Miscellaneous Project Costs								
421										
422	0601-0000	Utility Company Fees								
423										
424										
425										
426										
427	0602-0000	Testing Services								
428										
429										
430										
431										
432										
433										
434										
435										
436										
437										
438										
439										
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449										
450										
451										
452										
453										
454										
455										
456										
457										
458										
459	0699-0000	Other Project Costs (Mailing & Moving)								
460										
461										
462										
463										
464										
465										
466										
467										
468										
469										
470										
471										
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478										
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481										

Shaker Lane Elementary School Project Budget

As of September 18, 2024

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
482										
483										

Shaker Lane Elementary School Project Budget

As of September 18, 2024

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
484		Eagle Leasing (Field House Athletic Storage Container)								
485										
486										
487										
488										
489										
490										
491										
492										
493										
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519										
520										
521										
522										
523										
524		Miscellaneous Project Costs - TOTAL	$ -	$ -	$ -	$ -		$ -	$ -	
525										

Shaker Lane Elementary School Project Budget

As of September 18, 2024

Turner & Townsend Heery

Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
a	b	c	d	d-1	e	f	g	h	i	j
526	0700-0000	Furnishings and Equipment								
527										
528	0701-0000	Furnishings								
529										
530										
531										
532										
533										
534										
535										
536										
537										
538										
539										
540										
541										
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546										
547										
548										
549										
550										
551										
552										
553										
554										
555										
556										
557										
558		Owner Fit-Up Items								
559										
560										
561										
562	0702-0000	Equipment								
563										
564										
565										
566										
567										
568										
569										
570										
571										
572										
573										
574										
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592										

Shaker Lane Elementary School Project Budget

As of September 18, 2024

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
593										
594										
595										

Shaker Lane Elementary School Project Budget

As of September 18, 2024

Turner & Townsend Heery

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
596	0703-0000	Computer Equipment								
597										
598										
599										
600										
601										
602										
603										
604										
605										
606										
607										
608										
609										
610										
611										
612										
613										
614										
615										
616										
617										
618										
619										
620		Furnishings and Equipment - TOTAL	$ -	$ -	$ -	$ -		$ -	$ -	
621										
622	0801-0000	Owner's Contingency						$ -	$ -	
623										
624										
625										
626		Owner's Contingency - TOTAL	$ -	$ -	$ -	$ -		$ -	$ -	
627										
628		PROJECT TOTALS	$ 1,085,000.00	$ 1,085,000.00	$ 1,085,000.00	$ -		$ 331,324.50	$ 753,675.50	
629										

Shaker Lane Elementary School Project Budget

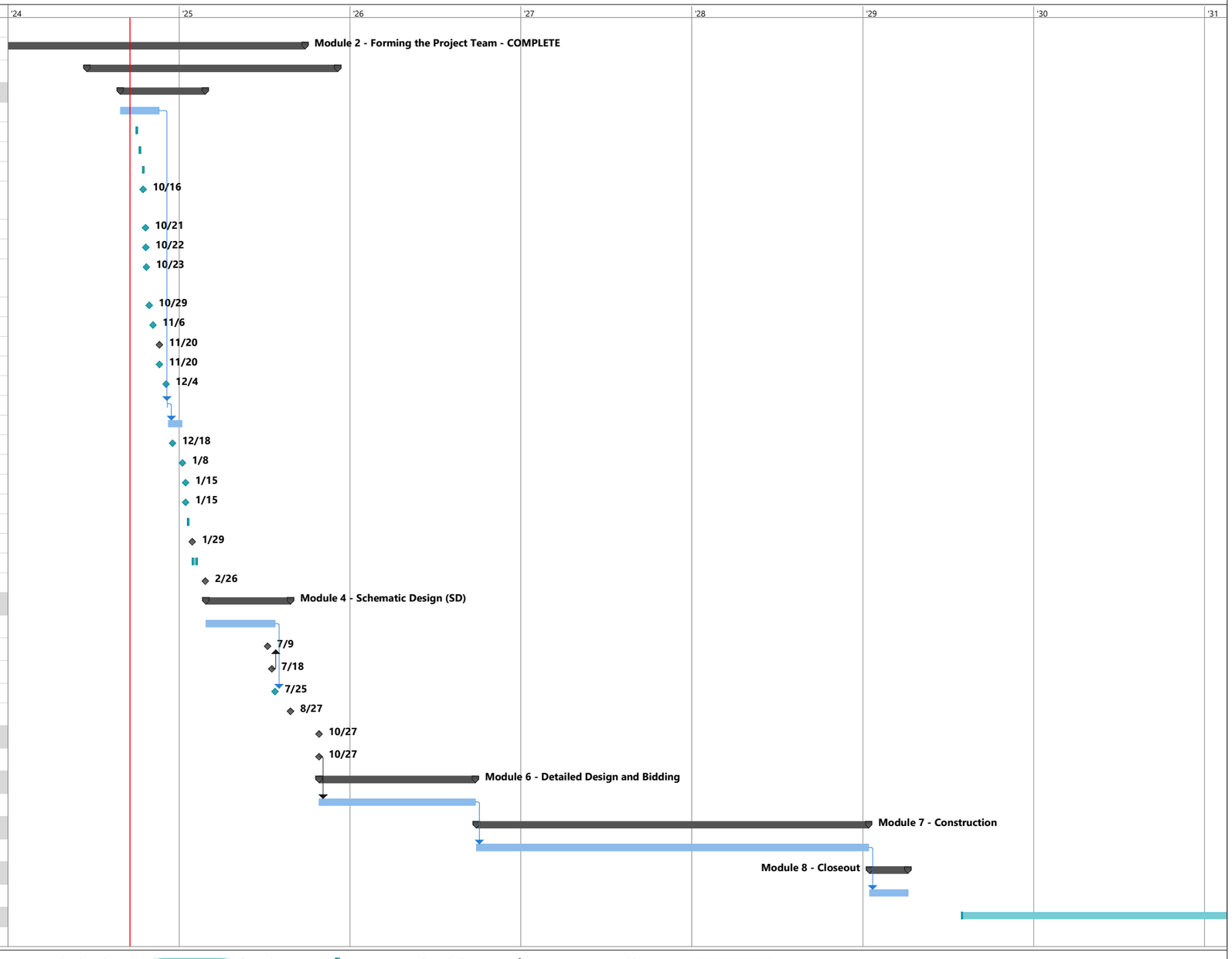
As of September 18, 2024

Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
a	b	c	d	d-1	e	f	g	h	i	j
630										
631		Total Project Budget (excluding Contingencies)								
632		Scope Items Excluded or Otherwise Ineligible								
633		Third Party Funding (Ineligible)								
634		Estimated Basis of Total Facilities Grant[1]								
635		Reimbursement Rate [3, 4]								
636		Est. Max. Facilities Grant (w/o recovery)[1]								
637		Cost Recovery[4]								
638		**Total Max Facilities Grant**[1]								
639										
640		Total Construction Contingency[2]								
641		Ineligible Construction Contingency[2]								
642		"Potentially Eligible" Construction Contingency[2]								
643		Total Owner's Contingency[2]								
644		Ineligible Owner's Contingency[2]								
645		"Potentially Eligible" Owner's Contingency[2]								
646		Total Potentially Eligible Contingency[2]								
647		Reimbursement Rate[3]								
648		Potential Additional Contingency Grant Funds[2]								
649		Maximum Total Facilities Grant								
650		**Total Project Budget**								

Turner & Townsend Heery

Shaker Lane Elementary School Project
OPM Project Milestone Schedule
September 18, 2024

ID	Task Name	Duration	Start	Finish
1	Module 1 - Eligibility Period - COMPLETE	19 days	Wed 6/1/22	Mon 6/27/22
5	Module 2 - Forming the Project Team - COMPLETE	567 days	Thu 7/27/23	Fri 9/26/25
27	Module 3.1 Preliminary Design Program (PDP)	384 days	Tue 6/18/24	Fri 12/5/25
40	**Module 3.2 Preferred Schematic Report (PSR)**	**130 days**	**Wed 8/28/24**	**Wed 2/26/25**
41	Develop PSR	59 days	Wed 8/28/24	Mon 11/18/24
42	Sub-Committee meeting	1 day	Wed 10/2/24	Wed 10/2/24
43	Cost estimate information available	1 day	Wed 10/9/24	Wed 10/9/24
44	Review Cost estimates	1 day	Wed 10/16/24	Wed 10/16/24
45	**School Building Committee Meeting/Joint Session with Select Board, School Committee, & Finance Committee**	**0 days**	**Wed 10/16/24**	**Wed 10/16/24**
46	Review / Reconcile Cost Estimates	0 days	Mon 10/21/24	Mon 10/21/24
47	Cost Estimates Due	0 days	Tue 10/22/24	Tue 10/22/24
48	**School Building Committee Meeting/Joint Session with Select Board, School Committee, & Finance Committee**	**0 days**	**Wed 10/23/24**	**Wed 10/23/24**
49	Special Town Meeting	0 days	Tue 10/29/24	Tue 10/29/24
51	Sub-Committee meeting	0 days	Wed 11/6/24	Wed 11/6/24
50	**School Building Committee Meeting**	**0 days**	**Wed 11/20/24**	**Wed 11/20/24**
61	**SBC/School Committee Approval of Preferred Schematic Report - PSR**	**0 days**	**Wed 11/20/24**	**Wed 11/20/24**
55	Sub-Committee meeting (TBD)	0 days	Wed 12/4/24	Wed 12/4/24
52	**PSR Submittal Date to MSBA (NO fewer than 12 weeks after PDP)**	1 day	Fri 12/6/24	Fri 12/6/24
53	MSBA Review of PSR (21 days required)	21 days	Mon 12/9/24	Mon 1/6/25
57	**School Building Committee Meeting**	**0 days**	**Wed 12/18/24**	**Wed 12/18/24**
58	Sub-Committee meeting (TBD)	0 days	Wed 1/8/25	Wed 1/8/25
54	**Facility Assessment Subcommittee (FAS) Meeting January 15**	**0 days**	**Wed 1/15/25**	**Wed 1/15/25**
59	**School Building Committee Meeting**	**0 days**	**Wed 1/15/25**	**Wed 1/15/25**
60	Address PSR Comments from MSBA (14 days to respond)	1 day	Mon 1/20/25	Mon 1/20/25
62	**Facility Assessment Subcommitte (FAS) Meeting January 29**	**0 days**	**Wed 1/29/25**	**Wed 1/29/25**
63	Address FAS comments	7 days	Thu 1/30/25	Fri 2/7/25
56	**MSBA Board Meeting - Approval of PSR**	**0 days**	**Wed 2/26/25**	**Wed 2/26/25**
64	**Module 4 - Schematic Design (SD)**	**129 days**	**Thu 2/27/25**	**Wed 8/27/25**
65	Schematic Design	5.3 mons	Thu 2/27/25	Thu 7/24/25
69	Project Scope and Budget Conference	0 days	Wed 7/9/25	Wed 7/9/25
66	SD Submittal Date to MSBA	0 days	Fri 7/18/25	Fri 7/18/25
68	Submit SD to DESE for Review	0 days	Fri 7/25/25	Fri 7/25/25
67	Project Scope and Budget MSBA Board Approval	0 days	Wed 8/27/25	Wed 8/27/25
70	**Module 5 - Funding (Approve) the Project**	**0 days**	**Mon 10/27/25**	**Mon 10/27/25**
71	Approval of Funding - Town Meeting	0 days	Mon 10/27/25	Mon 10/27/25
72	**Module 6 - Detailed Design and Bidding**	**240 days**	**Mon 10/27/25**	**Fri 9/25/26**
73	Design Phase	12 mons	Mon 10/27/25	Fri 9/25/26
74	**Module 7 - Construction**	**600 days**	**Mon 9/28/26**	**Fri 1/12/29**
75	Construction	30 mons	Mon 9/28/26	Fri 1/12/29
76	**Module 8 - Closeout**	**60 days**	**Mon 1/15/29**	**Fri 4/6/29**
77	Closeout	3 mons	Mon 1/15/29	Fri 4/6/29
78	**Module 9 - Post Occupancy Evaluation**	**828 days**	**Wed 8/1/29**	**Fri 10/1/32**
79				



Shaker Lane Elementary School
Date: Wed 9/18/24

Task | Split | Milestone | Summary | Project Summary | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | External Tasks | External Milestone | Deadline | Progress | Manual Progress

studio g ARCHITECTS
The Brewery 179 Boylston Street Jamaica Plain MA 02130
T 617-524-5558
F 617-524-5544

Town of Littleton
37 Shattuck Street
Littleton, MA 01460

Invoice number 00004
Date 08/31/2024

Project 22402 MSBA Shaker Lane Elementary School, Littleton, MA

Description	Contract Amount	Prior Billed	Total Billed	Current Billed
Feasibility Study	360,000.00	135,000.00	180,000.00	45,000.00
Schematic Design	290,000.00	0.00	0.00	0.00
Total	650,000.00	135,000.00	180,000.00	45,000.00

Invoice total 45,000.00

Aging Summary

Invoice Number	Invoice Date	Outstanding	Current	Over 30	Over 60	Over 90	Over 120
00002R	07/31/2024	45,000.00		45,000.00			
00004	08/31/2024	45,000.00	45,000.00				
	Total	90,000.00	45,000.00	45,000.00	0.00	0.00	0.00

Turner & Townsend Heery

300 Brickstone Square
Suite 201
Andover, MA 01810
www.turnerandtownsend.com

September 18, 2024

Ryan Ferrara
Assistant Town Administrator/Director of Finance and Budget
Town of Littleton
37 Shattuck Street
Littleton, MA 01460

Shaker Lane Elementary School MSBA
Cost Code 202101580005
Studio G Invoice #00005
Period August 1, 2024, through August 31, 2024

Dear Mr. Ferrara:

Please find attached invoices from Studio G as a reimbursable expense for services related to a Site Survey, Traffic Studies, and Hazardous Material Building Survey.

We have reviewed these invoices and acknowledge Studio G is coordinating these services as outlined in their proposal that was reviewed and approved during the 09/18/24 SLSBC meeting. These services are being tracked under Studio G contract amendment #01.

We therefore are submitting these three invoices for review and consideration in the total amount of Thirty-Seven Thousand Three Hundred Seventy-Three Dollars and Zero Cents ($37,373.00) as itemized on the attached invoices.

Should there be any questions, please feel free to call me at 781.733.7310.

Sincerely,

Mark A. Stafford

Mark A. Stafford
Senior Project Manager

Turner & Townsend Heery, Inc.

C: File

studio g ARCHITECTS
The Brewery 179 Boylston Street Jamaica Plain MA 02130
T 617-524-5558
F 617-524-5544

Town of Littleton
37 Shattuck Street
Littleton, MA 01460

Invoice number 00005
Date 08/31/2024

Project 22402 MSBA Shaker Lane Elementary School, Littleton, MA

Description		Contract Amount	Prior Billed	Total Billed	Current Billed	
Reimbursables						
Traffic		0.00	5,280.00	12,100.00	6,820.00	A
Site Survey		0.00	0.00	20,735.00	20,735.00	B
Geotechnical		0.00	0.00	0.00	0.00	
Geoenvironmental		0.00	0.00	0.00	0.00	
Hazardous Materials		0.00	0.00	9,817.50	9,817.50	C
	Subtotal	0.00	5,280.00	42,652.50	37,372.50	
	Total	0.00	5,280.00	42,652.50	37,372.50	
				Invoice total	37,372.50	

Aging Summary

Invoice Number	Invoice Date	Outstanding	Current	Over 30	Over 60	Over 90	Over 120
00003	07/31/2024	5,280.00		5,280.00			
00005	08/31/2024	37,372.50	37,372.50				
	Total	42,652.50	37,372.50	5,280.00	0.00	0.00	0.00

MDM Transportation Consultants, Inc.
28 Lord Road, Suite 280
Marlborough, MA 01752
Tel: 508-303-0370 Fax: 508-303-0371
www.mdmtrans.com

MM
Reviewed
9/05/2024
Reimb. Allowance -
"Traffic"
SGA 10% markup = $620

Meryl Nistler
Studio G Architects
179 Boylston Street
Jamaica Plain, MA 02130

INVOICE

INVOICE DATE: 8/16/2024
INVOICE NUM: 1363-02
BILLING THROUGH: 8/9/2024

1363 - Littleton - Shaker Lane Elementary School

TASK	CONTRACT AMOUNT	% COMPLETE	PRIOR BILLED	CURRENT SERVICES
2.0 Transportation Analysis/Design Principles	$6,200.00	100	$0.00	$6,200.00
			PHASED SERVICES TOTAL	$6,200.00
			SUBTOTAL	$6,200.00
			AMOUNT DUE THIS INVOICE	**$6,200.00**

This invoice is due upon receipt

ACCOUNT SUMMARY		
PRIOR DUE	**CURRENT**	**PRIOR PLUS CURRENT**
$0.00	**$6,200.00**	**$6,200.00**

Please make checks payable to MDM Transportation Consultants, Inc.

Thank you for choosing MDM Transportation Consultants, Inc.

REIMB: Traffic | Inv Amt $6,200.00 | 10% markup $620.00 | **Total Due $6,820.00** A

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Invoice

Samiotes Consultants, Inc.
Civil Engineering + Land Surveying
20 A Street
Framingham, MA 01701
T 508.877.6688
www.samiotes.com

MM Reviewed 8/20/2024 Add Service - "Site Survey & Wetlands"

Studio G Architects
Meryl Nistler, AIA, WELL AP, LEED AP, MCPPO, NCARB
179 Boylston Street
Jamaica Plain, MA 02130

August 7, 2024
Project No: 54025.01
Invoice No: 22557

Project 54025.01 Shaker Lane Elementary School - Littleton (s)

Email invoice to: Paula Tennyson (Controller): paulat@studiogarchitects.com

Studio G Project : #22402

Professional Services from July 1, 2024 to July 31, 2024
Fee

Task	Contract Amount	Percent Complete	Billings to Date	Previously Billed	Current Fee Billing
Limited Topographic Survey & Plan T1	19,000.00	90.00	17,100.00	0.00	17,100.00
Wetland Site Walk & Report T2	1,750.00	100.00	1,750.00	0.00	1,750.00
Total Fee	20,750.00		18,850.00	0.00	18,850.00
	Total Fee				**18,850.00**
			Total this Invoice		**$18,850.00**

REIMB: Site Survey

Inv Amt	10% markup	**Total Due**	
$18,850.00	$1,885.00	**$20,735.00**	B

Terms: DUE UPON RECEIPT. 1.5% Service charge on past due amounts over 30 Days

MN - Approved
8/30/2024
Reimbursable: HazMat
add 10% mark up

efi global

Remit by Mail:
EFI Global, Inc.
2877 Momentum Place
Chicago, IL 60689-5328

IRS-34-2028648

Remit by Wire or ACH transfer:
Beneficiary Bank: Fifth Third Bank
WIRE ABA: 042000314, SWIFT FTBCUS3CXXX
ACH ABA: 071923909
Account Name: EFI Global Inc.
Account Number: 9992305228
Reference: Reference Invoice Number Below

INVOICE

Studio G Architects
179 Boylston Street
3rd Floor
Boston, MA 02130

August 30, 2024
Project No: 014.08976
Invoice No: 400000269794

Project Manager John Vaz

Total this Invoice USD 8,925.00

Contract/PO/WO#

Project 014.08976 Shaker Lane Elementary School Hazardous Materials Consulting

Phase 01EV014 Hazardous Materials Survey

Fee

Billing Phase	Fee	Percent Complete	Earned
Hazardous Materials Survey & Report	6,700.00	100.00	6,700.00
Opinion of Cost	500.00	100.00	500.00
Asbestos Bulk Samples (132@$10ea)	1,320.00	100.00	1,320.00
Lead Paint Chip Samples (7@$15ea)	105.00	100.00	105.00
Radon Sampling (10@ $30ea)	300.00	100.00	300.00
Total Fee	8,925.00		8,925.00
	Previous Fee Billing		0.00
	Current Fee Billing		8,925.00

Total Fee **8,925.00**

Total this Phase **USD 8,925.00**

Total this Invoice **USD 8,925.00**

REIMB: Hazardous Materials

Inv Amt	10% markup	Total Due
$8,925.00	$892.50	**$9,817.50**

C

Turner & Townsend Heery, LLC
3550 Lenox Road NE, Suite 2300
Atlanta, GA 30326
FEI: 58-0827945

Invoice	
Invoice Number	PJIN0041380
Date	9/9/2024
Project Number	HII-2336600

FERRARA, RYAN

TOWN OF LITTLETON, MASSACHUSETTS

35 SHAKER LANE
Littleton, MA 01460

Project Name SHAKER LANE ELEMENTARY SCHOOL- FS/SD

Professional Services Rendered **August 1st through August 31st, 2024**

FEASIBILITY STUDY			**18,678.00**
	Labor	18,678.00	
	PAYMENT DUE THIS INVOICE		**18,678.00**

Cumulative Billings	**Current**	**Prior Periods**	**To-Date**
Labor	18,678.00	89,699.00	108,377.00
Totals	**18,678.00**	**89,699.00**	**108,377.00**

Turner & Townsend Heery, LLC
3550 Lenox Road NE, Suite 2300
Atlanta, GA 30326
FEI: 58-0827945

Invoice	
Invoice Number	PJIN0041380
Date	9/9/2024
Project Number	HII-2336600

Project Name SHAKER LANE ELEMENTARY SCHOOL- FS/SD

Professional Services Rendered

Employee Name	Period Ending	Hours	Rate	Multiplier	Bill Amount
FEASIBILITY STUDY					
MCCAFFERTY, MATTHEW E	8/8/2024	2.00	148.00	1.00	296.00
MCCAFFERTY, MATTHEW E	8/9/2024	2.00	148.00	1.00	296.00
MCCAFFERTY, MATTHEW E	8/12/2024	2.00	148.00	1.00	296.00
MCCAFFERTY, MATTHEW E	8/13/2024	2.00	148.00	1.00	296.00
MCCAFFERTY, MATTHEW E	8/19/2024	2.00	148.00	1.00	296.00
MCCAFFERTY, MATTHEW E	8/20/2024	1.00	148.00	1.00	148.00
MCCAFFERTY, MATTHEW E	8/21/2024	1.00	148.00	1.00	148.00
MCCAFFERTY, MATTHEW E	8/22/2024	1.00	148.00	1.00	148.00
MCCAFFERTY, MATTHEW E	8/26/2024	2.00	148.00	1.00	296.00
MCCAFFERTY, MATTHEW E	8/27/2024	2.00	148.00	1.00	296.00
MCCAFFERTY, MATTHEW E	8/28/2024	1.00	148.00	1.00	148.00
MCCAFFERTY, MATTHEW E	8/29/2024	1.00	148.00	1.00	148.00
STAFFORD, MARK	8/1/2024	8.00	148.00	1.00	1,184.00
STAFFORD, MARK	8/2/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	8/5/2024	6.00	148.00	1.00	888.00
STAFFORD, MARK	8/6/2024	6.00	148.00	1.00	888.00
STAFFORD, MARK	8/7/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	8/8/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	8/12/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	8/13/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	8/15/2024	6.00	148.00	1.00	888.00
STAFFORD, MARK	8/16/2024	6.00	148.00	1.00	888.00
STAFFORD, MARK	8/19/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	8/20/2024	6.00	148.00	1.00	888.00
STAFFORD, MARK	8/22/2024	6.00	148.00	1.00	888.00
STAFFORD, MARK	8/23/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	8/26/2024	6.00	148.00	1.00	888.00
STAFFORD, MARK	8/27/2024	6.00	148.00	1.00	888.00
STAFFORD, MARK	8/29/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	8/30/2024	4.00	148.00	1.00	592.00
ZEYTOONIAN, NINA	8/1/2024	2.00	125.00	1.00	250.00
ZEYTOONIAN, NINA	8/7/2024	4.00	125.00	1.00	500.00

Turner & Townsend Heery, LLC
3550 Lenox Road NE, Suite 2300
Atlanta, GA 30326
FEI: 58-0827945

Invoice	
Invoice Number	PJIN0041380
Date	9/9/2024
Project Number	HII-2336600

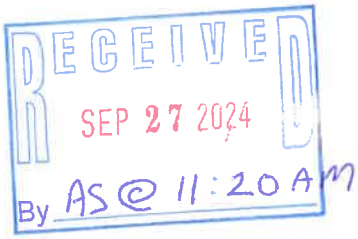
Project Name SHAKER LANE ELEMENTARY SCHOOL- FS/SD

Professional Services Rendered

Employee Name	Period Ending	Hours	Rate	Multiplier	Bill Amount
ZEYTOONIAN, NINA	8/13/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	8/14/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	8/15/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	8/16/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	8/19/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	8/20/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	8/21/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	8/22/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	8/26/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	8/27/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	8/28/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	8/29/2024	1.00	125.00	1.00	125.00
Subtotal, FEASIBILITY STUDY		**129.00**			**18,678.00**
	LABOR AMOUNT THIS INVOICE				**18,678.00**

AGENDA

Shaker Lane School
Building Committee Meeting



★ Revised Agenda ★
- Original Posting: 9/24/2024 @ 4:05 PM

Wednesday, October 2, 2024
7:00PM

Below are the Zoom Webinar credentials for the SLSBC's upcoming meeting of 10/2/24.
When: Oct 2, 2024 07:00 PM Eastern Time (US and Canada)
Topic: Shaker Lane School Building Committee
Please click the link below to join the webinar:
https://littletonma.zoom.us/j/81343073660?pwd=ZYDewC1plFLRFSDxDavA85HrNZresJ.1
Passcode: 856638
Webinar ID: 813 4307 3660
International numbers available: https://littletonma.zoom.us/u/kbommZe9uO

VIDEO OR CALL WILL BE MUTED UPON JOINING MEETING.
Please use the "RAISE YOUR HAND" feature in the Zoom meeting to ask to speak.
PARTICIPANTS/ATTENDEES ARE REMINDED THAT BY JOINING THIS MEETING, YOU CONSENT TO YOUR LIKENESS AND AUDIO BEING USED AND REBROADCAST BY LCTV
This Rebroadcast meeting can be viewed online at LCTV On-Demand at https://cloud.castus.tv/vod/littleton/

7:00 p.m.

Studio G:

1. **Design Update**
2. **Strategy for Sustainability**

TTH:

1. **Schedule Update**
2. **Community Input**
3. **Adjourn**

Next meeting(s) scheduled for October 16, 2024 and October 23, 2024
Littleton Police Department Community meeting Room

Shaker Lane Building Committee Minutes

Date 10/2/24

7 pm

Attending

Dorothy Mulone *
Organizer
Chuck DeCoste *
Kelly Clenchy *
Mark Stafford *
Meryl Nistler *
Michelle Kane *
Michael Scaduto *
Stacy Desmarais
Steven Mark *
Bob Romilly *
Marylee Mercy *
Ryan Ferrara *
Steve Moore *
stevem@studiogarchitects.com *
Steve Venuti *

Marylee Design Options Presentations
Presenting through the lens of what we will be presenting to **Town Leadership SC, PMBC, SB on October 16th.**
Special town meeting ison October 29.
TTH cost estimates for these designs that will be coming in on the 22nd.

Cost estimates coming in the next few weeks.

New construction Lower field 97k sq ft
Add reno 2.1 is 94k sw ft
Upper fields 97k sq fy

Still working on how to divide up the spaces, but general space planning and footprint options are being dong.

Add reno 2.1 division between community wing up front and the academic wing to provide more security options.

Steve M. mentioned the cost and logistics for the add reno can be complex and thought about and planned for if this becomes a viable option.

Steve Venuti noted that the wetland buffer is actually in the new school construction and was concerned with future flooding. Marylee explained topography but confirmed that there won't be a water issue based on the topography and water flow. Soil studies and tests can confirm the drainage. Civil engineers and landscape architects will have more insight on stormwater management and water flow. Grading strategies can be implemented as well.

Steve M. asked if geoformal wells can be put in the buffer zone.

Option 3.2 Lower Field:
Wetlands have grown over time. There is a two story option along the buffer but out of the wetlands. We loose one of the baseball fields in the back, but fields can be put in the front where the old building is located afer demo. Community accessible areas in the middle of the school, but there can be access doors in all locations for security. Student areas are private and secure.

3.1 Upper field option- two story option. Main entrance, cafe, gym, media center all in one area with ability to keep secure. Adds a lot of community fields and space. 100 parking spaces.

Steve M mentioned the reduction of 6k sq ft but that doesn't translate to much cost savings. Town needs to think about the value of reducing sq at the cost of the function vs cost savings.

The cost estimator will be able to give a better idea of what the cost differences will be.

Bob asked where future expansion would be if needed. Marylee confirmed that there is extra space if needed.

Meryle pointed out that we will have two cost estimates for these designs that will be coming in on the 22nd. These estimates will not be completed for the 16th meeting. Sq footage is not the only lever to adjust the cost, there are other ways to make the project more cost effective.

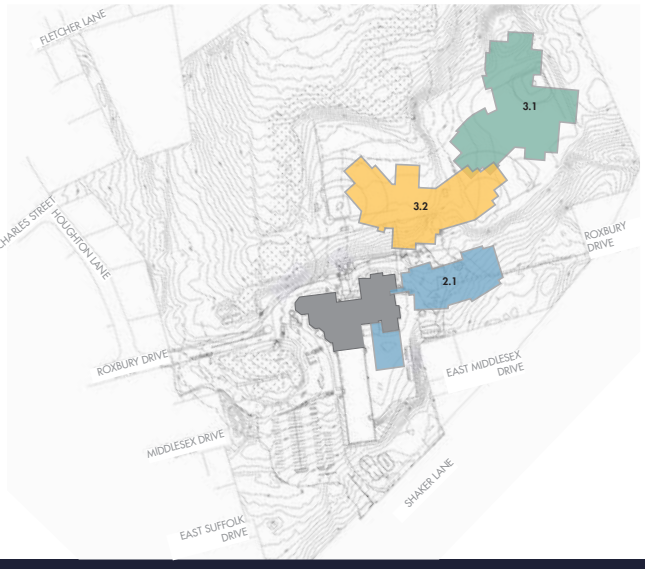
Steve M Studio G:Sustainability presentation

- MSBA Green School Requirements and Reimbursements
- LEED
- State and Federal Funding & Incentives
- Project Goals to Consider
-

Next steps
Sustainability workshop December 16th- need to identify the subcommittee

When are we talking about what the community presentations is going to look like.

6 additional people on community outreach
FAQ sections are being drafted to be reviewed by SLBC to go live on the 16th.



Design Agenda

1. Workplan Update for PSR
2. Design Update
3. Strategy for Sustainability
4. Community Outreach

studio g architects | Turner & Townsend Heery | ATLANTIC CONSTRUCTION & MANAGEMENT, INC.

School Building Committee Meeting

Shaker Lane School Project • Littleton Public Schools • Town of Littleton, MA | October 02, 2024 | 1

Project Goals

- Respond to the Educational Program to provide **integration** of Unified Arts and Social Emotional Learning programs, and support the concept of **Learning Everywhere**
- Provide spaces that can be shared with Littleton residents to increase value and utility, and to **build community**, incorporating elements of local history and community values in the design.
- Create a **healthy, safe and secure** environment
- **Maximize flexibility and adaptability** to support a broad variety of learning experiences, and to evolve over time to **accommodate future needs**
- Use cost-effective design strategies to **maximize value**, for construction costs and life-cycle costs
- Incorporate **sustainable** technologies, energy efficiency, and environmentally-friendly practices
- Create a Universally Designed building to **maximize inclusion** and accessibility

Workplan Update for PSR

Holiday
School Building Committee Meeting
Proposed Subcommittee Meeting
Date of Note

We are here

PSR study, analysis and documentation | Compile & submit PSR report | Schematic Design

September

Su	M	Tu	W	Th	F	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

- ☑ **Space program refinements with school personnel September 11 & 18**
- ongoing Interior space planning options
- ongoing Community outreach
- ☑ Soil investigations September 25, 2024

October

Su	M	Tu	W	Th	F	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

- ❑ **Reconvene Joint Town Leadership group October 16 & October 23**
- ❑ **Special Town Meeting October 29, 2024**
- ❑ Interior space planning options
- ❑ Community outreach
- ❑ Cost estimates
- ❑ MSBA PDP review, comments, & SGA responses

November

Su	M	Tu	W	Th	F	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

- ❑ Interior space planning options SBC review/ comment
- ❑ Community outreach
- ❑ SBC vote to submit PSR to MSBA November 20, 2024

December

Su	M	Tu	W	Th	F	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

- ❑ **Submit PSR to MSBA December 6, 2024**
- ❑ Begin Schematic Design December 9, 2024
- ❑ Sustainability Workshop week of December 16-20, 2024 (TBC)
- ❑ MSBA PSR review, comments, & SGA responses

January

Su	M	Tu	W	Th	F	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

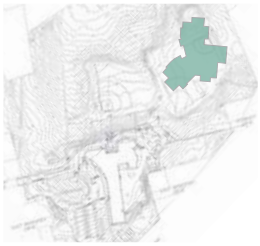
- ❑ Facility Assessment Subcommittee (FAS) January 15 or 29, 2025

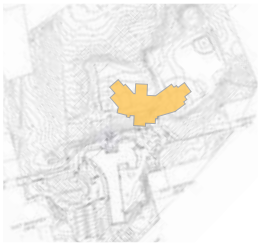
February 2025

- ❑ MSBA Board Meeting - Approval of PSR February 26, 2025

Design Update



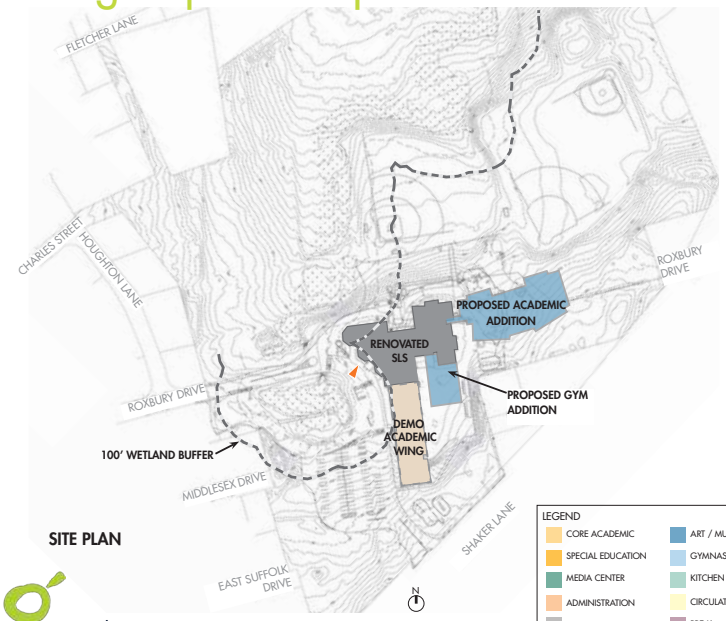




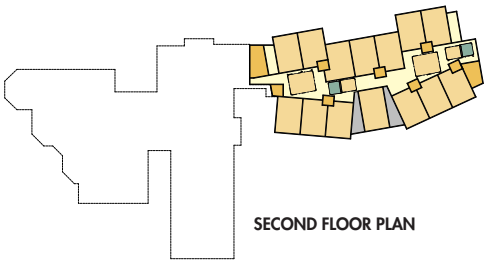
	MSBA BASELINE	SLS BASELINE	OPTION 2.1: ADD / RENO	OPTION 3.1: UPPER FIELD	OPTION 3.2: LOWER FIELD
Net Square Foot Total	49,231	57,281	63,233	64,871	64,871
GROSS SQUARE FOOT (GSF) TOTAL	73,845	85,922	94,850	97,307	97,307

Design Update: Option 2.1– Addition / Renovation East

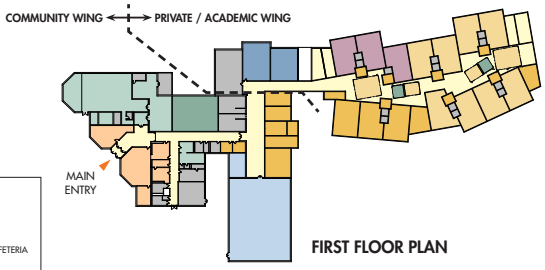
94,850gsf



SITE PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN

0' 32' 64'

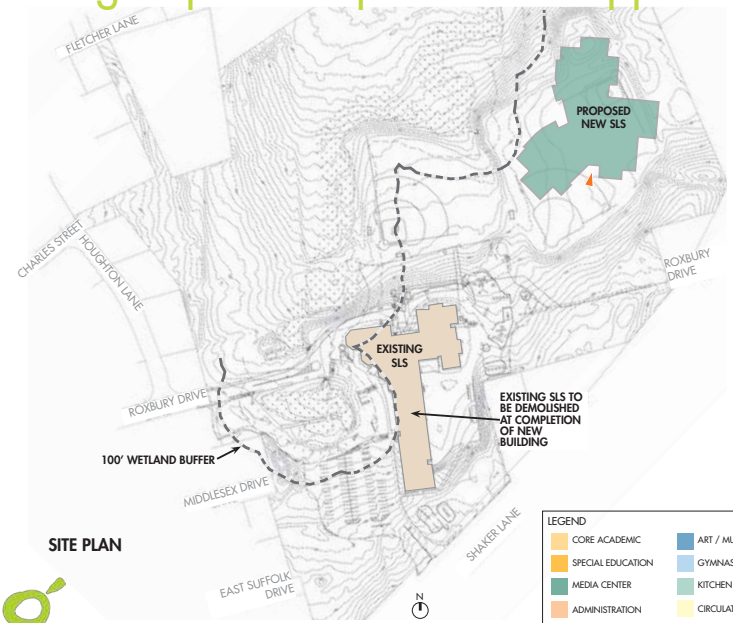
LEGEND

CORE ACADEMIC	ART / MUSIC
SPECIAL EDUCATION	GYMNASIUM
MEDIA CENTER	KITCHEN / CAFETERIA
ADMINISTRATION	CIRCULATION
BUILDING SERVICES	PRE-K

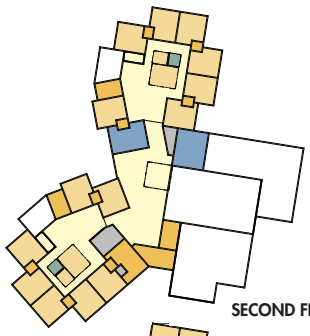
*Floor plan design subject to further design subcommittee discussions.

Design Update: Option 3.1 – Upper Field

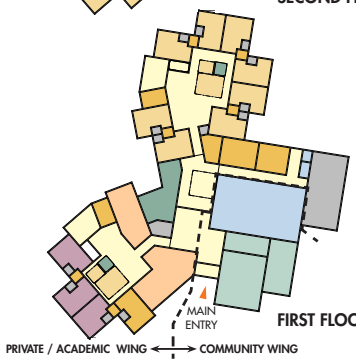
97,307gsf



SITE PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN

0' 32' 64'

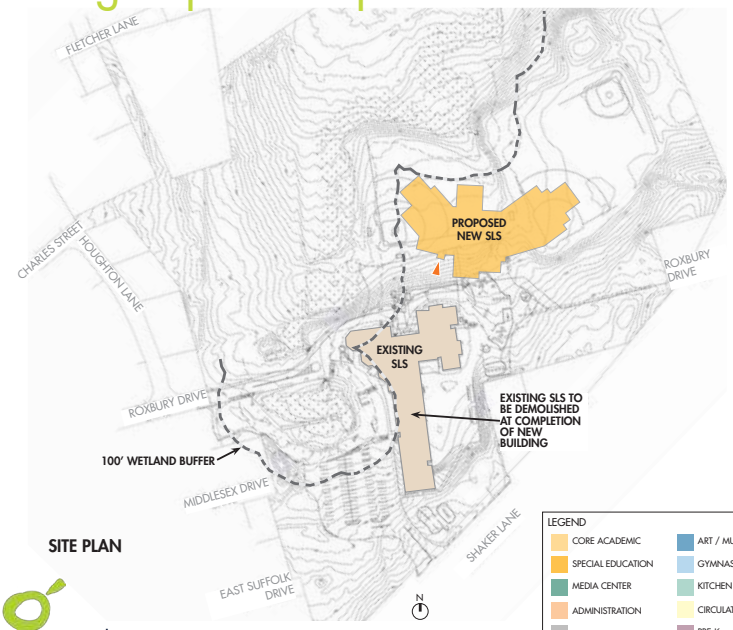
LEGEND

CORE ACADEMIC	ART / MUSIC
SPECIAL EDUCATION	GYMNASIUM
MEDIA CENTER	KITCHEN / CAFETERIA
ADMINISTRATION	CIRCULATION
BUILDING SERVICES	PRE-K

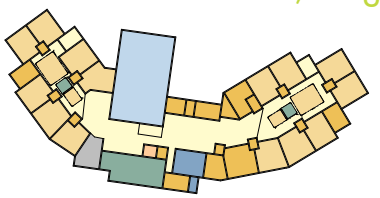
*Floor plan design subject to further design subcommittee discussions.

Design Update: Option 3.2 – Lower Field

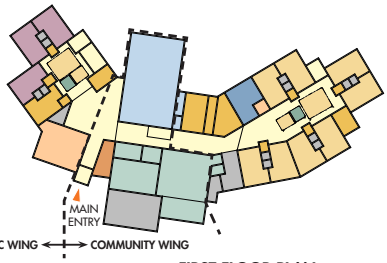
97,307gsf



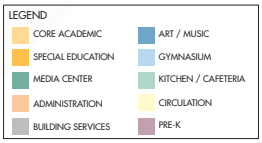
SITE PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN



0' 32' 64'

*Floor plan design subject to further design subcommittee discussions.

Shaker Lane Elementary School

Sustainability Meeting

October 16, 2024

Agenda

- MSBA Green Schools 2023 Requirements
- Modeling & Setting Energy Use Intensity (EUI) Targets
- LEED v4 Schools Overview
- Maximize State, Federal & Utility Incentives
- Additional Project Goals
- Wrap Up & Next Steps

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Sustainable Design Consulting

MSBA Green Schools Requirements

MINIMUM requirements for ALL MSBA projects (no additional reimbursement):

1. Achieve a minimum of LEED-Schools v4 "Silver" certification (50 points)
2. Meet minimum energy efficiency requirements of MA DOER "Stretch Code Green Community" standards (Littleton is a Stretch Code Community)
3. Earn a minimum of three points (from seven points available) from the following three LEED-Schools v4 categories:
   - MR – Material Ingredients
   - IEQ – Low Emitting Materials
   - IEQ – Indoor Air Quality Assessment
4. Achieve both Option 1 (Path 2) and Option 2 within the LEED-Schools v4 Enhanced Commissioning credit (Paid for by MSBA)

The Green Engineer
Sustainable Design Consulting

MSBA Green Schools Additional Reimbursement

- ❑ Additional **3% reimbursement** of the Estimated Basis of Total Facilities Grant requires:
  - Meet minimum requirements and meet minimum energy efficiency requirements of MA DOER "Opt-In Specialized Code" standards

- ❑ Additional **1% reimbursement** of the Estimated Basis of Total Facilities Grant requires:
  - Earn a minimum of five points (from seven points available) from the following three LEED-Schools v4 categories:
    - MR – Material Ingredients
    - IEQ – Low Emitting Materials
    - IEQ – Indoor Air Quality Assessment

- ❑ Both options above can be achieved to receive a total of **4% reimbursement**

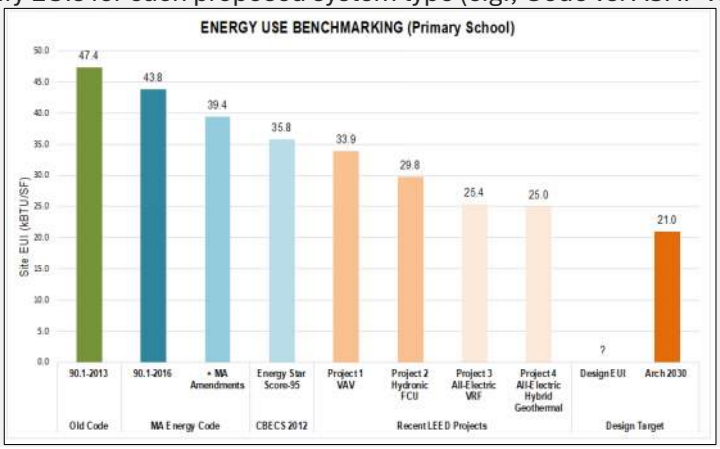
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Setting an EUI Target

› EUI = Energy Use Intensity – Energy / SF / year

› Setting an EUI target early in design helps keep energy efficiency goals on track

› The LCCA will identify EUIs for each proposed system type (e.g., Code vs. ASHP vs. GSHP)



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LEED

- The world's most widely used green building rating system.
- Provides a framework for healthy, highly efficient, and cost-saving green

Credit Categories


Location & Transportation


Energy & Atmosphere


Sustainable Sites


Materials & Resources


Water Efficiency

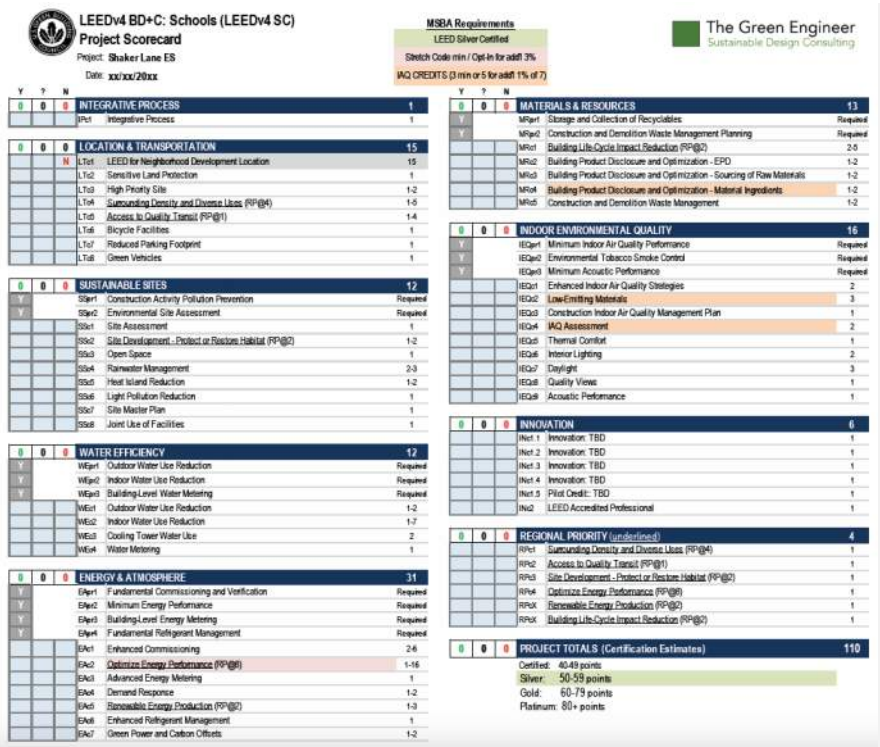

Indoor Environmental Quality

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- LEED v5 expected as early as Q1 2025
- MSBA tends to be early adopter of LEED updates
- Following v5 *may* be required

ograde to v4.1 credit when beneficial

t with USGBC and share energy



LEEDv4 BD+C: Schools (LEEDv4 SC)
Project Scorecard
Project: Shaker Lane ES
Date: xx/xx/20xx

MSBA Requirements
LEED Silver Certified
Stretch Code min / Opt-in for addl 3%
IAQ CREDITS (3 min or 5 for addl 1% of 7)

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Y	?	N	INTEGRATIVE PROCESS		1
			IPc1	Integrative Process	1

Y	?	N	LOCATION & TRANSPORTATION		15
		N	LTc1	LEED for Neighborhood Development Location	15
			LTc2	Sensitive Land Protection	1
			LTc3	High Priority Site	1-2
			LTc4	Surrounding Density and Diverse Uses (RP@4)	1-5
			LTc5	Access to Quality Transit (RP@1)	1-4
			LTc6	Bicycle Facilities	1
			LTc7	Reduced Parking Footprint	1
			LTc8	Green Vehicles	1

Y	?	N	SUSTAINABLE SITES		12
Y			SSpr1	Construction Activity Pollution Prevention	Required
Y			SSpr2	Environmental Site Assessment	Required
			SSc1	Site Assessment	1
			SSc2	Site Development - Protect or Restore Habitat (RP@2)	1-2
			SSc3	Open Space	1
			SSc4	Rainwater Management	2-3
			SSc5	Heat Island Reduction	1-2
			SSc6	Light Pollution Reduction	1
			SSc7	Site Master Plan	1
			SSc8	Joint Use of Facilities	1

Y	?	N	WATER EFFICIENCY		12
Y			WEpr1	Outdoor Water Use Reduction	Required
Y			WEpr2	Indoor Water Use Reduction	Required
Y			WEpr3	Building-Level Water Metering	Required
			WEc1	Outdoor Water Use Reduction	1-2
			WEc2	Indoor Water Use Reduction	1-7
			WEc3	Cooling Tower Water Use	2
			WEc4	Water Metering	1

Y	?	N	ENERGY & ATMOSPHERE		31
Y			EApr1	Fundamental Commissioning and Verification	Required
Y			EApr2	Minimum Energy Performance	Required
Y			EApr3	Building-Level Energy Metering	Required
Y			EApr4	Fundamental Refrigerant Management	Required
			EAc1	Enhanced Commissioning	2-6
			EAc2	Optimize Energy Performance (RP@8)	1-16
			EAc3	Advanced Energy Metering	1
			EAc4	Demand Response	1-2
			EAc5	Renewable Energy Production (RP@2)	1-3
			EAc6	Enhanced Refrigerant Management	1
			EAc7	Green Power and Carbon Offsets	1-2

Y	?	N	MATERIALS & RESOURCES		13
Y			MRpr1	Storage and Collection of Recyclables	Required
Y			MRpr2	Construction and Demolition Waste Management Planning	Required
			MRc1	Building Life-Cycle Impact Reduction (RP@2)	2-5
			MRc2	Building Product Disclosure and Optimization - EPD	1-2
			MRc3	Building Product Disclosure and Optimization - Sourcing of Raw Materials	1-2
			MRc4	Building Product Disclosure and Optimization - Material Ingredients	1-2
			MRc5	Construction and Demolition Waste Management	1-2

Y	?	N	INDOOR ENVIRONMENTAL QUALITY		16
Y			IEQpr1	Minimum Indoor Air Quality Performance	Required
Y			IEQpr2	Environmental Tobacco Smoke Control	Required
Y			IEQpr3	Minimum Acoustic Performance	Required
			IEQc1	Enhanced Indoor Air Quality Strategies	2
			IEQc2	Low-Emitting Materials	3
			IEQc3	Construction Indoor Air Quality Management Plan	1
			IEQc4	IAQ Assessment	2
			IEQc5	Thermal Comfort	1
			IEQc6	Interior Lighting	2
			IEQc7	Daylight	3
			IEQc8	Quality Views	1
			IEQc9	Acoustic Performance	1

Y	?	N	INNOVATION		6
			INov 1	Innovation: TBD	1
			INov 2	Innovation: TBD	1
			INov 3	Innovation: TBD	1
			INov 4	Innovation: TBD	1
			INov 5	Pilot Credit: TBD	1
			INc2	LEED Accredited Professional	1

Y	?	N	REGIONAL PRIORITY (undefined)		4
			RPc1	Surrounding Density and Diverse Uses (RP@4)	1
			RPc2	Access to Quality Transit (RP@1)	1
			RPc3	Site Development - Protect or Restore Habitat (RP@2)	1
			RPc4	Optimize Energy Performance (RP@8)	1
			RPc5	Renewable Energy Production (RP@2)	1
			RPc6	Building Life-Cycle Impact Reduction (RP@2)	1

Y	?	N	PROJECT TOTALS (Certification Estimates)	110
			Certified: 40-49 points	
			Silver: 50-59 points	
			Gold: 60-79 points	
			Platinum: 80+ points	

State and Federal Funding + Incentives

- **IRA funding/incentives available for:**
  - Renewable energy systems owned and generating on-site
  - Geothermal well systems
  - EV Chargers
  - Electric bus fleets

  (Potential to engage Undaunted K12 to better understand and help navigate available incentives)
- **MA DOER funding/incentives available for:**
  - APS Program – GSHPs + ASHPs
- **Little Electric Light + Water Dept incentives?**

The Green Engineer
Sustainable Design Consulting

Project Goals to Consider

1. **What does success look like regarding sustainability?**
2. **Earn either or both MSBA Green Schools additional reimbursements?**
   - 3% = Meeting Specialized Opt-In Code; **and/or**
   - 1% = Achieving additional LEED IAQ credits
3. **Push to LEED v4 Schools Gold certification?**
   - Requires 60 point minimum
4. **Target Net Zero Energy and/or certification?**
   - Include renewables?
   - Produce as much energy on-site as building consumes, annually

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Next Steps

- Schedule Sustainability Workshop week of December 16
- **District**: Identify sustainability 'champions' that will participate in the sustainability workshop and future sustainability initiatives (i.e., support for IRA and State funding incentives, assist with goal setting and design priorities)

The Green Engineer
Sustainable Design Consulting

Received: AS
Date/Time: 10/10/24 - 3:40 PM
Revised:
Date/Time:

AGENDA

Shaker Lane School Building Committee Meeting

(Hybrid) Littleton Police Department Community Room

500 Great Road

& Virtually via Zoom

Wednesday, October 16, 2024

7:00PM

Below are the Zoom Webinar credentials for the SLSBC's upcoming meeting of 10/16/24.

When: Oct 16, 2024 07:00 PM Eastern Time (US and Canada)
Topic: Shaker Lane School Building Committee
Please click the link below to join the webinar:
https://littletonma.zoom.us/j/86511181085?pwd=VifZHpcGBxB2sd9qpO6veCG0Ya49at.1
Passcode: 062932
Webinar ID: 865 1118 1085
International numbers available: https://littletonma.zoom.us/u/k0ny3d7rI

VIDEO OR CALL WILL BE MUTED UPON JOINING MEETING.
Please use the "RAISE YOUR HAND" feature in the Zoom meeting to ask to speak.
PARTICIPANTS/ATTENDEES ARE REMINDED THAT BY JOINING THIS MEETING, YOU CONSENT TO YOUR LIKENESS AND AUDIO BEING USED AND REBROADCAST BY LCTV
This Rebroadcast meeting can be viewed online at LCTV On-Demand at https://cloud.castus.tv/vod/littleton/

7:00 pm - 8:30 pm

1. **Approve Prior Meeting Minutes.**

2. **Review/Approve Invoices:**
   a. TTH Basic Services - $14,215
   b. Studio G Basic Services - $45,000
   c. Studio G Reimbursable Service Site Survey - $2,090.

3. **Proposal Approval:**
   a. Wastewater Disposal System Expertise – Advanced Wastewater Operation in the amount of $2,000.00.
   b. Geo-Environmental Test Pit Observations - PEER Consultants P.C. in the base amount of $6,884.00 or with alternates if realized of $9,224.00.

4. **STUDIO G:**
   a. Sustainability Presentation/Overview (10 mins)
   b. Design Update – site plan and floor plan update.
   c. Community Outreach Update – 10/22 tours, project website updates, "make your voice heard", FAQ/s.
   d. Discuss approach for presentation at the Special Town Meeting on 10/29.

5. **TTH:**
   a. Budget and Schedule Update

6. **Public Comment**

7. **Adjourn**

Next meeting scheduled for October 23, 2024
Littleton Police Department Community meeting Room

Shaker Lane Building Committee Minutes

10/16/24
7 pm

Attending

Dorothy Mulone *
Organizer
Steve Moore *
Marylee Mercy *
Steve Venuti *
Marylee Mercy *
Meryl Nistler *
Mark Stafford *
Ryan Ferrara *
Kelly Clenchy *
Chuck DeCoste *
Michelle Kane *
Bob Romilly *

Shaker Lane School Building Committee Meeting - October 16th, 2024 @ 7:00 PM - Hybrid: In-Person, LPD Community Room (500 Great Road) & Virtual via Zoom

Review/Approve Invoices:

a. TTH Basic Services - $14,215- Motion made by Steve Moore Kelly, Clenchy Seconded, unanimous vote to approve

b. Studio G Basic Services - $45,000- Motion made by Steve Moore,Clenchy Seconded, unanimous vote to approve

c. Studio G Reimbursable Service Site Survey - $2,090- Motion made by Steve Moore,Clenchy Seconded, unanimous vote to approve

Proposal Approval:

a. Wastewater Disposal System Expertise – Advanced Wastewater Operation in the amount of $2,000.00. Motion made by Steve Moore, Ryan F seconded, unanimous vote to approve

b. Geo-Environmental Test Pit Observations - PEER Consultants P.C. in the base amount of $6,884.00 or with alternates if realized of $9,224.00. Motion made by Steve Moore, Ryan F seconded, unanimous vote to approve

STUDIO G presentation : Marylee Mercy presented Design Update and discussed the following topics:

a. Site plan and floor plan update of 3 choices that moved from PDP to PSR
- Sq ft differences, design and location proposals
- Comparison of existing vs MSBA guidelines on space
- Site design and traffic safety considerations
- Budget differences between the different options

b. Community Outreach Update – 10/22 tours, project website updates, “make your voice heard”, FAQ/s.
- Community outreach committee in development to reach out via social media, town meetings, community events etc.
- Upcoming tours will be offered to the public to walk through the building and ask committee members questions about the project

c. Sustainability Presentation/Overview
- Sustainability committee to be established in the coming months
- Project will seek state, federal and utility incentives and MSBA reimbursement
- Project will meet at least minimum requirements for Stretch Code
- Project will be Solar ready

d. Discuss approach for presentation at the Special Town Meeting on 10/29.
- Speaking points discussed

Public Comment
- Suggestions made for improving the town meeting presentation were made

Motion made to adjourn made by Ryan F, Seconded Chuck D, unanimous vote

ADVANCED WASTEWATER OPERATIONS, LLC

Telephone: (978) 735-5980 steve.awwo@gmail.com

September 30, 2024

Mr. Steve Michener
Studio G Architects,
179 Boylston Street
Jamaica Plain, MA 02130

RE: Shaker Lane School
Littleton, MA
Wastewater Disposal Options

Dear Mr. Michener:

Thank you for inviting me to participate in the potential redesign and permitting of the Shaker Lane School wastewater disposal system.

I will assist the design team with permitting, technical expertise and history related to the Amphidrome innovative alternative treatment system and the siting and potential design options for the leaching fields. My involvement will include attending meetings and reviewing documents and plans.

My hourly rate is $125.00. My total participation will not exceed $2,000.00, which equates to a total of 16 hours.

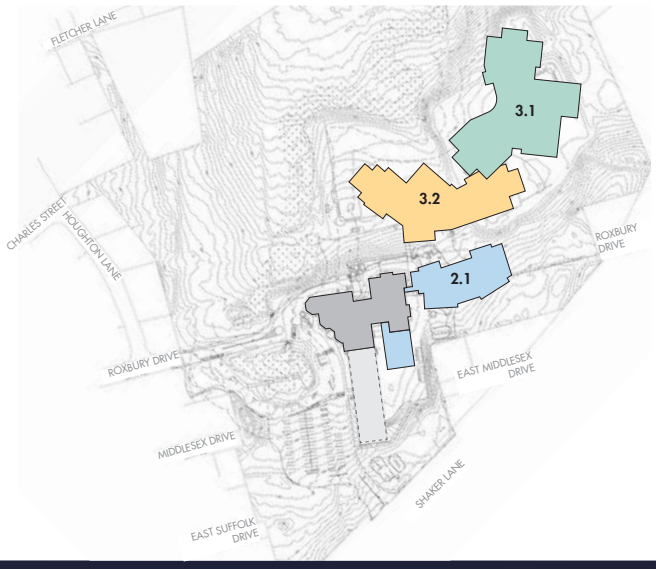
Please call if you have any questions or concerns.

Sincerely yours,
ADVANCED WASTEWATER OPERATIONS, LLC

Steven M. Loughlin, P. E.,
Principal

SML/ego

34 REMINGTON STREET
LOWELL, MA 01852



Design Agenda

1. Design Update
2. Sustainability Overview
3. Community Outreach Update
4. Special Town Meeting Approach

studio g architects | Turner & Townsend Heery | ATLANTIC

School Building Committee Meeting
Joined by: Finance Committee, Select Board, & School Committee

Shaker Lane School Project • Littleton Public Schools • Town of Littleton, MA

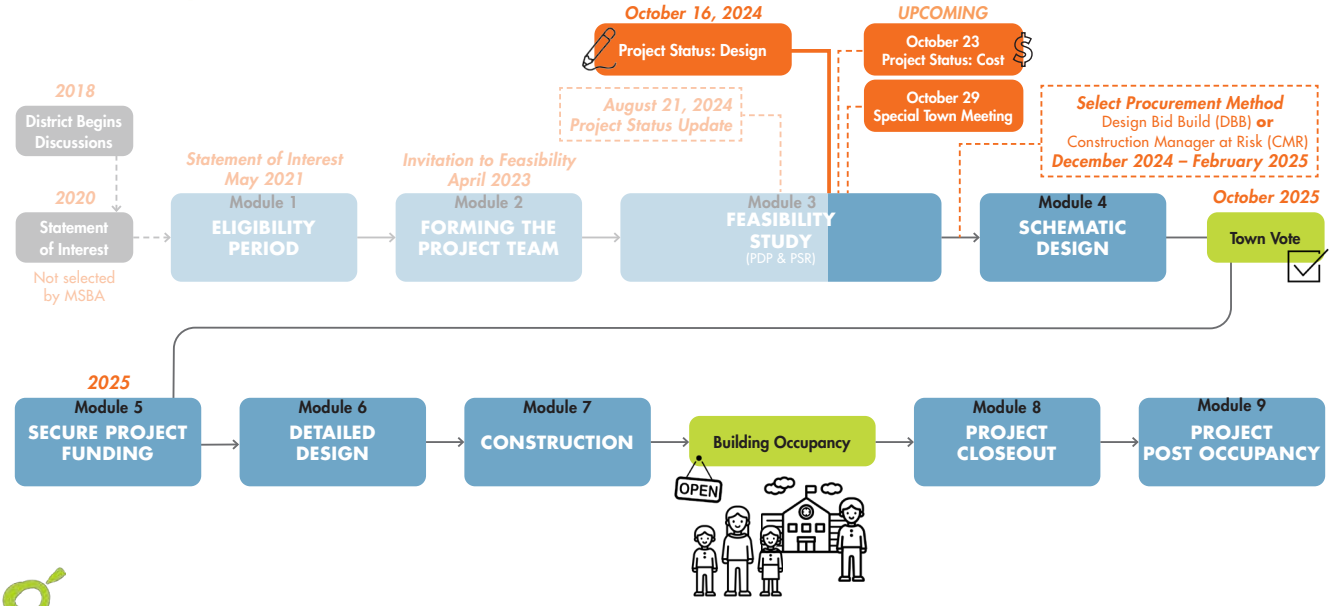
October 16, 2024

1

Project Goals

- Respond to the Educational Program to provide **integration** of Unified Arts and Social Emotional Learning programs, and support the concept of **Learning Everywhere**
- Provide spaces that can be shared with Littleton residents to increase value and utility, and to **build community**, incorporating elements of local history and community values in the design.
- Create a **healthy, safe and secure** environment
- **Maximize flexibility and adaptability** to support a broad variety of learning experiences, and to evolve over time to **accommodate future needs**
- Use cost-effective design strategies to **maximize value**, for construction costs and life-cycle costs
- Incorporate **sustainable** technologies, energy efficiency, and environmentally-friendly practices
- Create a Universally Designed building to **maximize inclusion** and accessibility

Design Update: MSBA Building Process for the New Shaker Lane



Design Update



	EXISTING SLS	MSBA GUIDELINES	INITIAL PROGRAM	OPTION 2.1: ADD / RENO 7/17/24 SCORE: 70.00	OPTION 3.1: UPPER FIELD 7/17/24 SCORE: 88.15	OPTION 3.2: LOWER FIELD 7/17/24 SCORE: 69.55
Net Square Foot (NSF) Total	41,124	49,231	69,251	63,233	64,871	64,871
GROSS SQUARE FOOT (GSF) TOTAL	60,790 Includes several corridors and closets being used as program spaces	73,845 Does not include Pre-K or Special Education Spaces *(approx. 86,000)*	103,876 From August 21, 2024	94,850 max Some existing spaces to remain are undersized (below MSBA guidelines)	97,307 max	97,307 max

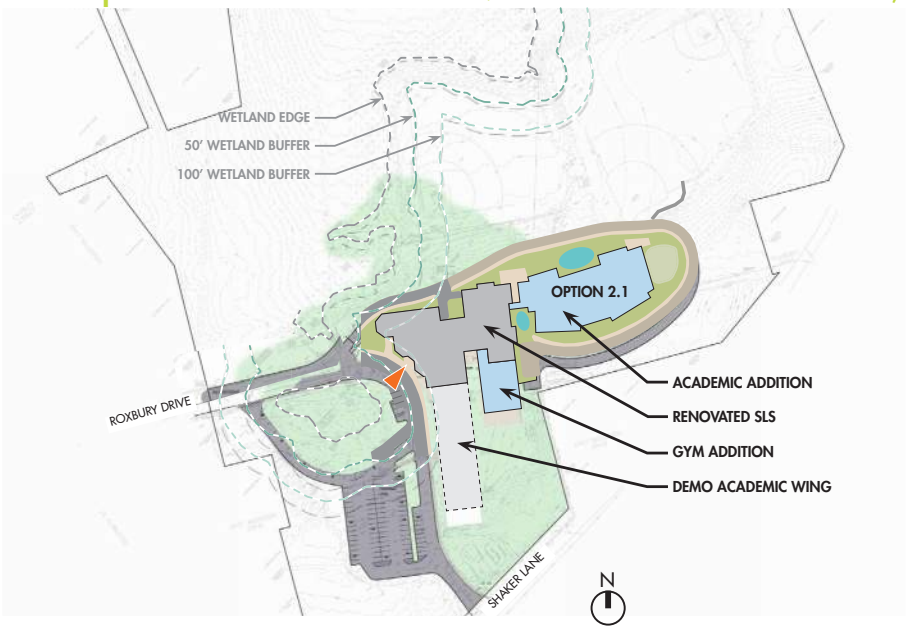
Space Summary Review

VISUAL COMPARISONS

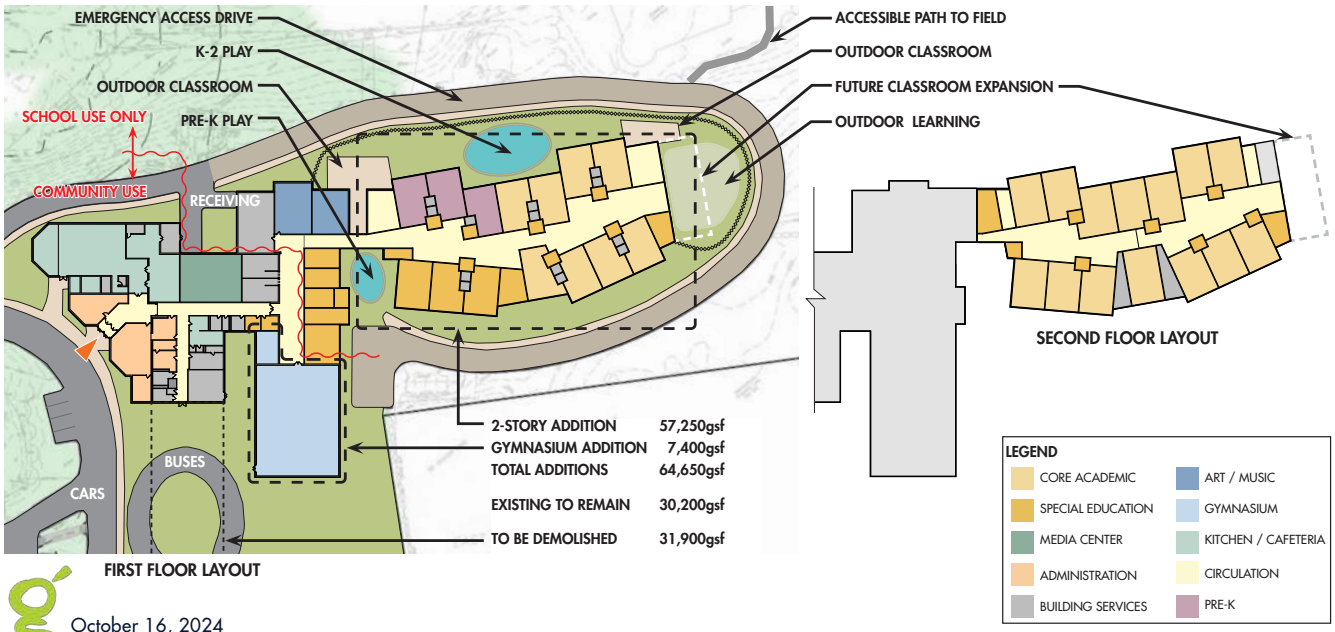


ROOM TYPE	EXISTING SHAKER LANE AREA SF	Δ	NEW SHAKER LANE AREA SF	UNIQUE SCOPE REQUIRED FOR SHAKER LANE EDUCATION PLAN
STUDENTS	446	37-49	483-495	
Core Academics	21,010	5,940	26,950	• Additional classroom for consistency in Grades 1 & 2 • Academic support specialist offices • "Imagatorium" STEM spaces • Extended learning "Dens"
Special Education	4,124	6,796	10,920	• Support room for each grade • Small group rooms for push-in instruction • ELL classroom • OT/PT & Adaptive PE rooms • Clinical support specialist offices • Special Ed conference room
Arts & Music	1,305	1,045	2,350	
Health & Physical Education	2,828	3,472	6,300	
Media Center	1,614	1,014	2,628	
Dining & Food Service	4,802	1,961	6,763	• Collaborative Staff Room
Medical	502	88	590	• Second Toilet with Changing Table
Administration & Guidance	1,296	1,014	2,310	• Teacher Work Room
Custodial & Maintenance	715	945	1,660	
Pre-K & Other	2,928	1,772	4,700	• Four Pre-K classrooms
Net Total	41,124	23,747	64,871	
GROSS TOTAL	60,790	36,517	97,307	

Design Update: Option 2.1– Addition / Renovation East 94,850gsf max



Design Update: Option 2.1– Addition / Renovation East 94,850gsf max



FIRST FLOOR LAYOUT

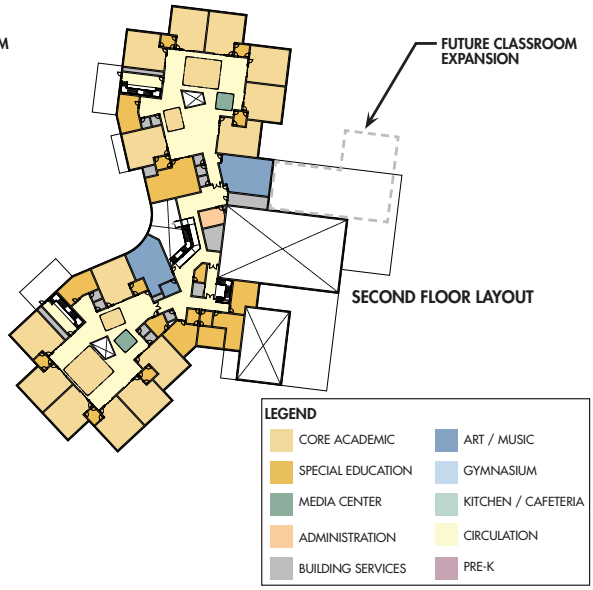
Design Update: Option 3.1 – Upper Field 97,307gsf max



Design Update: Option 3.1 – Upper Field

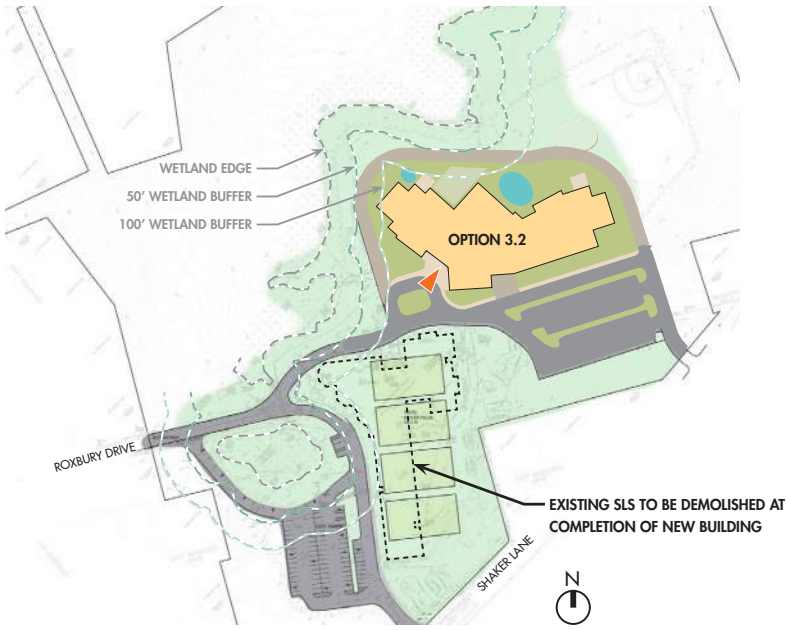
97,307gsf max





Design Update: Option 3.2 – Lower Field

97,307gsf max

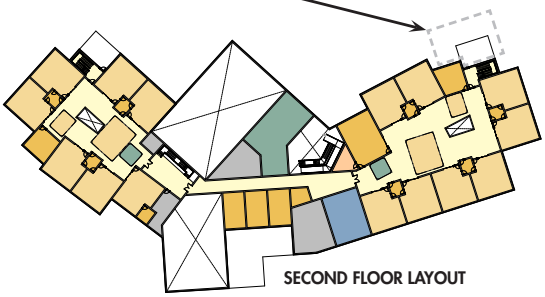


Design Update: Option 3.2 – Lower Field

97,307gsf max



FIRST FLOOR LAYOUT



SECOND FLOOR LAYOUT

LEGEND

- CORE ACADEMIC
- SPECIAL EDUCATION
- MEDIA CENTER
- ADMINISTRATION
- BUILDING SERVICES
- ART / MUSIC
- GYMNASIUM
- KITCHEN / CAFETERIA
- CIRCULATION
- PRE-K

Evaluation Criteria for Design Options

Site

- Adequate buildable area (excludes wetlands/ buffers, setbacks, floodplains, etc)
- Parking & vehicle queuing safe/efficient/ contained on site
- Safe pedestrian access
- Optimizes outdoor program & play spaces
- Extended access to undeveloped nature/green spaces
- Efficient use of site/integration into site

Cost/Schedule/Construction

- Minimizes MSBA non-reimbursement items
- Construction schedule
- Complexity of phasing
- Impact to educational program/facilities during construction
- Impact to abutters during construction
- **Cost**

Sustainability

- Ability to readily meet energy code
- Ease of facility maintenance
- Potential for geothermal system
- Good solar orientation in academic wing
- Effort required to become solar panel-ready
- Ability to support future expansion
- Potential to achieve LEED Silver (increases MSBA reimbursement rate)
- Potential to achieve Net Zero

Community/Neighborhood

- Affords community use of playgrounds/fields
- Local traffic impacts
- Building mass & scale impacts on abutters/ neighborhood

General

- Likely successful debt exclusion vote
- Geographic location in the district
- Permitting complexity (wetlands, planning, ZBA, Article 97, etc)

Criteria established by the Shaker Lane School Building Committee.

This criteria will serve as the basis for comparative analysis among these three options. By the end of PSR, a single option will be selected to proceed into schematic design.

Sustainability Overview

- SLSBC will seek input from the Littleton Sustainability Committee and other community members
- Project will achieve at least LEED v4 or v5 Silver certification
- Project will seek state, federal, & utility incentives
- Project will seek additional reimbursement from the MSBA by meeting sustainability benchmarks
- Project will meet at least minimum efficiency requirements for Stretch Code Green Community standards
- Project will be at least solar-ready

Community Outreach

Members

SBC Community Outreach Subcommittee
- Kelly Clenchy
- Michelle Kane
- Ryan Ferrara

Community Volunteers
- Rebeca Deacon, SLS Assistant Principal
- Shayna Garlisi, SLS Grade 2 Teacher
- Casey Ward, SLS Grade 2 Teacher
- Kathryn Sapp, LPS BCBA
- Kate Jacobsen, PRCE, School Committee
- Jeanine Wood, School Committee
- Libby Donegan, SLS School Council

Opportunities
- Littleton newsletter recurring segment
- Littleton TV interview
- Student involvement - SLS, LMS, LHS
- Flyers/info talks at the library
- Holiday Bazaar
- Visuals/postcards at town athletic fields
- Council on Aging
- Postcard/visual/lawn sign with QR code at local establishments
- Third Thursdays (next summer)
- Town Meetings
- Connections with Realtors
- Tours of existing SLS October 22

Website
- FAQ
- "Make Your Voice Heard"

Other ideas?

Special Town Meeting Preparation

Speaking Points Draft

- Intro: Why do we need a new Shaker Lane? (Michelle / Kelly)
- MSBA process overview
- Community engagement:
    - Where to go for more info
    - How to give feedback
    - Future public input dates
- Include compelling graphics (hand-out flyer?)
- Cost/budget?

PEER
CONSULTANTS, P.C.
Est. 1978

10 Mall Road, Suite 301 • Burlington, MA 01803
Phone: 781-238-8880 • Fax: 781-238-8884

Engineers • Scientists • Planners

September 17, 2024

Meryl Nistler, AIA, WELL AP, LEED AP, MCPPO, NCARB
Senior Project Manager
Studio G Architects, Inc.
179 Boylston Street, Suite P
Jamaica Plain, Massachusetts 02130

E: meryln@studiogarchitects.com
P: 617. 524.5558

Re: ESCS Proposal (8465) – Geo-Environmental Test Pit Observations
Shaker Lane Elementary School
35 Shaker Lane, Littleton, MA 01460
Environmental Science Consulting Services

Dear Meryl:

In accordance with your request, PEER Consultants is pleased to provide this cost proposal to conduct the following environmental science consulting services, related to the proposed work at the proposed new Shaker Lane Elementary School building (the "Building"), to be located on a property located at 35 Shaker Lane, Littleton, Middlesex County, Massachusetts (the "Property").

BACKGROUND:

According to the Town's Request for Design Services, as a result of a collaborative analysis with the MSBA of enrollment projections and space capacity needs for the proposed project at the Shaker Lane Elementary School, the Town of Littleton acknowledged and agreed that the design of the proposed project at the Shaker Lane Elementary School shall be based on an enrollment of no more than 435 students in grades K-2.

Littleton is a community located at the intersection of Route 495 and Route 2. The Town has approximately 10,000 residents and 1,700 students in four schools. The Town of Littleton is governed by a 5-member Board of Selectmen, with financial advice from the Town Finance Committee. Legal Counsel is consulted as needed. Town meetings are generally held twice per year in the spring and fall. The School Committee is comprised of 5 members, elected on a rotating basis. Both the Town and the School Department provides information on board members on their respective websites. The Littleton Public School Department consists of 4

school buildings: the Shaker Lane Elementary School serves grades Pre-K to 2, the Russell Street Elementary School educates students in grades 3-5,the Littleton Middle School serves grades 6-8, and the Littleton High School serves grades 9-12.

The Shaker Lane Elementary School's main building was constructed in 1959, with a small addition in 1962 when classroom space was added. In 1998, there was a building renovation including the gymnasium, core hallways and south classrooms and an addition, which included the north end of the building consisting of the main office suite, library, cafeteria, and a six classrooms kindergarten wing was added to the building.

The Shaker Lane Elementary School is approximately 70,000 sq ft, two story building that services approximately 460 Pre-K-2 students. The Shaker Lane Elementary School is located on the west side of Littleton, MA, serving as one of two elementary schools for the Town. It is located at 35 Shaker Lane with access to the site from an extension road running between Roxbury Drive and Rosewood Road.

According to the Town of Littleton Assessor's Maps, the Shaker Lane Elementary School site's total property consists of 31.1 acres. The site consists of the school building and associated parking, play areas and infrastructure. There are two softball fields, which are maintained by the Town, as well as an undeveloped forested area. The only other structure on the site is the pump house for the septic system. There are underground tanks associated with the septic system buried on the north side of the building, the leaching field is located on school owned property off site, at the end of University Drive, which is a dead-end street, to the South of the school Site. Pedestrian and Vehicular access to the school continues to be a safety concern. The current layout does not allow for a clear separation of bus traffic, parent drop-off areas and pedestrian routes. Additionally, there are two parent drop off areas, one for the Preschool program and one for the students in grades 1 and 2, whose parents drive them to school.

The school property also supports two softball fields, which are operated by the Town, playground, and hard surface play as well as the associative pedestrian sidewalks, driveways and parking spaces supporting the school. The 1959/62 building is steel frame with load bearing CMU. The upper floors have concrete-topped metal decks supported by steel beams and open web steel joists. The primary roofs are classified as a "flat" roof, sloped to internal drains which discharge to an underground storm drainage system. The roof is constructed of metal decks, which are supported by steel beams and open web steel joists. The corridor and stair walls are CMU, and the exterior of the building is brick veneer. The roofs are finished with a single ply EPDM membrane, with some areas adhered with stone ballast. The 1997/1998 addition is a similar steel frame construction, with some load bearing CMU. The wing added in 97/98 is all single story, with roof structure metal decks supported by steel beams and open web steel joints. The roof is a "flat" roof, sloped to internal drains which discharge to an underground storm drainage system. The corridor and stair walls are CMU, and the exterior of the building is brick veneer.

Furthermore, PEER understands that based on a proposal you received from the geotechnical engineer, that the geotechnical engineer has indicated the following:

"GeoEngineers will provide a field representative to observe and log one (2) days of test pit excavations. We have assumed that up to eight (8) test pits can be completed in one day, pending field conditions and access considerations.

PEER understands that GeoEngineers likely meant "two (2) days", and that you have asked PEER to also hold two days on the Property, with a third day, as may be needed. PEER understands that the Town will be providing a backhoe and a backhoe operator at these proposed test pits.

SCOPE OF SERVICES

Task I. Limited Geo-Environmental Observation-Based Soil Investigation

Subtask 1.1: PEER understands that the Town will DIGSAFE the proposed test pit locations and will be present on Site with GeoEngineers to advance an excavation at each test pit to an approximate depth of 10 feet below ground surface at the Site. PEER assumes that the Town will only have one backhoe on Site, and that GeoEngineers will have one of their Geotechnical Inspectors; therefore, PEER will plan to only have one representative on the Site in order to visually document suspect soil conditions within each test pit as it relates to the potential presence of visual indicators of oil and hazardous materials within the soil.

Based on a discussion with you, since the Project is currently in a feasibility phase, PEER will not collect and analyze soil (or any other media) from the test pits.

Subtask 1.2 – Feasibility Phase Test Pit Observation Memorandum

PEER will prepare one (1) Feasibility Phase Test Pit Observation Memorandum.

◊

Please inform us in advance whether the current scope of this proposal may take place during normal business hours, or whether we will need to plan for sampling during nights, holidays, or the weekend. If our understanding of this portion of the scope of the project is different from actual anticipated work, or if labor hours for Task 1 will also be outside of normal business hours, please inform us immediately, and we will make appropriate adjustments to this proposal.

2. COST

For the work outlined above in Scope of Services, including in consideration of our assumptions, we propose a fee for services as indicated in the following table, Table A.

Table A – Limited Geo-Environmental Observation-Based Soil Investigation

Environmental Science Consulting Services Level of Effort: **Limited Geo-Environmental Observation-Based Soil Investigation**	Total Cost ($)
Shaker Lane Elementary School **35 Shaker Lane, Littleton, Massachusetts**	
Task 1.0 – Limited Geo-Environmental Observation-Based Soil Investigation ---	
Subtask 1.1: One PEER Representative on Site on two business days to visually document suspect soil conditions within each test pit as it relates to the potential presence of visual indicators of oil and hazardous materials within the soil. **Day 1 and Day 2.**	5,272.00
Subtask 1.1 (Alternate 1): One PEER Representative on Site on a third business day (**Day 3, if needed**) to visually document suspect soil conditions within each test pit as it relates to the potential presence of visual indicators of oil and hazardous materials within the soil.	2,340.00
Subtotal: Subtask 1.1	***5,272.00***
Subtotal: Subtask 1.1 (with Alternate 1)	***7,612.00***
Subtask 1.2: One Feasibility Phase Test Pit Observation Memorandum.	1,310.00
Subtask 1.3: PEER has included one virtual project coordination meeting with the Architect of up to 1.5 hours duration, which includes preparation, to discuss the results of the test pit observation memorandum at this phase of the Project.	302.00
Estimate Total (without Add Alternate)	**6,884.00**
Estimate Total (with Add Alternate 1)	**9,224.00**

3. SCHEDULE

We can start work as soon as this project is awarded to PEER through the issuance of a contract, and as soon as you can schedule property access and other site support staff for this project. Please note that physical, chemical, biological, and/or viral hazards, as well as any other local, State, or Federally imposed restrictions may delay the initiation of this assignment.

4. STAFF RESPONSIBILITY

Mr. David Gorden, Board Certified Environmental Scientist, will be in charge of the project, and we understand that you will provide general direction and policy decisions on behalf of your organization. Other staff members with appropriate technical backgrounds will participate in this project.

5. GENERAL PROVISIONS

Our work for clients is conducted on a confidential basis, and we will treat information received from you or developed by us in accordance with our Established Professional Standards.

Our work will be on a best-efforts basis. We expect that the results will meet the objectives sought, and we have assigned to the work professional personnel having the required skills, experience and competence. Our recommendations and the written material we provide will be our best judgment based upon the information available to us. In any event, our liability for damages arising out of your use of the results of our work or any recommendations we may make shall not be greater than the amount paid to us for the professional services rendered within this proposal.

Any change in this agreement shall be confirmed in writing. This agreement shall be interpreted according to the laws of the Commonwealth of Massachusetts.

6. ACCEPTANCE

We appreciate the opportunity to work with you on this important assignment for the **Littleton Public Schools**. This proposal is considered valid when signed below, and when signed and returned to us within sixty (60) days of the proposal date. This proposal assumes that all tasks within Table A occur prior to December 2024. To authorize us to proceed, please issue us a contract to complete the work, and sign and return this proposal to us.

Sincerely,

John M. Corliss, Jr., PE
Senior Vice President and Chief Engineer
PEER Consultants, PC

Accepted for
Studio G Architects Inc.

By: _____

Title: _____

Date: _____

Shaker Lane Elementary School Project Budget

As of October 16, 2024

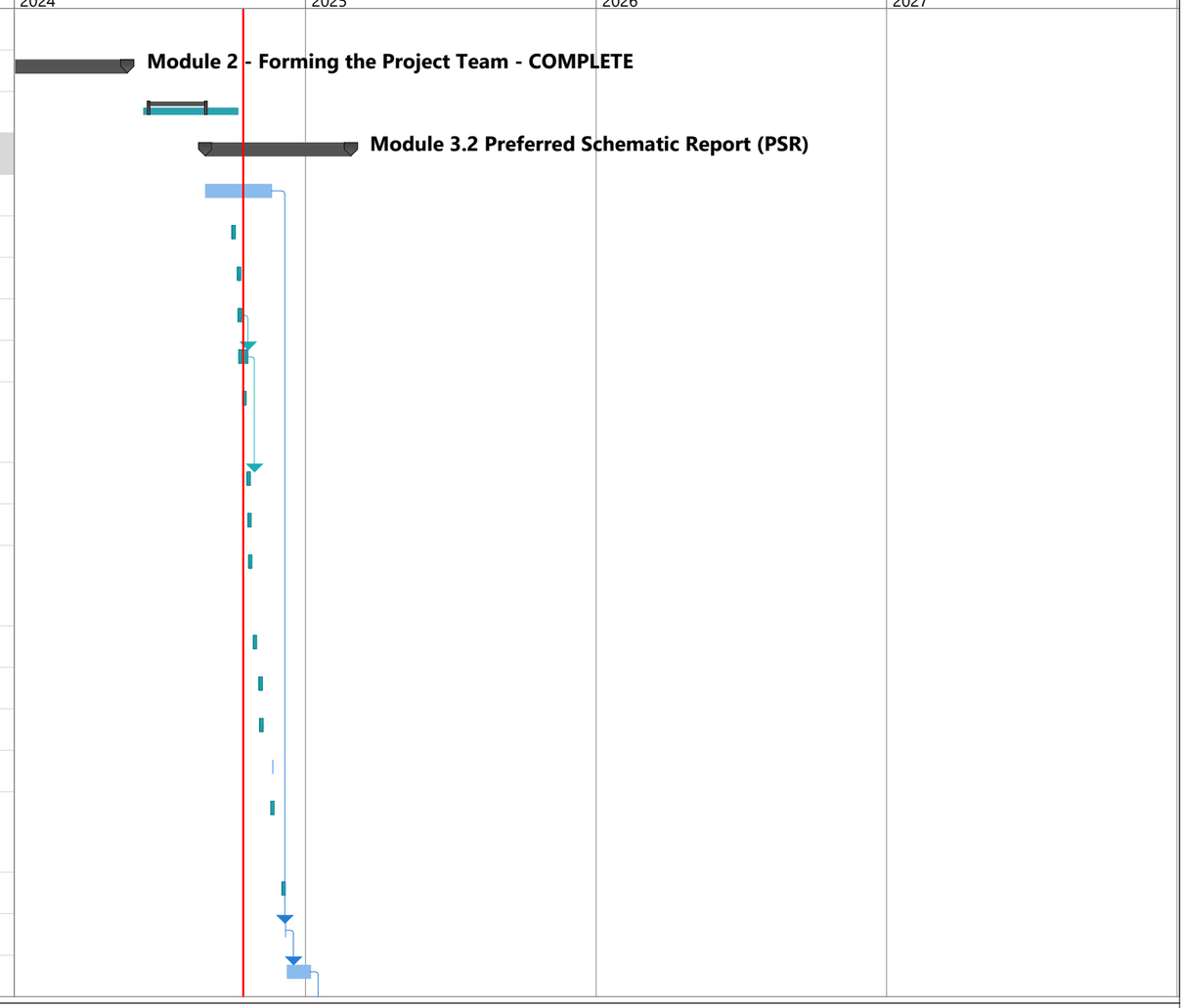
Turner & Townsend Heery

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
1	0000-0000	Feasibility Study Agreement								
2										
3	0001-0000	OPM - Feasibility Study	$ 285,000.00	$ 285,000.00	$ 285,000.00	$ -		$ 108,672.00	$ 176,328.00	
4		TTH PJIN003903						$ 8,800.00		01/08/24
5		TTH PJIN0039656						$ 11,248.00		02/15/24
6		TTH PJIN0039816						$ 9,176.00		03/06/24
7		TTH PJIN004040081						$ 11,008.00		04/03/24
8		TTH PJIN0040323						$ 10,064.00		05/08/24
9		TTH PJIN0040575						$ 13,988.00		06/10/24
10		TTH PJIN0040888						$ 11,403.00		07/11/24
11		TTH PJIN00411122						$ 14,307.00		08/08/24
12		TTH PJ1N0041380						$ 18,678.00		09/18/24
13										
14										
15										
16										
17										
18										
19										
20	0002-0000	A&E Feasibility Study	$ 650,000.00	$ 650,000.00	$ 650,000.00	$ -		$ 225,000.00	$ 425,000.00	
21		Studio G Invoice 0001						$ 90,000.00		06/30/24
22		Studio G Invoice 0002R						$ 45,000.00		07/31/24
23		Studio G Invoice 0004						$ 45,000.00		08/31/24
24		Studio G Invoice 0006						$ 45,000.00		09/30/24
25										
26										
27										
28										
29										
30										
31										
32										
33										
34										
35										
36	0003-0000	Environmental & Site	$ 140,000.00	$ 140,000.00	$ 140,000.00	$ -		$ 44,742.50	$ 95,257.50	
37		Studio G Invoice 0003						$ 5,280.00		MDM Traffic Study 7/31/24
38		Studio G Invoice 0005						$ 37,372.50		Samiotes Site Survey, EFI Global Haz Material, MDM Traffic Study 08/31/24
39		Studio G Invoice 0007						$ 2,090.00		Samiotes Site Survey 09/30/24
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										
50	0004-0000	Other	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ -		$ -	$ 10,000.00	
51										
52										
53		Feasibility Study Agreement - TOTAL	$ 1,085,000.00	$ 1,085,000.00	$ 1,085,000.00	$ -		$ 378,414.50	$ 706,585.50	
54										

Turner & Townsend Heery

Shaker Lane Elementary School Project
OPM Project Milestone Schedule
October 16, 2024

ID	Task Name	Duration	Start	Finish
1	Module 1 - Eligibility Period - COMPLETE	19 days	Wed 6/1/22	Mon 6/27/22
5	Module 2 - Forming the Project Team - COMPLETE	214 days	Thu 7/27/23	Tue 5/21/24
27	Module 3.1 Preliminary Design Program (PDP)	52 days	Tue 6/18/24	Wed 8/28/24
40	**Module 3.2 Preferred Schematic Report (PSR)**	**131 days**	**Wed 8/28/24**	**Wed 2/26/25**
41	Develop PSR	59 days	Wed 8/28/24	Mon 11/18/24
42	**School Building Committee meeting**	1 day	Wed 10/2/24	Wed 10/2/24
43	Cost estimate information available	1 day	Wed 10/9/24	Wed 10/9/24
45	Documents for Estimates sent to Estimators	1 day	Thu 10/10/24	Thu 10/10/24
46	Cost Estimates Production	6 days	Fri 10/11/24	Fri 10/18/24
44	**School Building Committee Meeting/Joint Session with Select Board, School Committee, & Finance Committee**	**1 day**	**Wed 10/16/24**	**Wed 10/16/24**
47	Review / Reconcile Cost Estimates	1 day	Mon 10/21/24	Mon 10/21/24
48	Review Cost Estimates with SLSBC	1 day	Tue 10/22/24	Tue 10/22/24
49	**School Building Committee Meeting/Joint Session with Select Board, School Committee, & Finance Committee**	**1 day**	**Wed 10/23/24**	**Wed 10/23/24**
50	Special Town Meeting	1 day	Tue 10/29/24	Tue 10/29/24
51	Deliver PSR to Sub-Committee	1 day	Tue 11/5/24	Tue 11/5/24
53	Sub-Committee meeting to Review PSR Submission	1 day	Wed 11/6/24	Wed 11/6/24
52	**School Building Committee Meeting**	**1 day**	**Wed 11/20/24**	**Wed 11/20/24**
64	**SBC/School Committee Approval of Preferred Schematic Report - PSR**	**1 day**	**Wed 11/20/24**	**Wed 11/20/24**
57	Sub-Committee meeting (TBD)	1 day	Wed 12/4/24	Wed 12/4/24
54	**PSR Submittal Date to MSBA (NO fewer than 12 weeks after PD**	1 day	Fri 12/6/24	Fri 12/6/24
55	MSBA Review of PSR (21 days required)	21 days	Mon 12/9/24	Mon 1/6/25



Shaker Lane Elementary School
Date: Tue 10/15/24

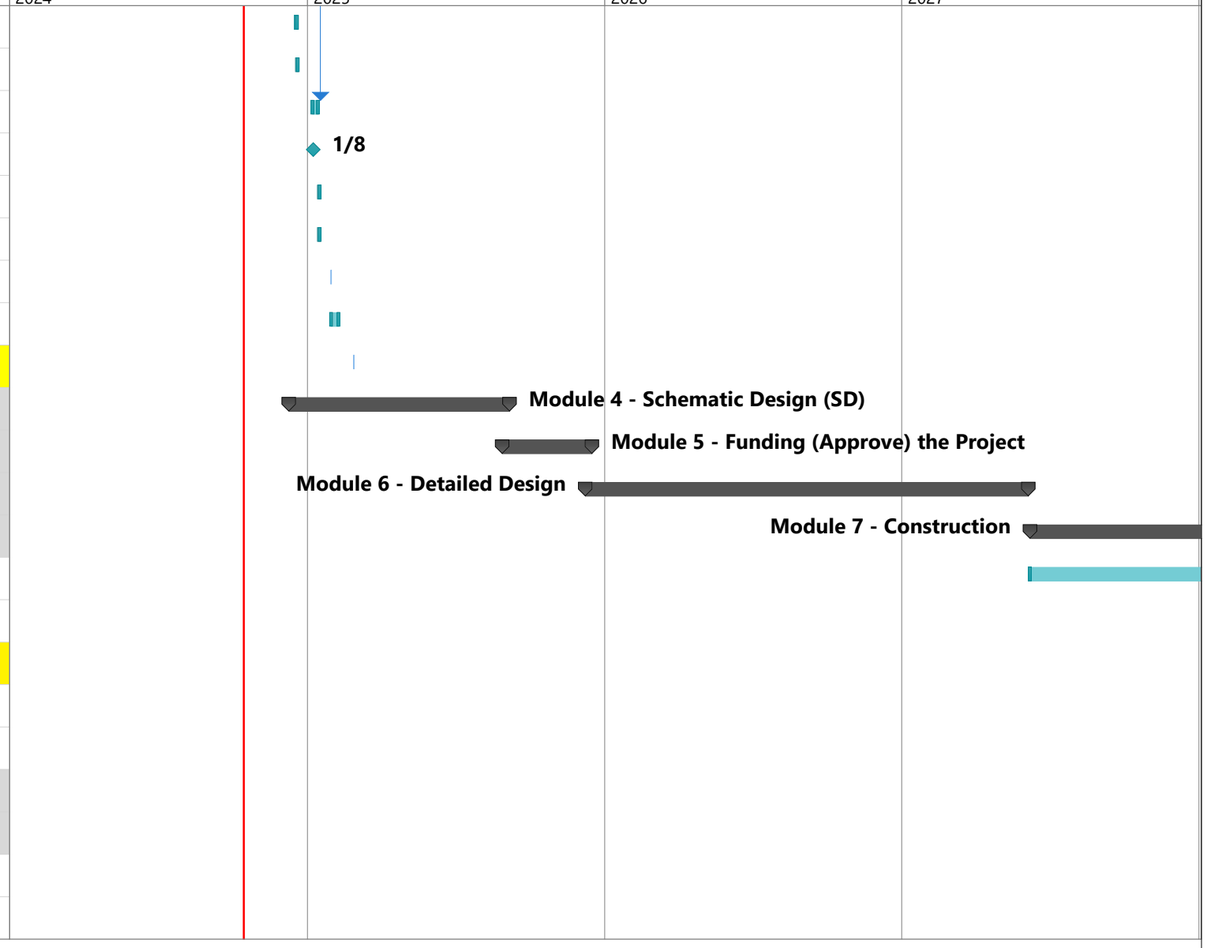
Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

618

Turner & Townsend Heery

Shaker Lane Elementary School Project
OPM Project Milestone Schedule
October 16, 2024

ID	Task Name	Duration	Start	Finish
59	**School Building Committee Meeting**	**1 day**	**Wed 12/18/24**	**Wed 12/18/24**
60	Submit PSR to FAS no later than	1 day	Thu 12/19/24	Thu 12/19/24
63	Address PSR Comments from MSBA (6 days to respond)	5 days	Tue 1/7/25	Mon 1/13/25
61	Sub-Committee meeting (TBD)	0 days	Wed 1/8/25	Wed 1/8/25
56	Facility Assessment Subcommittee (FAS) Meeting January 15	**1 day**	**Wed 1/15/25**	**Wed 1/15/25**
62	School Building Committee Meeting	**1 day**	**Wed 1/15/25**	**Wed 1/15/25**
65	Facility Assessment Subcommitte (FAS) Meeting January 29	**1 day**	**Wed 1/29/25**	**Wed 1/29/25**
66	Address MSBA / FAS comments	7 days	Thu 1/30/25	Fri 2/7/25
58	**MSBA Board Meeting - Approval of PSR**	**1 day**	**Wed 2/26/25**	**Wed 2/26/25**
67	**Module 4 - Schematic Design (SD)**	**195 days**	**Mon 12/9/24**	**Fri 9/5/25**
85	**Module 5 - Funding (Approve) the Project**	**78 days**	**Thu 8/28/25**	**Mon 12/15/25**
91	**Module 6 - Detailed Design**	**390 days**	**Mon 12/8/25**	**Fri 6/4/27**
114	**Module 7 - Construction**	**526 days**	**Mon 6/7/27**	**Mon 6/11/29**
115	Construction of New Building	400 days	Mon 6/7/27	Fri 12/15/28
116	Substantial Completion	1 day	Sun 12/31/28	Sun 12/31/28
117	Estimated Move-in Date	1 day	Mon 2/19/29	Mon 2/19/29
118	Complete Demo of Existing Building	66 days	Tue 2/20/29	Tue 5/22/29
119	Total Construction Complete - (New Building and Demolition)	14 days	Wed 5/23/29	Mon 6/11/29
120	**Module 8 - Closeout**	**260 days**	**Mon 12/18/28**	**Fri 12/14/29**
122	**Module 9 - Post Occupancy Evaluation**			
123				
124				



Shaker Lane Elementary School
Date: Tue 10/15/24

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

studio g ARCHITECTS
The Brewery 179 Boylston Street Jamaica Plain MA 02130
T 617-524-5558
F 617-524-5544

Town of Littleton
37 Shattuck Street
Littleton, MA 01460

Invoice number 00006
Date 09/30/2024

Project 22402 MSBA Shaker Lane Elementary School, Littleton, MA

Description	Contract Amount	Prior Billed	Total Billed	Current Billed
Feasibility Study	360,000.00	180,000.00	225,000.00	45,000.00
Schematic Design	290,000.00	0.00	0.00	0.00
Total	650,000.00	180,000.00	225,000.00	45,000.00

Invoice total 45,000.00

Aging Summary

Invoice Number	Invoice Date	Outstanding	Current	Over 30	Over 60	Over 90	Over 120
00004	08/31/2024	45,000.00		45,000.00			
00006	09/30/2024	45,000.00	45,000.00				
	Total	90,000.00	45,000.00	45,000.00	0.00	0.00	0.00

studio g ARCHITECTS
The Brewery 179 Boylston Street Jamaica Plain MA 02130
T 617-524-5558
F 617-524-5544

Town of Littleton
37 Shattuck Street
Littleton, MA 01460

Invoice number 00007
Date 09/30/2024

Project 22402 MSBA Shaker Lane Elementary School, Littleton, MA

Description	Contract Amount	Prior Billed	Total Billed	Current Billed	
Reimbursables					
Site Survey	22,825.00	20,735.00	22,825.00	2,090.00	A
Traffic Study	17,600.00	12,100.00	12,100.00	0.00	
Hazardous Materials	10,973.00	9,817.50	9,817.50	0.00	
Soil Testing	9,900.00	0.00	0.00	0.00	
Geotechnical	19,800.00	0.00	0.00	0.00	
Geoenvironmental	0.00	0.00	0.00	0.00	
Subtotal	81,098.00	42,652.50	44,742.50	2,090.00	
Total	81,098.00	42,652.50	44,742.50	2,090.00	

Invoice total 2,090.00

Aging Summary

Invoice Number	Invoice Date	Outstanding	Current	Over 30	Over 60	Over 90	Over 120
00005	08/31/2024	37,372.50		37,372.50			
00007	09/30/2024	2,090.00	2,090.00				
	Total	39,462.50	2,090.00	37,372.50	0.00	0.00	0.00

MM Reviewed 9/17/2023 Add Service - "Site Survey & Wetlands"

Invoice

Samiotes Consultants, Inc.
Civil Engineering + Land Surveying
20 A Street
Framingham, MA 01701
T 508.877.6688
www.samiotes.com

Studio G Architects
Meryl Nistler, AIA, WELL AP, LEED AP, MCPPO, NCARB
179 Boylston Street
Jamaica Plain, MA 02130

September 12, 2024
Project No: 54025.01
Invoice No: 22669

Project 54025.01 Shaker Lane Elementary School - Littleton (s)

Email invoice to: Paula Tennyson (Controller): paulat@studiogarchitects.com

Studio G Project : #22402

Professional Services from August 1, 2024 to August 31, 2024
Fee

Task	Contract Amount	Percent Complete	Billings to Date	Previously Billed	Current Fee Billing
Limited Topographic Survey & Plan T1	19,000.00	100.00	19,000.00	17,100.00	1,900.00
Wetland Site Walk & Report T2	1,750.00	100.00	1,750.00	1,750.00	0.00
Total Fee	20,750.00		20,750.00	18,850.00	1,900.00
	Total Fee				**1,900.00**
			Total this Invoice		**$1,900.00**

Outstanding Invoices

Number	Date	Balance	Inv Amt	10% markup	Total Due	
22557	8/7/2024	18,850.00	$1,900.00	$190.00	**$2,090.00**	**A**
Total		**18,850.00**				

REIMB: Site Survey

Terms: DUE UPON RECEIPT. 1.5% Service charge on past due amounts over 30 Days

Turner & Townsend Heery, LLC
3550 Lenox Road NE, Suite 2300
Atlanta, GA 30326
FEI: 58-0827945

Invoice	
Invoice Number	PJIN0041586
Date	10/7/2024
Project Number	HII-2336600

FERRARA, RYAN

TOWN OF LITTLETON, MASSACHUSETTS

35 SHAKER LANE
Littleton, MA 01460

Project Name SHAKER LANE ELEMENTARY SCHOOL- FS/SD

Professional Services Rendered for September 1 through September 30, 2024

SCHEMATIC DESIGN			**14,215.00**
	Labor	14,215.00	
	PAYMENT DUE THIS INVOICE		**14,215.00**

Cumulative Billings	**Current**	**Prior Periods**	**To-Date**
Labor	14,215.00	108,377.00	122,592.00
Totals	**14,215.00**	**108,377.00**	**122,592.00**

Contact: STAFFORD, MARK (Mark.Stafford@turntown.com) with invoice questions. **Page: 1 of 2**

Turner & Townsend Heery, LLC
3550 Lenox Road NE, Suite 2300
Atlanta, GA 30326
FEI: 58-0827945

Invoice	
Invoice Number	PJIN0041586
Date	10/7/2024
Project Number	HII-2336600

Project Name SHAKER LANE ELEMENTARY SCHOOL- FS/SD

Professional Services Rendered

Employee Name	Period Ending	Hours	Rate	Multiplier	Bill Amount
SCHEMATIC DESIGN					
STAFFORD, MARK	9/3/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	9/5/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	9/6/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	9/9/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	9/10/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	9/12/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	9/13/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	9/16/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	9/17/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	9/19/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	9/20/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	9/23/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	9/24/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	9/26/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	9/27/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	9/30/2024	8.00	148.00	1.00	1,184.00
ZEYTOONIAN, NINA	9/4/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	9/5/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	9/6/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	9/9/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	9/10/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	9/11/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	9/17/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	9/18/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	9/19/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	9/23/2024	2.00	125.00	1.00	250.00
ZEYTOONIAN, NINA	9/24/2024	2.00	125.00	1.00	250.00
ZEYTOONIAN, NINA	9/25/2024	2.00	125.00	1.00	250.00
ZEYTOONIAN, NINA	9/26/2024	2.00	125.00	1.00	250.00
ZEYTOONIAN, NINA	9/27/2024	2.00	125.00	1.00	250.00
Subtotal, SCHEMATIC DESIGN		**99.00**			**14,215.00**
	LABOR AMOUNT THIS INVOICE				**14,215.00**

Contact: STAFFORD, MARK (Mark.Stafford@turntown.com) with invoice questions.

Received: AS
Date/Time: 10/21/24 - 1:40 PM
Revised:
Date/Time:

AGENDA

Joint Meeting

Shaker Lane School Building Committee/Select Board

Finance Committee/School Committee

Wednesday, October 23, 2024

7:00p.m. - 8:00p.m.

Hybrid

Littleton Police Department Community Room

500 Great Road

When: Oct 23, 2024 07:00 PM Eastern Time (US and Canada)
Topic: Shaker Lane School Building Committee Joint Meeting SLSBC/FinCom/SB/SC
Please click the link below to join the webinar:
https://littletonma.zoom.us/j/86752804530?pwd=XcTGguNOKeUEXFr3ufr2BbILnRf6F2.1
Passcode: 290283
Webinar ID: 867 5280 4530
International numbers available: https://littletonma.zoom.us/u/kcTdRJUd1o

VIDEO OR CALL WILL BE MUTED UPON JOINING MEETING.
Please use the "RAISE YOUR HAND" feature in the Zoom meeting to ask to speak.
PARTICIPANTS/ATTENDEES ARE REMINDED THAT BY JOINING THIS MEETING, YOU CONSENT TO YOUR LIKENESS AND AUDIO BEING USED AND REBROADCAST BY LCTV
This Rebroadcast meeting can be viewed online at LCTV On-Demand at https://cloud.castus.tv/vod/littleton/

7:00

1. Plan updates / Cost estimates overview
2. Outline for Special Town meeting 10-minute presentation
3. Public Comment

8:00 ADJOURNMENT

Shaker Lane Building Committee Minutes

10/23/24
7 pm

Attending

Dorothy Mulone *
Organizer
Steve Venuti *
Steve Moore *
Marylee Mercy *
Meryl Nistler *
Mark Stafford *
Ryan Ferrara *
Kelly Clenchy *
Chuck DeCoste *
Michelle Kane *

Shaker Lane School Building Committee - Joint Meeting - October 23rd, 2024 @ 7:00 PM - Hybrid: In-Person, LPD Community Room (500 Great Road) & Virtual via Zoom

Meryl Nistler Presented the site and floor plan update of 3 choices that have been proposed to MSBA and discussed the following topics:

- Sq ft differences, design and location
- Cost Analysis
- Construction Costs
- Cost estimators and MSBA Estimates
    - $92M- $106M estimated total project costs
    - $27M-$24M estimated reimbursement from MSBA
- Criteria for design options
- Project schedule
- Estimated ~ 35% of project will be reimbursement from MSBA once the project is completed

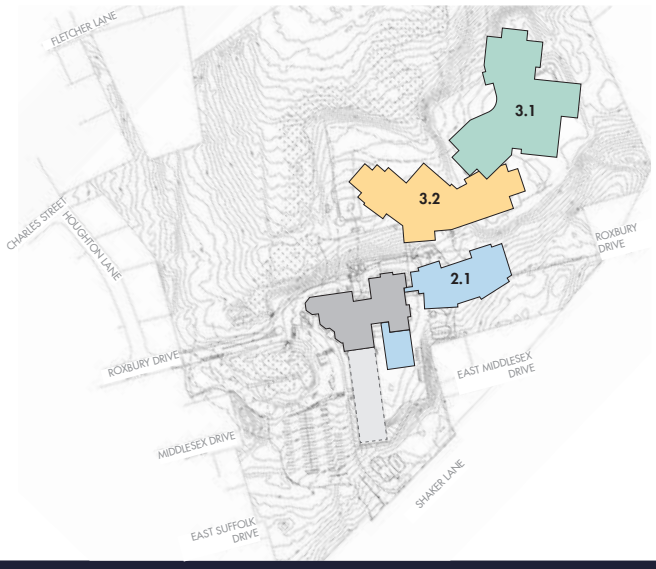
Cost estimates overview presentation made by Steve Venuti and discussed the following topics

- Debt service and Tax Estimates
- Explanation of 20 year bond issuance and possible tax impacts on residents are all subject to change

- Estimated Construction cost and Tax impacts

Proposed Outline for Special Town meeting presentation was discussed and suggestions were made for approval

Motion made to adjourn made by Ryan F, Seconded Chuck D, unanimous vote



Design Agenda

1. Design Update
2. Cost Estimates Update
3. Special Town Meeting Outline

studio g architects | Turner & Townsend Heery | ATLANTIC

School Building Committee Meeting
Joined by: Finance Committee, Select Board, & School Committee

Shaker Lane School Project • Littleton Public Schools • Town of Littleton, MA

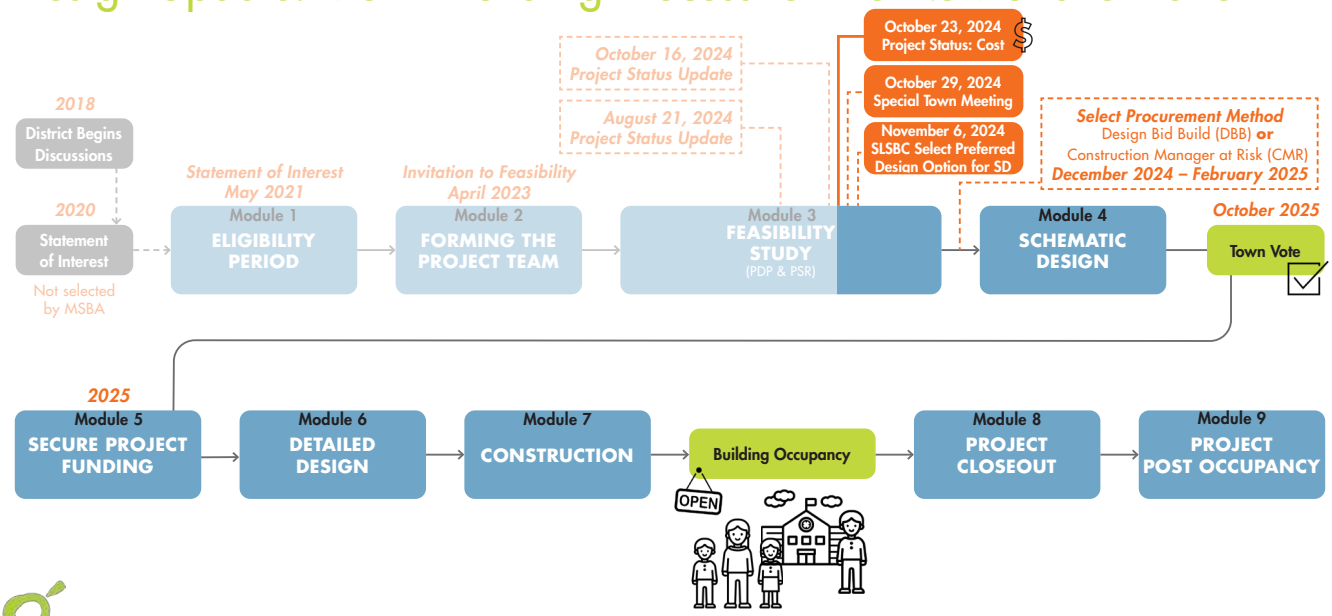
October 23, 2024

1

Project Goals

- Respond to the Educational Program to provide **integration** of Unified Arts and Social Emotional Learning programs, and support the concept of **Learning Everywhere**
- Provide spaces that can be shared with Littleton residents to increase value and utility, and to **build community**, incorporating elements of local history and community values in the design.
- Create a **healthy, safe and secure** environment
- **Maximize flexibility and adaptability** to support a broad variety of learning experiences, and to evolve over time to **accommodate future needs**
- Use cost-effective design strategies to **maximize value**, for construction costs and life-cycle costs
- Incorporate **sustainable** technologies, energy efficiency, and environmentally-friendly practices
- Create a Universally Designed building to **maximize inclusion** and accessibility

Design Update: MSBA Building Process for the New Shaker Lane



Design Update



	EXISTING SLS	MSBA GUIDELINES	INITIAL PROGRAM	OPTION 2.1: ADD / RENO 7/17/24 SCORE: 70.00	OPTION 3.1: UPPER FIELD 7/17/24 SCORE: 88.15	OPTION 3.2: LOWER FIELD 7/17/24 SCORE: 69.55
Net Square Foot (NSF) Total	41,124	49,231	69,251	63,233	64,871	64,871
GROSS SQUARE FOOT (GSF) TOTAL	60,790 Includes several corridors and closets being used as program spaces	73,845 Does not include Pre-K or Special Education Spaces *(approx. 86,000)*	103,876 From August 21, 2024	94,850 max Some existing spaces to remain are undersized (below MSBA guidelines)	97,307 max	97,307 max

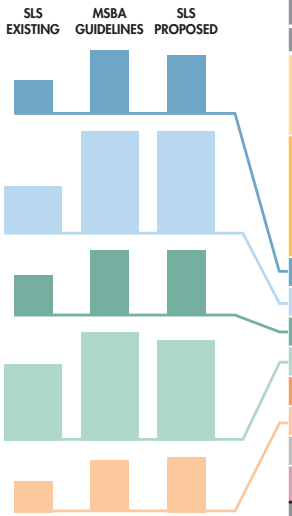
Space Summary Review

ROOM TYPE	EXISTING SHAKER LANE AREA SF	MSBA GUIDELINES	NEW SHAKER LANE AREA SF	UNIQUE SCOPE REQUIRED FOR SHAKER LANE EDUCATION PLAN
STUDENTS	446	435	435 + PRE-K	
Core Academics	21,010	21,950	26,950	• Additional classroom for consistency in Grades 1 & 2 • Academic support specialist offices • "Imagatorium" STEM spaces • Extended learning "Dens"
Special Education	4,124	4,530*	10,920	• Support room for each grade • Small group rooms for push-in instruction • ELL classroom • OT/PT & Adaptive PE rooms • Clinical support specialist offices • Special Ed conference room
Arts & Music	1,305	2,575	2,350	
Health & Physical Education	2,828	6,300	6,300	
Media Center	1,614	2,628	2,628	
Dining & Food Service	4,802	6,552	6,763	• Collaborative Staff Room
Medical	502	510	590	• Second Toilet with Changing Table
Administration & Guidance	1,296	2,151	2,310	• Teacher Work Room
Custodial & Maintenance	715	2,035	1,660	
Pre-K & Other	2,928	0**	4,700	• Four Pre-K classrooms
Net Total	41,124	49,230	64,871	
GROSS TOTAL	60,790	73,845	97,307	
		~86,000***		

* MSBA guidelines do not include district-specific Special Ed spaces
** MSBA guidelines do not include Pre-K spaces
*** Adjusted size if SLS Special Ed and Pre-K spaces are included

Space Summary Review

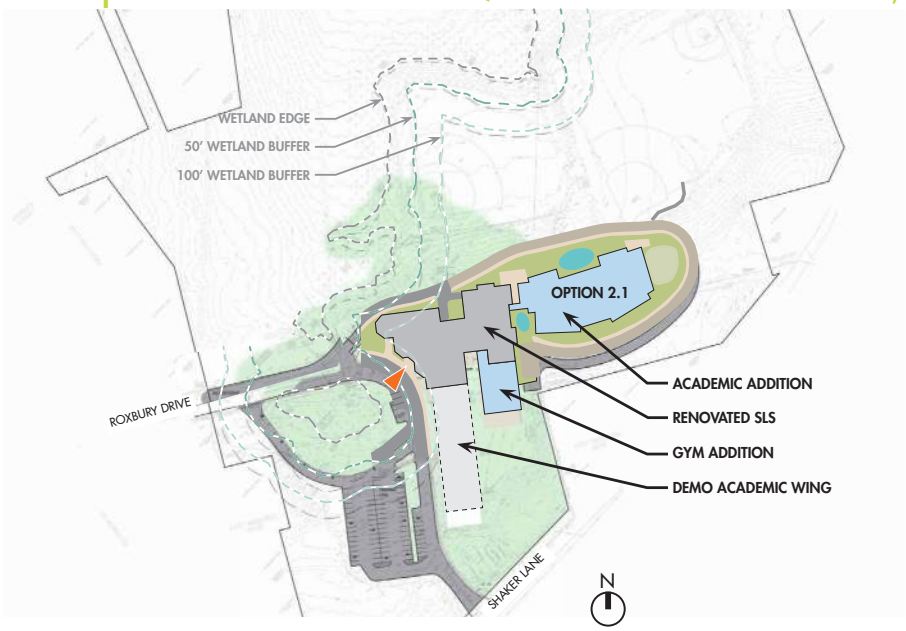
VISUAL COMPARISONS



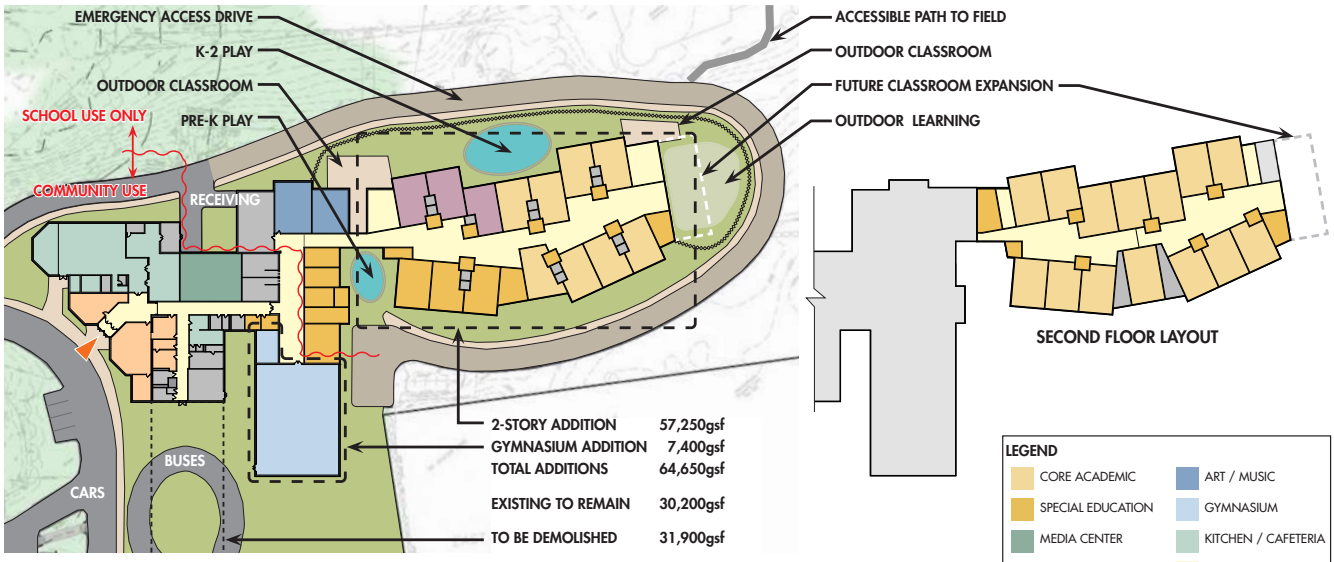
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		~86,000***		

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** MSBA guidelines do not include Pre-K spaces
*** Adjusted size if SLS Special Ed and Pre-K spaces are included

Design Update: Option 2.1– Addition / Renovation East 94,850gsf max



Design Update: Option 2.1– Addition / Renovation East 94,850gsf max



FIRST FLOOR LAYOUT

*Floor plans are conceptual and subject to further refinements

Design Update: Option 3.1 – Upper Field

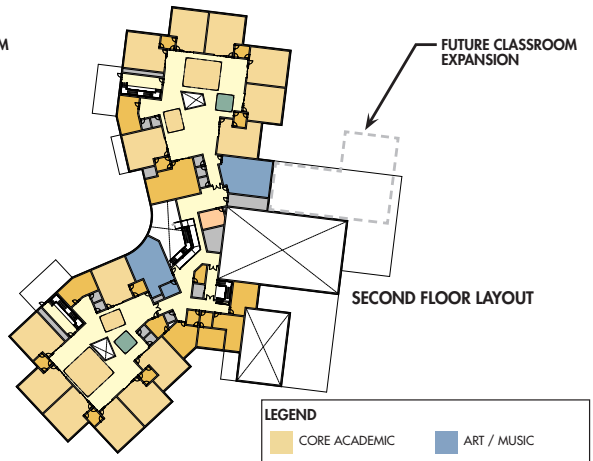
97,307gsf max

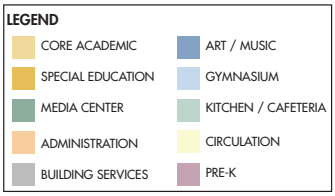


Design Update: Option 3.1 – Upper Field

97,307gsf max







*Floor plans are conceptual and subject to further refinements

Design Update: Option 3.2 – Lower Field

97,307gsf max



Design Update: Option 3.2 – Lower Field

97,307gsf max



FIRST FLOOR LAYOUT



SECOND FLOOR LAYOUT

LEGEND

- CORE ACADEMIC
- SPECIAL EDUCATION
- MEDIA CENTER
- ADMINISTRATION
- BUILDING SERVICES
- ART / MUSIC
- GYMNASIUM
- KITCHEN / CAFETERIA
- CIRCULATION
- PRE-K

*Floor plans are conceptual and subject to further refinements

Evaluation Criteria for Design Options

Site

- Adequate buildable area (excludes wetlands/ buffers, setbacks, floodplains, etc)
- Parking & vehicle queuing safe/efficient/ contained on site
- Safe pedestrian access
- Optimizes outdoor program & play spaces
- Extended access to undeveloped nature/green spaces
- Efficient use of site/integration into site

Cost/Schedule/Construction

- Minimizes MSBA non-reimbursement items
- Construction schedule
- Complexity of phasing
- Impact to educational program/facilities during construction
- Impact to abutters during construction
- **Cost**

Sustainability

- Ability to readily meet energy code
- Ease of facility maintenance
- Potential for geothermal system
- Good solar orientation in academic wing
- Effort required to become solar panel-ready
- Ability to support future expansion
- Potential to achieve LEED Silver (increases MSBA reimbursement rate)
- Potential to achieve Net Zero

Community/Neighborhood

- Affords community use of playgrounds/fields
- Local traffic impacts
- Building mass & scale impacts on abutters/ neighborhood

General

- Likely successful debt exclusion vote
- Geographic location in the district
- Permitting complexity (wetlands, planning, ZBA, Article 97, etc)

NEXT STEPS

1. SLSBC will update these criteria to make any necessary revisions.
2. SLSBC will evaluate all three design options based on updated criteria and cost estimate information.
3. SLSBC will vote to select one final option to move forward into Schematic Design.

Construction & MSBA Estimates

- Construction costs and MSBA reimbursements are estimated based on current project assumptions.
- MSBA reimbursements vary based on specific reimbursement rates for specific portions of the project, for example site work, approved square footage, demolition, etc.
- 30% to 35% is an estimated range and does not reflect exact rates of reimbursement

Comparative Cost Analysis

Estimated cost data from PM&C and TTH estimates, based on October 2024 information



	OPTION 2.1 RENO/ADD: EAST		OPTION 3.1 NEW: UPPER FIELD		OPTION 3.2 NEW: LOWER FIELD	
	PDP	PSR	PDP	PSR	PDP	PSR
Estimated Square Footage	103,000 sf	94,950 sf	103,000 sf	97,307 sf	103,000 sf	97,307 sf
Estimated Construction Cost per Square Foot	**$848.26**	**$858.50**	**$876.74**	**$888.16**	**$858.67**	**$877.08**
Estimated Construction Cost DBB	$87.4M	$76.8M	$90.3M	$81.9M	$88.4M	$80.9M
Estimated Construction Cost CMR	$92.6M	$81.4M	$95.7M	$86.9M	$93.7M	$85.8M
Estimated Soft Costs (based on DBB)	$17.5M	$15.4M	$18.0M	$19.4M	$17.7M	$16.2M
Estimated Total Project Cost Design Bid Build (DBB)	**$104.9M**	**$92.2M**	**$108M**	**$101.3M**	**$106.1M**	**$97.1M**
Construction Manager at Risk (CMR)	**$110.1M**	**$96.8M**	**$114M**	**$106.3M**	**$111.4M**	**$102.0M**
Estimated Potential MSBA Reimbursement	**~$23.0M – 26.9M**		**~$24.6M – 28.7M**		**~$24.3M – 28.3M**	

Project Comparison: Estimated Construction Cost Context (End of SD)

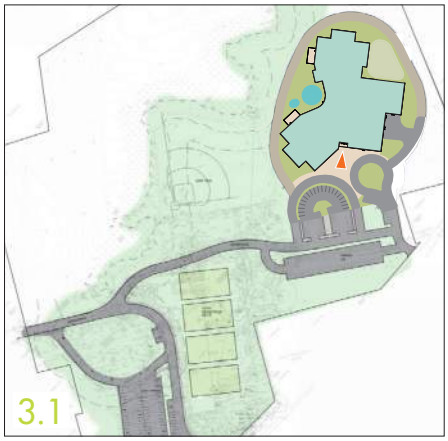
MSBA Elementary School Building Projects, New Construction - Information provided from MSBA website

	NEW BEDFORD	NEWTON	SCITUATE	STOUGHTON	BERKLEY	NORTH ADAMS
Date MSBA Board Approved	Dec 2023	Dec 2023	April 2024	April 2024	June 2024	June 2024
Enrollment	760	465	460	515	385	240
MSBA Approved Square Footage	124,160sf	76,000sf	106,084sf	101,550sf	84,620sf	73,600sf
Estimated Construction Cost per Square Foot	**$778**	**$794**	**$895**	**$904**	**$832**	**$726**
Estimated Total Project Costs	$119.7M	$76.0M	$119.4M	$114.4M	$89.9M	$65.3M

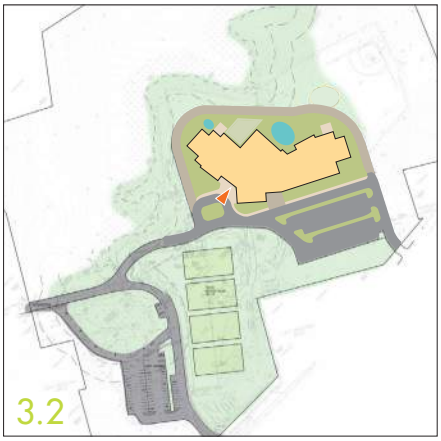
Discussion



RENOVATION & ADDITION TO EAST OF SLS



NEW CONSTRUCTION - UPPER FIELD



NEW CONSTRUCTION - LOWER FIELD

Special Town Meeting Outline

- We've Outgrown the Shaker Lane School
  Shaker Lane School no longer meets our needs
- Estimated Costs
  Estimated construction costs and estimated reimbursement
- Examples from Other Communities
  Recent cost examples and MSBA reimbursement examples
- Design Update
- Next Steps

Town of Littleton School Committee

33 Shattuck St. * P.O. Box 1486 * Littleton, MA 01460-4486 *
Phone: (978) 540-2500 * Fax: (978) 486-9581 * Website: www.littletonps.org

BINAL PATEL, Vice Chair
STACY DESMARAIS, Member
JUSTIN MCCARTHY, Chair
ELAINE SANTELMANN, Clerk
JEANINE WOOD, Member

SHAKER LANE SCHOOL BUILDING COMMITTEE
AT
SPECIAL TOWN MEETING
Tuesday, October 29, 2024
6:30 PM
Charles Forbes Kaye Gymnasium
Littleton Middle School
55 Russell Street
Littleton, MA 01460

- Any and all actions necessary with regard to any Town Meeting Articles.
- Adjourn

Received: AS
Date/Time: 10/25/24 - 11:45 AM
Revised:
Date/Time:

It is the policy of the Littleton Public Schools not to discriminate on the basis of race, gender, religion, national origin, color, homelessness, sexual orientation, gender identity, age or disability in its educational programs, services, activities or employment practices. Further information may be obtained by contacting Lyn Snow, District Equity Coordinator at 978-540-2500, lsnow@littletonps.org or 33 Shattuck Street, P.O. Box 1486, Littleton, MA 01460.

*The Littleton Public Schools' **MISSION** is to foster a community of learners who strive for excellence and prepare each student to be a successful, contributing citizen in a global society. As a district, we commit to evolve together as a diverse community through education, accountability, and compassion.*

Shaker Lane School Project Update

1. **Shaker Lane School No Longer Meets Our Needs**
2. **MSBA Process & Design Update**
3. **Examples from Other Communities**
4. **Estimated Costs**
5. **Next Steps**

Ongoing updates available on the project website:

http://bit.ly/47cAP4B

Littleton Public Schools
Town of Littleton, MA

Shaker Lane School No Longer Meets Our Needs



Not enough classrooms





Kitchen is too small



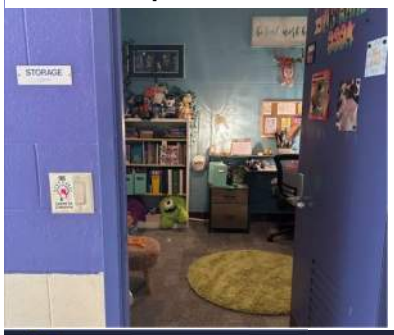


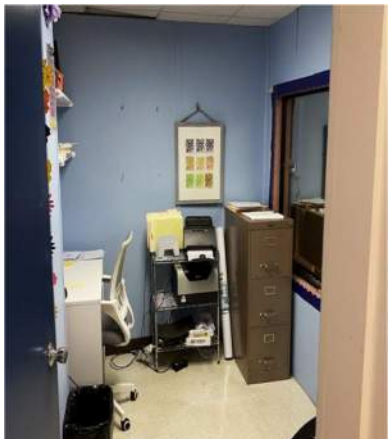
Classrooms are too small

Shaker Lane School No Longer Meets Our Needs



Student spaces in closets





Offices in closets





Inadequate teacher spaces

Littleton Public Schools
Town of Littleton, MA

Shaker Lane Project Team & Partners

- **Shaker Lane School Building Committee**
- **Select Board**
- **School Committee**
- **Finance Committee**
- **Owner's Project Manager Turner Townsend & Heery**
- **Designer Studio G Architects**
- **Massachusetts School Building Authority (MSBA)**

Littleton Public Schools
Town of Littleton, MA

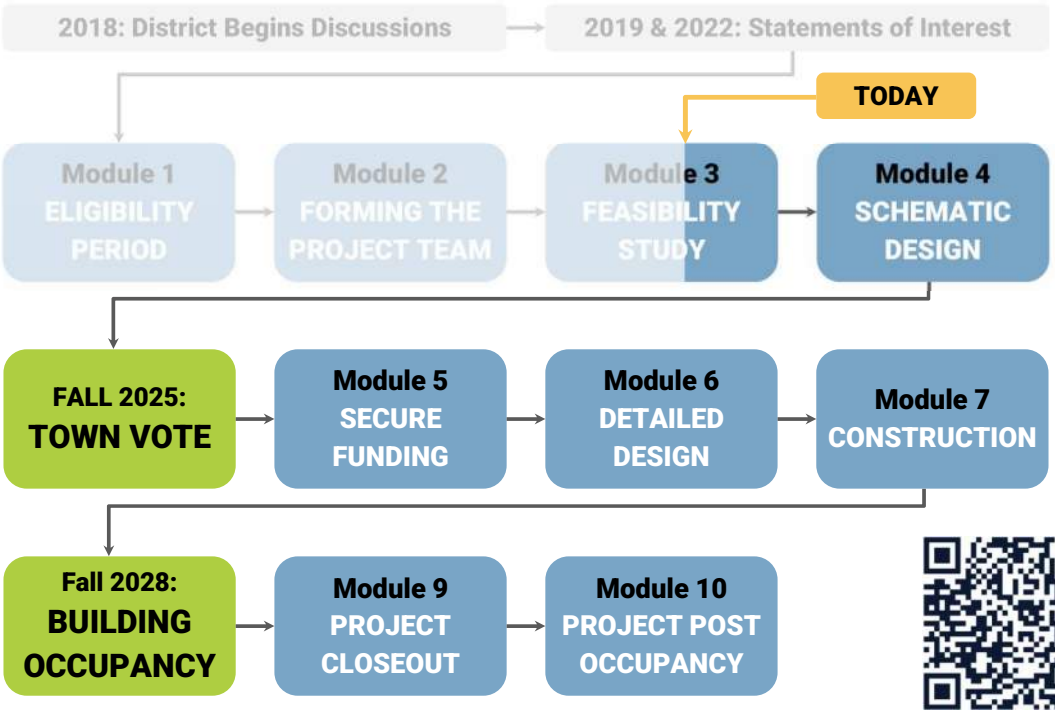
What is the Massachusetts School Building Authority?

The MSBA…

- **Partners with Massachusetts communities**
- **Supports the design and construction of public school facilities that are:**
  - Educationally-appropriate
  - Flexible
  - Sustainable
  - Cost-effective
- **Assists communities with funding**
  - Revenue comes from sales tax
  - Reimburses communities based on income, wealth, and poverty factors

Littleton Public Schools
Town of Littleton, MA

What is the MSBA Process?



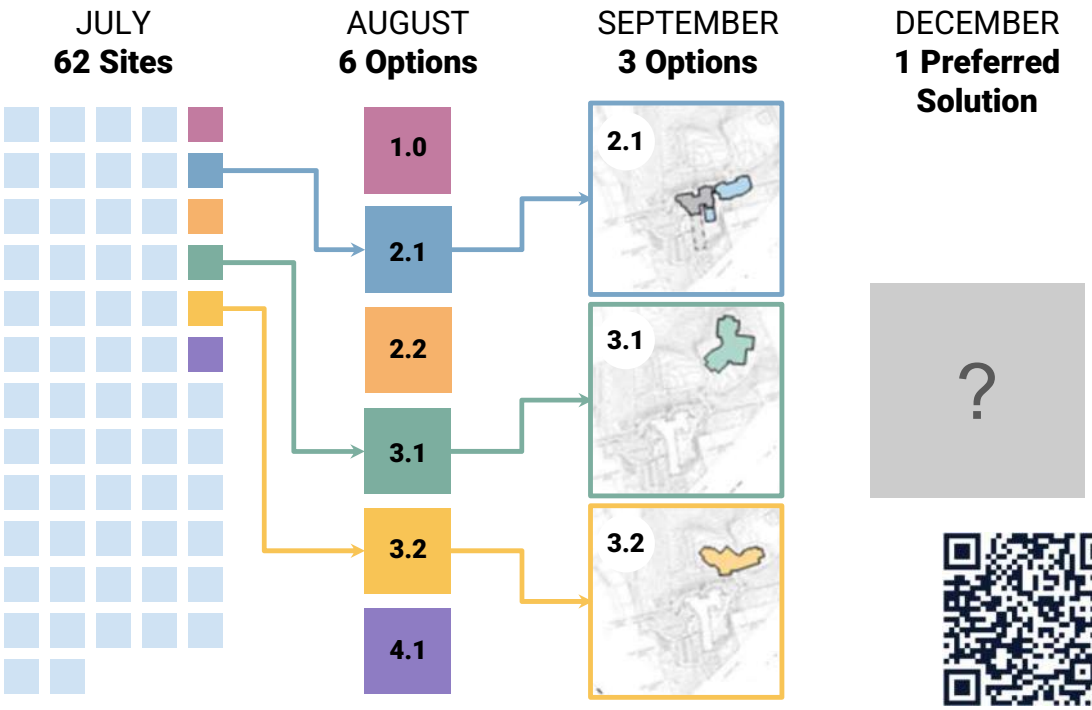
Littleton Public Schools
Town of Littleton, MA

When is the Town Vote?

	Event	Ballot	Req'd to Pass
1	**SPECIAL TOWN MEETING** October/November 2025	Allow Town to extend debt	**Two-thirds**
2	**DEBT EXCLUSION VOTE** Soon after Town Meeting	Approve debt exclusion	**Majority**

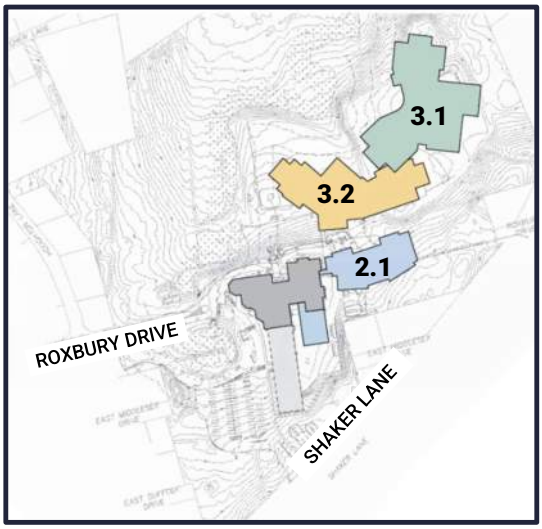
Littleton Public Schools
Town of Littleton, MA

Design Update: Site Selection Process



Littleton Public Schools
Town of Littleton, MA

Design Update: Current 3 Options









MBSA Project Cost Comparison

	NEW BEDFORD ES	NEWTON ES	SCITUATE ES	STOUGHTON ES	BERKLEY ES	NORTH ADAMS ES	SHAKER LANE SCHOOL
Date MSBA Approved	Dec. 2023	Dec. 2023	Apr 2024	Apr 2024	June 2024	June 2024	*Estimated* Aug. 2025
Enrollment	760	465	460	515	385	240	435
Size (square feet)	124,160sf	76,000sf	106,084sf	101,550sf	84,620sf	73,600sf	*Estimated* 97,800sf
Estimated $/sf	$778	$794	$895	$904	$832	$726	*Estimated* $810 - $888
Estimated Total Project Cost	$119.7M	$76.0M	$119.4M	$114.4M	$89.9M	$65.3M	*Estimated* $92.2M - $104.2M

- Data from MSBA
- Estimates for new construction at Schematic Design
- Escalation since December 2023: ~$50/sf

ESTIMATED Costs & Tax Impacts

Project Total	$92.2 M - $104.2 M
MSBA Reimbursement	$27.7 M - $34.4 M
Net cost to Littleton	$59.9 M - $74.7 M

This would be the most expensive project the Town has undertaken to this point



Littleton Public Schools
Town of Littleton, MA

ESTIMATED Costs & Tax Impacts

Debt Exclusion Override	Agreed by Select Board & Finance Committee
Tax Impact Estimates	Based on several factors Very conservative
Length of Bond	20 years (estimated) Could be 30 years
Interest Rate	6% (estimated)
Property Values	Estimated using FY24
Final Bond	End of FY29 Some short-term debt will be issued during construction



Littleton Public Schools
Town of Littleton, MA

ESTIMATED Costs & Tax Impacts

- Highest tax impact in first year
  (decreases over debt term)
- **Estimated first year tax: $1,475 - $1,850**
  (based on FY24 average home value $672,106)
- **Tax impact calculator will be made available online before the 2025 vote**
  (data will change over time for options, reimbursements, property values, etc.)

Littleton Public Schools
Town of Littleton, MA

Next Steps

Please visit the project website

- **Sign up for a tour/info session:**

  November 13 Wednesday
  November 19 Tuesday

  6:30pm: Tour
  7:15pm: Info Session

- **Make your voice heard**
- **Learn more about the project**

Ongoing updates available on the project website:

http://bit.ly/47cAP4B

Littleton Public Schools
Town of Littleton, MA

Thank you!

Received: AS
Date/Time: 11/8/24 - 12:35 PM
Revised:
Date/Time:

AGENDA

Shaker Lane School Building Committee

Wednesday, November 13, 2024

6:00p.m. – 6:30p.m.

Hybrid Meeting

Shaker Lane Elementary School

35 Shaker Lane

& Virtual via Zoom

When: Nov 13, 2024 06:00 PM Eastern Time (US and Canada)

Topic: Shaker Lane School Building Committee

Please click the link below to join the webinar:

https://littletonma.zoom.us/j/82512443761?pwd=P9fbDHbS8YTbJ1BJTVQNmSjVosXFSs.1

Passcode: 060117

Webinar ID: 825 1244 3761

International numbers available: https://littletonma.zoom.us/u/kcZM0S2BM9

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This Rebroadcast meeting can be viewed online at LCTV On-Demand at https://cloud.castus.tv/vod/littleton/

6:00 - 6:30

1. ***Vote for preferred option to be submitted for Schematic Design***
2. ***Public Comment***
3. ***Adjournment to In-Person Only Shaker Lane School Building Tour and Q & A***

Received: AS
Date/Time: 11/8/24 - 12:35 PM
Revised:
Date/Time:

AGENDA

Shaker Lane School Building Committee

Wednesday, November 13, 2024

6:30p.m. – 8:00p.m.

Shaker Lane Elementary School

35 Shaker Lane

6:30 - 8:00

1. ***Building Tour and Q&A***

8:00 - *ADJOURNMENT*

Shaker Lane Building Committee Minutes

11/13/24

7 pm

Attending

Dorothy Mulone *
Organizer
Steve Venuti *
Steve Moore *
Marylee Mercy *
Meryl Nistler *
Mark Stafford *
Ryan Ferrara *
Kelly Clenchy *
Stacy Desmarais
Michelle Kane *

Shaker Lane School Building Committee Meeting - November 13th, 2024 @ 6:00 PM - Hybrid Meeting: In-Person, Shaker Lane School (35 Shaker Lane) & Virtual via Zoom

Meryl Nistler and Steve Venutti Presented update on cost and budget considerations to be made between the 3 choices that have been proposed to MSBA, and discussed the following topics:

- Explanation of Why we need a new Shaker Lane School?
- Comparison to other completed projects in local districs
- Cost estimates overview presentation made by Steve Venuti
    - $92M- $104 M estimated total project costs
    - $27M-$34M estimated reimbursement from MSBA
    - Net cost to Littletion $59.9M-$75M
    - Debt service and Tax Estimates explained
    - Noted that 20 year bond issuance and possible tax impacts on residents are all subject to change
    - Estimated Construction cost and Tax impacts
    - Tax Impacts first year estimates $1,475-1,850 based on FY24 average home value of $672,106

- Evaluation Criteria for design options were presented to committee for final vote:
    - Site design
    - Community/Neighborhood
    - Cost/schedule/Construction
    - General

    - Sustainability

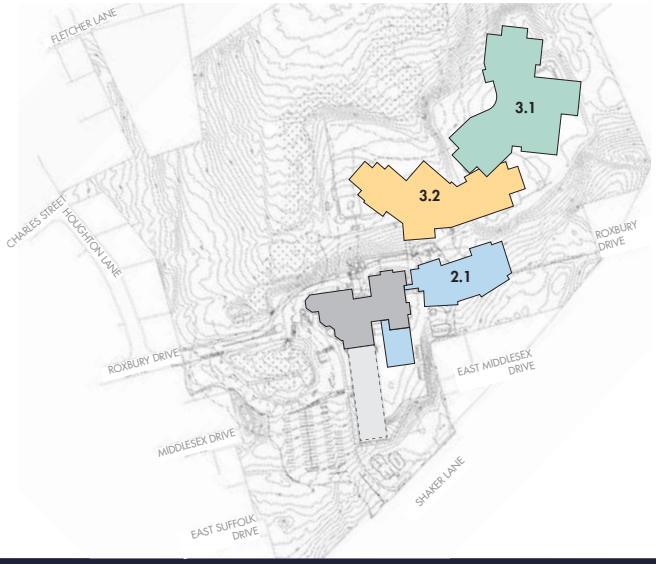
- Option 2.1 Renovation & Addition- score of 177 based on Evaluation Criteria scores
- Option 3.1 New Building Upper Field score of 381 based on Evaluation Criteria scores
- Option 3.2 New Building- Lower Field score of 371 based on Evaluation Criteria scores

Vote for preferred option to be submitted for Schematic Design

- Ryan Ferrera made a motion to approve to recommend Option 3.1-Upper Field to the MSBA, seconded by Kelly Clenchy, Unanimous vote to approve, motion approved.

Motion made to adjourn made by Ryan F, Seconded Kelly Clenchy, unanimous vote to adjourn

Adjournment to In-Person Only Shaker Lane School Building Tour and Q & A



Design Agenda

1. Why do we need a new Shaker Lane School?
2. How much will the project cost?
3. Preferred option recommendation
4. Discussion & vote

Why do we need a new Shaker Lane School?*

EDUCATION

- There are no spaces for private instruction or collaborative small groups; students frequently receive support services in hallways and re-purposed storage closets.
- Classroom layouts are not conducive to 21st century instruction. They do not allow for standard technology devices such as interactive white boards or speaker systems.
- Several instructional spaces and offices lack windows or natural light.
- There is no provision for outdoor learning.
- There is not enough storage space. Many materials are stored in the corridors. The school stage is used as storage and a teacher work area.

BUILDING SYSTEMS

- The building lacks adequate cooling, resulting in some interior temperatures regularly exceeding 85-90°F.
- There is little to no insulation in the existing classroom wing exterior envelope.
- The roof, back-up generator, boilers, and classroom heating units are at the end of their lifespans.
- The electrical system is at capacity.
- Drinking water is available only at a limited number of drinking and bottle filling stations. There is no access to water in the gym.
- There are ongoing issues with septic odors and the source has yet to be found.
- There are not enough adult bathrooms distributed throughout the school.

SAFETY & ACCESSIBILITY

- The site circulation does not have clear separation of buses, cars, and pedestrians.
- There are no sprinklers for fire protection.
- Many elements are not ADA compliant, including play equipment, parking, entry doors, toilet rooms, signage, doors/ door handles, handrails, and plumbing fixtures.

*This list is not exhaustive

Visit the project website for more answers
http://bit.ly/47cAP4B

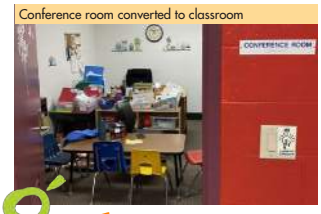
Why do we need a new Shaker Lane School?

Not enough classrooms

Instruction takes place in cafeteria behind partition

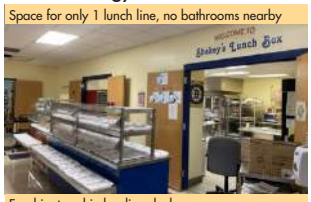


Conference room converted to classroom

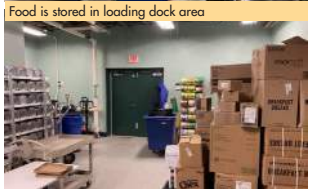


Kitchen & gym are too small

Space for only 1 lunch line, no bathrooms nearby



Food is stored in loading dock area



Gym is half-size and has no basketball hoops



Classrooms are too small

Music room is undersized and has no windows



Therapeutic space in storage closet

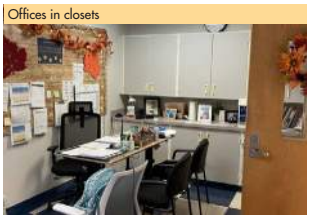


Inadequate teacher spaces

Copy machine in stairwell



Offices in closets



Visit the project website for more answers
http://bit.ly/47cAP4B

How much will the project cost?

PROJECT COST COMPARISON

- Recent MSBA elementary school building projects comparison
- Cost estimates provided at schematic design for new construction
- Escalation since December 2023: ~$50/sf

	SHAKER LANE SCHOOL	NEW BEDFORD	NEWTON	SCITUATE	STOUGHTON	BERKLEY	NORTH ADAMS
Date MSBA Board Approved	~August 2025	Dec 2023	Dec 2023	April 2024	April 2024	June 2024	June 2024
Enrollment	435	760	465	460	515	385	240
MSBA Approved Square Footage	~97,800sf	124,160sf	76,000sf	106,084sf	101,550sf	84,620sf	73,600sf
Estimated Construction Cost per Square Foot	**~$810 – $888**	**$778**	**$794**	**$895**	**$904**	**$832**	**$726**
Estimated Total Project Costs	~$92.2M – $106.3M	$119.7M	$76.0M	$119.4M	$114.4M	$89.9M	$65.3M

Information provided by MSBA

Visit the project website for more answers
http://bit.ly/47cAP4B

How much will the project cost?

TAX IMPACT INFO

Debt Exclusion Override	Agreed by Select Board & Finance Committee
Tax Impact Estimates	• Based on several factors • Very conservative
Length of Bond	• 20 years (estimated) • Could be 30 years
Interest Rate	6% (estimated)
Property Values	Estimated using FY24
Final Bond	• End of FY29 • Some short-term debt will be issued during construction

ESTIMATED COSTS

Estimated Project Total	~$92.2M – $104.2M
MSBA Reimbursement	~$27.7M – $34.4M
Net Cost to Littleton	~$59.9M – $74.7M

ESTIMATED TAX IMPACTS

- **Highest tax impact in the first year** (decreases over debt term)
- **Estimated first year tax: $1,475 – $1,850** (based on FY24 average home value of $672,106)
- **Tax impact calculator will be made available online before the 2025 vote** (data will change over time for options, reimbursements, property values, etc)

Preferred Option Recommendation - Evaluation Criteria

Site

- Adequate buildable area (excludes wetlands/ buffers, setbacks, floodplains, etc)
- Parking & vehicle queuing safe/efficient/ contained on site
- Safe pedestrian access
- Optimizes outdoor program & play spaces
- Extended access to undeveloped nature/green spaces
- Efficient use of site/integration into site

Cost/Schedule/Construction

- Maximizes MSBA reimbursement items
- Construction schedule
- Complexity of phasing
- Impact to educational program/facilities during construction
- Impact to abutters during construction

Sustainability

- Ability to readily meet energy code
- Ease of facility maintenance
- Potential for geothermal system
- Good solar orientation in academic wing
- Effort required to become solar panel-ready
- Ability to support future expansion
- Potential to achieve LEED Silver (increases MSBA reimbursement rate)
- Potential to achieve Net Zero

Community/Neighborhood

- Affords community use of playgrounds/fields
- Affords community use of building (controlled access)
- Local traffic impacts
- Building mass & scale impacts on abutters/ neighborhood

General

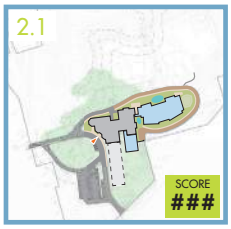
- Likely successful debt exclusion vote
- Geographic location in the district
- Permitting complexity (wetlands, planning, ZBA, Article 97, etc)
- Ability to fully meet the district's educational program
- Flexibility to adapt to future changes in teaching methods

Criteria established by the Shaker Lane School Building Committee.

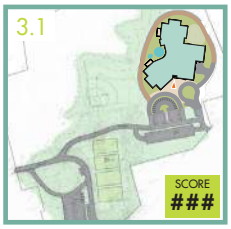
Options evaluated by the Site Selection/Design Subcommittee (comprising Dr. Kelly Clenchy, Michelle Kane, Mike Scaduto, Stacy Scott, and Steve Venuti).

Preferred Option Recommendation - Evaluation Criteria Ranking

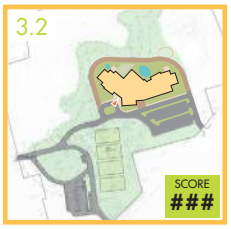
Evaluation Criteria			
TOTALS			
	OPTION 2.1 Reno/Add: East	OPTION 3.1 New: Upper Field	OPTION 3.2 New: Lower Field
Site			
Adequate buildable area			
Parking & vehicle queueing safe/efficient/contained on site			
Safe pedestrian access			
Optimizes outdoor program & play spaces			
Extended access to undeveloped nature / green spaces			
Efficient use of site / integration into site			
Cost/Schedule/Construction			
Maximizes MSBA reimbursement items			
Construction schedule			
Complexity of phasing			
Impact to educational program/facilities during construction			
Impact to abutters during construction			
Sustainability			
Ability to readily meet energy code			
Ease of facility maintenance			
Potential for geothermal system			
Good solar orientation in academic wing			
Effort required to become solar panel-ready			
Ability to support future expansion			
Potential to achieve LEED Silver			
Potential to achieve Net Zero			
Community/Neighborhood			
Affords community use of playgrounds/fields			
Affords community use of building (controlled access)			
Local traffic impacts			
Building mass & scale impacts on abutters/neighborhood			
General			
Likely successful debt exclusion vote			
Geographic location in the district			
Permitting complexity			
Ability to fully meet the district's educational program			
Flexibility to adapt to future changes in teaching methods			



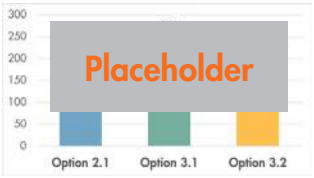
RENOVATION & ADDITION



NEW - UPPER FIELD



NEW - LOWER FIELD



RESULTS

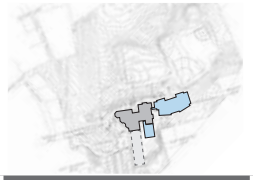
The highest-rated option as evaluated by the Site Selection/Design Subcommittee is Option ___.

The Subcommittee recommends to the SBC that this option be submitted to the MSBA in the Preferred Schematic Report (PSR). If approved by the SBC, this option will move forward into Schematic Design.

Visit the project website for more answers
http://bit.ly/47cAP4B

Discussion & Vote

Estimated cost data from PM&C and TTH estimates, based on October 2024 information







	OPTION 2.1 RENO/ADD: EAST	OPTION 3.1 NEW: UPPER FIELD	OPTION 3.2 NEW: LOWER FIELD
Evaluation Score	**###**	**###**	**###**
Estimated Square Footage	94,950 sf	97,307 sf	97,307 sf
Estimated Construction Cost per Square Foot	**$858.50**	**$888.16**	**$877.08**
Estimated Construction Cost DBB	$76.8M	$81.9M	$80.9M
Estimated Construction Cost CMR	$81.4M	$86.9M	$85.8M
Estimated Soft Costs (based on DBB)	$15.4M	$19.4M	$16.2M
Estimated Total Project Cost Design Bid Build (DBB)	**$92.2M**	**$101.3M**	**$97.1M**
Construction Manager at Risk (CMR)	**$96.8M**	**$106.3M**	**$102.0M**
Estimated Potential MSBA Reimbursement	**~$27.7M – 32.3M**	**~$30.4M – 35.5M**	**~$29.1M – 34.0M**

Visit the project website for more answers
http://bit.ly/47cAP4B

Received: AS
Date/Time: 11/14/24 - 1:00 PM
Revised:
Date/Time:

AGENDA

Shaker Lane School Building Committee

Tuesday, November 19, 2024
6:00p.m. - 6:30p.m.
Hybrid Meeting
Shaker Lane Elementary School
35 Shaker Lane
& Virtual via Zoom

When: Nov 19, 2024 06:00 PM Eastern Time (US and Canada)
Topic: Shaker Lane School Building Committee
Please click the link below to join the webinar:
https://littletonma.zoom.us/j/86086854884?pwd=sY4deQdOjkiKk3CTSvam5nuOabNqXm.1
Passcode: 485183
Webinar ID: 860 8685 4884
International numbers available: https://littletonma.zoom.us/u/kIfKYQi7l

VIDEO OR CALL WILL BE MUTED UPON JOINING MEETING.
Please use the "RAISE YOUR HAND" feature in the Zoom meeting to ask to speak.
PARTICIPANTS/ATTENDEES ARE REMINDED THAT BY JOINING THIS MEETING, YOU CONSENT TO YOUR LIKENESS AND AUDIO BEING USED AND REBROADCAST BY LCTV
This Rebroadcast meeting can be viewed online at LCTV On-Demand at https://cloud.castus.tv/vod/littleton/

6:00 - 6:30

1. ***Approve Previous Meeting Minutes***
2. ***Approve Invoices***
3. ***Vote to allow the OPM to submit the PSR to the MSBA***
4. ***Budget/Schedule/Design Update***
5. ***Public Comment***
6. ***Adjournment to In-Person Only Shaker Lane School Building Tour and Q & A***

Received: AS
Date/Time: 11/14/24 - 1:00 PM
Revised:
Date/Time:

AGENDA

Shaker Lane School Building Committee

Tuesday, November 19, 2024

6:30p.m. - 8:00p.m.

Shaker Lane Elementary School

35 Shaker Lane

6:30 - 8:00

1. ***Building Tour and Q&A***

8:00 ***ADJOURNMENT***

Shaker Lane Building Committee Minutes

11/19/24

Attending

Dorothy Mulone *
Organizer
Steve Venuti *
Steve Moore *
Marylee Mercy *
Meryl Nistler *
Mark Stafford *
Ryan Ferrara *
Kelly Clenchy *
Stacy Desmarais
Michelle Kane *

Shaker Lane School Building Committee Meeting - November 19th, 2024 @ 6:00 PM - Hybrid Meeting: In-Person, Shaker Lane School (35 Shaker Lane) & Virtual via Zoom

Approval of 3 Invoices:

1. TTH invoice of $24,590
2. Studio G $45,000k
3. Studio G $12,144.55
4. Ryan Ferrara made a motion to approve all 3 invoices, seconded by Kelly Clenchy, unanimous vote, motion approved.

Approval for OPM to submit preferred schematic report to the MSBA
-Ryan Ferrara made a motion to approve PSR to MSBA, seconded by Kelly Clenchy, unanimous vote, motion approved.

Budget Schedule design updates

- TTH and Studio G has spent $473,989 of the $1,085,000,000 budgeted for the feasibility study, $611,010.95 left for the project to proceed
- Review of MSBA milestone schedule

Meryl Nistler and Steve Venutti Presented update on cost and budget considerations regarding Option 3.1, which will move through the MSBA process, and discussed the following topics:

- Explanation of Why we need a new Shaker Lane School?
- Comparison to other completed projects in local districts
- Cost estimates overview presentation made by Steve Venuti
    - $92M- $104 M estimated total project costs
    - $27M-$34M estimated reimbursement from MSBA
    - Net cost to Littletion $59.9M-$75M
    - Debt service and Tax Estimates explained
    - Noted that 20 year bond issuance and possible tax impacts on residents are all subject to change
    - Estimated Construction cost and Tax impacts
    - Tax Impacts first year estimates $1,475-1,850 based on FY24 average home value of $672,106

Vote for preferred option to be submitted for Schematic Design

- Ryan Ferrera made a motion to approve to recommend Option 3.1-Upper Field to the MSBA, seconded by Kelly Clenchy, Unanimous vote to approve, motion approved.

Motion made to adjourn made by Ryan F, Seconded Kelly Clenchy, unanimous vote to adjourn

Adjournment to In-Person Only Shaker Lane School Building Tour and Q & A



Design Agenda

1. Why do we need a new Shaker Lane School?
2. How much will the project cost?
3. PSR submission discussion & vote

studio g architects | Turner & Townsend Heery | ATLANTIC

School Building Committee Meeting

Shaker Lane School Project • Littleton Public Schools • Town of Littleton, MA

November 19, 2024

Why do we need a new Shaker Lane School?*

EDUCATION

- There are no spaces for private instruction or collaborative small groups; students frequently receive support services in hallways and re-purposed storage closets.
- Classroom layouts are not conducive to 21st century instruction. They do not allow for standard technology devices such as interactive white boards or speaker systems.
- Several instructional spaces and offices lack windows or natural light.
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- There is not enough storage space. Many materials are stored in the corridors. The school stage is used as storage and a teacher work area.

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- The building lacks adequate cooling, resulting in some interior temperatures regularly exceeding 85-90°F.
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- There are ongoing issues with septic odors and the source has yet to be found.
- There are not enough adult bathrooms distributed throughout the school.

SAFETY & ACCESSIBILITY

- The site circulation does not have clear separation of buses, cars, and pedestrians.
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*This list is not exhaustive

Visit the project website for more answers:
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Why do we need a new Shaker Lane School?

Not enough classrooms

Instruction takes place in cafeteria behind partition



Conference room converted to classroom

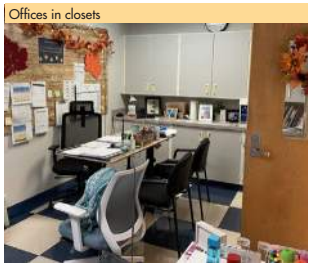


Inadequate teacher spaces

Copy machine in stairwell



Offices in closets



Classrooms are too small

Music room is undersized and has no windows

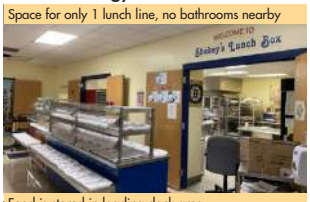


Therapeutic space in storage closet

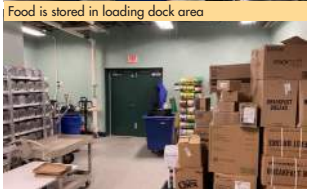


Kitchen & gym are too small

Space for only 1 lunch line, no bathrooms nearby



Food is stored in loading dock area



Gym is half-size and has no basketball hoops



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How much will the project cost?

PROJECT COST COMPARISON

- Recent MSBA elementary school building projects comparison
- Cost estimates provided at schematic design for new construction
- Escalation since December 2023: ~$50/sf

	SHAKER LANE SCHOOL	NEW BEDFORD	NEWTON	SCITUATE	STOUGHTON	BERKLEY	NORTH ADAMS
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Information provided by MSBA

School Building Committee Meeting
November 19, 2024
Shaker Lane School Project

Visit the project website for more answers:
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How much will the project cost?

TAX IMPACT INFO

Debt Exclusion Override	Agreed by Select Board & Finance Committee
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Property Values	Estimated using FY24
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ESTIMATED COSTS

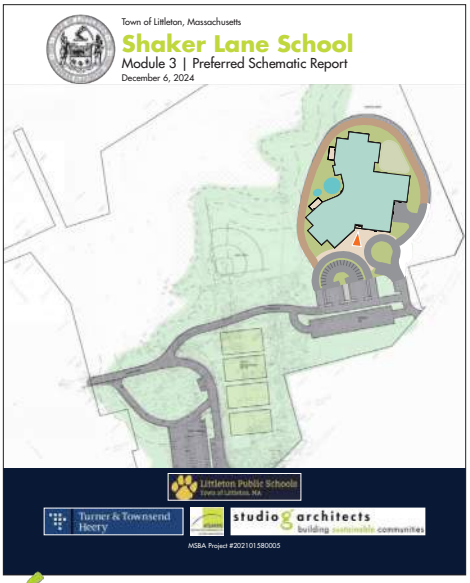
Estimated Project Total	~$98.3M - $104.2M
MSBA Reimbursement *(TBD, estimated at 30%)*	~$29.5M - $31.3M
Net Cost to Littleton	~$68.8M - $72.9M

ESTIMATED TAX IMPACTS

- **Highest tax impact in the first year** (decreases over debt term)
- **Estimated first year tax: ~$1,700 - $1,850** (based on FY24 average home value of $672,106)
- **Tax impact calculator will be made available online before the 2025 vote** (data will change over time for options, reimbursements, property values, etc)

Visit the project website for more answers:
http://bit.ly/47cAP4B

PSR Submission Discussion & Vote



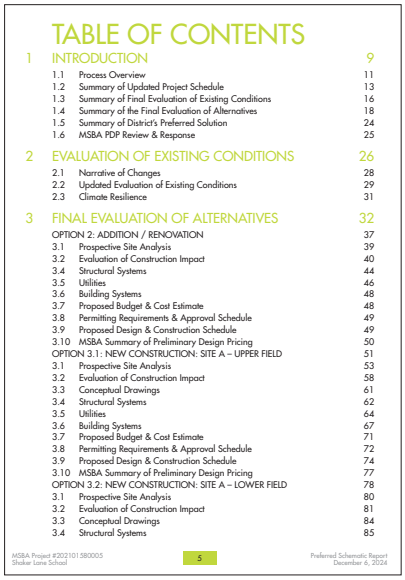


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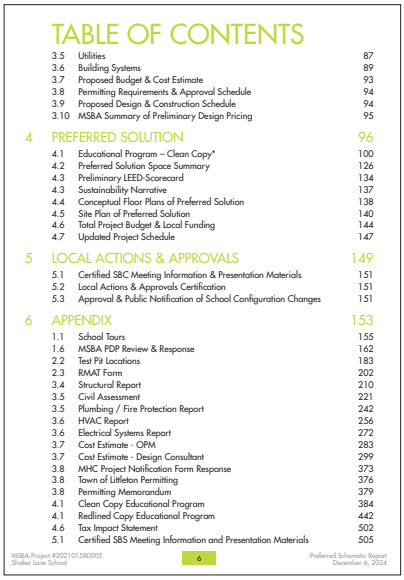


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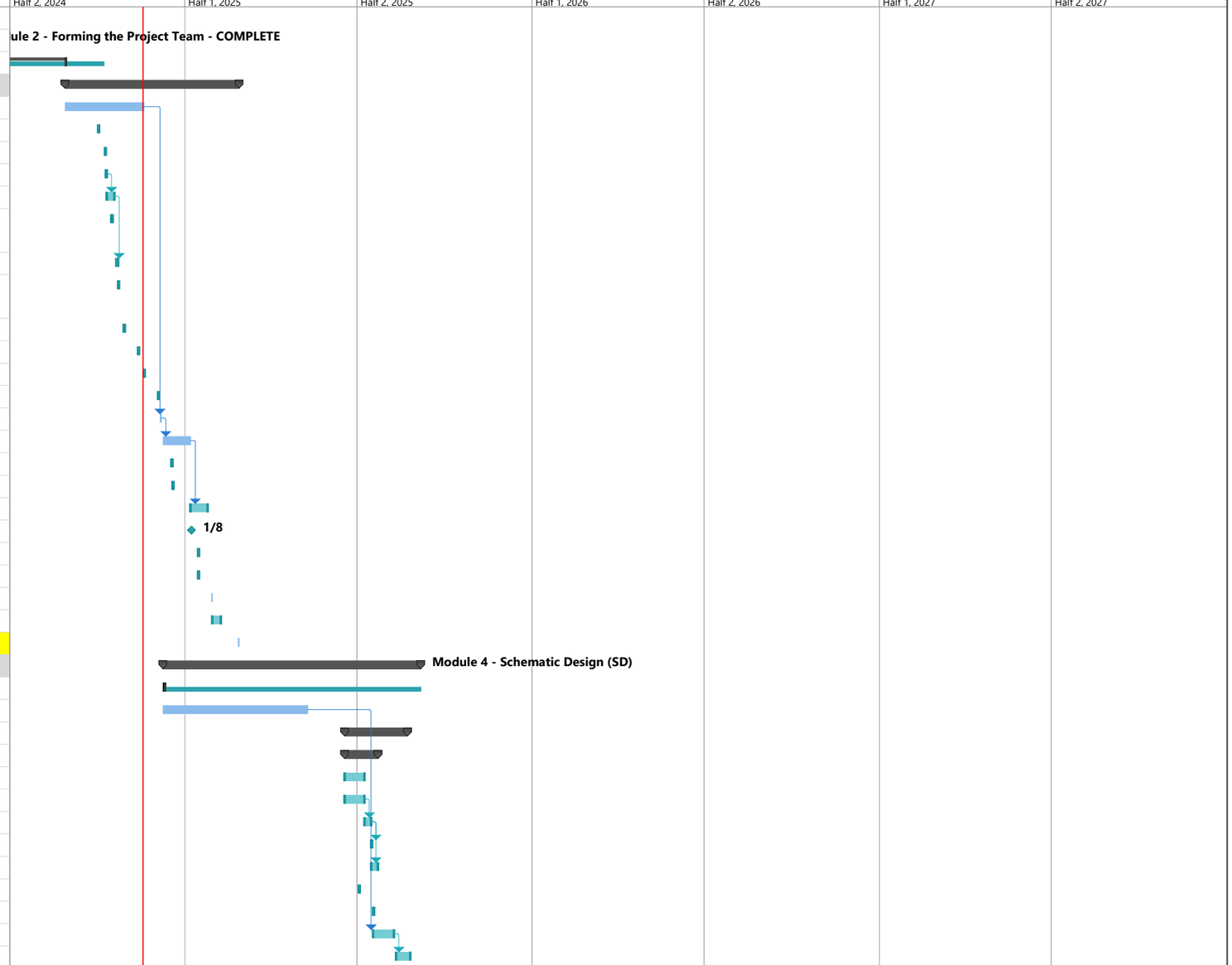
School Building Committee Meeting
November 19, 2024
Shaker Lane School Project

Visit the project website for more answers:
http://bit.ly/47cAP4B

Turner & Townsend Heery

Shaker Lane Elementary School Project
OPM Project Milestone Schedule
November 19, 2024

ID	Task Name	Duration	Start	Finish
1	Module 1 - Eligibility Period - COMPLETE	19 days	Wed 6/1/22	Mon 6/27/22
5	Module 2 - Forming the Project Team - COMPLETE	214 days	Thu 7/27/23	Tue 5/21/24
27	Module 3.1 Preliminary Design Program (PDP)	52 days	Tue 6/18/24	Wed 8/28/24
40	**Module 3.2 Preferred Schematic Report (PSR)**	**131 days**	**Wed 8/28/24**	**Wed 2/26/25**
41	Develop PSR	59 days	Wed 8/28/24	Mon 11/18/24
42	**School Building Committee meeting**	1 day	Wed 10/2/24	Wed 10/2/24
43	Cost estimate information available	1 day	Wed 10/9/24	Wed 10/9/24
45	Documents for Estimates sent to Estimators	1 day	Thu 10/10/24	Thu 10/10/24
46	Cost Estimates Production	6 days	Fri 10/11/24	Fri 10/18/24
44	**School Building Committee Meeting/Joint Session with Select Board, School Committee, & Finance Committee**	**1 day**	**Wed 10/16/24**	**Wed 10/16/24**
47	Review / Reconcile Cost Estimates	2 days	Mon 10/21/24	Tue 10/22/24
48	**School Building Committee Meeting/Joint Session with Select Board, School Committee, & Finance Committee**	**1 day**	**Wed 10/23/24**	**Wed 10/23/24**
49	Special Town Meeting	1 day	Tue 10/29/24	Tue 10/29/24
50	**School Building Committee Meeting and Tour**	**1 day**	**Wed 11/13/24**	**Wed 11/13/24**
61	**SBC/School Committee Approval of Preferred Schematic Report - PSR**	**1 day**	**Tue 11/19/24**	**Tue 11/19/24**
54	Sub-Committee meeting (TBD)	1 day	Wed 12/4/24	Wed 12/4/24
51	**PSR Submittal Date to MSBA (NO fewer than 12 weeks after PDP)**	**1 day**	**Fri 12/6/24**	**Fri 12/6/24**
52	MSBA Review of PSR (21 days required)	21 days	Mon 12/9/24	Mon 1/6/25
56	**School Building Committee Meeting**	**1 day**	**Wed 12/18/24**	**Wed 12/18/24**
57	Submit PSR to FAS no later than	1 day	Thu 12/19/24	Thu 12/19/24
60	Address PSR Comments from MSBA (14 days to respond)	14 days	Tue 1/7/25	Fri 1/24/25
58	Sub-Committee meeting (TBD)	0 days	Wed 1/8/25	Wed 1/8/25
53	Facility Assessment Subcommittee (FAS) Meeting January 15	**1 day**	**Wed 1/15/25**	**Wed 1/15/25**
59	School Building Committee Meeting	**1 day**	**Wed 1/15/25**	**Wed 1/15/25**
62	Facility Assessment Subcommitte (FAS) Meeting January 29	**1 day**	**Wed 1/29/25**	**Wed 1/29/25**
63	Address MSBA / FAS comments	7 days	Thu 1/30/25	Fri 2/7/25
55	**MSBA Board Meeting - Approval of PSR**	**1 day**	**Wed 2/26/25**	**Wed 2/26/25**
64	**Module 4 - Schematic Design (SD)**	**195 days**	**Mon 12/9/24**	**Fri 9/5/25**
65	**Schematic Design Introduction Deliverables**	**1 day**	**Tue 12/10/24**	**Tue 12/10/24**
66	**Final Schematic Design Program**	**110 days**	**Mon 12/9/24**	**Fri 5/9/25**
67	**DESE REVIEW**	**48 days**	**Wed 6/18/25**	**Fri 8/22/25**
74	**Project Estimates / Budget**	**25 days**	**Wed 6/18/25**	**Tue 7/22/25**
75	Designers Construction Estimate	15 days	Wed 6/18/25	Tue 7/8/25
76	OPM Construction Estimate	15 days	Wed 6/18/25	Tue 7/8/25
77	Reconcile Estimates	5 days	Wed 7/9/25	Tue 7/15/25
78	DBB or CMR review and decision	1 day	Wed 7/16/25	Wed 7/16/25
79	Total Project Budget Spreadsheet	5 days	Wed 7/16/25	Tue 7/22/25
71	SD Notification email sent to MSBA	1 day	Thu 7/3/25	Thu 7/3/25
72	**SD Submittal date to MSBA**	**1 day**	**Fri 7/18/25**	**Fri 7/18/25**
73	MSBA SD Review Complete	16 days	Fri 7/18/25	Fri 8/8/25
80	Address MSBA SD Review comments	11 days	Mon 8/11/25	Mon 8/25/25



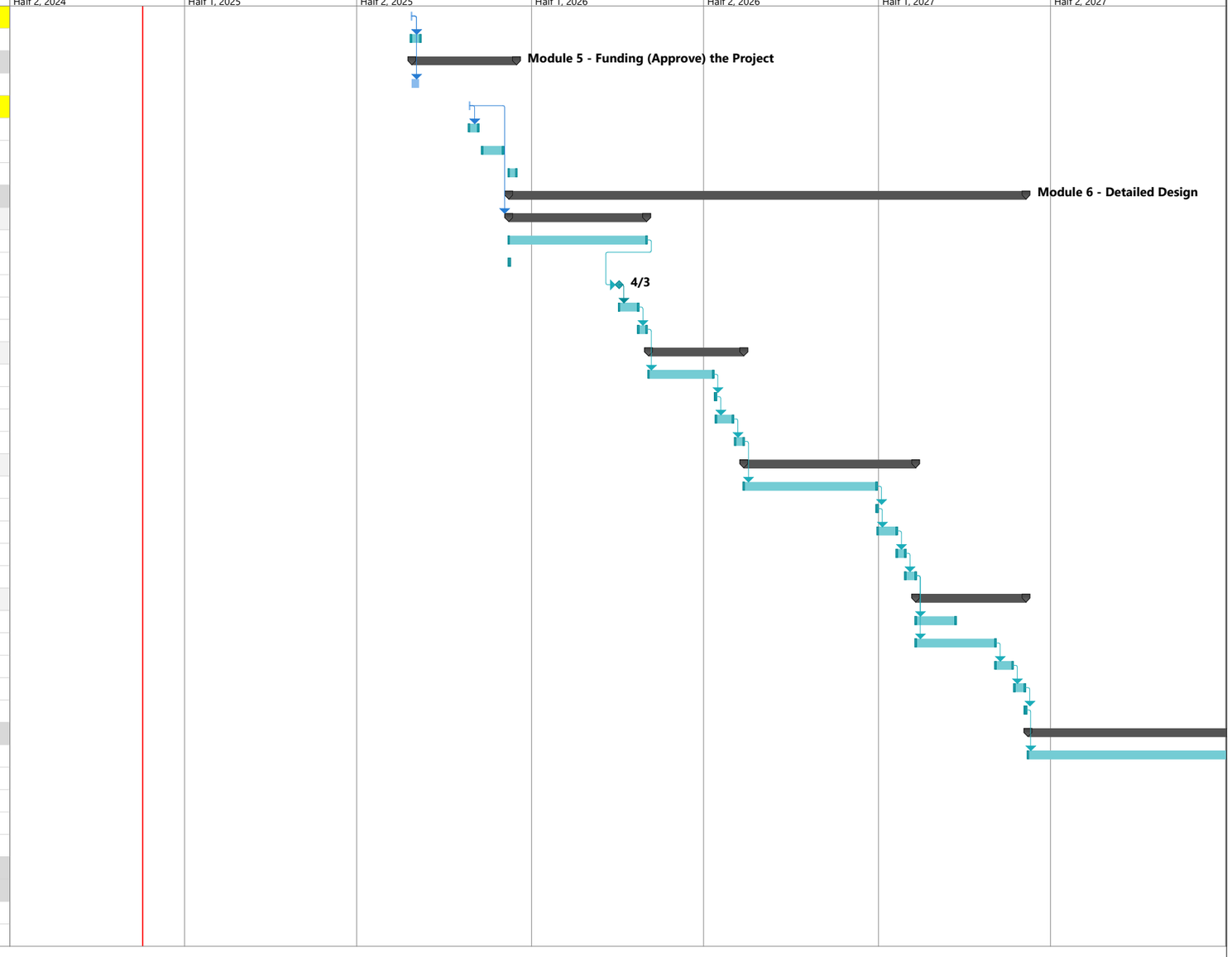
Shaker Lane Elementary School
Date: Mon 11/18/24

Task | Split | Milestone | Summary | Project Summary | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | External Tasks | External Milestone | Deadline | Progress | Manual Progress

660

Shaker Lane Elementary School Project
OPM Project Milestone Schedule
November 19, 2024

ID	Task Name	Duration	Start	Finish
81	**MSBA Board Approval -PSBA - Project Scope and Budget Amendme**	1 day	Wed 8/27/25	**Wed 8/27/25**
82	PSBA Agreement Executed	8 days	Wed 8/27/25	Fri 9/5/25
83	**Module 5 - Funding (Approve) the Project**	**78 days**	**Thu 8/28/25**	**Mon 12/15/25**
84	Project Scope and Budget Conference	5 days	Thu 8/28/25	Wed 9/3/25
85	**TOWN MEETING - Approval of Funding**	**1 day**	**Mon 10/27/25**	**Mon 10/27/25**
86	Certification of Votes sent to MSBA	8 days	Mon 10/27/25	Wed 11/5/25
87	Project Funding Agreement Sent	16 days	Mon 11/10/25	Mon 12/1/25
88	Project Funding Agreement Executed	6 days	Mon 12/8/25	Mon 12/15/25
89	**Module 6 - Detailed Design**	**390 days**	**Mon 12/8/25**	**Fri 6/4/27**
90	**Design Development**	**105 days**	**Mon 12/8/25**	**Fri 5/1/26**
91	Design Development	105 days	Mon 12/8/25	Fri 5/1/26
92	CM selection (If CMr selected)	1 day	Mon 12/8/25	Mon 12/8/25
93	DD Submission Date	0 days	Fri 4/3/26	Fri 4/3/26
94	MSBA DD Review	14 days	Fri 4/3/26	Wed 4/22/26
95	Address DD Review Comments	7 days	Thu 4/23/26	Fri 5/1/26
96	**60% Construction Documents**	**72 days**	**Mon 5/4/26**	**Tue 8/11/26**
97	60% CD Development	50 days	Mon 5/4/26	Fri 7/10/26
98	60% CD Submission Date	1 day	Mon 7/13/26	Mon 7/13/26
99	MSBA 60% CD Review	14 days	Tue 7/14/26	Fri 7/31/26
100	Address 60% CD Review comments	7 days	Mon 8/3/26	Tue 8/11/26
101	**90% Construction Documents**	**129 days**	**Wed 8/12/26**	**Mon 2/8/27**
102	90% CD Development	100 days	Wed 8/12/26	Tue 12/29/26
103	90% CD Submission date	1 day	Wed 12/30/26	Wed 12/30/26
104	MSBA 90% CD Review	14 days	Thu 12/31/26	Tue 1/19/27
105	Address 90% CD Review Comments	7 days	Wed 1/20/27	Thu 1/28/27
106	100% CD documents complete/submitted to BID procurement	7 days	Fri 1/29/27	Mon 2/8/27
107	**Bidding**	**84 days**	**Tue 2/9/27**	**Fri 6/4/27**
108	Filed sub bids due	30 days	Tue 2/9/27	Mon 3/22/27
109	Bids due	60 days	Tue 2/9/27	Mon 5/3/27
110	Bid review	14 days	Tue 5/4/27	Fri 5/21/27
111	Bid selection and descoping	9 days	Mon 5/24/27	Thu 6/3/27
112	Notice to Proceed	1 day	Fri 6/4/27	Fri 6/4/27
113	**Module 7 - Construction**	**383 days**	**Mon 6/7/27**	**Wed 11/22/28**
114	Construction Phase	320 days	Mon 6/7/27	Fri 8/25/28
116	Move-in	21 days	Tue 8/1/28	Tue 8/29/28
115	Substantial Completion	1 day	Mon 8/28/28	Mon 8/28/28
117	Complete Demo of Exisiting Building	60 days	Wed 8/30/28	Tue 11/21/28
118	Construction complete	1 day	Wed 11/22/28	Wed 11/22/28
119	**Module 8 - Closeout**	**120 days**	**Mon 8/28/28**	**Fri 2/9/29**
121	**Module 9 - Post Occupancy Evaluation**			
122				
123				



Shaker Lane Elementary School
Date: Mon 11/18/24

Task | Summary | Inactive Milestone | Duration-only | Start-only | External Milestone | Manual Progress
Split | Project Summary | Inactive Summary | Manual Summary Rollup | Finish-only | Deadline
Milestone | Inactive Task | Manual Task | Manual Summary | External Tasks | Progress

Shaker Lane Elementary School Project Budget

As of November 19, 2024

Turner & Townsend Heery

a	b	c	d	d-1	e	f	g	h	i	j
Ctr.	Cost Category	Base Contract Descriptions	PFA Budget	PFA Bid Amendment	Committed Funds	Un-Committed Budget		Approved Invoices To Date	Balance Remaining of Committed Funds	Comments
1	0000-0000	Feasibility Study Agreement								
2										
3	0001-0000	OPM - Feasibility Study	$ 285,000.00	$ 285,000.00	$ 285,000.00	$ -		$ 147,102.00	$ 137,898.00	
4		TTH PJIN003903						$ 8,800.00		01/08/24
5		TTH PJIN0039656						$ 11,248.00		02/15/24
6		TTH PJIN0039816						$ 9,176.00		03/06/24
7		TTH PJIN004040081						$ 11,008.00		04/03/24
8		TTH PJIN0040323						$ 10,064.00		05/08/24
9		TTH PJIN0040575						$ 13,988.00		06/10/24
10		TTH PJIN0040888						$ 11,028.00		07/11/24
11		TTH PJIN00411122						$ 14,307.00		08/08/24
12		TTH PJ1N0041380						$ 18,678.00		09/18/24
		TTH PJN0041586						$ 14,215.00		10/07/24
13		TTH PJIN0041885						$ 24,590.00		11/11/24
14										
15										
16										
17										
18										
19										
20	0002-0000	A&E Feasibility Study	$ 650,000.00	$ 650,000.00	$ 650,000.00	$ -		$ 270,000.00	$ 380,000.00	
21		Studio G Invoice 00001						$ 90,000.00		06/30/24
22		Studio G Invoice 00002R						$ 45,000.00		07/31/24
23		Studio G Invoice 00004						$ 45,000.00		08/31/24
24		Studio G Invoice 00006						$ 45,000.00		09/30/24
25		Studio G Invoice 00008						$ 45,000.00		10/31/24
26										
27										
28										
29										
30										
31										
32										
33										
34										
35										
36	0003-0000	Environmental & Site	$ 140,000.00	$ 140,000.00	$ 140,000.00	$ -		$ 56,887.05	$ 83,112.95	
37		Studio G Invoice 00003						$ 5,280.00		MDM Traffic Study 7/31/24
38		Studio G Invoice 00005						$ 37,372.50		Samiotes Site Survey, EFI Global Haz Material, MDM Traffic Study 08/31/24
39		Studio G Invoice 00007						$ 2,090.00		Samiotes Site Survey 09/30/24
40		Studio G Invoice 00009						$ 12,144.55		Samiotes Preliminary Soil Testing, GeoEngineers Test pit Observations, Reviews, Meetings
41										
42										
43										
44										
45										
46										
47										
48										
49										
50	0004-0000	Other	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ -		$ -	$ 10,000.00	
51										
52										
53		Feasibility Study Agreement - TOTAL	$ 1,085,000.00	$ 1,085,000.00	$ 1,085,000.00	$ -		$ 473,989.05	$ 611,010.95	
54										

November 18, 2024

SENT VIA ELECTRONIC MAIL

Mr. Ryan Ferrara
Assistant Town Administrator/Director of Finance and Budget Town of Littleton
37 Shattuck Street
Littleton, MA 01460

300 Brickstone Square, Suite 201
Andover, MA 01810
617-823-3265
www.turnerandtownsend.com
www.heery.com

For the attention of Recipient name

Dear Mr. Ferrara,

Re: Shaker Lane Elementary School
MSBA Cost Code #0002-0000 Feasibility Study
Studio G Invoice #00008
Period October 2024

Please find attached the Studio G invoice for Basic Services Design Services during the Feasibility Study Phase for the period stated above in the amount of Forty-Five Thousand Dollars and Zero Cents ($45,000.00).

Thank you for the opportunity to serve the Town of Littleton and the School District, should you have any questions please feel free to contact me, thank you.

Sincerely,

Mark A. Stafford Senior Project Manager

Turner & Townsend Heery, Inc.

C:
File

studio g ARCHITECTS
The Brewery 179 Boylston Street Jamaica Plain MA 02130
T 617-524-5558
F 617-524-5544

Town of Littleton
37 Shattuck Street
Littleton, MA 01460

Invoice number 00008
Date 10/31/2024

Project 22402 MSBA Shaker Lane Elementary School, Littleton, MA

Description		Contract Amount	Prior Billed	Total Billed	Current Billed
Feasibility Study		360,000.00	225,000.00	270,000.00	45,000.00
Schematic Design		290,000.00	0.00	0.00	0.00
	Total	650,000.00	225,000.00	270,000.00	45,000.00

Invoice total 45,000.00

Aging Summary

Invoice Number	Invoice Date	Outstanding	Current	Over 30	Over 60	Over 90	Over 120
00006	09/30/2024	45,000.00		45,000.00			
00008	10/31/2024	45,000.00	45,000.00				
	Total	90,000.00	45,000.00	45,000.00	0.00	0.00	0.00

November 18, 2024

SENT VIA ELECTRONIC MAIL

Mr. Ryan Ferrara
Assistant Town Administrator/Director of Finance and Budget Town of Littleton
37 Shattuck Street
Littleton, MA 01460

300 Brickstone Square, Suite 201
Andover, MA 01810
617-823-3265
www.turnerandtownsend.com
www.heery.com

For the attention of Recipient name

Dear Mr. Ferrara,

Re: Shaker Lane Elementary School
MSBA Cost Code #0003-0000 Feasibility Study
Studio G Invoice #00008
Period October 2024

Please find attached the Studio G invoices for Reimbursable Services Design Services during the Feasibility Study Phase for Soil Testing (Samiotes) in the amount of Three-Thousand Three Hundred Dollars ($3,300), and for GeoEngineers for Test Pit Observations/Meetings/Reviews in the amount of Eight-Thousand Four Hundred and Forty Four Dollars and 55 cents ($8,844.55) for the period stated above in for a total amount of Twelve-Thousand One Hundred and Forty Four Dollars and Fifty-Five Cents ($12,144.55).

Thank you for the opportunity to serve the Town of Littleton and the School District, should you have any questions please feel free to contact me, thank you.

Sincerely,

Mark A. Stafford Senior Project Manager

Turner & Townsend Heery, Inc.

C:
File

studio g ARCHITECTS
The Brewery 179 Boylston Street Jamaica Plain MA 02130
T 617-524-5558
F 617-524-5544

Town of Littleton
37 Shattuck Street
Littleton, MA 01460

Invoice number 00009
Date 10/31/2024

Project 22402 MSBA Shaker Lane Elementary School, Littleton, MA

Description		Contract Amount	Prior Billed	Total Billed	Current Billed	
Reimbursables						
Site Survey		22,825.00	22,825.00	22,825.00	0.00	
Traffic Study		17,600.00	12,100.00	12,100.00	0.00	
Hazardous Materials		10,973.00	9,817.50	9,817.50	0.00	
Soil Testing		9,900.00	0.00	3,300.00	3,300.00	A
Geotechnical		19,800.00	0.00	8,844.55	8,844.55	B
Geoenvironmental		10,146.40	0.00	0.00	0.00	
Wastewater Disposal System Expertise		2,200.00	0.00	0.00	0.00	
	Subtotal	93,444.40	44,742.50	56,887.05	12,144.55	
	Total	93,444.40	44,742.50	56,887.05	12,144.55	

Invoice total	12,144.55

Aging Summary

Invoice Number	Invoice Date	Outstanding	Current	Over 30	Over 60	Over 90	Over 120
00007	09/30/2024	2,090.00		2,090.00			
00009	10/31/2024	12,144.55	12,144.55				
	Total	14,234.55	12,144.55	2,090.00	0.00	0.00	0.00

MM
Reviewed
10/25/2023
Reimb. Allowance -
"Other Reimb Costs
- Additional Testing"

Invoice

Samiotes Consultants, Inc.
Civil Engineering + Land Surveying
20 A Street
Framingham, MA 01701
T 508.877.6688
www.samiotes.com

Studio G Architects
Meryl Nistler, AIA, WELL AP, LEED AP, MCPPO, NCARB
179 Boylston Street
Jamaica Plain, MA 02130

October 3, 2024
Project No: 54025.00
Invoice No: 22761

Project 54025.00 Shaker Lane Elementary School - Littleton

Email invoice to: Paula Tennyson (Controller): paulat@studiogarchitects.com

Studio G Project : #22402

Professional Services from September 1, 2024 to September 30, 2024
Fee

Task	Contract Amount	Percent Complete	Billings to Date	Previously Billed	Current Fee Billing
Preliminary Soil Testing T21	6,000.00	50.00	3,000.00	0.00	3,000.00
	Total Fee				**3,000.00**
			Total this Invoice		**$3,000.00**

REIMB: Soil Testing | Inv Amt $3,000.00 | 10% markup $300.00 | **Total Due $3,300.00** | **A**

Terms: DUE UPON RECEIPT. 1.5% Service charge on past due amounts over 30 Days

MN - Approved
10/23/2024
Amendment #2 Reimbursable:
Geotechnical Engineering
add 10% SGA mark-up

GeoEngineers USA

Memorandum

239 Causeway Street, Suite 400, Boston, Massachusetts 02114, Telephone: 617.749.9220 www.geoengineers.com

To:	Gail Sullivan, AIA (Studio G Architects, Inc.)
From:	Heidi Cashman, PE (GeoEngineers USA, PC)
Date:	October 21, 2024
File:	27534-001-00
Subject:	Application for Payment No. 1

Our Application for Payment for geotechnical engineering services for the proposed Sharker Lane Elementary School in Littleton, MA (the Site) is attached. Services were completed in accordance with our scope of work contained in our Agreement dated September 17, 2024. A summary of activities performed through October 4, 2024, is provided below:

- **Task 0100 – Desktop Review and Geotechnical Summary Memorandum**
  - Reviewed historical geotechnical records.
  - Preparation of our geotechnical memorandum issued on August 13, 2024.
- **Task 0200 – Meetings and Conference Calls**
  - Project coordination, project team meetings and workforce summaries.
- **Task 0300 – Test Pit Excavation Observation**
  - Prepared an investigation work plan and completed the geotechnical subsurface investigation.
  - Reimbursable expenses for the subsurface investigation program, including mileage.
  - Project coordination, including field preparation, support, and communication with the project team on schedule and results of the exploration program.
- **Task 0400 – Revised Geotechnical Summary Memorandum**
  - Initial preparation of our revised geotechnical summary memorandum.

Please let us know if you require any additional information.

Attachment: Invoice No. 201370

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers USA, PC and will serve as the official document of record.

GeoEngineers USA
P.O. Box 94207
Seattle, WA 98124-6507
Phone: (425) 861 - 6000
Fax: (425) 861 - 6050

October 18, 2024
Project No: 027534-001-00
Invoice No: 0201370

GeoEngineers PM: Amy Blomeke

Marylee Mercy
Studio G Architects, Inc.
179 Boylston Street, Suite P
Jamaica Plain, MA 02130

Project No.: 22402

Geotechnical Services
Shaker Lane Elementary School
35 Shaker Lane
Littleton, Massachusetts

.

Professional Services from September 1, 2024 to October 4, 2024

Task	0100	Desktop Review and Geotechnical Summary Memorandum				
Fee						
Total Fee		3,500.00				
Percent Complete		100.00	Total Earned		3,500.00	
			Previous Fee Billing		0.00	
			Current Fee Billing		3,500.00	
			Total Fee			**3,500.00**
				Total this Task		**$3,500.00**

Task	0200	Meetings and Conference Calls				
Fee						
Total Fee		1,500.00				
Percent Complete		48.6667	Total Earned		730.00	
			Previous Fee Billing		0.00	
			Current Fee Billing		730.00	
			Total Fee			**730.00**
				Total this Task		**$730.00**

Task	0300	Test Pit Excavation Observation				
Fee						
Total Fee		5,000.00				
Percent Complete		50.00	Total Earned		2,500.00	

Prompt payment will be appreciated.

Project	027534-001-00	Littleton Schools/Shaker Lane Elem GT		Invoice	0201370
			Previous Fee Billing	0.00	
			Current Fee Billing	2,500.00	
			Total Fee		**2,500.00**
				Total this Task	**$2,500.00**

Task	0400	Revised Geotechnical Summary Memorandum			
Fee					
Total Fee		2,000.00			
Percent Complete		65.525	Total Earned	1,310.50	
			Previous Fee Billing	0.00	
			Current Fee Billing	1,310.50	
			Total Fee		**1,310.50**
				Total this Task	**$1,310.50**
				TOTAL DUE THIS INVOICE	**$8,040.50**

Email: paulat@studiogarchitects.com
9/1/24 - 10/4/24

	Inv Amt	10% markup	**Total Due**	
REIMB: Geoenvironmental	$8,040.50	$804.05	**$8,844.55**	**B**

November 18, 2024

SENT VIA ELECTRONIC MAIL

Mr. Ryan Ferrara
Assistant Town Administrator/Director of Finance and Budget Town of Littleton
37 Shattuck Street
Littleton, MA 01460

300 Brickstone Square, Suite 201
Andover, MA 01810
617-823-3265
www.turnerandtownsend.com
www.heery.com

For the attention of Recipient name

Dear Mr. Ferrara,

Re: Shaker Lane Elementary School
MSBA Cost Code #0001-0000 Feasibility Study
Turner & Townsend Heery Invoice #PJIN0041885
Period October 2024

Please find attached Turner & Townsend Heery invoice for Owner's Project Management Services during the Feasibility Study Phase for the period stated above in the amount of Twenty-Four Thousand Five Hundred Ninety Dollars and Zero Cents ($24,590.00).

Thank you for the opportunity to serve the Town of Littleton and the School District, should you have any questions please feel free to contact me, thank you.

Sincerely,

Mark A. Stafford Senior Project Manager

Turner & Townsend Heery, Inc.

C:
File

Turner & Townsend Heery
3550 Lenox Road NE, Suite 2300
Atlanta, GA 30326

INVOICE	
Invoice Number	PJIN0041885
Date	November 18, 2024
Project Number	HII-2336600

Mr. Ryan Ferrara
Assistant Town Administrator/Director of Finance and Budget Town of Littleton

37 Shattuck Street
Littleton, MA 01460

Project Name
SHAKER LANE ELEMENTARY SCHOOL
OWNERS PROJECT MANAGEMENT SERVICES (OPM)

Period October 2024

No.	PHASE	SCHEDULED VALUE	WORK COMPLETED		TOTAL COMPLETED	BALANCE TO FINISH	PERCENT COMPLETE
			PREVIOUS APPLICATION	THIS PERIOD			
1	Feasibility Study	$285,000.00	$147,182.00	$24,590.00	$171,772.00	$113,228.00	40.0%
2	Design/Bid/Construction						
3	Closeout						
4							
5							
6	TOTALS	$285,000	$147,182.00	$24,590.00	$171,772.00	$113,228.00	40.0%

INVOICE PAYMENT DUE	**$24,590.00**

Contact: MARK A. STAFFORD @ mark.stafford@turntown.com, 781-733-7310 with invoice questions.

Turner & Townsend Heery, LLC
3550 Lenox Road NE, Suite 2300
Atlanta, GA 30326
FEI: 58-0827945

Invoice	
Invoice Number	PJIN0041885
Date	11/11/2024
Project Number	HII-2336600

FERRARA, RYAN

TOWN OF LITTLETON, MASSACHUSETTS

35 SHAKER LANE
Littleton, MA 01460

Project Name SHAKER LANE ELEMENTARY SCHOOL- FS/SD

Professional Services Rendered October 1st through October 31st, 2024

SCHEMATIC DESIGN			**17,142.00**
	Labor	17,142.00	
ESTIMATING			**7,448.00**
	Labor	7,448.00	
	PAYMENT DUE THIS INVOICE		**24,590.00**

Cumulative Billings	**Current**	**Prior Periods**	**To-Date**
Labor	24,590.00	122,592.00	147,182.00
Totals	**24,590.00**	**122,592.00**	**147,182.00**

Contact: STAFFORD, MARK (Mark.Stafford@turntown.com) with invoice questions. **Page: 1 of 3**

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Project Name SHAKER LANE ELEMENTARY SCHOOL- FS/SD

Professional Services Rendered

Employee Name	Period Ending	Hours	Rate	Multiplier	Bill Amount
ESTIMATING					
HOWSER, RHONDA L	10/14/2024	8.00	138.00	1.00	1,104.00
HOWSER, RHONDA L	10/15/2024	4.00	138.00	1.00	552.00
HOWSER, RHONDA L	10/16/2024	8.00	138.00	1.00	1,104.00
HOWSER, RHONDA L	10/18/2024	8.00	138.00	1.00	1,104.00
HOWSER, RHONDA L	10/21/2024	8.00	138.00	1.00	1,104.00
HOWSER, RHONDA L	10/22/2024	4.00	138.00	1.00	552.00
HOWSER, RHONDA L	10/24/2024	8.00	138.00	1.00	1,104.00
RIDGELY, GREGORY D	10/16/2024	2.00	206.00	1.00	412.00
RIDGELY, GREGORY D	10/18/2024	2.00	206.00	1.00	412.00
Subtotal, ESTIMATING		**52.00**			**7,448.00**
SCHEMATIC DESIGN					
STAFFORD, MARK	10/1/2024	8.00	148.00	1.00	1,184.00
STAFFORD, MARK	10/2/2024	8.00	148.00	1.00	1,184.00
STAFFORD, MARK	10/3/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	10/7/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	10/8/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	10/9/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	10/14/2024	7.00	148.00	1.00	1,036.00
STAFFORD, MARK	10/15/2024	7.00	148.00	1.00	1,036.00
STAFFORD, MARK	10/16/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	10/17/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	10/18/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	10/21/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	10/22/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	10/23/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	10/24/2024	5.00	148.00	1.00	740.00
STAFFORD, MARK	10/25/2024	8.00	148.00	1.00	1,184.00
STAFFORD, MARK	10/28/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	10/29/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	10/30/2024	4.00	148.00	1.00	592.00
STAFFORD, MARK	10/31/2024	4.00	148.00	1.00	592.00
ZEYTOONIAN, NINA	10/2/2024	1.00	125.00	1.00	125.00

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Project Name SHAKER LANE ELEMENTARY SCHOOL- FS/SD

Professional Services Rendered

Employee Name	Period Ending	Hours	Rate	Multiplier	Bill Amount
ZEYTOONIAN, NINA	10/3/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	10/4/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	10/10/2024	3.00	125.00	1.00	375.00
ZEYTOONIAN, NINA	10/15/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	10/16/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	10/17/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	10/22/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	10/23/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	10/24/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	10/29/2024	1.00	125.00	1.00	125.00
ZEYTOONIAN, NINA	10/31/2024	1.00	125.00	1.00	125.00
Subtotal, SCHEMATIC DESIGN		**118.00**			**17,142.00**
	LABOR AMOUNT THIS INVOICE				**24,590.00**