ARROWSTREET

SCHEMATIC DESIGN REPORT

MARGARET A. NEARY ELEMENTARY SCHOOL

SOUTHBOROUGH, MA
FEBRUARY 25, 2025

PREPARED FOR

NEARY BUILDING COMMITTEE &
MASSACHUSETTS SCHOOL BUILDING AUTHORITY

SKANSKA

Jim Burrows
Project Director
Skanska USA Building Inc.
101 Seaport Boulevard, Suite 200
Boston, MA 02210

February 25, 2025

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

Margaret A. Neary – Module 4 Schematic Design (SD) Submission

Dear Ms. Caprigno,

Please accept this submission of the Schematic Design documents for the Margaret A. Neary Elementary School Project for consideration of approval by the MSBA at their April 30, 2025, Board of Directors meeting. Pursuant to the Module 4 – Schematic Design requirements and in accordance with Section 8.1.1.2 of the OPM Contract, we have reviewed and coordinated the materials associated with the enclosed Schematic Design Submittal. We certify, to the best of our knowledge, that the information is accurate, complete, the Proposed Project as documented within the Schematic Design Submittal is within the District's budget, and that the District has approved the materials for submission to the MSBA in full compliance with the MSBA's requirements.

The Neary Building Committee met to approve the Schematic Design Submittal and to authorize Skanska USA, the Owner's Project Manager, to submit the PSR Submittal to the Massachusetts School Building Authority on behalf of the School District no later than February 25, 2025.

The submittal has been attached electronically as requested by the MSBA. We look forward to our next meeting with the MSBA team, to review our progress with the program to date.

Please contact us should you have any questions or concerns regarding this submission.

Sincerely,

Skanska USA Building, Inc.
Jim Burrows
Project Director

Cc: Sy Nguyen, Senior Project Manager, Skanska USA Building, Inc.

ARROWSTREET

MARGARET A. NEARY ELEMENTARY SCHOOL

Schematic Design Report

February 25, 2025

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INTRODUCTION

Introduction

In accordance with the requirements of the MSBA's School Building Program Module 4: Schematic Design, the following report, based on the preferred solution approved by the MSBA's Board of Directors, is to document in detail the scope, budget, and schedule of the proposed project. The Schematic Design submission addresses the concerns and questions raised by the MSBA during its review of the Preferred Schematic Report. It identifies any changes incorporated during development of the Schematic Design Submission based on further evaluations and considerations. The Schematic Design Submission and all changes have been approved by the Neary Building Committee.

OVERVIEW

Public meetings & Outreach

During previous phases of the project, the project team has held two community meetings, 5 NBC Meetings.

Since the PSR response was submitted to the MSBA on November 13, 2024, the project team has completed the following:

- 9 Neary Building Committee Meetings
- 6 Design Review Meetings
- 4 Community outreach meetings ('Office Hours') on January 10, February 1, February 24 and March 1, 2025.

The project team worked with the Neary Building Committee to develop the Preferred Option to the Schematic Design level. The design team also met with the Educators in a series of bi-weekly design meetings throughout the SD phase.

The project was submitted to the Southborough Historic Commission and received approval on November 19, 2024.

BUDGET & TOTAL FUNDING

The Total Project Budget for the new Neary Elementary School is not to exceed **$108,517,025**. On February 20, 2024, the Neary Building Committee voted to approve the Total Project Budget. Refer to the Cost Estimates in Appendix L & M.

SUMMARY OF PROJECT DESIGN

The Preferred Schematic Report approved by the MSBA Board of Directors on October 30, 2024, describes the construction of a new 4 grade elementary school on the current site.

The new school will be located on the footprint of the existing school, which minimizes soil removal costs and allows the existing fields to remain. The site is shared with Trottier Middle School, minimizing transitions and creating a self-contained school campus and a seamless educational experience from grades 2 through 8. By keeping students in a consistent environment, they build relationships with both peers and educators, creating a supportive foundation, all within a central and supportive environment.

The site design provides for a loop for bus / van traffic from passenger cars, adding a layer of safety, especially during busy drop-off and pick-up times. The separation can help prevent congestion and ensure that students are entering and exiting the building in a controlled and secure way. Visitor parking is provided at the main entry, while staff or longer duration parent parking is located at the side of the building.

The building is organized into four neighborhood wings, streamlining the educational experience and providing future flexibility. Each grade neighborhood demonstrates a commitment to integration and equity, ensuring that students with diverse learning needs have easy access to resources. Locating Small Group rooms throughout neighborhoods further underscores the importance of providing comprehensive support services to all students.

MSBA PSR REVIEW COMMENTS

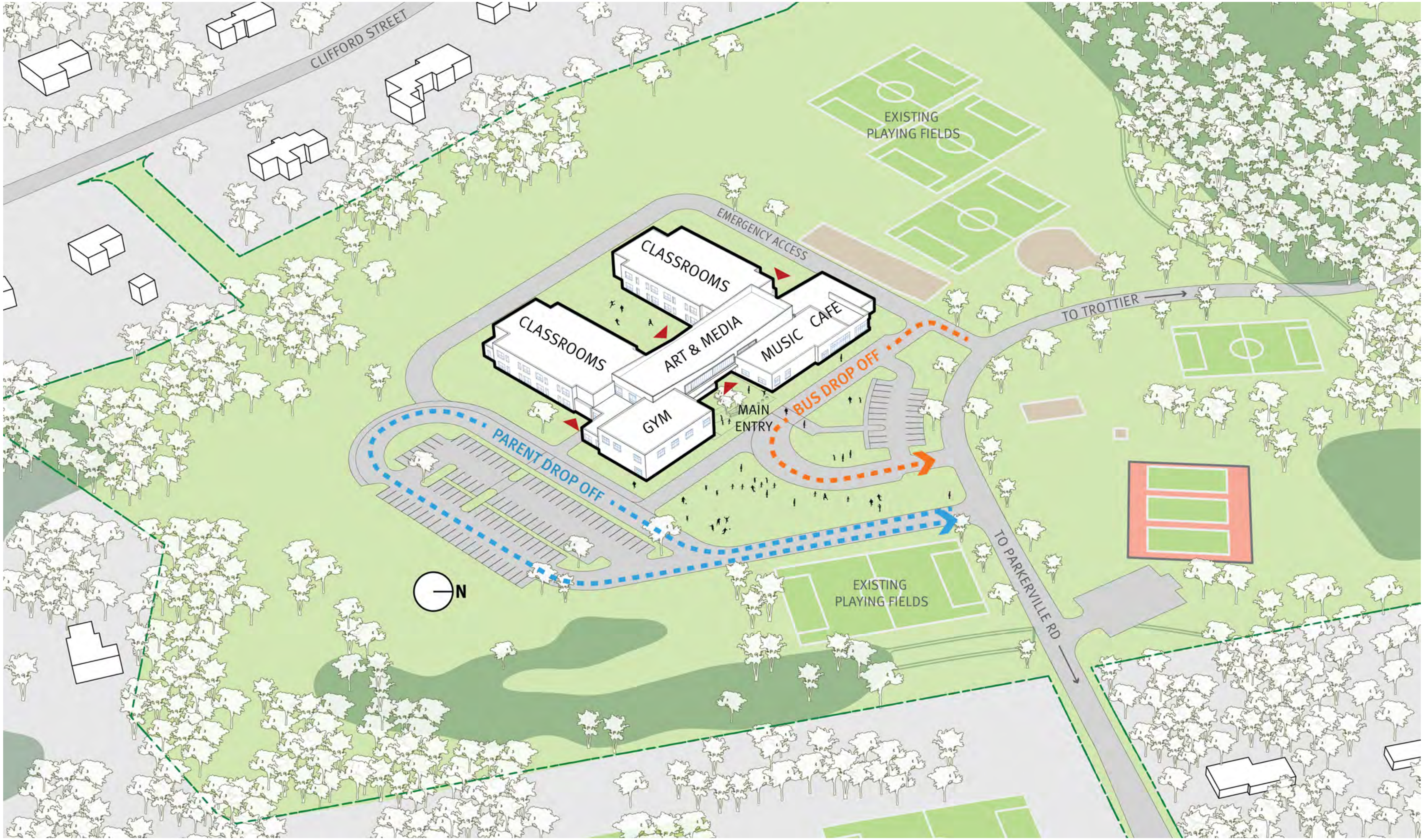
The MSBA Preferred Schematic Report comments were received on October 29, 2024. The District provided written responses to the MSBA comments on November 13, 2024.

See Appendix A, MSBA PSR Comments & Project Team Responses.

CONCEPTUAL LANDSCAPE SITE PLAN

PROPOSED PROGRAM PLAN - FIRST FLOOR

PROPOSED PROGRAM PLAN - SECOND FLOOR



SITE CONTEXT AND TRAFFIC FLOW DIAGRAM

MAIN ENTRY & ARRIVAL CONCEPT

VIEW OF STAIRS AND COURTYARD FROM THE CENTRAL CROSSING

STAIR OVERLOOK AND MEDIA CENTER FROM THE CENTRAL CROSSING

SCHEMATIC DESIGN PROGRAM

Architectural Characteristics

A timeless, adaptable learning community that inspires growth, fosters connection, and stands as a proud cornerstone for generations to come.

The District and the design team have envisioned a learning environment that unites two existing school programs, allowing for an expansion of an already collaborative pedagogy. The primary factor driving the project design has been the desire to adopt the most flexible facility possible, in both academic program and use.

Flexible Efficiency

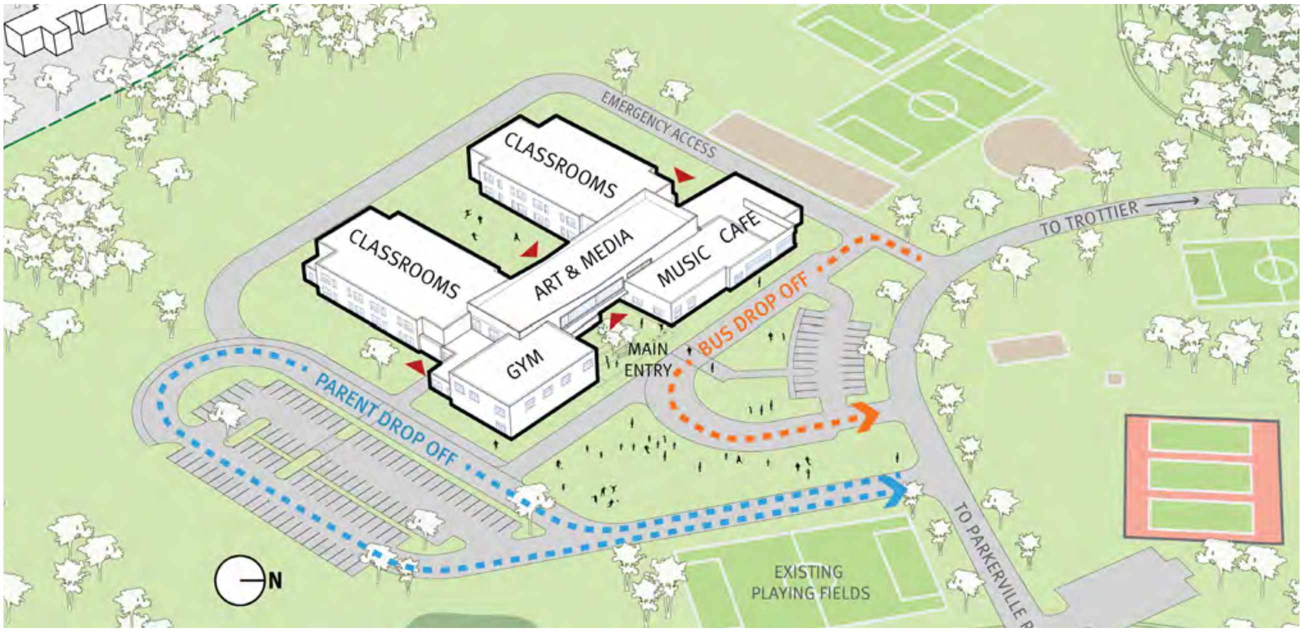
The architectural characteristics of the new Margaret A. Neary Elementary School are derived from the aforementioned flexibility, combined with deliberate attention to budget, school identity, learning neighborhoods, and community connection.

Early contextual studies of the site and surrounding area have focused on maintaining as much of the existing site integrity as possible. The building is nestled within wooded hills and vernal wetlands. Natural lawn and playing fields surround the building, and outline the constraints of usable land. The proximity to the wetlands and the soil conditions provided sufficient reasoning to build a new facility on the same location as the existing building. In maintaining the existing placement, the public-facing front of the building faces north, allowing for the utilization of diffused, northern light while the two classroom wings are oriented to the east and west.

The building features three distinct entry points, each designed to accommodate specific program needs while ensuring clear separation between public, parent, and bus traffic. This separation helps reduce the organized chaos for teachers and parents while maximizing safety for students, staff, and visitors.

The Main Entry, located at the center of the *Central Crossing*—the public wing of the school—provides direct access to the Main Office. This entrance is paired with a drop-off loop designated for bus and van traffic. While it is not intended for teacher, staff, or parent arrivals, it serves as the primary visitor entrance, conveniently accessible from an adjacent visitor parking lot.

A second entrance, situated on the building's west side, connects to a passenger vehicle drop-off lane adjacent to the staff parking lot. This entrance also accommodates after-hours access to the nearby Gymnasium.



BUILDING ENTRANCES AND SITE TRAFFIC DIAGRAM

The third entrance, on the east side of the public wing, serves as a connection for students moving between the Cafeteria and the playground or playing fields. During school hours, this entrance will remain locked and inaccessible to the public. Like all exterior entry points, it will only be accessible to staff and teachers using their credentials.

All vehicular traffic enters the site via the access drive off Parkerville Road that connects the existing Neary Elementary to the adjacent Trottier Middle School, which shares a portion of the property. Vehicular traffic is divided between bus and van traffic, and passenger car traffic. A paved loop around the back of the building provides auxiliary access for emergency vehicles, potential for overflow parking for special events, and access for larger maintenance and delivery vehicles.

The landscaping around the building is designed to punctuate the new facility, while leaving much of the existing site features intact. Carefully designed planting around traffic pathways provide screening and security at the main entrance and egress points around the building, while the rear courtyard is designed for safe, flexible use for gathering, outdoor learning, sheltered play. The courtyard is designed with low-maintenance materials and native planting to help keep operating costs low while ensuring a long-lasting, enriching space to serve students for years to come.

A Fresh Approach

Every school community has their own idyllic vision as to what their new school could be, and the Neary Building Committee envisioned a flexible learning facility that would help to consolidate two existing, 2-grade schools. The new configuration will provide a cost-effective solution to the current maintenance and upkeep of three school buildings, make bus routes more efficient, ensuring students spend less time on the bus, to and from school, and reducing bus-related traffic throughout the town, during operational hours.

The building further contributes to the future flexibility of the educational program by providing two, 2-story classroom wings; each wing housing (8) Classrooms, (4) Small Group Rooms, and (5) Learning Commons breakout areas per floor to allow the school to shift grade levels and *Learning Neighborhoods* as needed from year to year. This means that the school can opt for younger students to be located at the first level and older students at the second floor, or dedicate grade levels to one wing or the other, depending on the desired proximity to the Cafeteria or Gymnasium. Special, focused learning classrooms and spaces are located at the connection between the Learning Neighborhoods and the Central Crossing to maximize connectivity for students and staff accessing these spaces from different parts of the building. The two classroom wings surround the outdoor learning courtyard, accessed either at the end of each wing, or centrally near the base of the main staircase.

The two classroom wings are connected via the 2-story Central Crossing corridor that houses shared and public programs such as the main office, Gymnasium, Cafeteria, Music Classroom suite at the first floor, and the Art Room and Media Center at the second. Carefully placed security grilles allow for the school to limit access to the classroom wings during special events held during off-hours that would typically be open to the public.

The NBC expressed interest in allowing the new facility to have a more contemporary look and feel, rather than adhering to a particular historic language. Given this general direction with a need for an affordable, long-lasting building, it was decided that the most economical approach for the exterior construction would be that of masonry veneer with specialty materials only being used to emphasize special areas or programs.

From the Ground Up

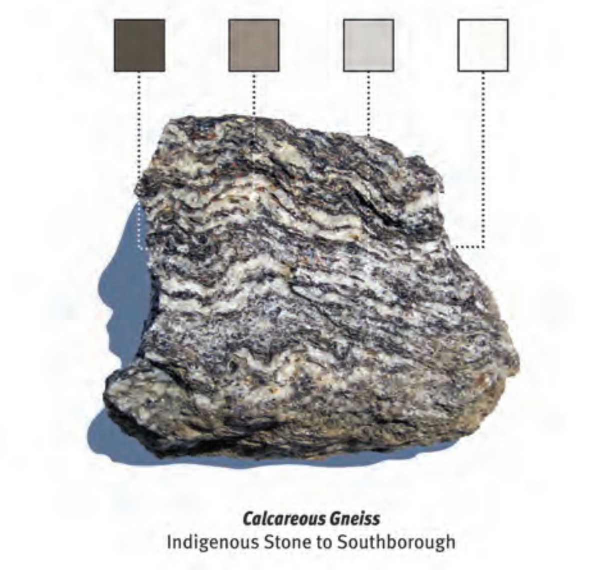
The challenge of creating a contemporary school using masonry meant that the design team had to explore alternatives to red brick and existing architectural or historic precedent and instead chose to borrow from local geology. An indigenous and abundant stone found throughout Southborough called *Calcareous Gneiss* served as design inspiration in both color and patterning of the masonry facades. It's color variation and striations allowed for the design team to create pattern and variation across the masonry facades that give them a dynamic complexity that punctuates the school against its natural, forested backdrop without introducing costly materials or construction methods.

Other exterior materials have been selected to emphasize certain areas of the building exterior or the programs within. At the three main entry and egress points, a panelized rain screen system is clad with wood-look phenolic panels to provide further connection to nature and natural materials as students arrive. This change in material will also serve as a way-finding feature to help guide first-time visitors.

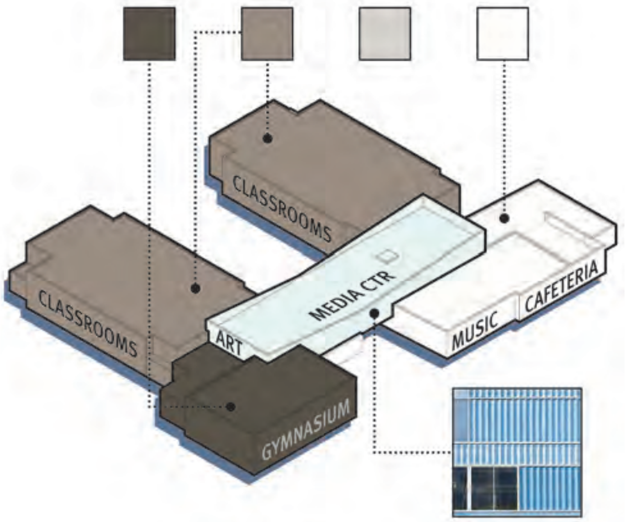
The second floor of the Central Crossing is clad with a corrugated aluminum panel rain screen to indicate a feeling of "lightness" floating above the tectonic mass of the masonry facades throughout. This separation of material also contributes to the contemporary aesthetic and reduces the imposing effect of taller spaces such as the Gymnasium and Cafeteria, therein softening the public-facing side of the school building.

Windows and glazing have been placed to maximize the amount of natural light within classrooms and learning spaces. Large ribbons of glazing are utilized in more public areas such as the Central Crossing corridors, Cafeteria, and Media Center. Large, punched openings provide natural light for classrooms and admin areas and include operable vents to allow for fresh air during milder temperatures.

The school will also be designed with great attention to sustainability features including but not limited to a ground-source, geothermal heating and cooling system, a high-performance building envelope, triple-glazed, energy efficient glazing at all windows and curtain walls, and a fossil-fuel-free kitchen, utilizing electric equipment for the preparation of school meals. Waste material from both the demolition of the existing building as well as construction of the new will be sorted and recycled to the greatest extent possible.



MATERIAL CONCEPT



MATERIAL/MASSING IDENTITY CONCEPT

Focal Point of School Design

The main focal points of the overall school design include:

- An efficient and flexible building that allows for programed areas to adapt to ever-changing educational needs.
- Clear, spacial identities of the four learning neighborhoods and the public programs connecting them.
- A cost-conscious, yet contemporary school facility that serves as an asset to both the District as well as the surrounding community for years to come.

Functional Relationships & Critical Adjacencies

The *Central Crossing* & Public Wing

The Central Crossing serves as the school's main thoroughfare, connecting classrooms with shared and public spaces. On the first floor, it is divided by the Main Entrance, with the Main Office suite on the left and the Music Classroom suite on the right. A wide, open pair of stairs lead to the second floor, while direct views and access to the outdoor learning courtyard create a welcoming arrival point.

Beyond the Main Office, students can easily reach the Gymnasium, OT and Adaptive PE/PT spaces, and the Medical Suite. Centrally located, the Medical Suite offers convenient access for parental pickup and is near the Gymnasium for handling minor injuries from PE class.

At the far end of the first floor, the Cafeteria and Kitchen serve students in three lunch seatings. The centrally placed Kitchen and Servery provide separate lines to accommodate different student needs. A Quiet Lunch space, designed for those with auditory sensitivities, can be opened or closed as needed and doubles as a meeting or conference space outside of lunch hours. The Cafeteria also features a raised platform with a proscenium and stage curtains, making it ideal for performances, assemblies, staff meetings, and community events.

On the second floor, the Central Crossing houses the Media Center at its core, with the Art Room to the left. Walking through this space feels like crossing a bridge, offering views of the learning courtyard below and the adjacent Media Center.

Designed to encourage social interaction and collaboration, the Central Crossing seamlessly connects grade levels and academic programs, fostering a strong sense of community within the school.

Music Room Suite

Music is a key part of the school curriculum. To support this, flexible Music Rooms are arranged together for easy use. A Large Group instructional room serves as the main space for music classes and orchestra practice, while two Ensemble Rooms provide additional breakout and practice areas.

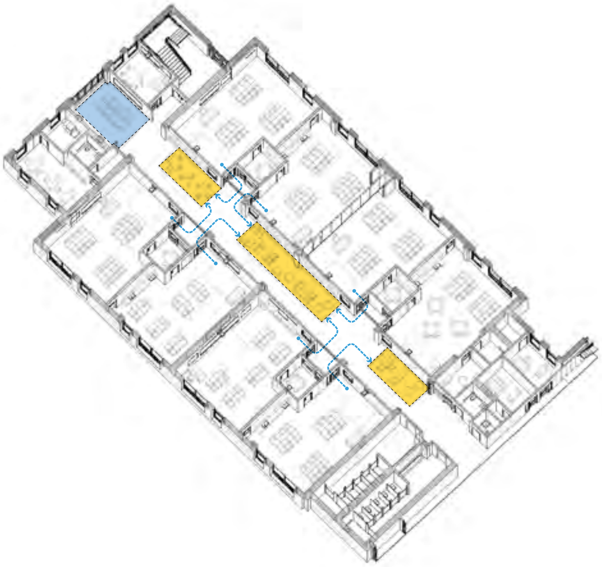
These rooms are located behind the performance Platform in the Cafeteria, ensuring smooth transitions between instruction and performances. The Platform is accessible from both the Cafeteria and the Music Classroom Suite. A movable partition at the back connects it to the Large Group Music Classroom, allowing for flexible use of space and accommodating larger orchestral performances.

Adjacent to the Music Suite is an Instrument Storage space, which allows arriving students to conveniently and securely drop off their instruments before continuing to their classroom. This storage area also provides overflow storage for larger instruments used by the music program.

Learning Neighborhoods
A significant challenge in consolidating two separate school communities is fostering a unified identity that transcends the distinct characteristics of the former programs. The Neary Building Committee emphasized the importance of drawing from the unique strengths of both the Neary and Woodward Schools to develop a new, cohesive pedagogy.

One strategy to achieve this is by promoting flexibility across all four Learning Neighborhoods. Instead of rigidly dividing the school by grade levels, the design encourages a seamless transition between spaces and years. While individual classrooms are organized by grade, shared programs serve as a bridge, linking grades and age groups. The corridors within the Learning Neighborhoods are interspersed with Learning Commons—dynamic spaces designed to foster exploratory learning beyond the traditional classroom environment.

These shared spaces also encourage collaboration across grade levels by activating the commons with constant activity and engagement. Students are less likely to feel confined or hesitant to explore other areas of the school, as the vibrant environment promotes interaction. For example, multi-grade groups can engage in science and STEM activities, allowing teachers to share resources effectively while older students mentor and assist younger peers.



LEARNING NEIGHBORHOOD SPACIAL ADJACENCIES

LEARNING NEIGHBORHOOD CONCEPT

Media Center & Art
Central to the school at the second floor is the Media Center and adjacent Art Room. The proximity of these two spaces has been a core requirement to the envisioned learning program, intended to foster collaboration and discovery for all grade levels.

The Media Center serves as both a library for student use, as well as a multi-use instructional space, further expanding the breakout opportunities for specialized learning. The Media Center offers quiet reading and study space while providing tables for group work or activities and also serves as a place for faculty meetings and professional learning for larger groups of educators. The Media Center includes an office for the librarian and a Media Storage room.

The Art Room is a spacious, light-filled instructional area, well-equipped for students to unleash their creativity and get messy in the process, and a wide variety of pinup space is provided throughout to display mini masterpieces. A dedicated Kiln Room is provided with additional storage space for materials, and large, basin sinks with provided sediment traps will allow for cleanup of media from paint to plaster and clay.

Educational Program

After the PDP comments from the MSBA were received, the District made minor updates to the educational program to clarify items in MSBA comments. In addition, the MSBA issued Project Advisory 85 in December 2023 with updates to the Educational Program Requirements. Further edits, reorganization, and the integration of the Design Team's Design Response to each component of the educational program into a singular document has been undertaken to match up to these updated requirements. These design responses have been updated as the design has developed.

In addition to the written educational plan, the design team also met with teachers from the existing Neary, Woodward and Finn Schools to discuss the new design and some of the specific elements that they would like in their new space and these conversations have been reflected in the design. The Design Team anticipates that meetings with teachers and staff will continue into the next phases and will strive to provide a school that meets the needs of the students and staff.

Please refer to Appendix B: Educational Plan With Design Responses.

CENTRAL CROSSING OUTSIDE OF MEDIA CENTER

Space Summary

Changes since PSR:

- Speech & Language Office (Special Education) was split into two offices of equal size. In PSR phase it was a single space.
- Instrument storage was shown as two spaces in PSR but is now a single space.

Core Academic

The proposed project contains 32,400 SF of core academic space. This is 6,750 SF above the MSBA guidelines of 25,650 SF.

The existing building currently contains 7 classrooms per grade (14 general education classrooms), with class sizes averaging between 18-22 students.

For all general education classrooms, the number of classrooms per grade remains the same, but with a doubled student enrollment, the number of classrooms increases to (28) classrooms.

General Classrooms were reduced from 950 sf to 900 SF based on the understanding that some of the activities that were originally planned to occur in the classrooms can be better served in the adjacent Small Group rooms and Learning Commons in each classroom neighborhood and one Resource Room in each wing. Other classrooms such as World Language were also decreased to 900 sf for consistency across the building and for future flexibility. Small Group rooms will be provided with each pair of classrooms to align with the District's educational goals; allowing for more student interaction with specialists, increased student autonomy for small group and independent learning opportunities, and provide better flexibility for teachers and support staff.

There are no STEM classrooms in the program as there is no current or future plan for staffing these spaces. Science curriculum will be conducted in the general education classrooms and in the Learning Commons, which will be centrally located in each grade's Learning Neighborhood.

Special Education

The proposed project contains 6,640 SF of special eduction space, which is 910 SF below the MSBA guidelines of 7,550 SF.

This variation is due to the Educational Plan developed by the District, which includes (2) full-size, self-contained classrooms to accommodate both the CASTLE and TLP programs, within one space in each classroom wing, in lieu of the (5) spaces listed in the MSBA guidelines. These spaces include self-contained toilet rooms and will be grouped with and supported by secondary spaces such as Small Group Rooms, Resource Rooms, Calming Rooms, Speech and Language Offices, School Psychologist Offices, OT and PT/Adaptive PE rooms, Office Space for support staff, and space for team meetings and student/parent conferences. Many of these spaces will also be used for interventions with students as well as student testing.

This allotment of program space provides a net increase from the existing plan, in available, flexible learning spaces which allows specialists and Educational Support Professionals (ESPs) greater access to the students they support.

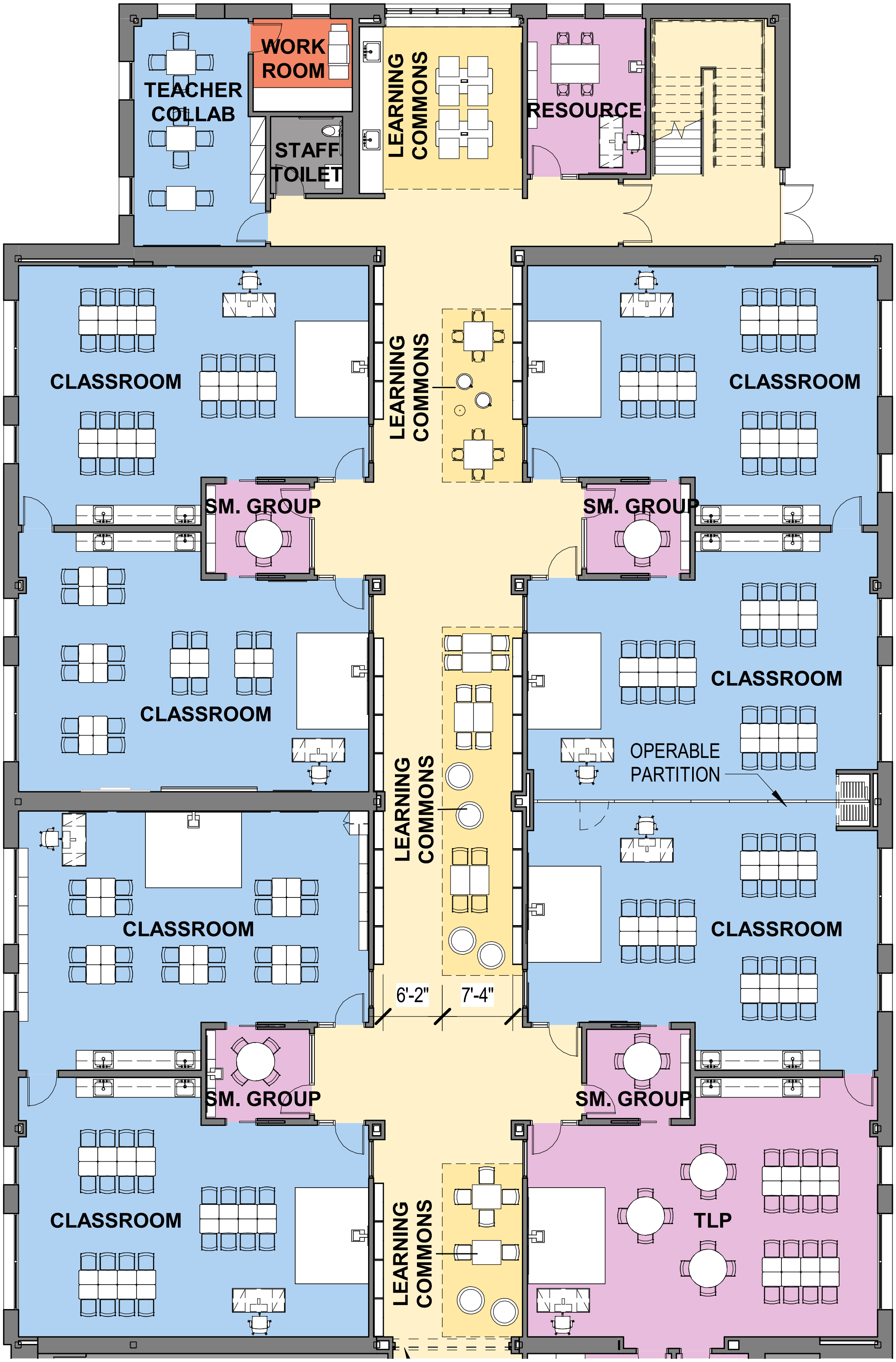
While it is not a change, it should be noted that Learning Commons are listed on the Space Summary as four spaces. Each space of 900 sf represents the total for a classroom wing.

Art & Music

The proposed project contains 4,750 SF of Art & Music space, which is 25 SF below the MSBA guidelines of 4,775 SF. This includes a single Art Room with Storage (one fewer than the MSBA guideline), and a single, Large Group Music Room with (2) Practice/Ensemble Rooms.

Health & Physical Education

The proposed project contains 6,300 SF of health & physical education space. This is in line with the MSBA guidelines of 6,300 SF. This includes a full sized gymnasium and support spaces.



LEARNING NEIGHBORHOOD PLAN CONCEPT

Media Center
The proposed project contains 3,415 SF of Media Center space, consistent with MSBA guidelines.

Dining & Food Service
The proposed project contains 8,141 SF of dining and food service space, consistent with MSBA guidelines.

Medical
The proposed project contains 610 SF of medical space, consistent with MSBA guidelines.

Administration & Guidance
The proposed project contains 1,910 SF of administration and guidance space. This was reduced by 2,595 SF in the PDP and is 685 SF lower than the MSBA guidelines.

The reduced size is due to the removal of the Assistant Principal's office, Guidance Offices, and a reduction in size of the Principal's Office. Based on their operational needs, the District decided these spaces would be underutilized.

Custodial & maintenance
The proposed project contains 2,210 SF of custodial and maintenance space. This is consistent with MSBA guidelines of 2,210 SF.

Non-Programmed Space
The two spaces in this category include an Instrument Storage Room, and Extended Day Program Storage Room, totaling 450 SF of non-programmed space.

Gross and Net
The proposed project contains 66,376 SF of net space. This is 5,130 SF above the MSBA guidelines of 61,246 SF. This includes the following:

- Core academic spaces, such as the Learning Commons, World Language Rooms, and similar spaces that are not specifically addressed in the Space Summary Template.
- Special Education spaces not specifically addressed in the Space Summary Template.
- More Small Group rooms for breakout learning to support the District's Educational Plan.
- Enlarged Music Room to accommodate larger sized band and orchestra classes (up to 75 students) in support of the District's Educational Plan

The proposed gross square footage of the project is 99,564 GSF. This is 11,114 GSF more than the MSBA guidelines of 88,450 GSF.

SPACE MEASUREMENT ANALYSIS & CERTIFICATION

The Designer certifies that the total gross square footage of the current plans for the Neary Elementary School are consistent with the updated and revised MSBA space summary dated February 25th, 2025.

Level 1	60,776 SF
Level 2	38,788 SF
Total	**99,564 GSF**

Laurence Spang, AIA LEED AP
Principal
Arrowstreet Inc.

Date: 02/25/25 Schematic Design Submittal

				PROPOSED PROGRAM															
Margaret A. Neary Elementary School Southborough, MA	**EXISTING CONDITIONS**			**EXISTING TO REMAIN / RENOVATED**			**NEW CONSTRUCTION**			**TOTAL**			**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**	**ROOM NFA[1]**	**# OF ROOMS**	**AREA TOTALS**	**ROOM NFA[1]**	**# OF ROOMS**	**AREA TOTALS**	**ROOM NFA[1]**	**# OF ROOMS**	**AREA TOTALS**	**ROOM NFA[1]**	**# OF ROOMS**	**AREA TOTALS**	**COMMENTS**
CORE ACADEMIC			**14,340**			**0**			**32,400**			**32,400**			**6,750**			**25,650**	STE Guidelines Policy
(List rooms of different sizes separately)																			
General Classrooms	890	14	12,460			0	900	28	25,200	900	28	25,200	-50	1	-450	950	27	25,650	900 NSF (minimum size) - 1,000 NSF (maximum size); Minimum of (2) sinks required per General Classroom
Science, Technology, Engineering (STE) Room	1,000	1	1,000			0	1,080	0	0	1,080	0	0	0	0	0	1,080	0	-	1,080 NSF (minimum size); Refer to the 2018 STE Guidelines for additional information.
STE Storage Room (if applicable)			0			0	120	0	0	120	0	0	0	0	0	120	0	-	Minimum of (1) 120 NSF STE Storage Room required per STE Room; Refer to the 2018 STE Guidelines for additional information.
Learning Commons (breakout) - Total area per Grade Neighborhood			0			0	900	4	3,600	900	4	3,600	900	4	3,600				
English Language Development Office			0			0	200	2	400	200	2	400	200	2	400				
Instructional Suite (Reading, Math)	880	1	880			0	200	4	800	200	4	800	200	4	800				
World Language			0			0	900	2	1,800	900	2	1,800	900	2	1,800				
Health / Wellness Classroom			0			0	0	0	0	0	0	0	0	0	0				
Teacher Collaboration Room						0	300	2	600	300	2	600	300	2	600				
SPECIAL EDUCATION			**3,360**			**0**			**6,640**			**6,640**			**-910**			**7,550**	Special Education spaces require DESE review and approval.
(List rooms of different sizes separately)																			
Self-Contained Special Education Classroom			0			0	900	2	1,800	900	2	1,800	-50	-3	-2,950	950	5	4,750	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			0			0	75	2	150	75	2	150	15	-3	-150	60	5	300	
Resource Room	1,110	1	1,110			0	200	4	800	200	4	800	-300	1	-700	500	3	1,500	1/2 size of a General Classroom
Small Group Room			0			0	100	15	1,500	100	15	1,500	-400	13	500	500	2	1,000	1/2 size of a General Classroom
Calming Room (adjacent to SCSEC)			0			0	120	2	240	120	2	240	120	2	240				
Speech & Language Office			0			0	200	1	200	200	1	200	200	1	200				
OT	495	1	495			0	500	1	500	500	1	500	500	1	500				
PT						0	600	0	0	600	0	0	600	0	0				
OT PT Storage						0	100	1	100	100	1	100	100	1	100				
PT / Adaptive PE	590	1	590			0	750	1	750	750	1	750	750	1	750				
Student Support Services	1,165	1	1,165			0	0	0	0	0	0	0	0	0	0				
Office (School Psych, Team Chair, Behavior Specialist)						0	150	2	300	150	2	300	150	2	300				
Small Group Room						0	200	0	0	200	0	0	200	0	0				
Testing spaces						0	100	0	0	100	0	0	100	0	0				
Special Ed Team Chair Office						0	150	0	0	150	0	0	150	0	0				
SPED Conference Room						0	300	1	300	300	1	300	300	1	300				
Public Day Education Spaces (List rooms separately below)																			
[Enter room type here]			0			0			0	0	0	0	0	0	0				
Collaborative Program Spaces (List rooms separately below)																			
[Enter room type here]			0			0			0	0	0	0	0	0	0				
ART & MUSIC			**4,055**			**0**			**4,750**			**4,750**			**-25**			**4,775**	
Art Classroom (25 seats)	1,000	1	1,000			0	1,000	1	1,000	1,000	1	1,000	0	-1	-1,000	1,000	2	2,000	Assumed schedule: 2 times per week per student
Art Workroom with Storage and Kiln			0			0	150	1	150	150	1	150	0	-1	-150	150	2	300	
Music Classroom / Large Group	1,895	1	1,895			0	1,800	1	1,800	1,800	1	1,800	600	-1	-600	1,200	2	2,400	Assumed schedule: 2 times per week per student
Music Ensemble	1,160	1	1,160			0	900	2	1,800	900	2	1,800	825	1	1,725	75	1	75	
Music Practice						0	150	0	0	150	0	0	-25	0	0	175	0	-	

HEALTH & PHYSICAL EDUCATION			**4,960**			**0**			**6,300**			**6,300**			**0**			**6,300**	Excess Physical Education Spaces Policy
Gymnasium	2,480	2	4,960			0	6,000	1	6,000	6,000	1	6,000	0	0	0	6,000	1	6,000	
Gym Storage			0			0	150	1	150	150	1	150	0	0	0	150	1	150	
Health Instructor's Office			0			0	150	1	150	150	1	150	0	0	0	150	1	150	
MEDIA CENTER			**2,590**			**0**			**3,415**			**3,415**			**0**			**3,415**	
Media Center / Reading Room (incl. office & storage)	2,590	1	2,590			0	3,415	1	3,415	3,415	1	3,415	0	0	0	3,415	1	3,415	
DINING & FOOD SERVICE			**5,000**			**0**			**8,141**			**8,141**			**0**			**8,141**	
Cafeteria / Dining	3,135	1	3,135			0	4,575	1	4,575	4,575	1	4,575	0	0	0	4,575	1	4,575	Based on 2 lunch seatings - 15 NSF per seat
Platform			0			0	1,000	1	1,000	1,000	1	1,000	0	0	0	1,000	1	1,000	
Chair / Table / Equipment Storage			0			0	403	1	403	403	1	403	0	0	0	403	1	403	
Kitchen	1,410	1	1,410			0	1,910	1	1,910	1,910	1	1,910	0	0	0	1,910	1	1,910	1,600 NSF for first 300 students + 1 NSF per additional student
Staff Lunch Room	455	1	455			0	253	1	253	253	1	253	0	0	0	253	1	253	20 NSF per student
MEDICAL			**440**			**0**			**610**			**610**			**0**			**610**	
Medical Suite Toilet			0			0	60	1	60	60	1	60	0	0	0	60	1	60	
Nurses' Office / Waiting Room	440	1	440			0	250	1	250	250	1	250	0	0	0	250	1	250	
Examination Room / Resting			0			0	100	3	300	100	3	300	0	0	0	100	3	300	
ADMINISTRATION & GUIDANCE			**1,900**			**0**			**1,910**			**1,910**			**-685**			**2,595**	
General Office / Waiting Room with Toilet	550	1	550			0	455	1	455	455	1	455	0	0	0	455	1	455	
Teachers' Mail and Time Room			0			0	100	1	100	100	1	100	0	0	0	100	1	100	
Copy Room			0			0	150	1	150	150	1	150	0	0	0	150	1	150	
Records Room			0			0	110	1	110	110	1	110	0	0	0	110	1	110	
Principal's Office	180	1	180			0	200	1	200	200	1	200	-175	0	-175	375	1	375	Conference room shared with Asst Principal
Secretary			0			0	125	1	125	125	1	125	0	0	0	125	1	125	
Assistant Principal's Office			0			0	120	0	0	120	0	0	0	-1	-120	120	1	120	
Supervisory / Spare Office			0			0	120	1	120	120	1	120	0	0	0	120	1	120	
Conference Room	390	1	390			0	250	1	250	250	1	250	0	0	0	250	1	250	
Guidance Office	210	1	210			0	150	0	0	150	0	0	0	-2	-300	150	2	300	
Guidance Storeroom			0			0	35	0	0	35	0	0	0	-1	-35	35	1	35	
Teachers' Work Room	570	1	570			0	100	4	400	100	4	400	-355	3	-55	455	1	455	
CUSTODIAL & MAINTENANCE			**1,949**			**0**			**2,210**			**2,210**			**0**			**2,210**	
Custodian's Office						0	150	1	150	150	1	150	0	0	0	150	1	150	
Custodian's Workshop	1,378	1	1,378			0	375	1	375	375	1	375	0	0	0	375	1	375	
Custodian's Storage	571	1	571			0	375	1	375	375	1	375	0	0	0	375	1	375	
Recycling Room / Trash			0			0	400	1	400	400	1	400	0	0	0	400	1	400	
Receiving and General Supply			0			0	**303**	1	303	303	1	303	0	0	0	303	1	303	
Storeroom			0			0	**407**	1	407	407	1	407	0	0	0	407	1	407	
Network / Telecom Room			0			0	200	1	200	200	1	200	0	0	0	200	1	200	

OTHER			**555**			**0**			**0**			**0**			**0**			**0**	
(List rooms separately below)																			
			6,135																
Extended Day Program Office			0			0	200	0	0	200	0	0	200	0	0				
						0						0							
District Office	5,465	1	5,465			0			0	0	0	0	0	0	0				
District Office Storage	490	1	490			0						0							
Office	180	1	180			0						0							
Quiet Corner	125	1	125			0						0							
After - School	250	1	250			0						0							
Zen Den	180	1	180			0			0	0	0	0	0	0	0				
Total Building Net Floor Area (NFA)			**39,149**			**0**			**66,376**			**66,376**			**5,130**			**61,246**	**Total Building Net Floor Area (NFA)**
Proposed Student Capacity / Enrollment																# of Grades	4	**610**	**Total Enrollment (Enter Design Enrollment)**
																K	0	**0**	Kindergarten Enrollment
																Grade 1	0	**153**	Lower Elementary School Enrollment (Grades 1-2)
																Grade 2	1	**458**	Upper Elementary School Enrollment (Grades 3-6)
																Grade 3	1		
																Grade 4	1		
																Grade 5	1		
																Grade 6	0		
NON-PROGRAMMED SPACES					% of GFA	**0**		% of GFA	**33,188**		% of GFA	**33,188**							Complete this category with Schematic Design Submittal
Other Occupied Rooms (List rooms separately below)																			
Instrument storage			0			0	300	1	300	300	1	300	125	1	300	175	0	-	
Extended Day Program Storage			0			0	150	1	150	150	1	150	150	1	150				
Unoccupied MEP / FP Spaces				-	#DIV/0!		-	0.0%		-	0.0%	0							
Unoccupied Closets, Supply Rooms, and Storage Rooms				-	#DIV/0!		-	0.0%		-	0.0%	0							
Toilet Rooms				-	#DIV/0!		-	0.0%		-	0.0%	0							
Circulation (corridors, stairs, ramps and elevators)				-	#DIV/0!		-	0.0%		-	0.0%	0							
Remaining[3]			23,607	-	#DIV/0!	**0**	-	32.9%	**32,738**	-	32.9%	**32,738**							
Total Building Gross Floor Area (GFA)[2]			**62,756**			**0**			**99,564**			**99,564**			**11,114**			**88,450**	**Total Building Gross Floor Area (GFA)[2]**
Grossing Factor (GFA / NFA)			**1.60**			**#DIV/0!**			**1.50**			**1.50**			**0.06**			**1.44**	**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.

Name of Architecture Firm: Arrowstreet Inc.

Name of Principal Architect: Laurence Spang, AIA LEED AP

Signature of Principal Architect: Laurence Spang

Date: 02/25/25

Instructional Technology

Current

The Margaret A. Neary Elementary School currently strives to integrate technology into classroom instruction. Technology plays a vital role in teaching and learning across all grade levels in both general education classrooms and special education programs.

Most classrooms are equipped with a wall-mounted projector, a cart-situated projector, or a non-interactive, flat screen display. Some classrooms have document cameras and/or sound amplification devices. Additionally, Chromebooks are available to all students in a 1:1 setting.

The current facility poses challenges with Wi-Fi coverage due to limited existing cabling infrastructure and insufficient power receptacles, hindering the effective use of instructional technology.

Proposed

As part of the new building construction, each classroom will receive either a short-throw projector or an interactive touch panel display, a classroom sound amplification system, a document camera, and a dedicated wireless access point. The facility will also feature an adequate number of power outlets to support both infrastructure and end-user device needs.

Integrating advanced technology into elementary classrooms enhances both teaching and learning by fostering an interactive and engaging educational environment. Short-throw projectors or interactive touch panel displays will enable teachers to present dynamic lessons incorporating visual and multimedia elements, catering to diverse learning styles. A classroom sound amplification system will ensure that all students, regardless of their seating position or hearing ability, can clearly hear instruction, improving focus and comprehension.

Document cameras will provide opportunities for real-time demonstrations, allowing students to showcase their work, model problem-solving strategies, and facilitate hands-on activities with the entire class.

Reliable, wireless access will support the integration of digital resources, adaptive learning tools, and collaborative platforms, fostering 21st-century skills such as critical thinking and communication. Additionally, ample power outlets will accommodate modern device usage, ensuring seamless access to technology that enhances learning and prepares students for future academic and career opportunities.

Technology integration will extend beyond core classrooms into support spaces such as the Media Center, Art Room, Music Rooms, and Platform, as well as shared assembly spaces like the Gymnasium and Cafeteria.

Security & Visual Access Requirements

District Specific Protocols

Security design is an ongoing conversation as the design continues to develop. Temporary conditions and protocols also will be further explored. These reports are considered to be confidential and not subject to Freedom of Information Act requests.

Refer to Appendix C: Proposed Security Narrative for the full security report prepared by Pamela Perini Consulting (PPC).

Alternative Entries

The building is designed with several alternative entries intended to facilitate student entry at the start of the school day and departure at the end of each day, that relate to arrival points to the site. The primary entrance during pick up and drop off for students arriving by bus or van will be the Main Entrance facing the entry drive from Parkerville Road. There is a separate, designated entry drive for passenger cars with a lengthy queuing lane, a pull-over lane and a sidewalk to provide a safe drop-off zone. These students would enter through a secondary entrance with a secure vestibule that will be open during drop off but will otherwise be locked. locked before and after drop off times. All visitors during the school hours will be directed to the Main Entrance at the front of the building where there are 20 visitor parking spaces provided.

All doors will be provided with card readers for staff and emergency personnel access. Doors will be numbered in accordance with Southborough Police and Fire Department protocol.

Main Entrance Design

As noted above, all alternative entries will lock after students have entered the building for the school day. There will be a secure vestibule at the main entrance to the school. The outer layer (exterior side) of the vestibule will be controlled through Electronic Access Control with Video Intercom for screening of visitors. Once a visitor is granted access to the vestibule, the inner layer will remain locked, as a "man trap" for further vetting. The vestibule will contain a pass through window for the delivery of items. Visitors will be allowed into the main office once a staff releases the locked door between the vestibule and Main Office. From the Main Office, they can be released into the remainder of the school.

Classroom Lockset Hardware

The Design Team will continue to meet with District security personnel to confirm that the design is in compliance with District policies. It is anticipated that classroom locksets will be Intruder function, and locked from the exterior.

Hardware at Courtyard doors into the building will have to be carefully considered to find an optimal balance of security, training, and access control.

Classroom Visibility

Instructional spaces have been designed to balance the District's desire for open and inviting classroom spaces with the need for security and places to shelter. Every classroom has been designed with a blind spot from the entry door and sidelights to ensure a safe room.

Optimal Surveillance

The project design will contain both interior and exterior cameras for both the final and temporary conditions to ensure optimal surveillance of the site during construction, as well as in the final design.

Site Development Requirements

Parking

The School is required to have one parking space per staff member, according to Town bylaws. The school employs roughly 25 teachers per grade and the proposed site plan includes 114 parking spaces, including the visitor parking at the front of the building.

Tree Protection & Tree Replacement

There are no requirements for protection of trees. The landscape design includes the planing of new trees along the entry drive, in the parking islands and along the emergency access drive at the rear of the building.

RECEIVED

NOV 15 2024

MASS. HIST. COMM

RC.75890

APPENDIX A MASSACHUSETTS
HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

Project Name: Margaret A. Neary Elementary School

Location / Address: 53 Parkerville Rd

City / Town: Southborough, MA

Project Proponent

Name: The Public Schools of Northborough and Southborough C/O Gregory L.Martineau, Superintendent

Address: 53 Parkerville Rd

City/Town/Zip/Telephone: Southborough, MA, 01772 (508)-486-5115

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)
MSBA	School Construction Grant
MassDEP	Public Water Supply
MEPA	ENF Certificate
EPA	NPDES General Permit for Construction Activities
Mass Save	Utility Incentives

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.75890

11/19/24

Joshua Duarte Date
Preservation Planner
Massachusetts Historical Commission

Project Description (narrative):

The project includes options for the addition/renovation of the existing Margaret A. Neary Elementary School or the construction of a new grades3-5 or grades 2-5 school on the existing Neary school site. The existing building shares a parcel of land with the Trottier Middle School to the north. The addition/renovation or new building will provide educational program of the Margaret A. Neary Elementary School and the Albert S. Woodward School in an approximately 121,067 sf (grades 2-5) or 100,200 sf (grades 3-5)facility at 53 Parkerville Rd in Southborough, MA. The project includes new building construction, possible demolition and abatement of the existing building; and construction of access drives, parking, playing fields, and associated site work.

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

Yes. The project includes the potential demolition of the existing school. The existing building is a modern single-story brick exterior, concrete framed building constructed in 1970.

See section IV. Existing Building Photos for photographs of the existing building. It has a number of accessibility issues, building systems are outdated and nearing the end of their useful life, and the building configuration needs improvement to meet the educational vision of the District. The Town of Southborough would also like to consolidate their elementary school buildings to reduce the number of transitions for the students as they progress through elementary school and reduce the transportation constraints on the district and families.

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.

Should the district choose to move forward with the addition/renovation option, rehabilitation of the existing building would occur to comply with accessibility regulations and provide spaces to meet the new educational programming needs of the school. No rehabilitation of the existing building will occur if the district moves forward with the new construction option.

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

Yes. The project includes the construction of a new consolidated school or an addition to the existing school building that will accommodate the students of the existing Margaret A. Neary Elementary School and the existing Albert S. Woodward School. The 1 or 2 story building will be approximately 121,067 sf (grades 2-5) or 100,200 sf (grades 3-5) and will consist of classrooms and community spaces (gymnasium, cafeteria, auditorium, etc.)

The project has been accepted into the Massachusetts School Building Authority Capital Funding Program.

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.

The Margaret A. Neary Elementary School is not listed in the State Inventory of Historic Assets of the Commonwealth. Neither is it located within the Southborough Center Historic District.

MHC Maps revealed no Prehistoric Archaeological Assets of the Commonwealth mapped in the project site location. The site and the playing fields were substantially rebuilt in 1970 as part of the construction of the existing buildings, so no archaeological resources are anticipated to be affected.

What is the total acreage of the project area?

Woodland 29 acres
Wetland 11.6 acres
Floodplain 16.94 acres
Open space 40 acres
Developed 10.37 acres

Productive Resources:
Agriculture 0 acres
Forestry 0 acres
Mining/Extraction 0 acres
Total Project Acreage 81 acres

What is the acreage of the proposed new construction? **2.77** acres

What is the present land use of the project area?

Education – Elementary School

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of Person submitting this form: Date: 7/12/2024

Name: Arrowstreet C/O Laurence Spang, Partner

Address: 10 Post Office Square, Suite 700 N

City/Town/Zip: Boston, MA 02109

Telephone: 617. 623.5555

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

Traffic Analysis

At the existing Neary building, all traffic arrives at the building from the access drive off Parkerville Rd. Car and buses both turn left into the parking lot and split into separate drive lanes. Cars enter to the right near the front entrance. Buses continue along the outer lane, loop around behind the building, and drop off at the basketball court to the north of the existing modular classroom. See diagram on previous page.

The District reported conflicts from the current circulation routes at the intersection of the departing cars and incoming buses as well as from teachers and staff crossing the parking lot.

The proposed site improvements will seek to alleviate conflicts by providing separate lanes for bus and car traffic and to increase efficiency and improve safety for walkers and bikers who access the school by utilizing the sidewalks along Parkerville and the access drive.

Refer to Appendix D: Preliminary Traffic Analysis for the previously completed traffic analysis by MDM.

Code Analysis

Code Red Consultants has reviewed the project and prepared a code report. The proposed Neary Elementary School will be designed according to all applicable codes and regulations. This Schematic Design submission includes a code summary and code approach drawings, that outline the approach to building and accessibility code compliance, on sheets G0.02 & G0.03. Approval from the local Authorities Having Jurisdiction (AHJ) regarding limiting the occupancy at the gym to a post maximum may be required.

A plumbing variance may need to be sought for the use of water closets in lieu of urinals at group bathrooms. The design team understands that this is a common variance to approve.

Please refer to Appendix E: Code Report & Analysis for the full code report.

Geotechnical & Geo-environmental Analysis

PRELIMINARY SUBSOIL ASSESSMENT

On April 15,2024, Lahlaf Geotechnical Consulting performed (4) borings to investigate the subsurface soil conditions of the site. The initial boring locations were identified based on the potential location for a new building located on the adjacent athletic field. This preliminary round of borings was intended to highlight the major soil strata.

Existing conditions include the following strata:

- The sampled topsoil ranged between 0.8 and 1.2 feet in depth.
- A layer of fill was encountered beneath the topsoil at the two borings in the play field north of the school. The fill at these locations extended to depths of about 6 feet beneath the ground surface. The samples in this layer were described as mostly silty sand.
- A third sample location on the southwest of the play field encountered subsoil at 2 feet below the ground surface and is described as poorly graded sand with silt. These initial borings indicate that the infilled soil will need to be removed to a depth of approximately 6 feet and replaced with structural fill to support any new construction. Topsoil should be removed from the entire construction area, including the building footprint and the paved areas. Sampled soils show that the soil is less than RCS-1 criteria and does not show any detection for pesticides, herbicides, gasoline and/ or diesel.

Through discussions with the Neary Building Committee, and due to the high cost of removing large amounts of soil, the proposed location of new construction has shifted to coincide with the location of the existing Neary School building.

After the initial borings, since the removal of large amounts of soil was costly, it was decided that the new construction should be placed in the same general area as the existing school. In order to have a better understanding of the geo-technical subsoil conditions in the new location, additional borings were performed on August 22. For full updated report, refer to Appendix F: Geotechnical Report.

SITE DRAINAGE

The existing site drainage system was installed during the original building construction. Two drain lines run on either side of the building and extend to two existing outfalls in the adjacent streams to the north and east of the school.

The District reported localized flooding near the catch basins in the pavement to the south and northwest of the building after storm events, suggesting the existing drainage system is under-performing and may be damaged or in need of cleaning. Additional explorations will be scheduled in the next phase of the project. It is anticipated that the proposed project will install an all-new site drainage system.

GEO-ENVIRONMENTAL ANALYSIS

During the Preliminary Design Program (PDP) phase, an Environmental Site Assessment (ESA) was conducted for the property by PEER Engineering. No detectable amounts were found of VOC's, SVOC's,or miscellaneous /biological elements. Metals, PCB's TPHs, pesticides, herbicides were all within acceptable thresholds.

Refer to Appendix G: Geo-environmental Analysis for a copy of the full report.

EXISTING BUILDING ASSESSMENTS

No additional testing of the existing building occurred since the Preferred Schematic Report. All necessary hazardous materials testing occurred at the PDP phase.

Utility Analysis

Green International Affiliates, Inc. (Green), has developed the schematic design for the preferred design option. The preferred design option involves demolishing the existing Neary Elementary School building and installing a new building in a similar location. This option changes the building shape to a "u-shape" instead of a rectangular shaped building. There will be parking on the east, northeast, and north sides of the building. The parking for the site includes approximately 125 spaces. The proposed layout includes two looped drop-off areas, a parent drop-off in the front and a bus drop-off looping around the building. The building and parking lot reconfiguration associated with this option requires reconstruction of the site utility infrastructure. This option includes 610 students and 100 staff members for a total of 710 occupants.

The following sections provide a general overview of the necessary construction components for the corresponding site.

Water

Municipal water services the existing school. Based on record documents provided by AST, there is an existing 8" asbestos cement water main that loops around the west side of the building. The water main runs southwest and connects to the municipal within water main on Clifford Street. The existing 8" water main also appears to continue eastward along the school driveway towards Parkerville Road. According to the records, there are two hydrants located within the school property to the northeast and southwest of the existing Neary School building.

The new water main will be an 8” cement lined ductile iron pipe. There will be a fire protection service line and domestic water line feeding the building off the 8” water main. Hydrants will be provided every 500 feet and will be coordinated with the fire department. The new building will conflict with the existing main. Since there is a conflict with the building, it is anticipated that a new water main will be installed within the limit of work connecting to the existing main within the driveway and to the existing main behind the building. The new water main will follow the proposed roadway looping around the east and south side of the building. The new water main will also provide a new connection to the existing main that continues up the driveway toward the high school.

The assumed quantities needed for the water upgrades include:

- 790 LF of 8” CLDI water main to loop around the building to tie into existing mains at the driveway and back of the building
- (1) New Hydrant
- 20 LF of 6’’ CLDI water connection to the Hydrant
- 100 LF of 4” CLDI domestic water connection to school
- 95 LF of 8” CLDI fire water connection to school
- (11) Water Gate Valves
- 25 LF Removal of Asbestos Cement pipe

Wastewater

The existing building discharges wastewater out of the southwest side of the building. The existing wastewater system includes 15,000-gallon septic tank, fast filtration unit, 10,000-gallon pump chamber, and a leach field. The existing leach field was designed for 522 people. The existing system is almost 30 years old and is reaching the end of its anticipated operating life span. Therefore, the existing system will be replaced under the proposed conditions.

The proposed wastewater system is based on 710 occupants. It is assumed that there will be a cafeteria and a gym.

The assumed quantities needed for the wastewater system upgrades include:

- 6,000-gallon grease trap (assume cafeteria, gym, 710 occupants)
- 15,000-gallon septic tank - 2 compartment (710 occupants)
- Fast Filtration Unit with piping and blower unit
- 10,000-gallon pump station with submersible duplex pumps, valve manhole, vent, and power
- 425 LF 4” SDR-26 Force main
- 70 LF 4” Sch 80 PVC
- 100 LF 6” Sch 80 PVC
- 21,515 sf Leach Field (710 occupants)
- (3) Sewer manholes
- Removal of existing 15,000-gallon septic tank, fast filtration unit, and, 10,000-gallon pump chamber.
- Abandon existing leach field and piping.

Stormwater

According to record information provided by AST, the existing drainage system collects stormwater via catch basins at low points throughout the site. Stormwater travels through 6” to 30” pipes, consisting of several materials including Vitrified Clay (VC), Reinforced Concrete Pipe (RCP), and Corrugated Metal Pipe (CMP). Most of the existing drainage infrastructure is collected and routed northeast of the school, which discharges from 30” RCP pipes at a headwall into a drainage ditch. The drainage ditch appears to be hydraulically connected to the existing skating pond via concrete weir. It appears that stormwater overflow travels northward along the existing channel.

A new closed drainage system is anticipated to accommodate the proposed parking and building layout. The closed drainage system will collect runoff from the proposed parking areas and from the roof drains for the building. The proposed closed drainage system will follow existing drainage patterns and discharge to the existing drainage system within the existing driveway. The existing site does not have any stormwater best management practices (BMPs) to provide stormwater treatment. The proposed project will result in a net increase in impervious areas. Therefore, stormwater BMPs will be proposed to mitigate peak rates and provide stormwater treatment. The following is a summary of the stormwater BMPs we anticipate for the project.

For the closed drainage system, we anticipate providing deep sump catch basins with hoods. These catch basins will achieve 25% TSS removal when installed offline instead of basin-to-basin connections. This TSS removal can be used to meet our pretreatment goals. The deep sumps and hoods provided in each catch basin will help to remove trash, debris, and sediment from stormwater runoff.

We anticipate providing two subsurface chamber systems and a rain garden for stormwater treatment. This consists of underground chambers that are designed to temporarily store stormwater. The site has a high groundwater table, which may not allow groundwater infiltration. Therefore, it is assumed that the chamber system will be lined with an underdrain. The chamber system will provide peak rate mitigation and stormwater treatment. The stormwater management system will have an outlet control structure which will include a manhole with a weir to control peak rates.

We anticipate providing water quality structures (WQS) for pretreatment. The WQS are proprietary hydrodynamic separators that can provide over 80% TSS removal. These units will be used to provide pretreatment for stormwater before entering the proposed subsurface chamber systems.

The proposed conditions will result in 60,900 sf of building area and 167,100 sf of paved areas. We anticipate a subsurface chamber system to be located under the parking lot east of the building. This subsurface system will require an approximate volume of 25,400 cf. We anticipate a second subsurface chamber system under the parking lot north of the building. This subsurface system will require an approximate volume of 12,00 cf. The volume is assumed that the subsurface chamber systems will need to provide at least 1-inch times the total post construction impervious area to meet water quality requirements. The subsurface chamber system will also be used for peak rate mitigation. Therefore, to be conservative, we approximate the storage to be approximately two times the water quality volume.

Due to the high groundwater table, underslab piping may be required. Coordination with the MEP and the structural engineer will be required.

The assumed quantities needed for the stormwater upgrades include:

- 11-15 Drainage Manholes
- 15-20 Catch Basins
- 3-5 Double Catch Basins
- (3) Water Quality Units
- (2) Outlet Control Structures
- 2,200 LF 12” HDPE drain lines
- 50 LF 18” HDPE drain lines
- 5 LF 30” HDPE drain lines
- 2,000 LF under slab piping
- Two subsurface chamber systems with storage of 25,400 cf and 12,700 cf
- Rain Garden
- Removal/abandon of existing drainage system within the limit of work.

Electrical/Gas

According to records provided by AST, the existing electrical infrastructure is located east and north of the school, serviced by a connection to Clifford Street via combination of overhead wires and underground electric. There is a gas main that runs parallel to the northbound and eastbound driveways. The records do not indicate the gas main size, material, or connection point to the school building.

New electrical and gas service will need to be provided for the new building. We defer the MEP for scope of gas and electrical requirements for the building.

The project intends to achieve the Electric Vehicle LEED credit. This requires installing electrical vehicle supply equipment for 5% of all parking spaces. This results in 6 electrical vehicle parking spaces.

Septic System

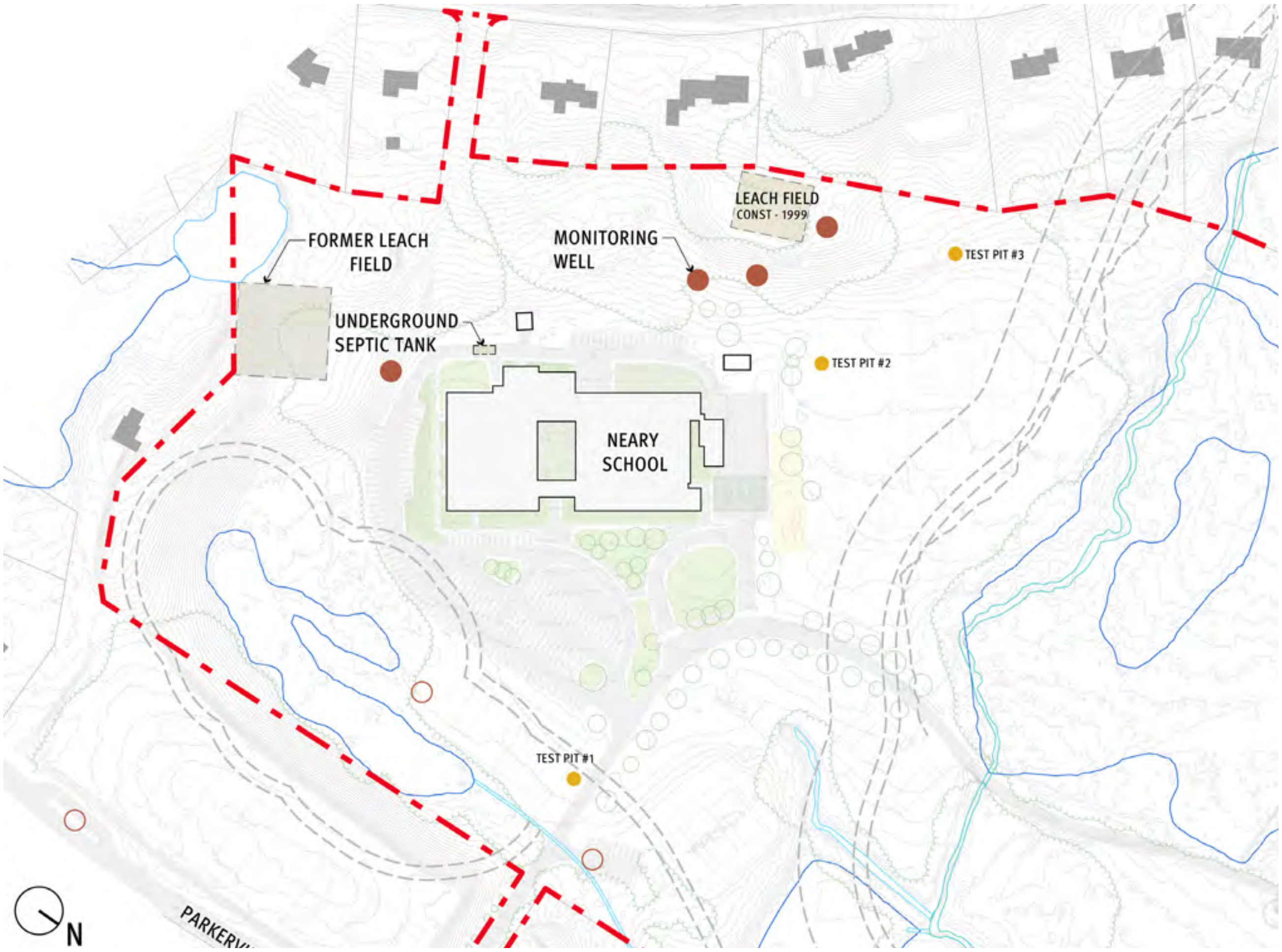
The original building septic system and leach field was located to the south of the existing building.

The septic system was replaced in 1997 and a new leach field was constructed to the west of the building on an elevated slope and a new tank was constructed adjacent to the existing tank. This system is approaching the end of usable service so it is likely that a new leach field will need to be constructed.

In anticipation of a new septic system and leaching field, percolation tests were performed at three locations on July 24, 2024 by McCarty Companies. The pits were dug by the DPW and the testing was witnessed by the local sanitation inspector.

Two of the test pits received passing percolation results (#2 and #3 in the diagram below). Test pit #1 revealed fill material and groundwater was present where it transitioned to native soil, so a percolation test was unable to be performed. Due to the presence of high groundwater, the area around pit #1 is not viable for a new leaching field.

Please refer to Appendix H: Soil Percolation Test for a copy of the full report.



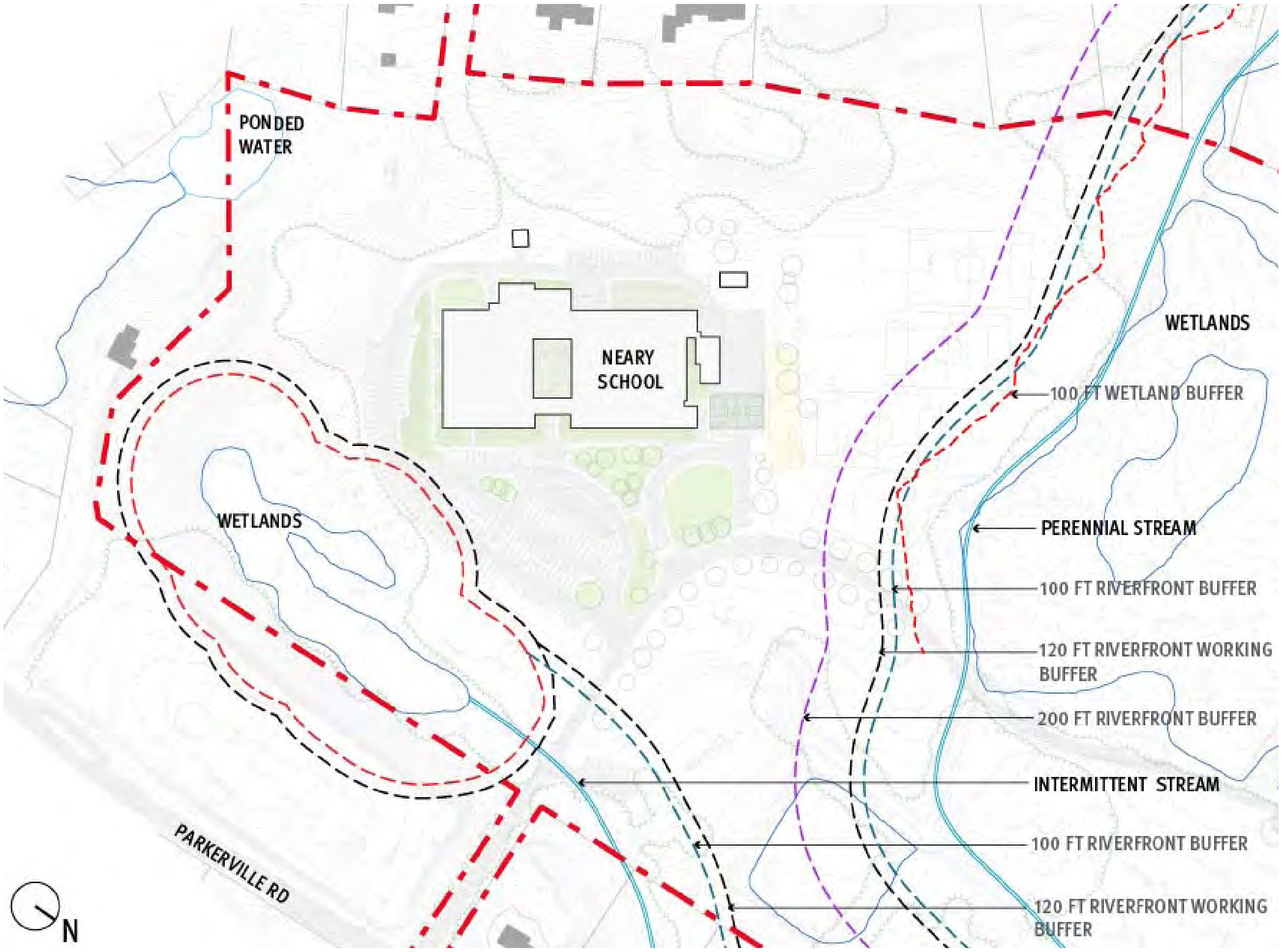
TEST PIT LOCATIONS AND EXISTING SEPTIC & LEACH FIELD LOCATIONS

ENVIRONMENTAL IMPACTS & PERMITTING REQUIREMENTS

The site is located in an urban residential area and has adjacent wetland areas. The site is not located within a 100-year Flood Zone according to the FEMA Flood Map. The project site is not located within any areas designated as an Estimated Habitat of Rare Wildlife and a Priority Habitat of Rare Species by the Natural Heritage & Endangered Species Program (NHESP). Land disturbance is anticipated to be greater than an acre and would require a local Stormwater Management Permit. In addition, any new drainage connections proposed to the municipal system would require a local Drain Permit.

The design team including Civil and Geo-Environmental Engineers performed a review of the State Site Permit Tracking Worksheet and found that there are no MEPA Triggers for this site.

See Appendix I: State Site Permit Tracking Worksheet for full worksheet and MEPA Trigger Checklist.



WETLAND SETBACK LOCATIONS

Massing Study

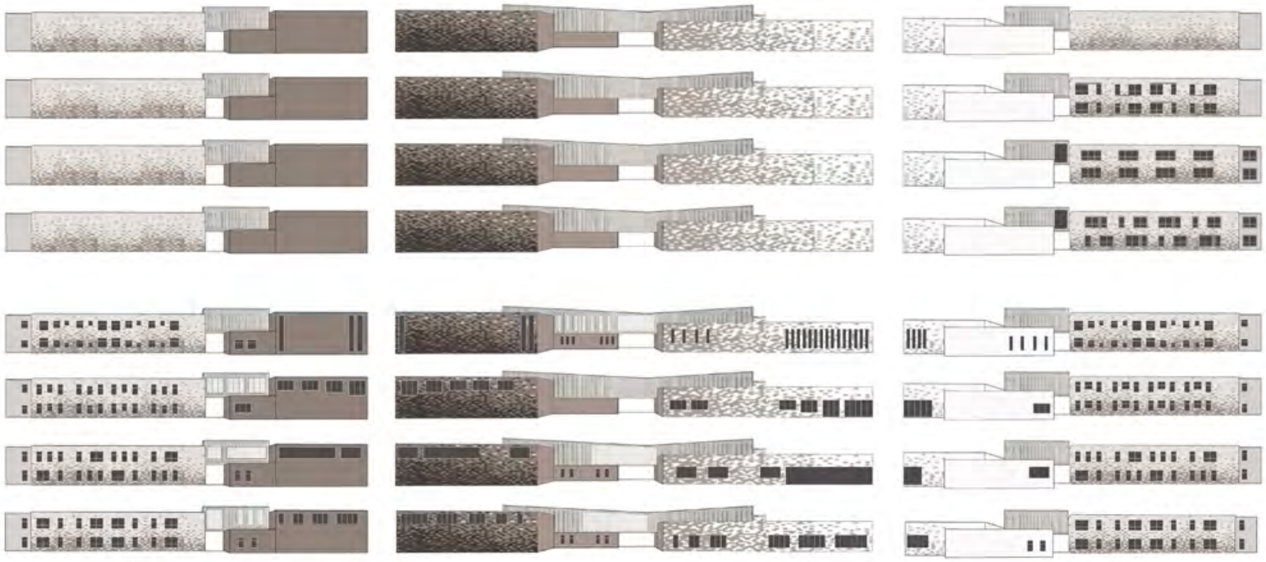
Since the submission of the Preferred Schematic Report, the design team underwent several massing study exercises to better understand the distribution of program areas, respond to the needs of the educational program and its various spacial adjacencies, and maintain the most compact and economic building footprint possible.

To achieve these goals, it was quickly determined that the model of a single-story public wing connecting the (2) two-story classroom wings was not the most efficient concept. Instead, by adding a second story to the public wing (Central Crossing), shared programs like the Art Room and Media Center move up and away from the first floor to become centralized hubs of student activity, while allowing for more efficient circulation space between the (2) classroom wings.

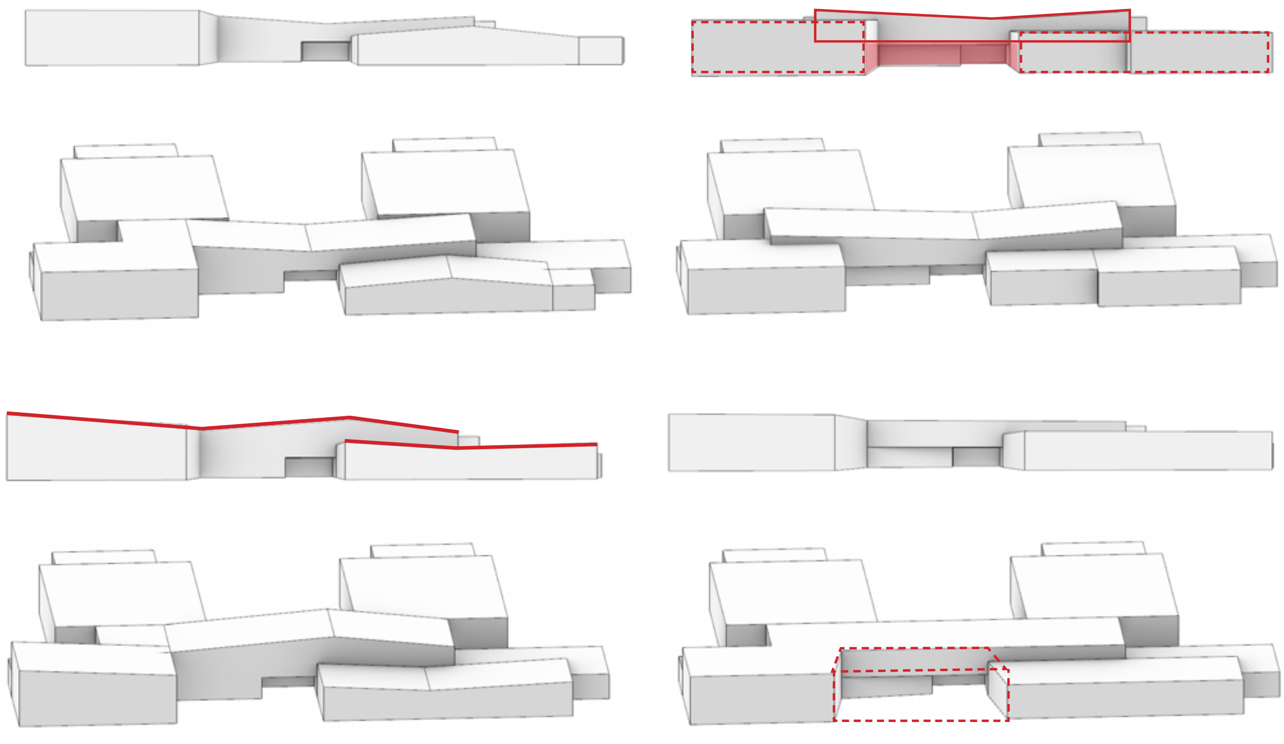
The building footprint is furthermore reduced by locating the Mechanical, Main Electric, and MDF Rooms to the second floor. This move also contributes to the building's resiliency; preventing damage to equipment by potential flooding or groundwater infiltration associated with the nearby wetlands.

Through the massing study, the design team looked at ways in which to use the "blocks" of program to create zones of identity, which give each portion of the building a distinctive look and feel while seamlessly coming together in a cohesive material language. Heavy materials like masonry meet lighter materials such as aluminum panel and wood-look rainscreen to help break up the facade. Combinations of masonry color blends allow for identifiable characteristics of larger masses such as the Gymnasium, Cafeteria, and Classroom Wings.

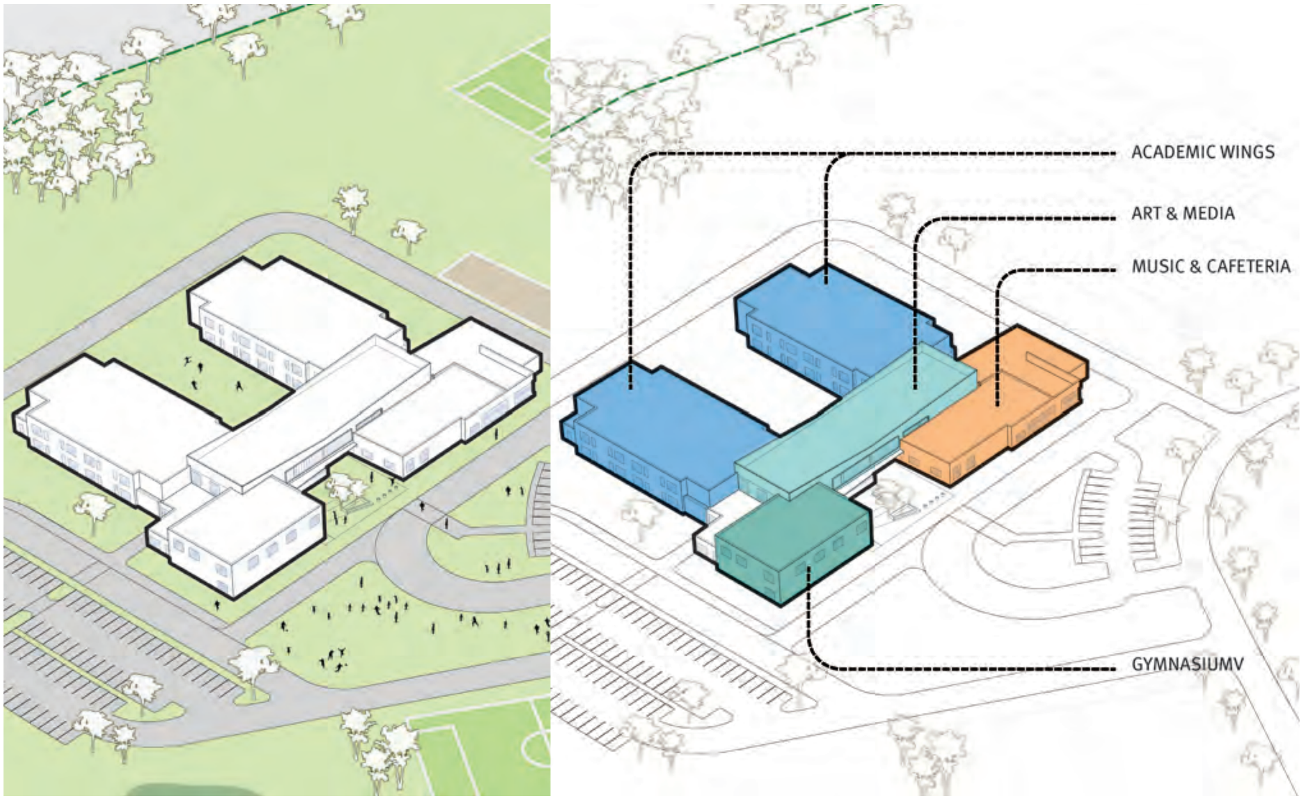
Lastly, while the location of the school is placed a comfortable distance from adjacent residences, special attention to the "public-facing" portion of the building would not have an imposing feeling to the surrounding neighborhood context which, to this point, has become accustomed to a single-story school building.



CONCEPTUAL MASSING AND MATERIAL STUDIES



EARLY MASSING CONCEPTS



BUILDING MASSING & PROGRAM BLOCKS

Structural Narrative

The proposed building is a new one- and two-story construction. The two-story construction includes two classroom wings on the sides and a center bar connecting the two wings forming a C shape in plan. The center bar will house a media center, an art room, and offices. The gymnasium and cafeteria are one-story, located at each end of the center bar.

The building's superstructure will include steel and concrete decks supported by structural steel beams, joists, and columns. The building will be supported on conventional spread footing foundations.

FOUNDATION & GROUND FLOOR

Foundation

According to the "Preliminary Geotechnical Guidelines Report" prepared by Lahlaf Geotechnical Consulting, Inc. dated May 2024, the proposed building foundation will consist of conventional spread footings over natural soil or compacted structural fill. Reinforced concrete frost walls and column pilasters will be constructed along the perimeter of the building. The bottom of perimeter wall footings and footings in unheated areas will be placed at a minimum of 4'-0" below the finished grade for frost protection. The bottom of interior column footings in heated areas will be placed at approximately 3'-6" below the ground floor slab.

Ground Floor

Ground floor slab will be concrete slab-on-grade of 5" thick. The slab-on-grade will be constructed over properly prepared sub-grade materials and will be reinforced with welded wire fabric. Control joints will be cut into the slab at column grids and a maximum of 15' in each direction.

SUPERSTRUCTURE

Two-Story Construction

Structural steel beams and columns supporting steel roof decks and concrete composite steel floor decks. The typical girders will be steel wide flanges sections (W-shapes) that span 25' to 30', and typical steel beams will be W-shapes spanning approximately 30' at 8' to 10' spacing. Steel beams for landing and stringers of monumental stairs will be rectangular tube steel shapes. Typical columns will be 12" deep steel W-shapes. Columns at exposed locations will be rectangular or round tube steel shapes.

Second floor decks will consist of 3.5" thick normal-weight concrete over 3" deep galvanized composite steel deck (6.5" total thickness). A minimum of one row of stud shear connectors, 3/4 inch in diameter and 5" long, will be welded over the top of each supporting beam at an interval of not more than one foot. The roof deck will be 3" deep type N steel roof deck.

Gymnasium & Cafeteria

Roof structure of the gymnasium and cafeteria will consist of roof deck 3.5" deep dovetail acoustical steel roof deck supported by long span steel open web joists. The steel joists will be approximately 50" deep spaced at 8' to 9' on centers. The joists will be supported by steel girders and columns located at the perimeter of the gym and cafeteria.

Gymnasium will have perimeter 12" thick reinforced CMU walls between steel columns. A row of steel beams will span between steel columns on top of the CMU wall to support the sill of strip windows.

Connections

A typical beam to beam, beam to girder, and a typical beam/girder to column connection will be a double angle connection with bearing type bolts. Connections for the lateral load resisting moment frames will be shop and field welded. Connections for lateral load resisting braced frames will be shop and field welded or slip critical bolted.

Lateral Load Resisting System

The building will be stabilized against wind and seismic forces by concentric steel braced frames in both orthogonal directions at locations permitted by the architectural design. At Gymnasium, the lateral system will be supplemented by CMU shear walls

AESS

Steel framing, including connections, exposed to view will meet the requirements of Architecturally Exposed Structural Steel (AESS).

Steel Quantity

For the purpose of schematic design quantity estimate, the structural steel weight is assumed to be 16 pounds per square foot. This weight will include steel beams, girders, columns, framing for stairs and elevators, relieving angles, plates, hangers, diagonal bracings, etc., but exclude equipment screens, dunnage, shear studs, composite steel floor deck and steel roof deck.

LEED Certification

The use of structural steel which is comprised of at least 93% recycled content, and the addition of ground granulated blast furnace slag, a cementitious waste product of steel manufacturing, to the concrete mix will contribute to the goal of LEED certification.

DESIGN LOADS & PARAMETERS

The proposed building structure will be designed in accordance with the 10th Edition draft of the Massachusetts State Building Code. The design loads and parameters are as follows:

Floor Live Loads

First Floor & Public Space	100 PSF
Corridors Above First Floor	80 PSF
Classrooms	50 PSF
Light Storage	125 PSF

Dead Loads

Mechanical Units	Actual Weights
Roofing & Insulation	5 PSF
PV Panels & Ballast	10 PSF
Services & Ceiling	10 PSF
Structure	Est. Actual Weights

Wind Loads

Basic Wind Speed V_{ult} = 128 mph , Risk Category III

Exposure: B

Roof Snow Loads

Ground Snow Load Pg = 40 PSF

Exposure Factor Ce = 0.9

Thermal Factor Ct = 1.0

Importance Factor I = 1.1

Minimum Flat Roof Snow Load Pf = 35 PSF (Basic snow load will be adjusted for drift, roof slope, sliding.)

Earthquake Loads

Risk Category: III

Seismic Importance Factor: I = 1.25

Mapped Spectral Response Acceleration at Short Period: S_s = 0.237g

Mapped Spectral Response Acceleration at 1 second: S_1 = 0.062g

Site Class: D (Per Preliminary Geotech Report)

Seismic Design Category: B

Lateral Load Resisting System: Ordinary Steel Braced Frames

Response Modification Factor: R = 3

Analysis Procedure: Equivalent Lateral Force Analysis

Mechanical Narrative

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), Massachusetts Municipal Stretch Energy Code 2023, 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 items incidental thereto, including commissioning and testing.

The HVAC narrative below provides a summary of HVAC options lifecycle cost analysis (LCCA) in section 4 below. The proposed HVAC options to be studied as described withing sections 5, 6 and 7. Sections 1,2, 3, and 8 through 12 of the Narrative are general requirements that pertain to all options.

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 deg. F, Summer 88 deg. F DB 73 deg. F WB
- Inside: 70 deg. F +/- 2 deg. F for Heating, 75 deg. F +/- 2 deg. F (55% RH) for Air-conditioned areas (Administration, Nurses Office, Guidance, Cafeteria, Classrooms, Teacher Support and Gym (during normal School Use).
- 78-80 deg. F (55% RH) for Corridor, Gym (During Assembly use).
- Unoccupied temperature setback will be provided 60 deg. F heating (adj.), 85 deg. F (adj›) cooling (adj.).

Outside air shall be provided at the rate 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.

Geothermal Water Source Heat Recovery Heat Pump Chiller & Heating Plant w/ VAV Displacement System

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 75% eff. 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. Hot and chilled water terminal units shall be provided for IT Server Rooms, Electric rooms and elevator machine rooms.

Geothermal Heating and Cooling Plant

1. Heating and cooling for the entire building will be capable of being provided through the use of a high-efficiency geothermal heating and cooling plant including a modular ground water source to water simultaneous heating/cooling heat recovery heat pump chillers with seven (7) 50 nominal ton cooling/40 ton nominal heating modules, with two (2) of the modules for heating/cooling backup purposes. The estimated peak

heating load is 200 tons, and the estimated peak cooling load is 275 tons. The heat pump chiller units will be located in the Mechanical Room. The heat pump heat recovery chillers will be provided with ground source condenser water from approximately (60) closed loop type quad-loop ground source geothermal wells approximately 650 feet deep and spaced a minimum of 20-25' apart from one-another, based on a capacity of 4.5 tons/well. The final well quantity, depth and distances shall be determined by the geothermal design consultant.

2. The heat pump chiller plant will supply heating hot water to heating equipment and systems located throughout the building through a two-pipe fiberglass insulated schedule 40 black steel and copper piping system. The plant shall supply a maximum hot water temperature of 130°F on a design heating day. Primary and standby end suction base mounted pumps will be provided with variable frequency drives for variable volume flow through the water distribution system for improved energy efficiency. In addition to pumps, new hot water accessories including air separators and expansion tanks shall be provided.
3. The heat pump chiller plant will distribute between 45°F and 55°F chilled water to the roof mounted air handling units and a compensated chilled water distribution system located throughout the building will distribute between 55°F and 65°F chilled water to the terminal radiant cooling panels units in the fully air conditioned Classrooms, Administration, Guidance, Media Center, Cafeteria, and Nursing Areas. The chilled water distribution piping will be of the fiberglass insulated schedule 40 type and will be completely separate from the hot water distribution piping system. Chilled water pumps and variable frequency drives (which will control down to maintain a minimum flow to the chiller) will be provided for overall variable flow chilled water system distribution. Compensated chilled water pumps with variable frequency drives will be provided for variable flow chilled water system distribution. In addition to pumps, new chilled water accessories including air separators and expansion tanks shall be provided.
4. Primary and standby 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 and expansion tanks shall be provided.

Ventilation Air Handling Equipment

It is proposed that a new air-conditioning displacement ventilation system shall be provided to provide air-conditioning and ventilation to the occupied areas of the building.

1. New rooftop air handling units with 100% outside air operation capability, supply and return air fans with VFDs, energy recovery wheels, hot water heating coil with modulating valve, chilled water cooling coil, hot water re-heat 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 by maintaining a maximum of 800 PPM while providing sufficient ventilation to meet the required heating or cooling load of the classroom. 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 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 ceiling panels will be provided along exterior walls that shall be interlocked with space enthalpy sensors

that shall modulate the control valve of the coil closed when the space enthalpy is above dewpoint conditions.

Preliminary AHU Quantities, zones and airflow capacities are as follows:

- AHU-1, 2, 3, & 4 – Classrooms – 32,000 CFM Total (Each unit @ 8,000 CFM Avg.)
- AHU-5 – Gym – 6,500 CFM
- AHU-6 – Media Center, Administration, Main Entry, Central core areas – 12,000 CFM
- AHU-7 – Cafeteria – 6,500 CFM
- MAU-1 Kitchen (Make-Up Air) – 2,500 CFM

ERV Units

1. The ERV units shall be designed to provide air conditioning or partial air conditioning (dehumidification) to the majority of building areas. The Administration, Media Center and Cafeterias areas shall be provided with "full" air conditioning to maintain 75 deg F on a design cooling day, whereas the Gym and Classroom and related Teacher support areas shall be designed for partial air conditioning to maintain a temperature of 78-80 deg F on a design cooling day.
2. It is proposed that building Classrooms and adjacent teacher support and circulation areas, Administration Areas, Cafeteria and Gym Areas are served by a displacement ventilation air system which consists of low wall supply displacement air diffusers and ceiling mounted return/exhaust air registers.
3. Code required exhaust for the majority of building areas, including toilet rooms, shall be provided through the localized energy recovery ventilation (ERV) systems.
4. Dedicated exhaust air fan systems shall be provided for Kitchen exhaust air (if provided) and Janitor's closet areas.
5. New insulated galvanized sheet metal ductwork shall be provided to connect the ERV units supply and return ductwork to each space. New VAV (variable air volume) terminal boxes with temperature and demand control ventilation shall be provided for each classroom, teacher support room and the office areas. Enthalpy controls shall be provided to shut down mechanical cooling systems when operable windows are opened during hot and humid outdoor air conditions.
6. Unitary type hot and chilled water terminal units shall be provided to serve IT server rooms and closets.
7. A new direct digital automatic temperature control (ATC) and building energy management system (BMS). The new ATC/BMS system shall be web accessible, include energy metering, and shall be capable of being integrated into the City-wide energy management system.

Lobby, Corridor, & 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.

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.

Testing, Adjusting, Balancing & Commissioning

All new HVAC systems shall be tested, adjusted, balanced and commissioned as art of the project 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 City Wide Central energy management system.

TESTING REQUIREMENTS

The Mechanical Contractor shall provide testing of the following systems with the Owner and Owner's Representative present:

- Heat pump chiller plant system
- Condenser (Ground-Source) water plant system for Option 2
- Back up boiler plant for Option 2 & 3
- Air handling unit systems including all rooftop units, indoor air handling systems and exhaust air systems
- Terminal heating and cooling devices
- Variable Refrigerant Flow (Option 1) and Ductless AC Systems (All Options)
- Automatic temperature control and building energy management system

Testing reports shall be submitted to the Engineer for review and approval before providing to the Owner.

OPERATION & MAINTENANCE MANUALS

When the project is completed, the Mechanical Contractor shall provide operation and maintenance manuals to the owner.

RECORD DRAWINGS & 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.

COMMISSIONING

The project shall be commissioned per the Commissioning Section of the specifications.

Plumbing Narrative

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

CODES

All work installed under Section 220000 shall comply with the MA Building Code, MA Plumbing Code and all state, county, and federal codes, laws, statutes, and authorities having jurisdiction.

DESIGN INTENT

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 Plumbing work and all items incidental thereto, including commissioning and testing.

GENERAL

1. The Plumbing Systems that will serve the project are cold water, hot water, sanitary waste and vent system, Kitchen waste system and storm drain system.
2. The building will be serviced by Municipal water and Septic sewer system.
3. All Plumbing in the building will conform to Accessibility Codes and to Water Conserving sections of the Plumbing Code.

DRAINAGE SYSTEM

1. Soil, Waste, and Vent piping systems are provided to connect to all fixtures and equipment. The system runs from 10 feet outside the building and terminates with stack vents through the roof.

2. A separate Kitchen Grease Waste System starting with connection to an exterior concrete grease interceptor running through the kitchen and Servery area fixtures and terminating with a vent terminal through the roof. The point of use grease interceptors are to be provided at designated kitchen fixtures. The grease interceptor is provided under Division 33 scope.
3. Storm Drainage system is provided to drain all roofs with roof drains piped through the building to a point 10 feet outside the building.
4. Drainage system piping will be service weight cast iron piping; hub and spigot with gaskets for below grade; no hub with gaskets, bands and clamps for above grade 2 in. and larger. Waste and vent piping 1-1/2 in. and smaller will be type 'L' copper.

WATER SYSTEM

1. A new 4-inch domestic water service from the municipal water system will be provided. A meter and backflow preventer will be provided.
2. Cold water distribution main is provided. Non-freeze wall hydrants with integral back flow preventers are provided along the exterior of the building.
3. Domestic hot water heating for the Kitchen will be provided with an electric storage tank type water heater (36 kW input), with a storage capacity of 500 gallons. The system be equipped with thermostatically controlled mixing devices to control water temperature to the fixtures.
4. Domestic hot water heating for the Toilet Core areas shall be provided with an electric storage tank type water heater (9 kW input), with a storage capacity of 30 gallons. The system is equipped with thermostatically controlled mixing devices to control water temperature to the fixtures.
5. A pump will re-circulate hot water at the Kitchen and Toilet Core piping systems. The water temperature will be 120 deg. to serve general use fixtures.
6. Remote plumbing fixtures requiring hot water will be served with electric, point-of-use, instantaneous water heaters (8.3 kW, 208 volts, 1 phase each).
7. Water piping will be type 'L' copper with wrot copper sweat fittings, silver solder or press-fit system. All piping will be insulated with 1 in. thick high-density fiberglass.

FIXTURES LEED v4

1. Furnish and install all fixtures, including supports, connections, fittings, and any incidentals to make a complete installation.
2. Fixtures shall bear the manufacturer's guaranteed label trademark indicating first quality. All acid resisting enameled ware shall bear the manufacturer's symbol signifying acid resisting material.
3. Vitreous china and acid resisting enameled fixtures, including stops, supplies and traps shall be of one manufacturer by Kohler, American Standard, or Eljer, or equal. Supports shall be Zurn, Smith, Josam, or equal. All fixtures shall be white. Faucets shall be Speakman, Chicago, or equal.
4. Fixtures shall be as scheduled on drawings.
    - Water Closet: High efficiency toilet, 1.28 gallon per flush, wall hung, vitreous china, siphon jet. Manually operated 1.28 gallon per flush-flush valve.
    - Urinal: High efficiency 0.13 gallon per flush urinal, wall hung, vitreous china. Manually operated 0.13 gallon per flush-flush valve.
    - Lavatory: Wall hung/countertop ADA lavatory with 0.35 GPM metering mixing faucet.
    - Sink: MAAB/ADA stainless steel countertop sink with gooseneck faucet and 0.5 GPM aerator.
    - Drinking Fountain: Barrier free hi-low wall mounted electric water cooler, stainless steel basin with bottle filling stations.
    - Janitor Sink: 24 x 24 x 10 Terrazo mop receptor Stern-Williams or equal.

DRAINS

Drains are cast iron, caulked outlets, nickaloy strainers, and in waterproofed areas and roofs shall have galvanized iron clamping rings with 6 lb. lead flashings to bond 9 in. in all directions. Drains shall be Smith, Zurn, Josam, or equal.

VALVES

Locate all valves so as to isolate all parts of the system. Shutoff valves 3 in. and smaller shall be ball valves, solder end or screwed, Apollo, or equal.

INSULATION

All water piping shall be insulated with snap-on fiberglass insulation Type ASJ-SSL, equal to Johns Manville Micro-Lok HP.

CLEANOUTS

Cleanouts shall be full size up to 4 in. threaded bronze plugs located as indicated on the drawings and/or where required in soil and waste pipes.

ACCESS DOORS

Furnish access doors for access to all concealed parts of the plumbing system that require accessibility. Coordinate types and locations with the Architect.

Fire Protection Narrative

The following is the Fire Protection system narrative, which defines the scope of work and capacities of the Fire Protection system, as well as, the Basis of Design.

CODES

All work installed under Section 210000 shall comply with the MA Building Code and all state, county, and federal codes, laws, statutes, and authorities having jurisdiction.

DESIGN INTENT

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 Fire Protection work and all items incidental thereto, including commissioning and testing.

GENERAL

In accordance with the provisions of the Massachusetts Building Code, a school building of greater than 12,000s.f. must be protected with an automatic sprinkler system.

DESCRIPTION

1. The new building will be served by a new 6-inch fire service, double check valve assembly, wet alarm valve complete with electric bell, and fire department connection meeting local thread standards.
2. The system will be an automatic sprinkler system with a total of four (4) control valve assemblies. The system shall be installed in accordance with NFPA 13-2019.
3. Control valve assemblies shall consist of a supervised shutoff valve, check valve, flow switch and test connection with drain. Standpipes meeting the requirements of NFPA 14-2019 shall be provided in the Stage area.
4. All areas of the building, including all finished and unfinished spaces, combustible concealed spaces, all electrical rooms and closets will be sprinklered.
5. All sprinkler heads will be quick response, pendent in hung ceiling areas and upright in unfinished areas.
6. Fire department valves and cabinets will be provided on each side of the Stage.

BASIS OF DESIGN

The mechanical rooms, kitchen, and storage rooms are considered Ordinary Hazard Group 1. The stage is considered Ordinary Hazard Group 2. All other areas are considered light hazard.

- Required Design Densities:
  - » Light Hazard Areas = 0.10 GPM over 1,500 s.f.
  - » Ordinary Hazard Group 1 = 0.15 GPM over 1,500 s.f.
  - » Ordinary Hazard Group 2 = 0.20 GPM over 1,500 s.f.

Sprinkler spacing (max.):

- » Light Hazard Areas = 225 s.f.
- » Ordinary Hazard Areas = 130 s.f.

A flow test shall be performed to confirm the Municipal water system capacity.

DOUBLE CHECK VALVE ASSEMBLY

- Double check valve assembly shall be MA State approved, U.L./F.M. approved, with iron body bronze mounted construction complete with supervised OS & Y gate valves and test cocks. Furnish two spare sets of gaskets and repair kits.
- Double check valve detector assembly shall be of one of the following:
  - » Watts Series 757-OSY
  - » Wilkins 350A-OSY
  - » Conbraco Series 4S-100
  - » Or equal

PIPING

Sprinkler piping 1-1/2 in. and smaller shall be ASTM A-53, Schedule 40 black steel pipe. Sprinkler/standpipe piping 2 in. and larger shall be ASTM A-135, Schedule 10 black steel pipe.

FITTINGS

Fittings on fire service piping, 2 in. and larger, shall be Victaulic Fire Lock Ductile Iron Fittings conforming to ASTM A-536 with integral grooved shoulder and back stop lugs and grooved ends for use with Style 009-EZ or Style 005 couplings. Branch line fittings shall be welded or shall be Victaulic 920/920N Mechanical Tees. Schedule 10 pipe shall be roll grooved. Schedule 40 pipe, where used with mechanical couplings, shall be roll grooved and shall be threaded where used with screwed fittings. Fittings for threaded piping shall be malleable iron screwed sprinkler fittings.

JOINTS

Threaded pipe joints shall have an approved thread compound applied on male threads only. Teflon tape shall be used for threads on sprinkler heads. Joints on piping, 2 in. and larger, shall be made up with Victaulic, or equal, Fire Lock Style 005, rigid coupling of ductile iron and pressure responsive gasket system for wet sprinkler system as recommended by manufacturer.

SPRINKLERS

1. All sprinklers to be used on this project shall be Quick Response type.
2. Furnish spare heads of each type installed located in a cabinet along with special sprinkler wrenches. The number of spares and location of cabinet shall be in complete accord with NFPA 13-2013.
3. Sprinklers shall be manufactured by Tyco, Victaulic, Viking, or equal.
4. Upright sprinkler heads in areas with no ceilings shall be Tyco Model "TY-FRB" Quick Response, upright natural brass finish heads. Include heavy duty sprinkler guards in all mechanical rooms and storage rooms.
5. Sidewall heads shall be Tyco Model "TY-FRB" Quick Response with white polyester head and escutcheon.
6. Pendent wet sprinkler heads shall be Tyco Model "TY-FRB" Quick Response recessed adjustable escutcheon, white polyester finish.
7. Concealed heads shall be Tyco Model "RFII" Quick Response concealed type, 1-1/2 inch adjustment white cover plate. In special areas, as may be noted on the Drawings, provide alternate cover plate finishes.

8. Use of flexible stainless steel hose with fittings for fire protection service that connect sprinklers to branch lines in suspended ceilings is acceptable. Flexible hoses shall be UL/FM approved and shall comply with NFPA 13 standards. Hose assemblies shall be type 304 stainless steel with minimum 1-inch true-bore internal hose diameter. Ceiling bracket shall be galvanized steel and include multi-port style self-securing integrated snap-on clip ends that attach directly to the ceiling with tamper resistant screws.

Electrical Narrative

The following is the Electrical Systems narrative, which defines the scope of work and capacities of the Power and Lighting System, as well as, the Basis of Design. The Electrical Systems shall be designed and constructed for LEED for Schools where indicated on this narrative.

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.

SEQUENCE OF OPERATIONS AND INTERACTIONS

1. 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 DDC control system for scheduled functions. The controllability shall be in conformance with credit LEED credit IEQC 6.1.
2. 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).
3. 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.
4. Emergency and Exit lighting will be run through life safety panels and will be "ON" during normal power conditions, as well as power outage conditions. The emergency lighting system will have time control so that lights are "ON" only when the building is occupied.

DESCRIPTION OF THE SYSTEMS

Utilities

1. The new building will be supplied with utility power from the utility company National Grid. The new service will be fed via underground primary duct bank to a pad mounted utility company owned liquid filled transformer. The service will utilize overhead 3-phase service form Clifford Street.
2. The service electrical transformer will be furnished, installed, owned and maintained by National Grid, 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 National Grid 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 a utility pole to the pad-mounted transformer. Pre-cast concrete manholes 5' x 5' will be provided by the Contractor to facilitate the primary cables field installation. The duct bank routing is shown on the civil drawings.
5. Utility company will provide a primary feeder cable from the utility manhole to the pad-mounted transformer via the new manhole and terminate the feeder cable on both ends.
6. Transformer secondary feeder of copper conductors will be installed underground in the duct bank of six 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 National Grid. The new service will be metered at the transformer secondary voltage.
7. National Grid metering CTs will be installed in a CT section of the switch board, the meter will be located at 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. Communication services will come from Clifford Street. Overhead utility distribution then transition to below grade once on the site.
9. Copper conductors shall be utilized for all branch circuit and feeder wiring. Aluminum conductors will be allowed for feeders 100 amperes or over.
10. The building connected electrical load estimate is based on the preliminary building systems design:

Load Type	**KVA**
HVAC Loads (including AHU, Destratification Fans, DCU, Chiller, UH, VRF, Boilers, FCs, Pumps, RTUs, Exhaust Fans, DCU)	784 KVA
Elevator	31.7 KVA
Exterior Lighting	2.0 KVA
General Power	196 KVA
Kitchen	112 KVA
EV Charging	18 KVA
Plumbing/Fire Protection (Pumps, etc.)	150 KVA
Total Connected Load	**1,432.7 KVA**

Electrical Distribution System

1. Service ratings for the building are designed for a connected load of 1,432.4 KW. The service capacity will be sized for 2,000 Amperes with a 80% rated main breaker. The main bus will be sized at 2,500 Amperes and will have an available breaker space provision at the end of the switchboard to accommodate a future grid connected photovoltaic array. The switchboard will be furnished with a service entrance surge protection device (SPD) rated at 240 kA and a 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 will be coordinated with the Utility Company but will be rated for 65 KAIC.
2. New lighting and power panels will be provided to accommodate respective loads. The equipment locations will be in dedicated rooms or closets.

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.
7. 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.
8. 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.
9. 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.
10. Stage and Auditorium theatrical lights with connector strips and a dimming system will be provided for performances. House lighting in Auditorium will be DMX dimmable to black LED and controlled by a theatrical dimming system.
11. 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.

12. Media Center lighting will be a combination of pendant decorative pendant fixtures and recessed fixtures with integral LED source and electronic drivers. The light levels will be designed for approximately 30 foot candles. Daylighting controls will be provided on perimeter light fixtures with 15 feet of glazing.
13. 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.
14. 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.
15. 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 Lighting System

1. An exterior 400KW, 500KVA (diesel fired emergency generator with sound attenuated enclosure and base tank with alarms will be provided. An integral resistive load bank will be provided for generator testing under load. 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 generator.
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).

Emergency (life safety) Power Loads as required by the Code:

- Emergency exit and egress lighting (interior and building exterior at the exits)
- Fire alarm system

Standby Power Loads:

- Heating system with associated heat pumps and controls
- Telephone/ data closets and associated A/C equipment
- Communication systems (telephone and public address systems)
- Building DDC system control panels
- Kitchen refrigeration equipment
- Lighting and power in the nurse/medical area
- Security system equipment

Site Lighting System: LEED Credit SSC8

1. Fixtures for area lighting will be pole mounted cut-off ‘LED’ luminaries in the parking area and roadways. Pole heights will be 20 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 0.5 foot-candle for parking areas in accordance with the Illuminating Engineering Society.
2. Building perimeter will be ‘LED’ wall mounted cut-off fixtures over exterior doors for exit discharge.

Wiring Devices

1. New classrooms 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. Existing classrooms shall keep existing receptacles and have new, surface mounted receptacles provided in quantities equal to new classrooms.
2. New 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.
6. Surface mounted raceways will be provided within renovated areas where raceways cannot be concealed in public spaces.
7. All receptacles will be of the tamper resistant type.

Fire Alarm System with Mass Notification

1. A fire alarm/mass notification system and detection system will be provided with 60-hour battery back-up. The system will be of the addressable type where each detection device will be identified at the control panel and remote annunciators by device type and location to facilitate search for origin of alarms. The notification system will be in conformance with NFPA 72 Chapter 24 emergency communications systems.
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 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.
5. Manual pull stations will be provided at exit discharge doors.
6. The system will be remotely connected to automatically report alarms to the fire department via a method approved by the fire department.
7. A mass notification system will be provided with separate strobes from the fire alarm system. Audible tone shall be through fire alarm speakers. System activation shall be through panic buttons and card readers with dedicated lockdown key fob.

Metering

Measurement devices shall be installed to monitor the electrical energy use for each of the following separately:

- Total electrical energy
- 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.

Uninterruptible Power Supply (UPS)

1. One (1) 24 kW, three phase centralized UPS system 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.

Lightning Protection System

1. A system of lightning protection devices will be provided.
2. The lightning protection equipment will include air terminals, roof main conductors and down conductors, conduits, fasteners, connectors, ground rods, etc.
3. The facility will be issued a UL Master Label Certificate.

Renewable Energy System Provisions

Electrical provisions will be made for a roof mounted renewable energy system consisting of a grid (location on Roof of Addition) connected photovoltaic PV system intended to reduce the facilities demand for power.

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.

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

Provide provisions for eight (8) dual port EVSE stations fed with 40 ampere feeders back to a EVSE panel. Two protective bollards will be installed at each charging station.

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.

TESTING REQUIREMENTS

1. 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.
   - Emergency generator system.
   - Lighting control system (interior and exterior).
   - Fire alarm system.
   - Uninterruptible Power System, UPS.
   - Lightning protection system.
   - Two-way communication system.
   - Distributed Antennae system.
2. Testing reports shall be submitted to the Engineer for review and approval before provided to the Owner.

OPERATION AND MAINTENANCE MANUALS

When the project is completed, the Electrical Contractor shall provide operation and maintenance manuals to the Owner.

RECORD DRAWINGS AND CONTROL DOCUMENTS

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.

COMMISSIONING

The project shall be commissioned per Commissioning Section of the specifications.

PHASING

Cut cap and make safe existing building for demolition by Demolition Contractor.

Technology Narrative

The following is the Technology System narrative, which defines the scope of work and capacities of the Communications system infrastructure as well as the Basis of Design.

CODES

All work installed under Section 270000 shall comply with the Massachusetts Building Code and all local, county, and federal codes, laws, statues, and authorities having jurisdiction.

DESIGN INTENT

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 Technology work and all items incidental thereto, including commissioning and testing.

TECHNOLOGY

The data system infrastructure will consist of fiber optic backbone cabling horizontal wiring will consist of Category 6A UTP Plenum rated cabling for both data and telephone systems for gigabit connectivity. The telephone infrastructure will accommodate VOIP based voice systems.

Each classroom will have 2 data outlets for student computers. Two data, one voice with video and audio connections to an LCD monitor will be provided at teacher's station with interconnectivity to a interactive LCD touch screen monitor. A wall phone outlet with 2-way ceiling speaker will be provided for communications with administration. Wireless access points will be provided in all classrooms and other spaces and consist of (2) CAT6A cables.

Classroom Sound reinforcement systems/assistive listening system will be provided in grade level classrooms, STE Room, Art Room, ELL, Media Center, SPED classrooms (CARES & Learning Center) and neighborhood collaborative areas that will consist of a wireless receiver, handheld microphone, pendant microphone with lanyard, student group speaker wireless pod, and an in-ceiling speaker/amplifier.

An IPTV video on demand system equal to Media Master will be provided. IPTV decoders will be provided in each classroom to facilitate the distribution of the media content.

A central paging system will be provided and integrated with the telephone system. (Proprietary Telecor)

A wireless GPS/LAN based master clock system will be provided with 120V wireless remote clocks that act as transceivers. (Proprietary Telecor)

The Main Distribution Frame (MDF) will contain all core network switching and IP voice switch. Intermediate Distribution Frames (IDFs) will serve each floor/wing of the school. A fiber optic backbone will be provided from each IDF to MDF. The backbone will be designed for 10 Gbps Ethernet.

Two-way communication call boxes will be provided adjacent to each elevator that is above or below grade level. The base station will be located at a control point on the first floor.

Each classroom shall be provided with an ultra short throw interactive projector.

TESTING REQUIREMENTS

The Technology Contractor shall provide testing of the following systems with the Owner and Owner's Representative present:

- Telephone and data cabling
- Fiber optic backbone cabling
- Paging system
- Wireless clock system
- A/V wiring for classrooms

Testing reports shall be submitted to the Engineer for review and approval before providing to the Owner.

PHASING

A new temp overhead communication line will be brought into the 1970's building and routed to a new Communication closet. New Data wiring will be run to each room as required for network connectivity as well as new wireless access locations that will provide WIFI throughout the existing buildign and the modulars.

OPERATION MANUALS AND MAINTENANCE MANUALS

When the project is completed, the Technology Contractor shall provide operation and maintenance manuals to the Owner.

RECORD DRAWINGS AND CONTROL DOCUMENTS

When the project is completed, an as-built set of drawings, showing all tel/data requirements from contract and addendum items, will be provided to the Owner.

COMMISSIONING

The project shall be commissioned per Section 019113 of the specifications.

Site Vulnerability

Risk Assessment & Evaluation

The project team has identified site resiliency concerns, weighed design mitigation options and proposed resulting design decisions. The Resilient Massachusetts Action Team (RMAT) Climate Resilience Design Standards Tool was used to screen the project site for climate risks. The results deem the site is not subject to coastal flooding, sea level rise, or storm surge and has a moderate exposure to riverine flooding. High exposures risks that are present at the location include extreme precipitation urban flash flooding and extreme heat. The report from this tool can be found in Appendix J: Resilient Mass Action Team
Design Standards Tool Report.

The tool acknowledges that the projected values, standards, and guidance that are provided may be used to inform plans and designs, but they do no provide guarantees for future conditions. The projected values are not to be considered final or appropriate design guidance for construction documents without supporting engineering analysis. The Design Tools guidance is intended to be general and does not set specific project requirements. The tool does not replace location specific engineering calculations and analysis, existing code and regulatory requirements, risk and vulnerability assessments, or cost-benefit analyses.

Regarding riverine and urban flash flooding related to extreme precipitation events, there is no historic flooding at the site. The recommended design standard for urban flooding from the RMAT tool is a 50-year storm on a 2070 planning horizon resulting in a projected 24-hr precipitation depth of 9.7". The RMAT 2030 25-year storm has a 24-hr depth of 7.2”. The current design is to mitigate a 100 year storm on the current planning horizon, resulting in a total precipitation depth of 8.8". As noted above, the RMAT tool's recommendations are general and are based on the catchment area of the site. The project's peak run off rates from pre to post construction are anticipated to be substantially improved within the site's catchment area. The FEMA map indicates a floodplain elevation of approximately 268'. The finished floor elevation of the existing building is 274'. The first floor of the new building is proposed to be elevated above the elevation of the previous building. The stormwater system will be improved as part of the project and perimeter foundation drains and drainage under the playground and fields will be included.

Regarding extreme heat, this was deemed a relevant risk by the RMAT tool because there are 30+ day increase in the number of days over 90°F within the project's useful life, the project is located within 100' of a body of water, the existing impervious area is greater than 50%, and some existing trees are being removed as part of the project.

The recommended design standard for extreme heat from the RMAT tool is for 90th Percentile climate data on a 2070 planning horizon. However, the tool specifically acknowledges that its purpose is as a reference point or basis of discussion in planning, early design, and or the evaluation of projects. Current code requires that the mechanical system be sized for present weather data. This includes an assumption that 0.4% annual hours are to exceed 91°F/74°FWB. Per the ResilientMass Maps and Data Center's Climate Change Projections Dashboard, by 2050 Southborough is expected to see 2.7° increase in the average temperature, and 11 additional days over 90°F as compared to 2030. By 2070, this is projected to be 4.5° increase in the average temperature, and 32 additional days over 90°F. Note that the projected days over 90°F may not exceed this temperature for the entire duration of the day. The planned equipment will still perform as designed, although it will be less efficient as temperatures rise above 90°F.

The envelope design utilizing passive building principles is intended to limit the impact of exterior climate on the heating/cooling loads of the building. Making the building more resilient to future heat increases. The site will address the localized heat island effect with the use of high albedo roofing and site hard scape and vegetation. In addition, the planned equipment is anticipated to have a life expectancy of 25-30 years, which will be just beyond 2050. At that time the code/ASHRAE will have updated their weather data to the future climate conditions for analysis in selection of the next equipment. At that time in the future, new equipment should be available that would have higher efficiencies to handle more extreme deltas in indoor and outdoor temperature. Future access to remove and install new equipment has been considered with double doors provided at each location required.

Sustainable Design Elements

The Neary School is designed to be a healthy, resilient, all-electric, net zero ready school. The project incorporates passive building standards including high thermal performance via thermal-bridge-free and air tight envelope, optimized window to wall ratio and skylight to roof ratio, energy recovery ventilation, and optimized orientation and massing. These standards reduce energy loads and improve indoor air quality and other aspects of the indoor environment.

Carbon & Energy Efficiency

The HVAC system planned for the school is a result of close discussion between the design team, Building Committee, and District staff. An Initial Life Cycle Cost Assessment (LCCA) was conducted that compared three options; variable refrigerant flow (VRF), ground source heat pump (GSHP), and . The design team provided updated state and federal incentive potential to the district for the air source and ground source options.

For more information on the LCCA, please refer to Appendix N: Life Cycle Cost Analysis (LCCA)

Massing, Siting & Envelope

To reduce energy loads, the building has the long façades of the classroom wings oriented as close to south-north exposure as possible. The window to wall ratio is less than 25%. The glazing is triple glazed with low U-factor and optimal SHGC. Both thermally broken aluminum frames and fiberglass windows will be evaluated. Opaque assembly u-factor targets are below, these are clear field derated values. Detailing of the air barrier and thermal breaks will be carefully reviewed for complexity of installation and continuity of the thermal and air barriers. A blower door test will be completed during construction to confirm the air leakage is less than 0.35 CFM/sf @ 75 Pa.

- Roofs: u-0.027
- Metal Framed Walls: u-0.033
- CMU Mass Walls: u-0.0417
- Slab on grade: u-0.36

Materials & Indoor Environment

Just as important to an overall sustainability strategy are the materials used to create the building; their impacts to the environment, the workers manufacturing them, and the final environment in which they are placed. Intentional material selections include the avoidance of vinyl, such as using linoleum for flooring. Vinyl materials are avoided due to the toxic processes required in the manufacturing process, the pollution created when disposed of, and the risk from endocrine disruptors, asthmagens, and carcinogens to occupants during use. Other chemicals of concern that will be avoided are chemical flame retardants, antimicrobials, and PFAS. All materials are vetted through a firm database for health and environmental impacts. Each material specified for this project will be evaluated for health risks via HPDs or similar disclosures, for off gassing via VOC emissions test reports, and environmental impacts via EPDs.

In addition to careful material selections, other wellness features include daylighting, nature linked biophilic elements, universal design, and adjustable lighting. The indoor environment is further improved by displacement ventilation that has better thermal comfort, less noise, and higher indoor air quality than an overhead mixing system.

Green Schools Program

The MSBA's Green Schools Program was updated in June 2023. The new policy requires all MSBA projects to register and achieve the Silver certification level of the most recent version of LEED BD+C Schools (LEED-S) or Verified certification for NE-CHPS. In addition, specific amount of points related to indoor air quality are required. Lastly, the project must meet the minimum energy efficiency requirements of the 225 CMR 23 Stretch Energy Code. The district has selected to follow the LEED BD+C Schools rating system for this project.

The updated MSBA Green Schools Program provides additional reimbursement to a district to electrify the building systems and further improve indoor air quality for new construction and major renovation/addition projects. For an additional 3% reimbursement, projects must meet the 225 CMR 23 Appendix CC Municipal Opt-in Specialized Energy Code which focuses on electrification. For an additional 1% reimbursement, projects must achieve a minimum of 5 of 7 points in the LEED credits related to indoor air quality. This project is targeting both strategies for 4% additional reimbursement.

There are currently two compliance pathways for schools in the Stretch Energy Code, the TEDI Path or Certified Passive House Performance Path. Both pathways are intended by DOER to result in similar levels of performance and building system design. The project will be pursuing the TEDI Path under the Stretch Code. In addition to the provisions of the Stretch Code, one of three paths for electrification must be selected from the Opt-in Specialized Energy Code. The project has selected the All-electric Path.

LEED BD+C Schools Rating System

The current applicable LEED rating system is LEED v4 Building Design and Construction: Schools. Points from LEED v4.1 will be substituted as relevant to the project. For a LEED BD+C Schools Silver design, a project must satisfy all prerequisites and earn a minimum of 50 points of 110 points. The LEED Schools rating system is appropriate for buildings made up of core and ancillary learning spaces on K-12 school grounds. LEED BD+ C Schools certifications are awarded according to the following scale: Certified 40—49 points, Silver 50—59 points, Gold 60—79 points, Platinum 80—110 points. The LEED Green Building Rating Systems address these topics: Integrative Progress, Location and Transportation, Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Innovation, and Regional Priorities.

The project LEED scorecard is currently tracking 55 points with an additional 19 points that will continue to be evaluated as the design progresses.

LEED v4/4.1 for BD+C: Schools

Project Checklist

all credits will follow v4.1 criteria unless otherwise noted

Project Name: Southborough Neary School
Date: 7/11/2024 Prepared By: Arrowstreet

Y	?	N			Possible
	1		Credit 1	Integrative Process	1
2	**5**	**8**		**Location and Transportation**	**15**
		na	Credit 1	LEED for Neighborhood Development Location	15
1			Credit 2	v4 Sensitive Land Protection	1
	2		Credit 3	v4 High Priority Site	2
	2	3	Credit 4	v4 Surrounding Density and Diverse Uses	5
		4	Credit 5	Access to Quality Transit	4
		1	Credit 6	Bicycle Facilities	1
	1		Credit 7	Reduced Parking Footprint	1
1			Credit 8	Electric Vehicles	1
6	**3**	**3**		**Sustainable Sites**	**12**
Y			Prereq 1	Construction Activity Pollution Prevention	Required
Y			Prereq 2	Environmental Site Assessment	Required
1			Credit 1	v4 Site Assessment	1
		2	Credit 2	Protect or Restore Habitat	2
	1		Credit 3	v4 Open Space	1
1	1	1	Credit 4	Rainwater Management	3
2			Credit 5	v4 Heat Island Reduction	2
1			Credit 6	v4 Light Pollution Reduction	1
	1		Credit 7	Site Master Plan	1
1			Credit 8	Joint Use of Facilities	1
4	**5**	**3**		**Water Efficiency**	**12**
Y			Prereq 1	Outdoor Water Use Reduction	Required
Y			Prereq 2	Indoor Water Use Reduction	Required
Y			Prereq 3	Building-Level Water Metering	Required
1	1		Credit 1	Outdoor Water Use Reduction	2
2	2	3	Credit 2	Indoor Water Use Reduction	7
	2		Credit 3	Optimize Process Water Use	2
1			Credit 4	Water Metering	1
14	**15**	**2**		**Energy and Atmosphere**	**31**
Y			Prereq 1	Fundamental Commissioning and Verification	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	Building-Level Energy Metering	Required
Y			Prereq 4	Fundamental Refrigerant Management	Required
6			Credit 1	Enhanced Commissioning	6
8	6	2	Credit 2	Optimize Energy Performance	16
	1		Credit 3	Advanced Energy Metering	1
	2		Credit 4	Grid Harmonization	2
	5		Credit 5	Renewable Energy	5
	1		Credit 6	Enhanced Refrigerant Management	1

Y	?	N			Possible
6	**3**	**4**		**Materials and Resources**	**13**
Y			Prereq 1	Storage and Collection of Recyclables	Required
Y			Prereq 2	Construction and Demolition Waste Management Planning	Required
2	1	2	Credit 1	Building Life-Cycle Impact Reduction	5
1		1	Credit 2	Building Product Disclosure and Optimization - EPDs	2
	1	1	Credit 3	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
2			Credit 4	Building Product Disclosure and Optimization - Material Ingredients	2
1	1		Credit 5	v4 Construction and Demolition Waste Management	2
9	**5**	**2**		**Indoor Environmental Quality**	**16**
Y			Prereq 1	Minimum Indoor Air Quality Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke Control	Required
Y			Prereq 3	Minimum Acoustic Performance	Required
2			Credit 1	Enhanced Indoor Air Quality Strategies	2
2	1		Credit 2	Low-Emitting Materials	3
1			Credit 3	Construction Indoor Air Quality Management Plan	1
1	1		Credit 4	Indoor Air Quality Assessment	2
	1		Credit 5	Thermal Comfort	1
1		1	Credit 6	Interior Lighting	2
1	1	1	Credit 7	Daylight	3
1			Credit 8	Quality Views	1
	1		Credit 9	Acoustic Performance	1
6				**Innovation**	**6**
1			Credit 1.1	Exemplary Performance: EPDs	1
1			Credit 1.2	Pilot Credit: Composting	1
1			Credit 1.3	Innovation: Design for Active Occupants	1
1			Credit 1.4	Innovation: Green Building Education	1
1			Credit 1.5	Innovation: TBD	1
1			Credit 2	LEED Accredited Professional	1
2	**2**			**Regional Priority**	**4**
1			Credit 1	Optimize Energy Performance Threshold 8pt	1
1			Credit 2	Building Life-Cycle Impact Reduction Threshold 2pt	1
	1		Credit 3	Renewable Energy Threshold 2pt	1
	1		Credit 4	Outdoor Water Use Reduction	1
49	**39**	**22**		**TOTALS** Possible Points:	**110**

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

ARROWSTREET

ARROWSTREET

25 February 2025

Ms. Maria Caprigno
Project Coordinator
Massachusetts School Building Authority
40 Broad Street, Suite 50
Boston, MA 02109

Margaret A. Neary Elementary School / 23072

Town of Southborough
Margaret A. Neary Elementary School
Southborough, Massachusetts

Dear Ms. Caprigno,

This is an acknowledgement that the Town of Southborough has identified a goal of 4% additional reimbursement from the MSBA High Efficiency Green School Program. As their Designer, I have submitted a completed LEED for Schools checklist showing all prerequisites and attempted credits, which will be further evaluated and developed in subsequent phases of the project to meet that goal. This is achieved via an additional 3% reimbursement for meeting the energy code requirements described in the Specialized Energy Code, and 1% for providing a minimum of 5 points in the LEED indoor air quality requirements.

The scope of work for this project will include 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 to the LEED requirements outlined in the submitted checklist.

Sincerely,

ARROWSTREET

Laurence Spang

Laurence Spang, AIA, LEED AP
Principal

Accessibility

Code Red Consultants have reviewed the project for accessibility concerns. As a primarily new construction project, the proposed project will be designed to meet all applicable regulations as defined by the Massachusetts Architectural Access Board (MAAB).

The building will be designed to meet all codes and regulations required by authorities having jurisdiction. The building and site will be designed to meet accessibility requirements defined by MAAB Regulations and the Americans with Disabilities Act. Accessibility code compliance will include the layout of accessible spaces, ADA compliant elevator, compliant openings, signage, millwork, and plumbing fixtures and compliant sidewalks, roadways and parking spaces.

Room Data Sheets

Refer to Appendix K: Room Data Sheets for the complete set of Room Data Sheets.

Proposed Construction Methodology

CM-at-Risk is a team-oriented and “open book” approach to project delivery. This is a good fit for the Margaret A. Neary Elementary School Project which includes critical schedule goals and construction of a new building. The project team has significant experience with the CM-at-Risk construction delivery method and is in complete alignment with the process.

From our experience, other inherent benefits to Owners include:

- Expedited project schedule and transparent project delivery.
- Implementation of early release packages.
- Early cost input/validation from Construction Manager (CM).
- Improved control of the quality of work.
- Enhanced value engineering review.
- Flexibility in adjusting building elements as design is completed.
- Mitigate subcontractor claims on the project.
- CM input regarding constructibility.
- Increased on-site project management.
- Site safety and logistics plans developed/ implemented early with Owner's input.

Skanska USA Inc. and Arrowstreet Inc. described the criteria and analysis used by the Owner’s Project Manager, in conjunction with the Designer, to compare the construction delivery methods provided in M.G.L. Chapters 149 and 149A for the Proposed Project. A PowerPoint presentation was made to the School Building Committee on November 21, 2024, reviewing the relative advantages and disadvantages associated with each of the construction delivery methods.

A motion was made and seconded and the District elected to proceed under the CM at Risk construction delivery methodology, and passed unanimously. The November 15, 2022, meeting minutes are included as part of this package for record.

The application for authorization to proceed with the CM at Risk construction delivery method was submitted to the Office of The Inspector General on January 29, 2025. The notice to proceed is expected to be received by the Office of The Inspector General within 60 days of the submission.

The OPM Confirms that cost estimates, proposed project schedule, estimated reimbursement rate, and Total Project Budget Spreadsheet reflect the selected construction delivery method. Following the notice to proceed, the district will designate a CM Application Review Subcommittee, issue a Request for Qualifications, will work alongside the project team to review CM qualifications, then issue a Request for Proposal to the qualified CM firms. CM interviews will be conducted in May 2025. Selection and negotiation will occur in early June 2025.

District's Anticipated Reimbursement Rate

The District is currently anticipating to receive the following incentive points:

Category	Reimbursement Points
Reimbursement Rate Before Incentives (Per 2025 Increase)	41.32%
Maintenance (0-2)	1.44%
Newly Formed Regional School District (0-6)	0.00%
Major Reconstruction or Reno/Reuse (0-5)	0.00%
Overlay Zoning 40R and 40S (0-1)	0.00%
Overlay Zoning 100 Units or 50% Units 1, 2, or 3 Family Structures (0-0.05)	0.00%
Energy Efficiency - "Green Schools" (0-4)	4.00%
Total Incentive Points	5.44%
Anticipated MSBA Reimbursement Rate with Incentives	**46.76%**

Total Project Budget

The total project budget for the Neary Elementary School project is **$108,517,025.** The town of Southborough understands and acknowledges its obligation to participate with the Massachusetts School Building Authority (MSBA) to fund this project. To meet this commitment, the city is prepared to bond its financial obligation, ensuring the necessary resources are available.

COST RECONCILIATION

The Design Team along with the OPM carefully reviewed the two, independent cost estimates and reconciled the costs listed for each trade. Refer to page 72 and page 74 for break downs of the two estimates.

Town of Southborough - Margaret A. Neary Elementary School - 02.25.2025

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Total Project Budget: All costs associated with the project are subject to 963 CMR 2.16(5)	Estimated Budget	Scope Items Excluded from the Estimated Basis of Maximum Facilities Grant or Otherwise Ineligible	Estimated Basis of Maximum Total Facilities Grant[1]	Estimated Maximum Total Facilities Grant[1]
Feasibility Study Agreement				
OPM Feasibility Study	$238,120	$0	$238,120	
A&E Feasibility Study	$596,000	$0	$596,000	
Environmental & Site	$101,698	$0	$101,698	
Other	$14,182	$0	$14,182	
Feasibility Study Agreement Subtotal	**$950,000**	**$0**	**$950,000**	**$444,220**
Administration				
Legal Fees	$50,000	$0	$50,000	**$23,380**
Owner's Project Manager				
Design Development	$3,052,674	$0	$3,052,674	
Construction Contract Documents	$0	$0	$0	
Bidding	$0	$0	$0	
Construction Contract Administration	$0	$1,374,187	-$1,374,187	
Closeout	$0	$0	$0	
Extra Services	$0	$0	$0	
Reimbursable & Other Services	$0	$0	$0	
Cost Estimates	$0	$0	$0	
Advertising	$2,500	$0	$2,500	
Permitting	$0	$0	$0	
Owner's Insurance	$50,000	$0	$50,000	
Other Administrative Costs	$0	$0	$0	
Administration Subtotal	**$3,155,174**	**$1,374,187**	**$1,780,987**	**$832,789**
Architecture and Engineering				
Basic Services				
Design Development	$8,285,829	$0	$8,285,829	
Construction Contract Documents	$0	$0	$0	
Bidding	$0	$0	$0	
Construction Contract Administration	$0	$3,405,809	-$3,405,809	
Closeout	$0	$0	$0	
Other Basic Services	$0	$0	$0	
Basic Services Subtotal	**$8,285,829**	**$3,405,809**	**$4,880,020**	
Reimbursable Services				
Construction Testing	$10,000	$0	$10,000	
Printing (over minimum)	$25,000	$0	$25,000	
Other Reimbursable Costs	$50,000	$0	$50,000	
Hazardous Materials	$80,000	$0	$80,000	
Geotechnical & Geo-Environmental	$290,000	$0	$290,000	
Site Survey	$20,000	$0	$20,000	
Wetlands		$0	$0	
Traffic Studies		$0	$0	
Architectural / Engineering Subtotal	**$8,760,829**	**$3,405,809**	**$5,355,020**	**$2,504,007**
CM at Risk Pre-Construction Services				
Pre-Construction Services	$150,000	$0	**$150,000**	**$70,140**
Site Acquisition				
Land / Building Purchase	$0	$0	$0	
Appraisal Fees	$0	$0	$0	
Recording fees	$0	$0	$0	
Site Acquisition Subtotal	**$0**	**$0**	**$0**	**$0**
Construction Costs				
SUBSTRUCTURE				
Foundations	$4,071,394			
Basement Construction	$0			
SHELL				
Super Structure	$5,714,840			
Exterior Closure	$8,830,143			
Exterior Walls	$0			
Exterior Windows	$0			
Exterior Doors	$0			
Roofing	$2,031,043			
INTERIORS				
Interior Construction	$5,536,334			
Staircases	$331,681			
Interior Finishes	$2,426,958			
SERVICES				
Conveying Systems	$174,620			
Plumbing	$2,295,120			
HVAC	$8,860,068			
Fire Protection	$870,881			
Electrical	$5,475,784			
EQUIPMENT & FURNISHINGS				
Equipment	$737,000			
Furnishings	$1,099,476			
SPECIAL CONSTRUCTION & DEMOLITION				
Special Construction	$0	$0		
Existing Building Demolitior	$627,560	$0		
In-Building Hazardous Material Abatement	$939,392	$0		
Asbestos Containing Floor Material / Ceiling Tile Abatement	$0	$0		
Other Hazardous Material Abatement	$0	$0		
BUILDING SITE WORK				
Site Preparation	$13,049,647	$0		
Site Improvements	$0	$0		
Site Civil / Mechanical Utilities	$0	$0		

Site Electrical Utilities	$0	$0		
Scope Excluded Site Work	$0	$0		
Construction Trades Subtotal	$63,071,941	$0		
Contingencies (Design and Pricing)	$6,307,194	$0		
Sub-Contractor Bonds	$543,995	$0		
D/B/B Insurance	$1,644,474	$0		
General Conditions	$7,491,309	$0		
D/B/B Overhead & Profit		$0		
GMP Insurance		$0		
GMP Fee	$2,466,375	$0		
GMP Contingency	$2,540,367	$0		
Escalation to Mid-Point of Construction	$3,153,597	$0		
Construction Cost over Funding Cap		$27,557,732		
Construction Budget	**$87,219,252**	**$27,557,732**	**$59,661,520**	**$27,897,727**
Alternates				
Ineligible Work Included in the Base Project	$0	$0	$0	
Alternates Included in the Total Project Budget	$0	$0	$0	
Alternates Excluded from the Total Project Budget	$0		$0	
Subtotal to be Included in Total Project Budget	**$0**	**$0**	**$0**	**$0**
Miscellaneous Project Costs				
Utility Company Fees	$75,000	$75,000	$0	
Testing Services	$125,000	$125,000	$0	
Swing Space / Modulars	$2,000,000	$2,000,000	$0	
Other Project Costs (Mailing & Moving)	$275,000	$275,000	$0	
Miscellaneous Project Costs Subtotal	**$2,475,000**	**$2,475,000**	**$0**	**$0**
Furnishings and Equipment				
Furniture, Fixtures, and Equipment	$1,220,000	$488,000	$732,000	
Technology	$1,098,000	$366,000	$732,000	
FF&E Subtotal	**$2,318,000**	**$854,000**	**$1,464,000**	**$684,566**
Soft Costs that exceed 20% of Construction Cost		$0	$0	
Project Budget	**$105,028,255**	**$35,666,728**	**$69,361,527**	**$32,433,450**

Board Authorization	
Design Enrollment	610
Total Building Gross Floor Area (GSF)	99,564
Total Project Budget (excluding Contingencies)	$105,028,255
Scope Items Excluded or Otherwise Ineligible	- $35,666,728
Third Party Funding (Ineligible)	- $0
Estimated Basis of Maximum Total Facilities Grant[1]	$69,361,527
Reimbursement Rate[1]	46.76%
Est. Max. Total Facilities Grant (before recovery)[1]	$32,433,450
Cx Costs associated with Ineligible Building Area[2]	- $13,657
Cost Recovery associated with Prior Projects[2]	- $0
Estimated Maximum Total Facilities Grant[1]	$32,419,793

41.32	Reimbursement Rate Before Incentive Points
5.44	Total Incentive Points
46.76%	MSBA Reimbursement Rate

NOTES

This template was prepared by the MSBA as a tool to assist Districts and consultants in understanding MSBA policies and practices regarding potential impact on the MSBA's calculation of a potential Basis of Total Facilities Grant and potential Total Maximum Facilities Grant. This template does not contain a final, exhaustive list of all evaluations which the MSBA may use in determining whether items are eligible for reimbursement by the MSBA. The MSBA will perform an independent analysis based on a review of information and estimates provided by the District for the proposed school project that may or may not agree with the estimates generated by the District using this template.

1 - The Estimated Basis of Total Facilities Grant and Estimated Maximum Facilities Grant amounts do not include any potentially eligible contingency funds and are subject to review and audit by the MSBA.

2 - Costs associated with the commissioning of ineligible building area is estimated to result in the recovery of a portion of the overall commissioning cost. The OPM has estimated this recovery of funds to be $_____. The proposed demolition of the _______ School is expected to result in the MSBA recovering a portion of state funds previously paid to the District for the _________ project at the existing facilities completed in ____. The MSBA will perform an independent analysis based on a review of its records and information and estimates provided by the District for the proposed school project that may or may not agree with the estimated cost recovery generated by the District and its consultants using this template.

3 - Pursuant to Section 3.21 of the Project Funding Agreement and the applicable policies and guidelines of the Authority, any project costs associated with the reallocation or transfer of funds from either the Owner's contingency or the Construction contingency to other budget line items shall be subject to review by the Authority to determine whether any such costs are eligible for reimbursement by the Authority. All costs are subject to review and audit by the MSBA.

Construction Contingency[3]	$2,180,481
Ineligible Construction Contingency[3]	$1,308,288
"Potentially Eligible" Construction Contingency[3]	$872,193
Owner's Contingency[3]	$1,308,289
Ineligible Owner's Contingency[3]	$872,193
"Potentially Eligible" Owner's Contingency[3]	$436,096
Total Potentially Eligible Contingency[3]	$1,308,289
Reimbursement Rate	46.76%
Potential Additional Contingency Grant Funds[3]	$611,756
Maximum Total Facilities Grant	$33,031,549
Total Project Budget	$108,517,025
Estimated Effective Rate	**30.44%**
Estimate Town Share	**$75,485,476**

By signing this Total Project Budget, I hereby certify that I have read and understand the form and further certify, to the best of my knowledge and belief, that the information supplied by the District in the table above is true, accurate, and complete.

____

By:
Title: Chair of School Building Committee

Date: __________________

By signing this Total Project Budget, I hereby certify that I have read and understand the form and further certify, to the best of my knowledge and belief, that the information supplied by the District in the table above is true, accurate, and complete.

____

By:
Title: Chief Executive Officer

Date: __________________

By signing this Total Project Budget, I hereby certify that I have read and understand the form and further certify, to the best of my knowledge and belief, that the information supplied by the District in the table above is true, accurate, and complete.

____

By:
Title: Superintendent of Schools

Date: __________________

By signing this Total Project Budget, I hereby certify that I have read and understand the form and further certify, to the best of my knowledge and belief, that the information supplied by the District in the table above is true, accurate, and complete.

____

By:
Title: Chair of the School Committee

Date: __________________

Town of Southborough - Margaret A. Neary Elementary School - 02.25.2025

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	Proposed Budget	**Total Construction Cost at Schematic Design**
Construction Mark-ups Costs		
Contingencies (Design and Pricing)[1]	$6,307,194	
Escalation to Mid-Point of Construction[1]	$3,153,597	
Subtotal	$9,460,791	
Construction Costs		
GMP Fee[1]	$2,466,375	$2,466,375
GMP Insurance[1]	$1,087,991	$1,087,991
GMP Contingency[1]	$2,540,367	$2,540,367
Division 1 - General Requirements[1]	$7,491,309	$7,491,309
Division 2 - Existing Conditions	$1,566,952	$1,802,064
Division 3 - Concrete	$2,395,717	$2,755,180
Division 4 - Masonry	$2,788,080	$3,206,415
Division 5 - Metals	$5,617,154	$6,459,974
Division 6 - Woods, Plastics and Composites	$942,789	$1,084,249
Division 7 - Thermal and Moisture Protection	$5,317,458	$6,115,311
Division 8 - Openings	$2,849,865	$3,277,470
Division 9 - Finishes	$6,058,729	$6,967,805
Division 10 - Specialties	$1,131,085	$1,300,798
Division 11 - Equipment	$737,000	$847,582
Division 12 - Furnishings	$1,135,776	$1,306,192
Division 13 - Special Construction	$0	$0
Division 14 - Conveying Systems	$170,000	$195,507
Division 21 - Fire Suppression	$968,974	$1,114,363
Division 22 - Plumbing	$2,295,120	$2,639,489
Division 23 - HVAC	$8,860,068	$10,189,468
Division 25 - Integrated Automation	$0	$0
Division 26 - Electrical	$5,976,784	$6,873,565
Division 27 - Communications	$0	$0
Division 28 - Electronic Safety and Security	$0	$0
Division 31 - Earthwork	$5,568,599	$6,404,134
Division 32 - Exterior Improvements	$4,146,969	$4,769,197
Division 33 - Utilities	$4,526,322	$5,205,469
Construction Trades Subtotal	**$63,053,441**	
CSI Construction Budget {w/ mark-ups}[2]	**$76,639,483**	**{$86,100,274}**
Uniformat Construction Budget[2]		**$87,219,252**

[1] *Markup based on Construction Cost Estimates at the conclusion of Schematic Design*

[2] *Provide Reconciled CSI Construction Cost Estimates that align with the Uniformat Estimates*

Proposed Schedule of Alternates

Town of Southborough - Margaret A. Neary Elementary School
02.25.2025

DRAFT

Description of Item	Ineligible Work & Alternates to be included in District's Total Project Budget	Alternates Excluded From the Total Project Budget that are to be funded through Bid Savings	District Rationale	Eligibility for Reimbursement
Second Art Room		$765,217	After further consultation with art educators, a second art room would allow for greater flexibility in scheduling and the ability for two art classes to be held simultaneously. One art room will work, but it will add complexity to the schedule; however, adding a second one is ideal.	To Be Completed by MSBA
Sliding Storefront Doors		$207,000	The learning commons is a key space for learning in the Educational Plan. Adding Sliding Storefront Doors allows classrooms to open directly to the Learning Commons and serve as an extension of the school. classroom. With this addition, the two learning spaces would allow for maximum flexibility and significantly impact how the spaces are seamlessly connected.	To Be Completed by MSBA
				To Be Completed by MSBA
				To Be Completed by MSBA
Total	$0	$972,217		

By signing this Total Project Budget, I hereby certify that I have read and understand the form and further certify, to the best of my knowledge and belief, that the information supplied by the District in the table above is true, accurate, and complete	By signing this Total Project Budget, I hereby certify that I have read and understand the form and further certify, to the best of my knowledge and belief, that the information supplied by the District in the table above is true, accurate, and complete	By signing this Total Project Budget, I hereby certify that I have read and understand the form and further certify, to the best of my knowledge and belief, that the information supplied by the District in the table above is true, accurate, and complete	By signing this Total Project Budget, I hereby certify that I have read and understand the form and further certify, to the best of my knowledge and belief, that the information supplied by the District in the table above is true, accurate, and complete
______________________________	______________________________	______________________________	______________________________
By:	By:	By:	By:
Title: Chair of the School Building Committee	Title: Chief Executive Officer	Title: Superintendent of Schools	Title: Chair of the School Committee
Date: _________________________	Date: _________________________	Date: _________________________	Date: _________________________

DESIGNER'S COST ESTIMATE SUMMARY

For full estimate, refer to Appendix L: Designer's Cost Estimate, dated 02/18/25.

PM&C

Neary Elementary School
Southborough, MA

17-Feb-25

Schematic Design Cost Estimate

GFA 99,564

CONSTRUCTION COST SUMMARY

BUILDING SYSTEM	*SUB-TOTAL*	*TOTAL*	*$/SF*
BUILDING + SITE SUMMARY			
A10 FOUNDATIONS		**$4,071,394**	$40.89
A1010 Standard Foundations	$1,704,952		
A1020 Special Foundations	$0		
A1030 Lowest Floor Construction	$2,366,442		
A20 BASEMENT CONSTRUCTION		**$0**	$0.00
A2010 Basement Excavation	$0		
A2020 Basement Walls	$0		
B10 SUPERSTRUCTURE		**$5,714,840**	$57.40
B1010 Upper Floor Construction	$2,426,608		
B1020 Roof Construction	$3,288,232		
B20 EXTERIOR CLOSURE		**$8,830,143**	$88.69
B2010 Exterior Walls	$6,758,508		
B2020 Windows	$1,859,485		
B2030 Exterior Doors	$212,150		
B30 ROOFING		**$2,031,043**	$20.40
B3010 Roof Coverings	$2,013,543		
B3020 Roof Openings	$17,500		
C10 INTERIOR CONSTRUCTION		**$5,536,334**	$55.61
C1010 Partitions	$3,146,523		
C1020 Interior Doors	$815,180		
C1030 Specialties/Millwork	$1,574,631		
C20 STAIRCASES		**$331,681**	$3.33
C2010 Stair Construction	$286,000		
C2020 Stair Finishes	$45,681		
C30 INTERIOR FINISHES		**$2,426,958**	$24.38
C3010 Wall Finishes	$612,471		
C3020 Floor Finishes	$952,678		
C3030 Ceiling Finishes	$861,809		
D10 CONVEYING SYSTEMS		**$174,620**	$1.75
D1010 Elevator	$174,620		

BUILDING + SITE SUMMARY

D20	**PLUMBING**		**$2,295,120**	$23.05
D2000	Plumbing	$2,295,120		
D30	**HVAC**		**$8,860,068**	$88.99
D3000	HVAC	$8,860,068		
D40	**FIRE PROTECTION**		**$870,881**	$8.75
D4000	Fire Protection	$870,881		
D50	**ELECTRICAL**		**$5,475,784**	$55.00
D5010	Service & Distribution	$1,479,020		
D5020	Lighting & Power	$1,807,152		
D5030	Communication & Security Systems	$1,739,612		
D5040	Other Electrical Systems	$450,000		
E10	**EQUIPMENT**		**$737,000**	$7.40
E1010	Equipment	$737,000		
E20	**FURNISHINGS**		**$1,099,476**	$11.04
E2010	Fixed Furnishings	$1,099,476		
E2020	Movable Furnishings			
F10	**SPECIAL CONSTRUCTION**		**$0**	$0.00
F1000	Special Construction	$0		
F20	**DEMOLITION & HAZMAT REMOVALS**		**$0**	$0.00
F2010	Building Elements Demolition	$0		
F2020	Hazardous Components Abatement	$0		
TOTAL DIRECT BUILDING COST (Trade Costs)			**$48,455,342**	$486.68

BUILDING + SITE SUMMARY

G10	**SITE PREPARATION**	**$2,763,275**	
G20	**SITE IMPROVEMENTS**	**$4,560,279**	
G30	**SITE MECHANICAL UTILITIES**	**$4,818,593**	
G40	**SITE ELECTRICAL UTILITIES**	**$557,500**	
TOTAL DIRECT SITE COST (Trade Costs)		**$12,699,647**	$127.55
TOTAL DIRECT PROJECT COST (Trade Costs)		**$61,154,989**	$614.23

OPM'S COST ESTIMATE SUMMARY

For full estimate, refer to Appendix M for the Cost Estimate performed by PCM in contract with the OPM, dated 02/18/25.

NEARY ELEMENTARY SCHOOL **SD ESTIMATE**

PCM COMPANY
Accuracy You Can Build On

PROJ. NO: 28-116
REVISION: POST RECON 1
EST DATE: 2/18/2025
GROSS SF: *99,564*

DESCRIPTION	UNIT COST	TOTAL COST
A10 - FOUNDATIONS	$ 40.54	$ 4,036,484
A20 - BASEMENT CONSTRUCTION	$ -	$ -
B10 - SUPERSTRUCTURE	$ 56.88	$ 5,662,943
B20 - ENCLOSURE	$ 87.56	$ 8,717,356
B30 - ROOFING	$ 22.33	$ 2,223,070
C10 - INTERIOR CONSTRUCTION	$ 57.23	$ 5,697,582
C20 - STAIRS	$ 3.33	$ 332,000
C30 - INTERIOR FINISHES	$ 25.97	$ 2,585,362
D10 - CONVEYING	$ 1.92	$ 191,500
D20 - PLUMBING	$ 23.85	$ 2,374,810
D30 - HVAC	$ 90.18	$ 8,978,862
D40 - FIRE PROTECTION	$ 8.00	$ 796,948
D50 - ELECTRICAL	$ 59.83	$ 5,957,194
E10 - EQUIPMENT	$ 7.32	$ 728,530
E20 - FURNISHINGS	$ 10.23	$ 1,018,626
F10 - SPECIAL CONSTRUCTION	$ -	$ -
F20 - SELECTIVE BUILDING DEMOLITION	$ 16.80	$ 1,672,184
G10 - SITE PREPARATIONS	$ 25.58	$ 2,547,106
G20 - SITE IMPROVEMENTS	$ 41.59	$ 4,140,544
G30 - SITE CIVIL / MECHANICAL UTILITIES	$ 46.70	$ 4,649,206
G40 - SITE ELECTRICAL UTILITIES	$ 6.40	$ 637,133
CONSTRUCTION SUBTOTAL	**$ 632.23**	**$ 62,947,439**
DESIGN / ESTIMATE CONTINGENCY -- 10%	10.0%	$ 6,294,744
CM CONTINGENCY	3.0%	$ 2,077,265
GENERAL CONDITIONS / REQUIREMENTS (MOS)	27	$ 6,885,000
SOIL DISPOSAL ALLOWANCE	1	$ 350,000
CONSTRUCTION SUBTOTAL	**$ 788.98**	**$ 78,554,449**
BOND AND INSURANCE -- 3%	3.0%	$ 2,356,633
CONSTRUCTION SUBTOTAL	**$ 812.65**	**$ 80,911,082**
CONTRACTOR FEE -- 3%	3.0%	$ 2,427,332
CONSTRUCTION SUBTOTAL	**$ 837.03**	**$ 83,338,415**
ESCALATION	5.0%	$ 4,166,921
CONSTRUCTION GRAND TOTAL	**$ 878.89**	**$ 87,505,335**

Town of Southborough - Margaret A. Neary Elementary School

Project Directory

Name	Title	Office Phone	E-mail
Owner's Project Manager			
Skanska			
101 Seaport Blvd, Boston, MA 02210			
Dale Caldwell	Principal in Charge		dale.caldwell@skanska.com
Jim Burrows	Project Director		jim.burrows@skanska.com
Sy Nguyen	Project Manager		sy.nguyen@skanska.com
Jessica Mendez	Assistant PM		jessica.mendez@skanska.com
Vincent Vadeboncoeur	Field Rep		vincent.vadeboncoeur@skanska.com
Owner			
Neary Building Committee - Voting Members			
Jason Malinowski	Chair & Capital Planning Rep.		jmalinowski@southboroughma.com
Denise Eddy	Vice Chair & Citizen-at-large		deddy@southboroughma.com
Andrew Pfaff	Clerk & Advisory Comm. Rep.		apfaff@southboroughma.com
Roger Challen	School Comm. Rep.		rchallen@nsboro.k12.ma.us
Kathryn Cook	Select Board Rep.		kcook@southboroughma.com
Mark Davis	Citizen-at-large		mdavis@southboroughma.com
Christopher Evers	Citizen-at-large		cevers@southboroughma.com
Neary Building Committee - Non-Voting Members			
Brian Ballantine	Town Finance Director		bballantine@southboroughma.com
Keith Lavoie	Asst. Superintent of Operations		klavoie@nsboro.k12.ma.us
Gregory Martineau	Superintendent of Schools		gmartineau@nsboro.k12.ma.us
Kathleen Valenti	Neary School Principal		kvalenti@nsboro.k12.ma.us
Steve Mucci	Woodward School Principal		smucci@nsboro.k12.ma.us
Rebecca Pellegrino	School Finance Director		rpellegrino@nsboro.k12.ma.us
Mark Purple	Town Administrator		mpurple@southboroughma.com
Stefanie Reinhorn	Asst. Superintent of Teaching/Learning		sreinhorn@nsboro.k12.ma.us
The Public Schools of Northborough and Southborough			
School Department			
53 Parkerville Road, Southborough, MA 01772			
Gregory Martineau	Superintendent of Schools	(508) 486-5115 x71251	gmartineau@nsboro.k12.ma.us
Stefanie Reinhorn	Asst. Superintent of Teaching/Learning	(508) 486-5115 x71211	sreinhorn@nsboro.k12.ma.us
Cheryl Lepore	Executive Administrator	(508) 486-5115 x71251	clepore@nsboro.k12.ma.us
Keith Lavoie	Assistant Superintendent of Operations	(508) 486-5115 x71216	klavoie@nsboro.k12.ma.us
Kathleen Valenti	Neary School Principal	(508) 481-2300 x62103	kvalenti@nsboro.k12.ma.us
Steve Mucci	Woodward School Principal		smucci@nsboro.k12.ma.us
Clayton Ryan	Finn School Principal		cryan@nsboro.k12.ma.us
Marie Alan	Director of Student Support	(508) 486-5115 x71221	malan@nsboro.k12.ma.us
Cathy Carmignani	Director of Institutional Technology & Digital Learning	(508) 351-7010 x1057	ccarmignani@nsboro.k12.ma.us
Mary Ellen Duggan	District Wellness Coordinator and Nurse Leader	(508) 351-7010 x1245	mduggan@nsboro.k12.ma.us
Selvi Oyola	Director of Multilingual Learners and Equity	(508) 486-5115 x71242	soyola@nsboro.k12.ma.us
Megan Kelty	English Language Arts Coordinator - PreK-8		mkelty@nsboro.k12.ma.us
Kathy Lizotte	Math Coordinator - PreK-5		klizotte@nsboro.k12.ma.us
Jennifer Henry	Early Childhood Administrator	(508) 485-3176 x63106	jhenry@nsboro.k12.ma.us
Rebecca Pellegrino	Asst. Superintendent of Finance	(508) 486-5115 x71227	rpellegrino@nsboro.k12.ma.us
Kyle Parson	Food Services Manager	(508) 486-5115 x71228	kparson@nsboro.k12.ma.us
Jon Parent	Director of Information Technology	(508) 351-7010 x2222	jparent@nsboro.k12.ma.us
Town of Southborough			
Southborough Town House			
17 Common Street, Southborough, MA			
Kathryn Cook	Town Select Board Chair		kcook@southboroughma.com
James Hegarty	Town Clerk		jhegarty@southboroughma.com
Melissa Danza	Conservation Commission Agent		mdanza@southboroughma.com
Kaina Quinn	Planning & Zoning Department		kquinn@southboroughma.com
Jason Montijo	Town Technology Manager	(508) 485-0710 x3021	jmontijo@southboroughma.com
Mark Purple	Town Administrator & Public Information		mpurple@southboroughma.com
John Parent	Facilities		jparent@southboroughma.com
William Cundiff	Department of Public Works Superintendent		wcundiff@southboroughma.com
David Williams	Chair - Zoning Board of Appeals		dwilliams@southboroughma.com
Meme Luttrell	Chair - Town Planning Board		mluttrell@southboroughma.com
William Sines	Chair - Public Accessibility Committee		wsines@southboroughma.com
Kevin Miller	Chair - Historical Commission		kmiller@southboroughma.com
Frederica Gillespie	Chair - Open Space Preservation Commission		fgillespie@southboroughma.com
Chelsea Malinowski	Chair - Board of Health		cmalinowski@southboroughma.com
Jeffrey Klein	Chair - Board of Assessors		jklein@southborougma.com
Mark Spruill	Emergency Management Specialist		mspruill@southboroughma.com
Andrew Puntini	Fire Department Chief	508-485-3235	apuntini@southboroughma.com
Ryan Newell	Chief of Police	508-485-2121	rnewell@southboroughma.com
Scott Navaroli	EMS		snavaroli@southboroughma.com

Town of Southborough - Margaret A. Neary Elementary School

Project Directory

Name	Title	Office Phone	Cell Phone	E-mail
Architect				
Arrowstreet				
10 Post Office Square, Suite 700N, Boston, MA 02109				
Larry Spang	Principal	(617) 666-7078	(617) 921-8769	spang@arrowstreet.com
Katy Lillich	Project Manager	(617) 666-7019		lillich@arrowstreet.com
Tina SooHoo	Project Architect	(617) 666-7091		soohoo@arrowstreet.com
Andy Rodrigue	Project Architect	(617) 666-7032		rodrigue@arrowstreet.com
Architect's Consultants				
Educational Consultant				
MLP INTEGRATED DESIGN				
Mike Pirollo	Educational Consutlant	(617) 733-0847		
Building Code				
Code Red Consultants				
154 Turnpike Rd., Suite 200, Southborough, MA 01772				
Paul Moan	Principal – Sr Project Manager	(617) 500-7633		paulm@crcfire.com
Kevin Lynch	Project Manager			klynch@crcfire.com
Accessbility				
KMA				
154 Turnpike Rd., Suite 200, Southborough, MA 01772				
Josh Safdie	Managing Principal			jsafdie@kmaccess.com
J George				jgeorge@kmaccess.com
Hazardous Materials, Geo-Environmental, & Environmental Planning				
PEER Consulting PC				
99 South Bedford Street, Suite 200, Burlington, MA 01803				
David Gorden		(781) 238-8880		GordenD@peercpc.com
Geotechnical				
Lahlaf Geotechnical Consulting				
23 McGinness Way, Billerica, MA 01821				
Madjid Lahlaf	Principal Engineer	(978) 330-5912	(781) 771-1933	madjid.lahlaf@lgcinc.net
Survey				
Beals and Thomas, Inc.				
144 Turnpike Road, Southborough, MA 01772				
Mark Benson	Associate	(508) 366-0560	(508) 341-3394	mbenson@bealsandthomas.com
Existing Conditions				
Pointknown				
418 Massachisetts Avenue, Arlington, MA 02474				
Jim Foster				jfoster@pointknown.com
Christina Annunziata		(617) 575-2222		cannunziata@pointknown.com
Traffic				
MDM Transportation Consultants, Inc				
28 Lord Road, Suite 280, Marlborough, MA 01752				
Robert Michaud, PE	Managing Principal	(508) 303-0370 x1115		rmichaud@mdmtrans.com
Dan Mills	Senior Project Manager			
Civil				
Green International Affiliates, Inc				
100 Ames Pond Drive, Suite 200, Tewksbury, MA 01876				
Danielle H. Spicer, P.E.	Project Manager	(978) 843-5218		jthorne@greenintl.com
Justin Macek		(978) 923-0400		jmacek@greenintl.com
Bryan Vachon		(978) 923-0400		bvachon@greenintl.com
Adel Shahin, PE	Senior Vice President	(978) 923-0400		ashahin@greenintl.com
Landscape Architecture				
Terraink				
7 Central Street, Arlington, MA 02476				
Kellie Connelly	Principal	(781) 316-1595		kconnelly@terraink.com
Jade Cummings	Principal	(781) 316-1595		jcummings@terraink.com
Kelly Ashton	Landscape Architect/CAD Lead	(781) 316-1595		kashton@terraink.com
Liz Thompson	Landscape Designer	(781) 316-1595		ethompson@terraink.com
Halley Murray	Landscape Designer	(781) 316-1595		hmurray@terraink.com

Structural Engineering

Lim Consultants, Inc

6 Pleasant Street, Malden, MA 02148

Christine Ye	Project Principal	(781) 338-9300 x309	(617) 628-7728	cye@limconsultants.com
Pabel Perez-Gonzales	Structural Engineer		(978) 652-6810	pperezg@limconsultants.com

Mechanical, Electrical, Plumbing, Fire Protection, Tech

GGD Consulting Engineers, Inc.

375 Faunce Corner Road, N. Dartmouth, MA 04727

Chris Garcia	Plumbing & Fire Protection	(508) 998-5700		chris_garcia@g-g-d.com
Walter Araujo	Plumbing & Fire Protection	(508) 998-5700		walter_araujo@g-g-d.com
Dave Pereira	Electrical	(508) 998-5700		david_pereira@g-g-d.com
Tony Dacunha	Electrical	(508) 998-5700		adacunha@g-g-d.com
Dom Puniello	Mechanical	(508) 998-5700		dom_puniello@g-g-d.com
Sean Strassell	Mechanical	(508) 998-5700		sean_strassell@g-g-d.com
Jolie Aranjo	Administrative Assistant	(508) 998-5700		jolie_aranjo@g-g-d.com
Keith Lane	Mechanical/BIM Lead	(508) 998-5700		keith_lane@g-g-d.com

Audio Visual / Acoustical

Cavanaugh Tocci Associates, Inc.

327F Boston Post Road, Sudbury, MA 01776

Alex Bagnall	Principal Consultant	(978) 639-4129		abagnall@cavtocci.com
Justyna M. Mazierkowska	BIM Lead			jmazierkowska@cavtocci.com
Max Boucher				mboucher@cavtocci.com
Lincoln Berry	Principal Acoustic Consultant	(978) 443-7871		lberry@cavtocci.com

Specifications

Kalin Associates

21 Eliot Street, Natick, MA 01760

Cynie Linton			(617) 320-9659	clinton@kalinassociates.com

Food Service

Crabtree McGrath Associates, Inc

161 W. Main Street, Georgetown, MA 01833

John Sousa	Principal	(978) 352-8500		jsousa@crabtree-mcgrath.com

Door Hardware

Allegion

77 Wexfod Street, Needham Heights, MA 02494

Kevin McIntyre	Specifier		(413) 537-1870	kevin.mcintyre@allegion.com
Jeff Batick	Regional Manager			jeffrey.batik@allegion.com

Acoustics

Acentech

33 Moulton Street, Cambridge, MA 02138

Rose Mary Su	Principal	(617) 499-8000		rsu@acentech.com
Will Spallino	Consultant			wspallino@acentech.com

Cost Estimating

PM&C

20 Downer Avenue, Suite 1C, Hingham, MA 02043

Peter Bradley	Cost Estimator	(781) 740-8007		peterbradley@pmc-ma.com
Amy Happ	Office Manager			amyhapp@pmc-ma.com

Sustainability & Energy Modeling

Thornton Tomasetti

27 Wormwood St #200, Boston, MA 02210

Xiaoshu (Sunny) Du	Senior Project Director	(207) 245-6074		XDu@ThorntonTomasetti.com
Irmak Turan				ituran@thorntontomasetti.com
Vamshi Gooje				VGooje@ThorntonTomasetti.com;

Security

Pamela Perini Consulting, LLC

591 North Avenue, Wakefield, MA 01880

Pamela Perini, PSP	Principal Secuirty Consultant	(781) 788-6674		pperini@pamelaperiniconsulting.com

Communications Plan

Margaret A. Neary Elementary School Building Project
Southborough School District
Southborough, MA

Summary

The purpose of this document is to outline the proper communication procedures between all parties involved with the Margaret A Neary Elementary School Project.

Key Personnel

MSBA:

- Maria Caprigno, Project Coordinator
- Sarah Przybylowicz, Project Manager
- Christina Forde, Project Manager

Margaret A. Neary School Building Committee Members:

- Brian Ballantine, Town Finance Director
- Roger Challen, School Committee Representative
- Kathryn Cook, Select Board Representative
- Mark Davis, Resident at Large
- Denise Eddy, Resident at Large
- Christopher Evers, Resident at Large
- Keith Lavoie, Assistant Superintendent of Operations
- Jason Malinowski, Chair of Building Committee/Capital Planning Representative
- Gregory Martineau, Superintendent of Schools
- Steve Mucci, Woodward School Principal
- Rebecca Pellegrino, Assistant Superintendent of Finance
- Andrew Pfaff, Advisory Committee Representative
- Mark Purple, Town Administrator
- Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning
- Kathleen Valenti, Margaret A. Neary Principal

Town of Southborough:

- Mark Purple, Town Administrator
- Brian Ballantine, Town Finance Director

Owner's Project Manager – Skanska USA Building Inc.:

- Dale Caldwell, Senior Vice President, LEEP AP, AVS, MCPPO
- Jim Burrows, Project Director, MCPPO
- Sy Nguyen, Senior Project Manager, CCM, LEED A BD+C, CHC MCPPO

Design Team – Arrowstreet Inc.:

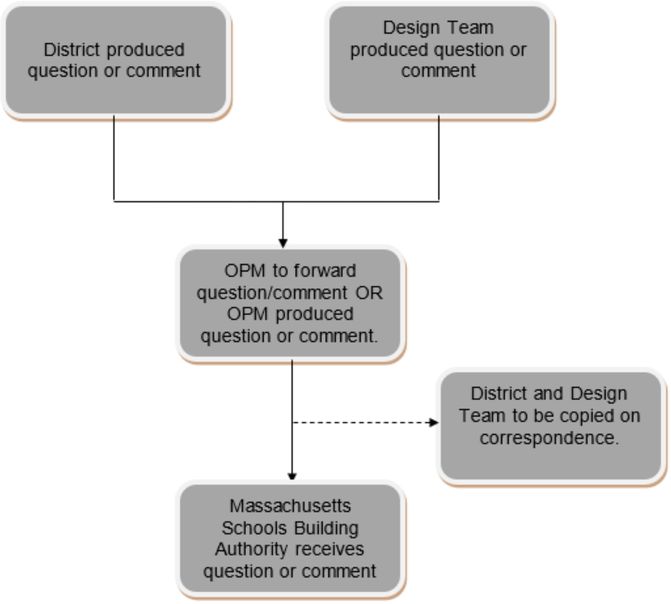
- Laurence Spang, Partner, AIA, LEED AP, MCPPO
- Katy Lillich, Associate Principal, AIA LEED AP, MCPPO
- Andy Rodrigue, Project Architect, AIA, NCARB

Communication Strategy

The following diagrams represent the flow of communication between the personnel identified through the Schematic Design Phase. This document will be updated when the Project Team expands to include a general contractor and subcontractors during the construction phase.

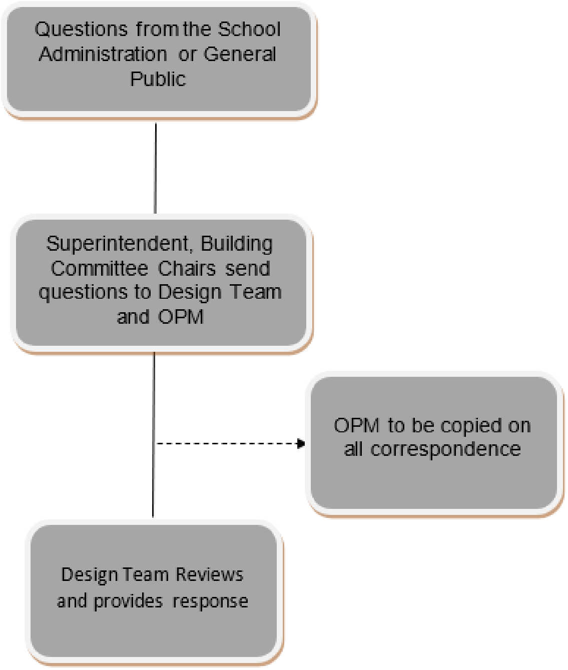
Communication to the Massachusetts School Building Authority

The Owner's Project Manager (OPM) is responsible for being the conduit to the Massachusetts School Building Authority (MSBA). Any questions or comments directed to the MSBA should be issued through the OPM. In the event that the OPM Team is aware of the discussion point, the District and the Design Team can communicate directly with the MSBA while copying the OPM on the correspondents.



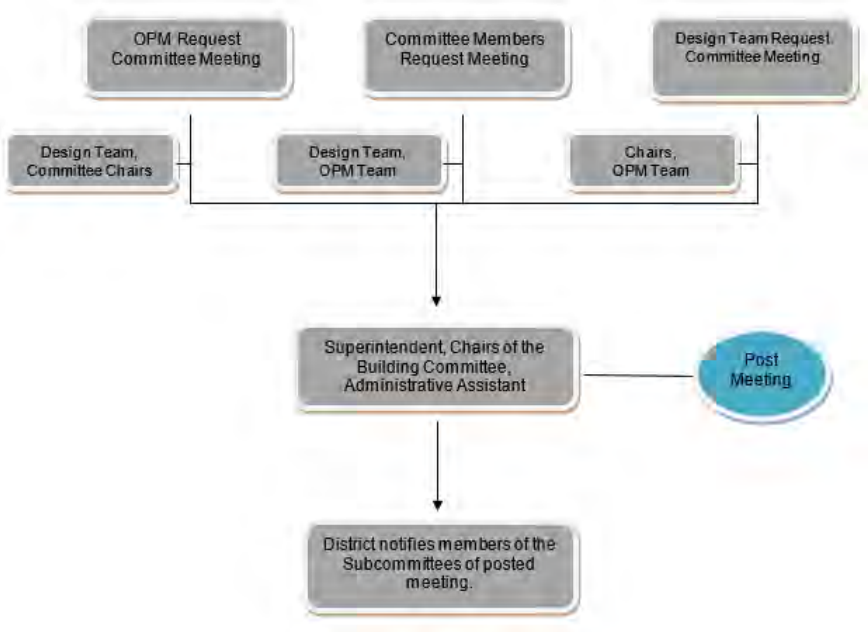
Communication to the Design Team

All design-related questions from the School Administration, Educational Task Forces, and the General Public should be filtered through the Interim Superintendent and the Building Committee Chairs. These questions should then be directed to the Design Team while notifying the Owner's Project Manager. All responses should filter back through the District the same way before being distributed to the appropriate parties.



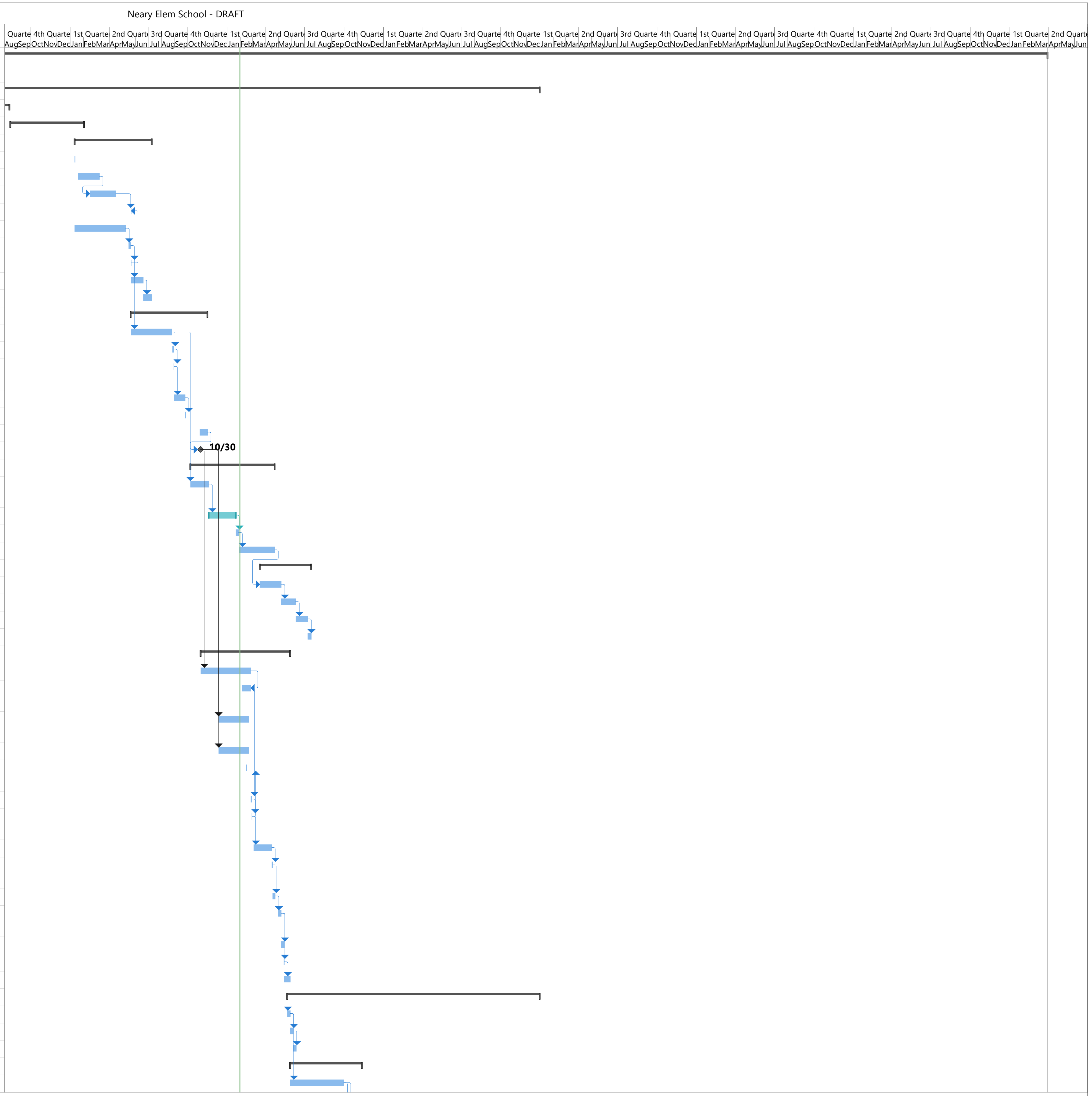
Scheduling Committee Meetings

Committee Meetings should be scheduled by the Chair at the end of each meeting. The time and location decided upon should be sent to the members of the district identified in the Key Personnel Table. These meetings should be posted on the Town and Project websites. If another meeting needs to be scheduled, the procedure outlined below should be followed.



Neary Elem School - DRAFT

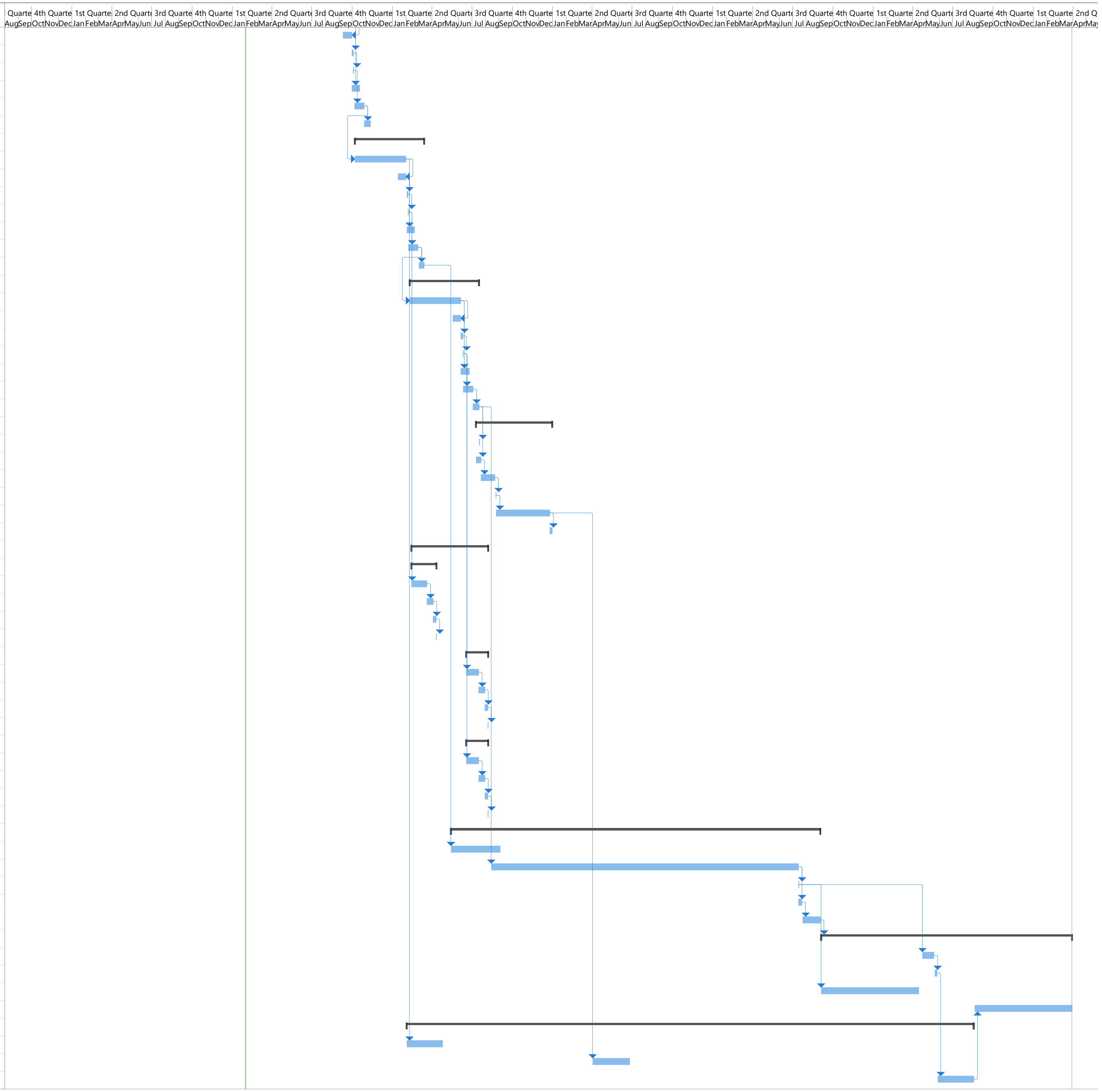
ID		Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1			**Neary Project**	**1825 days**	**Mon 4/3/23**	**Fri 3/29/30**		
2			**Module 1 - Eligibility Period**	**22 days**	**Mon 4/3/23**	**Tue 5/2/23**		
5			**Module 2 - Forming the Project Team**	**956 days**	**Wed 5/3/23**	**Wed 12/30/26**		
6			**Owners Project Manager Selection**	**73 days**	**Wed 5/3/23**	**Fri 8/11/23**		
10			**Designer Selection**	**124 days**	**Mon 8/14/23**	**Thu 2/1/24**		
29			**Module 3.1: Feasibility Study - Preliminary Design Progr**	**128 days**	**Thu 1/11/24**	**Mon 7/8/24**		
30			Kick-off Meeting (District/Project Team and MSBA)	1 day	Thu 1/11/24	Thu 1/11/24	26	
31			Educational Planner: Visioning Sessions	36 days	Fri 1/19/24	Fri 3/8/24		
32			Update Educational Plan for MSBA/DESE Review	42 days	Fri 2/16/24	Mon 4/15/24	31FS-16 days	
33			Submit Education Plan to MSBA	1 day	Tue 5/21/24	Tue 5/21/24	32,36FF	
34			PDP Submittal Development	85 days	Thu 1/11/24	Wed 5/8/24	26	
35			**Approval of PDP (SBC Meeting)**	3 days	Thu 5/16/24	Mon 5/20/24	34	
36			PDP Submittal to MSBA	1 day	Tue 5/21/24	Tue 5/21/24	35	
37			MSBA Review of PDP	21 days	Tue 5/21/24	Tue 6/18/24	35	
38			Address PDP Comments (14 Days to Respond)	14 days	Wed 6/19/24	Mon 7/8/24	37	
39			**Module 3.2: Preferred Schematic Report**	**129 days**	**Tue 5/21/24**	**Fri 11/15/24**		
40			PSR Submittal Development	69 days	Tue 5/21/24	Fri 8/23/24	35	
41			**Approval of PSR (SBC Meeting)**	3 days	Mon 8/26/24	Wed 8/28/24	40	
42			PSR Submittal Date to MSBA (no sooner than 8 weeks after PDP) (Need to submit by 8/29 for 10/30)	1 day	Thu 8/29/24	Thu 8/29/24	41	
43			MSBA Review of PSR	18 days	Fri 8/30/24	Tue 9/24/24	42	
44			Facility Assessment Subcommittee Presentation - 9/2	1 day	Wed 9/25/24	Wed 9/25/24	43FS-10 days	
45			Address MSBA PSR Comments (14 Days to Respond)	14 days	Tue 10/29/24	Fri 11/15/24		
46			MSBA Board Meeting - PSR Approval	1 day	Wed 10/30/24	Wed 10/30/24	45	
47			**Project Delivery Method**	**141 days**	**Mon 10/7/24**	**Mon 4/21/25**		
48			Project Delivery Method options presentation to SBC and vote	31 days	Mon 10/7/24	Mon 11/18/24	40FS+30 days	
49			OPM Prepares CM At-Risk application	45 days	Tue 11/19/24	Mon 1/20/25	48	
50			OPM submit applications to Office of Inspector Genera	1 wk	Tue 1/21/25	Mon 1/27/25	49	
51			OIG review (up to 60 days)	60 days	Tue 1/28/25	Mon 4/21/25	50	
52			**Procurement of CM**	**86 days**	**Tue 3/18/25**	**Tue 7/15/25**		
53			Prepare RFQ	36 days	Tue 3/18/25	Tue 5/6/25	51FS-25 days	
54			Advertise, SOQ Received	24 days	Wed 5/7/25	Mon 6/9/25	53	
55			Evaluate SOQ and interviews	20 days	Tue 6/10/25	Mon 7/7/25	54	
56			Recommend CM At-Risk to SBC and Award and NTP	6 days	Tue 7/8/25	Tue 7/15/25	55	
57			**Module 4 - Schematic Design (SD)**	**149 days**	**Thu 10/31/24**	**Tue 5/27/25**		
58			SD Preparation	83 days	Thu 10/31/24	Mon 2/24/25	46	
59			SD Documents for Cost Estimate/Reconciliation/VE if Required	14 days	Wed 2/5/25	Mon 2/24/25	58FF	
60			Designer Proposal - Develop, Review and Finalize with District	50 days	Thu 12/12/24	Wed 2/19/25	46FS+30 days	
61			OPM Proposal - Develop, Review and Finalize with Dist	50 days	Thu 12/12/24	Wed 2/19/25	46FS+30 days	
62			OPM SD Notification email to MSBA 10 days prior to SD Submission	1 day	Fri 2/14/25	Fri 2/14/25	64FS-10 days	
63			**Approval of SD and Budget (Joint Meeting SBC and S**	2 days	Tue 2/25/25	Wed 2/26/25	59	
64			SD Submittal to MSBA (must submit by 2/27/25 for 4/30 Board Date)	1 day	Thu 2/27/25	Thu 2/27/25	63	
65			MSBA SD Review	30 days	Tue 3/4/25	Mon 4/14/25	64FS+2 days	
66			MSBA Project Scope & Budget Conference w/ District - Date TBD	2 days	Tue 4/15/25	Wed 4/16/25	65	
67			Address MSBA SD Review Comments	4 days	Thu 4/17/25	Tue 4/22/25	66	
68			MSBA Board Meeting - Project Scope & Budget (PS&B) Approval - 120 calendar days for Town 's	5 days	Wed 4/30/25	Tue 5/6/25	67	
69			MSBA Send PS&B Agreement	5 days	Wed 5/7/25	Tue 5/13/25	68	
70			**Town Meeting**	1 day	Tue 5/13/25	Tue 5/13/25	68FS+4 days	
71			PS&B Agreement and Final PFA Executed	10 days	Wed 5/14/25	Tue 5/27/25	70	
72			**Module 6 - DD/CD**	**421 days**	**Wed 5/21/25**	**Wed 12/30/26**		
73			SBC Vote to Amend OPM and Designer Contracts	5 days	Wed 5/21/25	Tue 5/27/25	70FS+5 days	
74			Send amended OPM and Designer Contracts to MSBA	5 days	Wed 5/28/25	Tue 6/3/25	73	
75			Schedule MSBA Kick-off Meeting	5 days	Wed 6/4/25	Tue 6/10/25	74	
76			**Design Development Phase**	**119 days**	**Wed 5/28/25**	**Mon 11/10/25**		
77			DD develoment	89 days	Wed 5/28/25	Mon 9/29/25	73	



Page 1

Neary Elem School - DRAFT

ID	ⓘ	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
78			100% DD to estimators	14 days	Wed 9/10/25	Mon 9/29/25	77FF	
79			Approval of 100% DD (SBC Meeting)	3 days	Tue 9/30/25	Thu 10/2/25	78	
80			100% DD to MSBA	1 day	Fri 10/3/25	Fri 10/3/25	79	
81			Commissioning Agent Comments on 100% DD	14 days	Tue 9/30/25	Fri 10/17/25	77	
82			MSBA Reviews 100% DD comments (21 calendar da	16 days	Mon 10/6/25	Mon 10/27/25	80	
83			Address 100% DD Review Comments (14 calendar d	10 days	Tue 10/28/25	Mon 11/10/25	82	
84			**60% CD Phase**	**114 days**	**Tue 10/7/25**	**Fri 3/13/26**		
85			60% CD development	84 days	Tue 10/7/25	Fri 1/30/26	82FS-15 days	
86			60% CD to estimators	14 days	Tue 1/13/26	Fri 1/30/26	85FF	
87			Approval of 60% CD (SBC Meeting)	3 days	Mon 2/2/26	Wed 2/4/26	86	
88			60% CD to MSBA	1 day	Thu 2/5/26	Thu 2/5/26	87	
89			Commission Agent Comments on 60% CD	14 days	Mon 2/2/26	Thu 2/19/26	85	
90			MSBA Reviews 60% CD comments (21 calendar days	16 days	Fri 2/6/26	Fri 2/27/26	88	
91			Address 60% CD Review Comments (14 calendar da	10 days	Mon 3/2/26	Fri 3/13/26	90	
92			**90% CD Phase**	**114 days**	**Mon 2/9/26**	**Thu 7/16/26**		
93			90% CD development	84 days	Mon 2/9/26	Thu 6/4/26	90FS-15 days	
94			90% CD to estimators	14 days	Mon 5/18/26	Thu 6/4/26	93FF	
95			Approval of 90% CD (SBC Meeting)	3 days	Fri 6/5/26	Tue 6/9/26	94	
96			90% CD to MSBA	1 day	Wed 6/10/26	Wed 6/10/26	95	
97			Commissioning Agent Comments on 90% CD	14 days	Fri 6/5/26	Wed 6/24/26	93	
98			MSBA Reviews 90% CD comments (21 calendar days	16 days	Thu 6/11/26	Thu 7/2/26	96	
99			Address 90% DD Review Comments (14 calendar da	10 days	Fri 7/3/26	Thu 7/16/26	98	
100			**100% CD/ Bid Package Activities**	**124 days**	**Fri 7/10/26**	**Wed 12/30/26**		
101			100% CD to CM	1 day	Fri 7/17/26	Fri 7/17/26	99	
102			Advertisement for Filed Sub-Trades	7 days	Fri 7/10/26	Mon 7/20/26	99FS-5 days	
103			Filed Sub-Trade Bidding	24 days	Tue 7/21/26	Fri 8/21/26	102	
104			Filed Sub-Trade Bids due	1 day	Mon 8/24/26	Mon 8/24/26	103	
105			Establish GMP and Finalize GMP	88 days	Tue 8/25/26	Thu 12/24/26	104	
106			SBC approval of final GMP	4 days	Fri 12/25/26	Wed 12/30/26	105	
107			**Early Bid Packages**	**125 days**	**Fri 2/13/26**	**Thu 8/6/26**		
108			**EBP #1 Site Enabling/Demo Existing Building**	**41 days**	**Fri 2/13/26**	**Fri 4/10/26**		
109			Issue bid package	5 wks	Fri 2/13/26	Thu 3/19/26	88FS+1 wk	
110			Bids Due/Descope	2 wks	Fri 3/20/26	Thu 4/2/26	109	
111			SBC Approval to award	1 wk	Fri 4/3/26	Thu 4/9/26	110	
112			Contract Award: Site Enabling	1 day	Fri 4/10/26	Fri 4/10/26	111	
113			**EBP #2 Sitework, Concrete, Elevator**	**36 days**	**Thu 6/18/26**	**Thu 8/6/26**		
114			Issue 90% CD package	4 wks	Thu 6/18/26	Wed 7/15/26	96FS+1 wk	
115			Bids Due/Descope	2 wks	Thu 7/16/26	Wed 7/29/26	114	
116			SBC Approval to award	1 wk	Thu 7/30/26	Wed 8/5/26	115	
117			Contract Award: Sitework, Concrete, Elevator	1 day	Thu 8/6/26	Thu 8/6/26	116	
118			**EBP #3 Structural Steel**	**36 days**	**Thu 6/18/26**	**Thu 8/6/26**		
119			Issue 90% CD package	4 wks	Thu 6/18/26	Wed 7/15/26	96FS+1 wk	
120			Bids Due/Descope	2 wks	Thu 7/16/26	Wed 7/29/26	119	
121			SBC Approval to award	1 wk	Thu 7/30/26	Wed 8/5/26	120	
122			Contract Award: Structural Steel	1 day	Thu 8/6/26	Thu 8/6/26	121	
123			**Module 7 Construction**	**602 days**	**Thu 5/14/26**	**Fri 9/1/28**		
124			Construction - Site Enabling and Demo Existing Bldg.	80 days	Thu 5/14/26	Wed 9/2/26	91FS+43 days	
125			Construction - Main Building	500 days	Fri 8/14/26	Thu 7/13/28	99FS+20 days	
126			Substantial Completion	1 day	Fri 7/14/28	Fri 7/14/28	125	
127			TCO	6 days	Fri 7/14/28	Fri 7/21/28	125	
128			Move-In	30 days	Mon 7/24/28	Fri 9/1/28	127	
129			**Module 8 Close-Out**	**410 days**	**Mon 9/4/28**	**Fri 3/29/30**	**128**	
130			Cx - 10 months after Substantial Completion)	4 wks	Mon 4/23/29	Fri 5/18/29	126FS+10 mons	
131			Final Cx report to MSBA/USGB	1 wk	Mon 5/21/29	Fri 5/25/29	130	
132			Close-out documentation	8 mons	Mon 9/4/28	Fri 4/13/29	126	
133			Final Reimbursement Request to MSBA	160 days	Mon 8/20/29	Fri 3/29/30	137	
134			**Sustainable Design Milestone**	**925 days**	**Mon 2/2/26**	**Fri 8/17/29**		
135			Sustainable Design, LEED Project Registration	12 wks	Mon 2/2/26	Fri 4/24/26	86	
136			Provisional review submittal 3 months after bidding	12 wks	Fri 4/2/27	Thu 6/24/27	105FS+70 days	
137			USGBC Final Review Submission (allow 12 weeks)	12 wks	Mon 5/28/29	Fri 8/17/29	131	



LOCAL ACTIONS AND APPROVALS

Please find the certified Local Actions and Approvals Certification on the following pages.

The meeting minutes for all Neary School Building Committee Meetings that have occurred since the submission can be found in Appendix O: Local Actions and Approvals.

Four Community Outreach meetings ('Office Hours') were held on:

- January 10, 2025
- February 1, 2025
- February 24, 2025
- March 1, 2025 (Upcoming)

TOWN OF SOUTHBOROUGH

TOWN HOUSE · 17 COMMON STREET · SOUTHBOROUGH, MASSACHUSETTS 01772-1662
(508) 485-0710

February 24, 2025

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

Dear Ms. Caprigno,

At its meeting on Thursday, February 20, 2025, the Margaret A. Neary Elementary School Building Committee voted the following:

The Margaret A. Neary Elementary School Building Committee votes to approve the Schematic Design (SD) Submission and authorize Skanska USA Building as Owner Project Manager to submit to the Massachusetts School Building Authority on behalf of the district. Mr. Jason Malinowski made the motion. Ms. Kathryn Cook seconded the motion.

7 voted in the affirmative, Roger Challen, Kathryn Cook, Mark Davis, Denise Eddy, Christopher Evers, Jason Malinowski, and Andrew Pfaff.
0 opposed.
0 abstained.
0 absent
The motion passed unanimously.

Respectfully submitted by:

Gregory J Martineau

Gregory L. Martineau
Superintendent of Schools

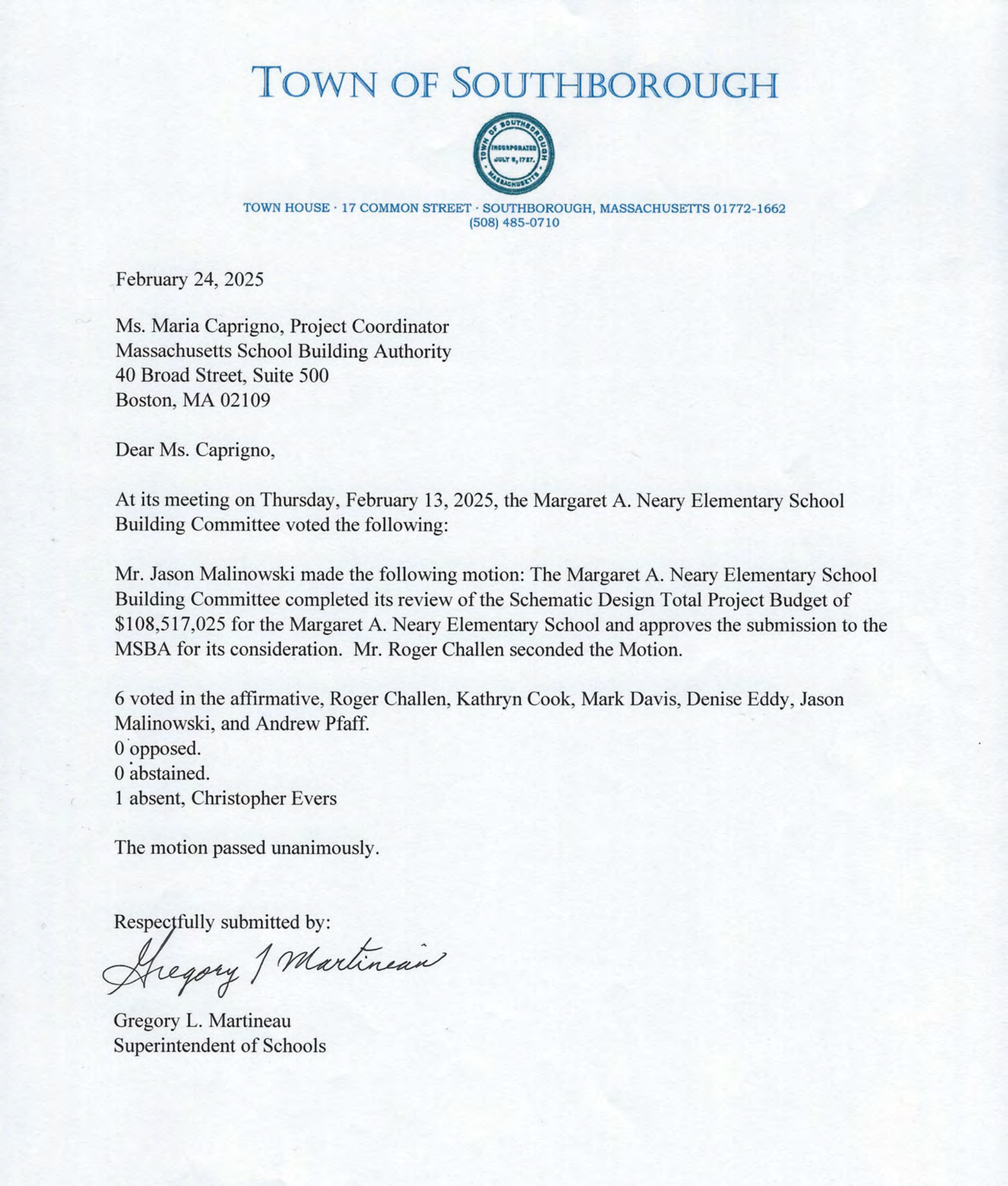
Acknowledgment Certificate

Commonwealth of Massachusetts
County of Worcester

On this 24th of february 2025, before me, Sheila Hana the undersigned notary public, personally appeared G. Martineau (name of document signer) proved to me through satisfactory evidence of identification, which were MA license, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

Sheila A Hana
(seal) Notary Public Signature

SHEILA A HANA
NOTARY PUBLIC
Commonwealth of Massachusetts
My Commission Expires On
07/19/2030



TOWN OF SOUTHBOROUGH

JULY 6, 1727.

TOWN HOUSE · 17 COMMON STREET · SOUTHBOROUGH, MASSACHUSETTS 01772-1662
(508) 485-0710

February 24, 2025

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

Dear Ms. Caprigno,

At its meeting on Thursday, February 13, 2025, the Margaret A. Neary Elementary School Building Committee voted the following:

Mr. Jason Malinowski made the following motion: The Margaret A. Neary Elementary School Building Committee completed its review of the Schematic Design Total Project Budget of $108,517,025 for the Margaret A. Neary Elementary School and approves the submission to the MSBA for its consideration. Mr. Roger Challen seconded the Motion.

6 voted in the affirmative, Roger Challen, Kathryn Cook, Mark Davis, Denise Eddy, Jason Malinowski, and Andrew Pfaff.
0 opposed.
0 abstained.
1 absent, Christopher Evers

The motion passed unanimously.

Respectfully submitted by:

Gregory L Martineau

Gregory L. Martineau
Superintendent of Schools

Acknowledgment Certificate

Commonwealth of Massachusetts
County of Worcester

On this 24th of February, 2025, before me, Sheila Hana the undersigned notary public, personally appeared G. Martineau (name of document signer) proved to me through satisfactory evidence of identification, which were MA license, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

Sheila A Hana
(seal) Notary Public Signature

SHEILA A HANA
NOTARY PUBLIC
Commonwealth of Massachusetts
My Commission Expires On
07/19/2030

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APPENDICES

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A: MSBA PSR Comments & Project Team Responses

ATTACHMENT A
MODULE 3 – PREFERRED SCHEMATIC REPORT REVIEW COMMENTS

District: Town of Southborough
School: Margaret A. Neary Elementary School
Owner's Project Manager: Skanska USA Building Inc.
Designer Firm: Arrowstreet Inc.
Submittal Due Date: August 29, 2024
Submittal Received Date: August 29, 2024
Review Date: August 29, 2024 – October 24, 2024
Reviewed by: L. Winston, C. Forde, C. Alles

MSBA REVIEW COMMENTS

The following comments[1] on the Preferred Schematic Report ("PSR") submittal are issued pursuant to a review of the project submittal document for the proposed project presented as a part of the Feasibility Study submission in accordance with the MSBA Module 3 Guidelines.

3.3 PREFERRED SCHEMATIC REPORT

Overview of Preferred Schematic Submittal	Complete	Provided; *Refer to comments following each section*	Not Provided; *Refer to comments following each section*	Receipt of District's Response; *To be filled out by MSBA Staff*
OPM Certification of Completeness and Conformity	☒	☐	☐	☐
Table of Contents	☒	☐	☐	☐
3.3.1 Introduction	☒	☐	☐	☐
3.3.2 Evaluation of Existing Conditions	☐	☒	☐	☐
3.3.3 Final Evaluation of Alternatives	☐	☒	☐	☐
3.3.4 Preferred Solution	☐	☒	☐	☐
3.3.5 Local Actions and Approval Certification	☐	☒	☐	☐

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[1] The written comments provided by the MSBA are solely for purposes of determining whether the submittal documents, analysis process, proposed planning concept and any other design documents submitted for MSBA review appear consistent with the MSBA's guidelines and requirements, and are not for the purpose of determining whether the proposed design and its process may meet any legal requirements imposed by federal, state or local law, including, but not limited to, zoning ordinances and by-laws, environmental regulations, building codes, sanitary codes, safety codes and public procurement laws or for the purpose of determining whether the proposed design and process meet any applicable professional standard of care or any other standard of care. Project designers are obligated to implement detailed planning and technical review procedures to effect coordination of design criteria, buildability, and technical adequacy of project concepts. Each city, town and regional school district shall be solely responsible for ensuring that its project development concepts comply with all applicable provisions of federal, state, and local law. The MSBA recommends that each city, town and regional school district have its legal counsel review its development process and subsequent bid documents to ensure that it is in compliance with all provisions of federal, state and local law, prior to bidding. The MSBA shall not be responsible for any legal fees or costs of any kind that may be incurred by a city, town or regional school district in relation to MSBA requirements or the preparation and review of the project's planning process or plans and specifications.

3.3.1 INTRODUCTION

Provide the following Items		Complete; *No response required*	Provided; *District's response required*	Not Provided; *District's response required*	Receipt of District's Response; *To be filled out by MSBA Staff*
1	Overview of the process undertaken since submittal of the Preliminary Design Program that concludes with submittal of the Preferred Schematic Report, including any new information and changes to previously submitted information	☒	☐	☐	☐
2	Summary of updated project schedule, including:				
	a) Projected MSBA Board of Directors Meeting for approval of Project Scope and Budget Agreement	☒	☐	☐	☐
	b) Projected Town/City vote for Project Scope and Budget Agreement	☒	☐	☐	☐
	c) Anticipated start of construction	☒	☐	☐	☐
	d) Target move in date	☒	☐	☐	☐
3	Summary of the final evaluation of existing conditions	☒	☐	☐	☐
4	Summary of final evaluation of alternatives	☒	☐	☐	☐
5	Summary of District's preferred solution	☒	☐	☐	☐
6	A copy of the MSBA Preliminary Design Program project review and corresponding District response	☒	☐	☐	☐

MSBA Review Comments:

No review comments for this section.

3.3.2 EVALUATION OF EXISTING CONDITIONS

Provide the following Items		Complete; *No response required*	Provided; *District's response required*	Not Provided; *District's response required*	Receipt of District's Response; *To be filled out by MSBA Staff*
1	A narrative of any changes resulting from new information that informs the conclusions of the evaluation of the existing conditions and its impact on the final evaluation of alternatives	☐	☒	☐	☐
2	If changes are substantive, provide an updated Evaluation of Existing Conditions and identify as final. Identify additional testing that is recommended during future phases of the proposed project and indicate when the investigations and analysis will be completed	☐	☒	☐	☐

3	Site vulnerability risk assessment evaluation for each site under consideration, including a description of specific identified site resiliency concerns, design mitigation options, and resulting design decisions by the District	☐	☒	☐	☐

MSBA Review Comments:

1) The information provided does not include an existing building conditions report associated with the Albert S. Woodward Memorial School site. As noted in the MSBA's PDP review comments and acknowledged by the District:

> *"The MSBA will require the District and project team provide site and existing building conditions information, as outlined in Module 3, for* ***both*** *the Margaret A. Neary Elementary School and Albert S. Woodward Memorial School as part of the District's PSR submittal."*

Subsequent to receiving the submittal the MSBA received a copy of the deed and an existing site plan for the Albert S. Woodward Memorial School site on October 10, 2024. In response to these review comments, please provide the existing building conditions information for the Albert S. Woodward Memorial School.

Additionally, the information provided summarizing the 'Preliminary Subsoil Assessment' indicates that initial borings were conducted on the play fields of the Neary Elementary School site; however, based on the findings of initial borings the District and project team determined that location of the proposed project will be built on the location of the existing Neary Elementary School facility. For reference the information provided states the following:

- *"On April 15,2024, Lahlaf Geotechnical Consulting performed (4) borings to investigate the subsurface soil conditions of the site. The boring locations were identified based on the potential location for a new building located on the adjacent athletic field. This preliminary round of borings is intended to highlight the major soil strata. Additional borings will be performed during subsequent phases of the project."*
- *"These initial borings indicate that the infilled soil will need to be removed to a depth of approximately 6 feet and replaced with structural fill to support any new construction. Topsoil should be removed from the entire construction area, including the building footprint and the paved areas. Sampled soils show that the soil is less than RCS-1 criteria and does not show any detection for pesticides, herbicides, gasoline and/ or diesel."*
- *"Since the initial borings were located on the area of the current play fields, and to have a better understanding of the geotechnical subsoil conditions in the new location, additional borings have been scheduled to be performed on August 22."*

In response to these review comments, please provide an update regarding the additional borings which were scheduled for August 22, 2024, and provide a summary of any additional site investigations anticipated during schematic design.

See attached updated Geotechnical Report dated September 14, 2024, labeled as Appendix 1. At that time, four additional borings were performed in the anticipated footprint of the new building. Borings B-101, B-102 and B-103 were consistent with previous borings at other portions of the site. Boring B-101 showed signs of swamp deposits, which aligns with the Subsurface Soil Investigation performed by

PEER Engineering. This area will need further investigation in Design Development to determine the extents of this soil condition.

2) The information provided indicates additional site drainage explorations will be scheduled in the next phase of the project. In response to these review comments, please provide the timeline associated with the additional site explorations and 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 and considered ineligible for reimbursement.

See attached Soil Testing (percolation) report dated July 11, 2024, labeled as Appendix 2. In summary, the report indicates that the soil is Class 2 (generally fine sandy loam, peat or decomposed plant material), groundwater level at these locations is relatively high (42-45 inches deep) and the percolation rate is moderate (22-29 min/inch). These results indicate that the soil is suitable for a future septic leach field.

3) The submittal included a completed RMAT Climate Resilience Design Standards Tool Report. In the response these review comments, provide a summary of this evaluation describing specific identified site resiliency concerns, potential design mitigation options addressing these potential hazards, and resulting design decisions by the District incorporated or not incorporated into the project scope based on this risk assessment.

No further review comments for this section.

3.3.3 FINAL EVALUATION OF ALTERNATIVES

Include at least three potential alternatives, with at least one renovation and/or addition option. Include the following for each alternative where appropriate:

Provide the following Items		Complete; *No response required*	Provided; *District's response required*	Not Provided; *District's response required*	Receipt of District's Response; *To be filled out by MSBA Staff*
1	An analysis of each prospective site including:				
	a) Natural site limitations	☐	☒	☐	☐
	b) Building footprint(s)	☐	☒	☐	☐
	c) Athletic fields	☐	☒	☐	☐
	d) Parking areas and drives	☐	☒	☐	☐
	e) Bus and parent drop-off areas	☐	☒	☐	☐
	f) Site access and surrounding site features	☐	☒	☐	☐
2	Evaluation of the potential impact that construction of each option will have on students and measures recommended to mitigate impact	☒	☐	☐	☐
3	Conceptual architectural and site drawings that satisfy the requirements of the education program	☒	☐	☐	☐
4	An outline of the major building structural systems	☒	☐	☐	☐
5	The source, capacities, and method of obtaining all utilities	☒	☐	☐	☐

Provide the following Items		Complete; *No response required*	Provided; *District's response required*	Not Provided; *District's response required*	Receipt of District's Response; *To be filled out by MSBA Staff*
6	A narrative of the major building systems	☐	☒	☐	☐
7	A proposed total project budget and a construction cost estimate using the Uniformat II Elemental Classification format (to as much detail as the drawings and descriptions permit, but no less than Level 2)	☐	☒	☐	☐
8	Permitting requirements and associated approval schedule	☐	☒	☐	☐
9	Proposed project design and construction schedule including consideration of phasing	☒	☐	☐	☐
10	Completed Table 1 – MSBA Summary of Preliminary Design Pricing spreadsheet	☐	☒	☐	☐

MSBA Review Comments:

Subsequent to receiving the submittal the MSBA received updated information on September 17, 2024, associated with the Final Evaluation of Alternatives. The District explored the following (6) options:

- ***Option A.1:*** *Base Repair for grades 4-5 with an enrollment of 305 students at the existing Margaret A. Neary Elementary School; with an estimated total project cost of $63 million.*
- ***Option A.2:*** *Base Repair for grades 3-5 with an enrollment of 450 students at the existing Albert S. Woodward Memorial School; with an estimated total project cost of $58 million.*
- ***Option B.4:*** *Addition/ Renovation for grades 2-5 with an enrollment of 610 students at the existing Margaret A. Neary Elementary School; with an estimated total project cost of $113.6 million.*
- ***Option C.1:*** *New Construction for grades 4-5 with an enrollment of 305 students at the existing Margaret A. Neary Elementary School site; with an estimated total project cost of $83.1 million.*
- ***Option C.2:*** *New Construction for grades 3-5 with an enrollment of 450 students at the existing Margaret A. Neary Elementary School site; with an estimated total project cost of $105.4 million.*
- ***Option C.4: New Construction for grades 2-5 with an enrollment of 610 students at the existing Margaret A. Neary Elementary School site; with an estimated total project cost of $113.4 million. (District's Preferred Schematic)***

6) In response to these review comments, confirm that building and District maintenance personnel have been included in discussions regarding the selection and long-term operational and maintenance costs of the Building Management System ("BMS") and mechanical systems and that the training program will be coordinated with the District's facility staff and will include sufficient training hours to learn how to operate the proposed BMS before the opening of the proposed project as well as hours post turnover.

Response: Arrowstreet has met with the District for a series of Sustainability meetings which have included members of the District's facility staff, including the Assistant Superintendent of Operations, Ketih Lavoie, to discuss the selection of equipment, including the implications of long-term operation costs, maintenance requirements and general operating costs.

Additionally, in response to these review comments, please confirm that the District's consultants have performed a life-cycle cost and payback analysis for all proposed building system options, including incorporating the Mass Save rebates and the tax credit available to municipalities through the Inflation Reduction Act and provide the detailed information.

Response: In the Feasibility Phase, the Design Team reviewed building system options with members of the Building Committee, including potential incentive programs from National Grid, State and Federal incentives that are available to the project. In the Schematic Design Phase, the Design Team will complete a life-cycle cost assessment, select a preferred system, and further work with the District to update the anticipated incentive rebates from the utility company, state and federal programs.

7) In response to these review comments, please note and acknowledge that the schematic design documents must include the following information:

- *The District must include negotiated costs for OPM and Designer fees for the remainder of the project as part of their Total Project Budget. The fees must be listed separately by the applicable line items that are included in the MSBA's Total Project Budget template.*
- *Identify estimated cost associated with removal of any existing fuel storage tanks;*
- *Identify estimated costs associated with the removal of existing flooring and ceiling materials containing asbestos;*
- *Complete the "CSI" tab within the MSBA's total project budget spreadsheet; and,*
- *If add/deduct construction alternates are proposed, please complete the "Alternates" tab within the MSBA's total project budget spreadsheet detailing the cost and the rationale associated with each alternate.*

Response: Acknowledged

10) Subsequent to receiving the submittal, the MSBA received an updated preliminary design pricing table on September 17, 2024. The information provided indicates the District's Preferred Schematic includes an estimated total construction cost of $91.8 million ($922/sf) and an estimated total project cost of $113.4 million. In response to these review comments, please provide additional information that clearly describes the cost drivers and underlying factors that contribute to an estimated total construction square foot cost of $922/sf and describe opportunities that could adjust the proposed design to maintain, or possibly reduce the estimated per square foot cost during the schematic design phase. Additionally, the MSBA encourages the District and its consultants to further evaluate the proposed design and describe the underlying factors leading to the estimated costs.

Response: Arrowstreet and Skanska have reviewed the estimate and the concerns noted above with our Estimating Consultant, PM&C. The primary drivers for the overall cost for the building are escalation and site costs. Our Estimating Consultant notes that Stoneham High School, which is currently bidding and is a similar size, is budgeted at $780 psf in 2022 dollars but which if escalated *to 2026 dollars would be about $904 psf, similar to the cost psf estimated for Neary Elementary School.*

- *Removal of non-structural soil and replacement with structural fill will be necessary, however the cost is still to be determined based on the results of the additional borings performed in August.*
- *Underslab and perimeter drainage system due to high groundwater levels, $650,000-800,000*
- *New septic system, with increased volume to reflect new enrollment is estimated at $600,00-750,000*
- *Radon/gas removal system is becoming more common and is included at the estimated cost of $300,000-$350*
- *Underdrain system at play fields and playground due to high groundwater levels is included at the estimated cost of $400,00-$500,000*
- *Geothermal wells add approximately $4,440,000 as a conservative estimate based on similar projects. This may be reduced with consultation with our Geothermal consultant starting in SD.*
- *Kitchen equipment being fully electric is higher than usual at approximately $610,000 and a smaller building area increases the psf cost.*

According to PM&C, taking out these additional costs as well as the escalation puts the current cost at approximately $922 per SF which is reflective of today's market while still being conservative considering this is for the PSR phase.

No further review comments for this section.

3.3.4 PREFERRED SOLUTION

	Provide the following Items		Complete; *No response required*	Provided; *District's response required*	Not Provided; *District's response required*	Receipt of District's Response; *To be filled out by MSBA Staff*
1	Educational Program					
	a)	Summary of key components and how the preferred solution fulfills the educational program	☒	☐	☐	☐
	b)	Design responses including desired features and/or layout considerations	☐	☒	☐	☐
	c)	Proposed variances to, and benefits of, any changes to the current grade configuration (if any) and a related transition plan	☒	☐	☐	☐
2	Preferred Solution Space Summary					
	a)	Updated MSBA Space Summary spreadsheet	☐	☒	☐	☐
	b)	Itemization and explanation of variations from the initial space summary (and MSBA review) included in the Preliminary Design Program	☒	☐	☐	☐
3	Preliminary NE-CHPS or LEED-S scorecard		☐	☒	☐	☐

	Provide the following Items	Complete; *No response required*	Provided; *District's response required*	Not Provided; *District's response required*	Receipt of District's Response; *To be filled out by MSBA Staff*
4	Narrative descriptions and diagrams showing sustainable design "best practices"	☐	☐	☒	☐
5	Conceptual floor plans of the preferred solution, in color that are clearly labeled to identify educational spaces	☐	☒	☐	☐
6	Clearly labeled site plans of the preferred solution including, but not limited to:				
	a) Structures and boundaries	☒	☐	☐	☐
	b) Site access and circulation	☒	☐	☐	☐
	c) Parking and paving	☒	☐	☐	☐
	d) Zoning setbacks and limitations	☐	☐	☒	☐
	e) Easements and environmental buffers	☐	☐	☒	☐
	f) Emergency vehicle access	☐	☐	☒	☐
	g) Safety and security features	☐	☐	☒	☐
	h) Utilities	☐	☐	☒	☐
	i) Athletic fields and outdoor educational spaces (existing and proposed)	☒	☐	☐	☐
	j) Site orientation	☒	☐	☐	☐
7	An overview of the Total Project Budget and local funding including the following:				
	a) Estimated total construction cost	☐	☒	☐	☐
	b) Estimated total project cost	☐	☒	☐	☐
	c) Estimated funding capacity	☐	☒	☐	☐
	d) List of other municipal projects currently planned or in progress	☐	☒	☐	☐
	e) District's not-to-exceed Total Project Budget	☐	☒	☐	☐
	f) Brief description of the local process for authorization and funding of the proposed project	☐	☒	☐	☐
	g) Estimated impact to local property tax, if applicable	☐	☒	☐	☐
	h) Completed MSBA Budget Statement	☒	☐	☐	☐
8	Updated Project Schedule including the following projected dates:				
	a) Massachusetts Historical Commission Project Notification Form	☐	☐	☒	☐
	b) MSBA Board of Directors meeting for approval to proceed into Schematic Design	☒	☐	☐	☐

Provide the following Items		Complete; *No response required*	Provided; *District's response required*	Not Provided; *District's response required*	Receipt of District's Response; *To be filled out by MSBA Staff*
c)	MSBA Board of Directors meeting for approval of project scope and budget agreement and project funding agreement	☒	☐	☐	☐
d)	Town/City vote for project scope and budget agreement	☒	☐	☐	☐
e)	Design Development submittal date	☒	☐	☐	☐
f)	MSBA Design Development Submittal Review (include required 21-day duration)	☐	☒	☐	☐
g)	60% Construction Documents submittal date	☒	☐	☐	☐
h)	MSBA 60% Construction Documents Submittal Review (include required 21-day duration)	☐	☒	☐	☐
i)	90% Construction Documents submittal date	☒	☐	☐	☐
j)	MSBA 90% Construction Documents Submittal Review (include required 21-day duration)	☐	☒	☐	☐
k)	Anticipated bid date/GMP execution date	☒	☐	☐	☐
l)	Construction start	☒	☐	☐	☐
m)	Move-in date	☒	☐	☐	☐
n)	Substantial completion	☒	☐	☐	☐

MSBA Review Comments:

1b) In response to these review comments, please provide an updated educational program that includes the design response for each category identified in MSBA's Educational Program Requirements.

2a) Please refer to "Attachment B" for detailed review comments.

3) The MSBA notes that the submitted LEED-S V4.0 scorecard, showing 49 total points, does not meet the minimum current standards of a minimum of 50 points / LEED Silver (although the scorecard complies with the minimum IAQ points as described in the MSBA Green Schools Program policy). The MSBA also notes that the Town of Southborough is a designated "Stretch Code" community, and achieving that goal is a minimum requirement of the MSBA and the Town of Southborough. After reviewing the MSBA Green Schools Program policy, if the District intends to achieve 4% additional reimbursement points as indicated in the narrative, the following must be provided in the Schematic Design submittal:

1. *A LEED scorecard that indicates a minimum of 5 points in the appropriate IAQ categories (the submitted LEED scorecard currently complies with that goal).*
2. *Confirmation that the District intends to meet the Opt-in energy code and a description of how, including a detailed description of the compliance pathway the project will meet.*
3. *Architectural, Mechanical, and Electrical systems narratives, the sustainability narrative and the green certification that align with item #2 above. Include an updated LEED scorecard and Total Project Budget spreadsheet as necessary.*

4. *Confirmation that the systems described in item #3 above are included in the project budget and the Total Project Budget spreadsheet.*

Response: See updated LEED checklist has been updated to meet 50 points, in Appendix 3, attached. We will continue to assess credits throughout the process and will provide an update in Schematic Design, including an updated scorecard, the Opt-in compliance pathway selected by the District, narratives and certifications, and confirmation that these systems are included within the Project Budget.

4) Not provided. Refer to the current version of Module 3 – Feasibility Study (page 16-17) regarding the required narrative descriptions and diagrams showing sustainable design "best practices". Provide this information in response to these review comments.

Response: Section 3.3.4 pages related to Sustainability have been updated to include additional detail. Please see Appendix 3, attached.

5) The conceptual floor plans must be further developed in order to clearly demonstrate the proposed circulation and should include at minimum the following items in response to these review comments: door openings/door swings; exterior door locations; and room names and abbreviation legend for clarity.

In response to these review comments, provide interior circulation diagrams that illustrate how students will: transition into the school from the drop off areas; transition from the classrooms to the cafeteria; and exit the school at time of dismissal.

Also, provide the same information for an individual that is physically challenged as the intent is to understand how students will be traveling through the building daily.

Response: See attached Student Circulation and Arrival & Dismissal diagrams, Appendix 4.

Additionally, if the proposed building is intended to be used by the community, provide a narrative that describes how the proposed building will be used by the community, how the proposed building will be secured and monitored, and how the community will enter and use the proposed building.

Response: Community use will occur in the gym, cafeteria and large music room. These spaces are located on the ground floor in the central wing of the building. Security doors or overhead grilles will be located at the ends of classroom wings to secure these spaces during after-hours events.

Furthermore, in response to these review comments, provide more detailed information related to the process for considering and selecting building components, i.e. exterior building materials, roofing, windows, etc.

Response: The Design Team has been meeting regularly with the school's academic leadership to further develop the plans for the building. As part of these discussions, the Design Team will begin to review building massing and exterior materials options. This effort will be expanded to include Building Committee members at their regular meetings. As the exterior of the building further develops, the Building Committee will engage members of the community with the discussion. .

6f) In response to these review comments, please confirm that local emergency representatives will continue to be consulted in the planning process and associated requirements will be incorporated in the proposed project as it further develops.

Response: Confirmed.

6i) In response to these review comments, please include information that describes the process including those involved in making decisions associated with incorporating site improvement components such as landscape features, trees, plantings, irrigation, rain gardens, etc. The MSBA encourages the District to include facilities and maintenance personnel responsible for the future care and maintenance of the proposed site components in an effort to fully understand the time, care, and resources required to maintain the intended site features. Please acknowledge.

Response: The Design Team has been meeting with the District on a biweekly basis and the Neary Building Committee on a monthly basis, which include representatives from the District and Facilities personnel. Presentations related to exterior building components such as materials, landscaping and site circulation will be agenda items at several meetings during Schematic Design.

6d-h) In response to these review comments, please provide site plans that address the following items:

- *Zoning setbacks and limitations;*
- *Easements and environmental buffers, if any;*
- *Emergency vehicle access;*
- *Safety and Security features; and,*
- *Utilities.*

Response:

- *Zoning setbacks and limitations; The proposed location meets City of Southborough Zoning Ordinance requirements. Zoning summary table is included in Appendix 5 for reference.*
- *Easements and environmental buffers, if any; There are wetlands on the Northern and Eastern boundaries of the site. The resulting riverfront setbacks are shown on the attached site diagram. It is our intent to limit the scope of work to avoid construction within the 200' setback. There is also a 20' wide AT&T easement along the northeastern boundary of the site, adjacent to the landfill.*
- *Emergency vehicle access; Emergency vehicles access is maintained around the perimeter of the building. See updated site circulation diagram, Appendix 5.*
- *Safety and Security features; and, As part of ongoing Security discussions, site elements that act as security elements will be included. Initial considerations are shown on the site circulation diagram and will continue to be studied.*
- *Utilities. The existing utilities enter the site from Parkerville Road, under the entry drive. See updated site diagram, Appendix 5.*

7a-g) This information is provided within the Capital Budget Statement provided with this submittal, however, this includes a watermark that states "Update w/ Signed Copy". In response to these review comments, please provide the signed Capital Budget Statement. Please note variations in the signed version, if any, from that originally submitted.

Response: Please see attached Capital Budget Statement, Appendix 6. The only update is to the date of August 20, 2024. There is no signature required.

8a) The District's response to MSBA's PDP review comments indicates that the Design team submitted a Project Notification Form ("PNF") to the Massachusetts Historical Commission

("MHC") on July 12, 2024. In response to these review comments, please provide MHC's response to the PNF. 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.

For reference, please note for Design Development ("DD") and 60% and 90% Construction Document ("CD") submissions, the schedule must include 21 calendar days for the MSBA to review each submittal. Additionally, please include 14 calendar days for the project team to respond to MSBA's review comments and incorporate those responses into the project documents prior to the next submission or finalizing project documents to make available to bidders. Also, please note the minimum duration between each MSBA design submission (DD, 60% CD, and 90% CD) is 35 calendar days. Please acknowledge.

Response: Acknowledged

No further review comments for this section.

3.3.5 LOCAL ACTIONS AND APPROVALS

	Provide the following Items	Complete; *No response required*	Provided; *District's response required*	Not Provided; *District's response required*	Receipt of District's Response; *To be filled out by MSBA Staff*
1	Certified copies of the School Building Committee meeting notes showing specific submittal approval vote language and voting results, and a list of associated School Building Committee meeting dates, agenda, attendees and description of the presentation materials.	☐	☒	☐	☐
2	Signed Local Actions and Approvals Certification(s):				
	a) Submittal approval certificate	☒	☐	☐	☐
	b) Grade reconfiguration and/or redistricting approval certificate (if applicable)	☐	☐	☒	☐
3	Provide the following to document approval and public notification of school configuration changes associated with the proposed project:				
	a) A description of the local process required to authorize a change to the existing grade configuration or redistricting in the district	☐	☐	☒	☐
	b) A list of associated public meeting dates, agenda, attendees and description of the presentation materials	☐	☐	☒	☐
	c) Certified copies of the governing body (e.g. School Building Committee) meeting notes showing specific grade reconfiguration and/or	☐	☐	☒	☐

	redistricting, vote language, and voting results if required locally				
	d) A certification from the Superintendent stating the District's intent to implement a grade configuration or consolidate schools, as applicable. The certification must be signed by the Chief Executive Officer, Superintendent of Schools, and Chair of the School Committee.	☐	☐	☒	☐

MSBA Review Comments:

1) Please provide an originally, certified version of the August 26, 2024, School Building Committee ("SBC") meeting minutes at which it was voted to submit the PSR submittal to the MSBA in response to these review comments.

Response: Please see attached August 26, 2024 School Building Committee Meeting Minutes, labeled as Appendix 7. The original copy of the certification was included in the hard copy of the PSR submission (see Volume 2, Section J, page 337). A copy of the certification is included for reference.

2b) Please provide an originally signed Grade Reconfiguration and/or Redistricting Approval Certificate in response to these review comments.

Response: Please reference Appendix 8 with the executed Grade Reconfiguration Certificate.

3a-d) Please provide the following to document approval and public notification of school configuration changes associated with the proposed project:

- *A description of the local process required to authorize a change to the existing grade configuration or redistricting in the district.*
- *A list of associated public meeting dates, agenda, attendees and description of the presentation materials.*
- *Certified copies of the governing body (e.g. School Building Committee) meeting notes showing specific grade reconfiguration and/or redistricting, vote language, and voting results if required locally.*
- *A certification from the Superintendent stating the District's intent to implement a grade configuration or consolidate schools, as applicable. The certification must be signed by the Chief Executive Officer, Superintendent of Schools, and Chair of the School Committee.*

No further review comments for this section.
Response: Please reference Appendix 8 with the executed Grade Reconfiguration Certificate.

Additional Comments:

- *As previously communicated to the District and project team, prior to the submission of the District's Schematic Design submittal, the MSBA requests that the District be available to present updates associated with the Preferred Schematic to the MSBA's Facilities Assessment Subcommittee. This update is to ensure a mutual understanding and agreement of the proposed project scope and to ensure that this scope will be reflected in the District's Schematic Design submittal.*

- *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 including a MEPA guideline checklist. 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.

- *The MSBA issues project advisories from time to time, as informational updates for Districts, Owner's Project Managers ("OPM"), and Designers in an effort to facilitate the efficient and effective administration of proposed projects currently pending review by the MSBA. The advisories can be found on the MSBA's website. In response to these review comments, please confirm that the District's consultants have reviewed all project advisories and they have been incorporated into the proposed project as applicable.*

  Response: Acknowledged

End

ATTACHMENT B
MODULE 3 – PREFERRED SCHEMATIC SPACE SUMMARY REVIEW

District: Town of Southborough
School: Margaret A. Neary Elementary School
Owner's Project Manager: Skanska USA Building Inc.
Designer Firm: Arrowstreet Inc.
Submittal Due Date: August 29, 2024
Submittal Received Date: August 29, 2024
Review Date: August 29, 2024 – October 24, 2024
Reviewed by: L. Winston, C. Forde, C. Alles

The Massachusetts School Building Authority (the "MSBA") has completed its review of the proposed space summary of the preferred alternative as produced by Arrowstreet Inc. and its consultants. This review involved evaluating the extent to which the Margaret A. Neary Elementary School's proposed space summary conforms to the MSBA guidelines and regulations.

The MSBA considers it critical that the Districts and their Designers aggressively pursue design strategies to achieve compliance with the MSBA guidelines for all proposed projects in the new program and strive to meet the gross square footage allowed per student and the core classroom space standards, as outlined in the guidelines. The MSBA also considers its stance on core classroom space critical to its mission of supporting the construction of successful school projects throughout the Commonwealth that meet current and future educational demands. The MSBA does not want to see this critical component of education suffer at the expense of larger or grander spaces that are not directly involved in the education of students.

The following review is based on the submitted new construction project option with an agreed upon design enrollment of 610 students in grades 2-5.

The MSBA review comments are as follows:

- **Core Academic** – The District is proposing a total of 32,400 net square feet ("nsf") which exceeds the MSBA guidelines by 6,750 nsf. The proposed area in this category has decreased by 5,050 nsf since the Preliminary Design Program ("PDP") submittal. The District is proposing the following spaces:
    - **General Classrooms** – The District is proposing (28) 900 nsf General Classrooms totaling 25,200 nsf, which exceeds the MSBA guidelines by (1) classroom and below the MSBA guidelines by 450 nsf. Based on the grade and team configuration for each grade as described in the educational program, the MSBA accepts this variation to the guidelines. Additionally, please review and respond to the following items in response to these review comments:

        - As the project further develops, please note and acknowledge that 900 nsf is the minimum size for all newly constructed General Classrooms in an elementary school. Response: Acknowledged.
        - Please note and acknowledge that the MSBA's STE Guidelines require all elementary school general classrooms have a minimum of (2) sinks to facilitate STE exploration and project-based learning within the classrooms. One sink must be accessible, and one must be deep and wide to accommodate buckets or containers. Response: Acknowledged.
    - **Learning Commons (Breakout)** – The District is proposing (4) 900 nsf Learning Commons totaling 3,600 nsf which exceeds the MSBA guidelines. The information provided indicates that the District is proposing smaller classrooms to take advantage of the proposed Breakout Spaces and Learning Centers. In response to these review comments, please provide floor plans that indicate the location of the proposed Breakout Spaces and Learning Centers within the hallways.
    - **English Language Development Office** – The District is proposing (2) 200 nsf English Language Development Offices totaling 400 nsf which exceeds the MSBA guidelines. Based on the information provided the MSBA accepts this variation to the guidelines. No further action required.
    - **Instructional Suite (Reading, Math)** – The District is proposing (4) 200 nsf Instructional Suites totaling 800 nsf, which exceeds the MSBA guidelines. Based on the information, the MSBA does not object to the proposed Teacher Collaboration Rooms. No further action required.
    - **World Language** – The District is proposing (2) 900 nsf World Language Classrooms totaling 1,800 nsf, which exceeds the MSBA guidelines. Based on the information provided, the MSBA accepts this variation to the guidelines. No further action required.
    - **Teacher Collaboration Room** – The District is proposing (2) 300 nsf Teacher Collaboration rooms totaling 600 nsf, which exceeds the MSBA guidelines. Based on the information, the MSBA does not object to the proposed Teacher Collaboration Rooms. No further action required.
- **Special Education** – The District is proposing a total of 6,640 nsf which is 910 nsf below the MSBA guidelines. The proposed area in this category has decreased by 4,200 nsf since the PDP submittal. Please note that the Special Education program is subject to approval by the Department of Elementary and Secondary Education ("DESE"). The District should provide this information for this submittal 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.
- **Art & Music** – The District is proposing a total of 4,750 nsf which is 250 nsf below the MSBA guidelines. The proposed area in this category has decreased by 3,750 nsf since the PDP submittal. In response to these review comments, please

confirm the proposed square footage is sufficient to deliver the District's educational program.

Response: The District confirms that the NSF for Art and Music is adequate to deliver the Educational Program.

- **Health & Physical Education** – The District is proposing a total of 6,300 nsf which meets the MSBA guidelines. The proposed area in this category has decreased by 150 nsf since the PDP submittal. No further action required.
- **Media Center** – The District is proposing a total of 3,415 nsf which meets the MSBA guidelines. The proposed area in this category has not changed since the PDP submittal. No further action required.
- **Dining & Food Service** – The District is proposing a total of 8,141 nsf which meets the MSBA guidelines. The proposed area in this category has not changed since the PDP submittal. No further action required.
- **Medical** – The District is proposing a total of 610 nsf which meets the MSBA guidelines. The proposed area in this category has increased by 60 nsf since the PDP submittal. No further action required.
- **Administration & Guidance** – The District is proposing a total of 1,910 nsf which is 685 nsf below the MSBA guidelines. The proposed area in this category has decreased by 685 nsf since the PDP submittal. In response to these review comments, please verify the proposed square footage is sufficient for the District to deliver its educational program.
- **Custodial & Maintenance** – The District is proposing a total of 2,210 nsf which meets the MSBA guidelines. The proposed area in this category has not changed since the PDP submittal. No further action required.
- **Other** – The District is not proposing any square footage in this category. The proposed area in the category has decreased by 500 nsf since the PDP submittal. No further action required.
- **Total Building Net Floor Area** – The District is proposing to provide a total of 66,376 nsf which exceeds the MSBA guidelines by 4,905 nsf. The proposed area has decreased by 14,275 nsf since the PDP submittal. Please address the comments provided in the categories above as part of the District's response to these comments in order for the MSBA to estimate an allowable net square footage.

  Response: Please note that the Space Summary submitted in the PSR (page 146) states that it exceeds MSBA guidelines by 5,130 sf. This overage is due to Core Academic spaces that are not included in the MSBA guidelines as typical Core Academic spaces. These include Learning COmmons, English Language Development Offices, Reading and Math Instructional Suites, World Language Classrooms and Teacher Collaboration Rooms.

- **Total Building Gross Floor Area** – The District is proposing to provide a total of 99,564 gross square feet ("gsf") which exceeds the MSBA guidelines by 7,358 gsf, with a grossing factor of 1.50. The proposed area has decreased by 21,503 gsf since the PDP submittal. Please address the comments provided in the categories above as part of the District's response to these comments in order for the MSBA to estimate an allowable gross square footage.

Response: Please note that the Space Summary submitted in the PSR (page 146) states that it exceeds MSBA guidelines by 11,114 sf. See responses above for additional detail.

Please note that upon moving forward into subsequent phases of the proposed project, the Designer will be required to provide, with each submission, a signed, updated space summary that reflects the design and demonstrates that the design remains, except as agreed to in writing by the MSBA, in accordance with the guidelines, rules, regulations and policies of the MSBA. Should the updated space summary demonstrate changes to the previous space summary include a narrative description of the change(s) and the reason for the proposed changes to the project.

LGCI
Lahlaf Geotechnical Consulting, Inc.

September 14, 2024

Ms. Katy Lillich, AIA, LEED AP, MCPPO
Arrowstreet
10 Post Office Square
Suite 700N
Boston, MA 02109
Phone: (617) 623-5555
Direct: (617) 666-7019
E-mail: Lillich@Arrowstreet.com

Re: **Preliminary Geotechnical Report**
Proposed Neary Elementary School
Southborough, Massachusetts
LGCI Project No. 2404

Dear Ms. Lillich:

Lahlaf Geotechnical Consulting, Inc. (LGCI) has completed an additional preliminary geotechnical study for the proposed Neary Elementary School in Southborough, Massachusetts. We are submitting our preliminary geotechnical report electronically.

The soil samples from our explorations are currently stored at LGCI for further analysis, if requested. Unless notified otherwise, we will dispose of the soil samples after three (3) months.

Thank you for choosing LGCI as your geotechnical engineer.

Very truly yours,

Lahlaf Geotechnical Consulting, Inc.

Abdelmadjid M. Lahlaf, Ph.D., P.E.
Principal Engineer

Lahlaf Geotechnical Consulting, Inc.

PRELIMINARY GEOTECHNICAL REPORT
PROPOSED NEARY ELEMENTARY SCHOOL
SOUTHBOROUGH, MASSACHUSETTS

LGCI Project No. 2404
September 14, 2024

Prepared for:

Arrowstreet
10 Post Office Square
Suite 700N
Boston, MA 02109
Phone: (617) 623-5555

PRELIMINARY GEOTECHNICAL REPORT
PROPOSED NEARY ELEMENTARY SCHOOL
SOUTHBOROUGH, MASSACHUSETTS

LGCI Project No. 2404
September 14, 2024

Prepared for:

Arrowstreet
10 Post Office Square
Suite 700N
Boston, MA 02109
Phone: (617) 623-5555

Prepared by:

LAHLAF GEOTECHNICAL CONSULTING, INC.
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ABDELMADJID
M. LAHLAF
CIVIL
No. 39814

Abdelmadjid M. Lahlaf, Ph.D., P.E.
Principal Engineer

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Preliminary Geotechnical Report
Proposed Neary Elementary School
Southborough, Massachusetts
LGCI Project No. 2404

1. PROJECT INFORMATION

1.1 Project Authorization

This geotechnical report presents the results of the preliminary subsurface explorations, and a geotechnical evaluation performed by Lahlaf Geotechnical Consulting, Inc. (LGCI) for the proposed Neary Elementary School in Southborough, Massachusetts. We performed our preliminary services in two (2) phases:

Our initial preliminary phase services were performed in general accordance with our proposal No. 23154-Rev. 2 dated December 27, 2023, revised on February 9, 2024. Ms. Katy Lillich of Arrowstreet authorized our services by signing our proposal on February 16, 2024.

Our additional preliminary phase services were performed in general accordance with our proposal No. 24078 dated July 22, 2024. Ms. Katy Lillich of Arrowstreet authorized our additional preliminary phase services by signing our proposal on July 30, 2024.

1.2 Purpose and Scope of Services

The purpose of our preliminary geotechnical services was to perform preliminary subsurface explorations at the site for the proposed Neary Elementary School, and to provide foundation design and construction recommendations. LGCI performed the following services:

- Coordinated our exploration locations with Arrowstreet.

- Marked the exploration locations at the site and notified Dig Safe Systems Inc. (Dig Safe) and the Town of Southborough for utility clearance.

- Engaged a drilling subcontractor for two (2) days to advance eight (8) soil borings at the site, including four (4) soil borings as part of our initial preliminary phase services, and four (4) soil borings as part of our additional preliminary phase services.

- Provided an LGCI geotechnical field representative at the site to coordinate and observe the borings, describe the soil samples, and prepare field logs.

- Submitted six (6) soil samples collected from the borings for laboratory testing, including four (4) soil samples as part of our initial preliminary phase services, and two (2) soil samples as part of our additional preliminary phase services.

- Prepared this preliminary geotechnical report containing the results of our preliminary subsurface explorations and our preliminary recommendations for foundation design and construction.

Following our previous preliminary explorations, LGCI prepared a preliminary geotechnical report dated May 1, 2024. The present report includes the results of our previous report and supersedes it.

Our scope does not include preparing specifications, reviewing contract documents, attending meetings, or providing construction services. LGCI would be pleased to perform these services when needed. Recommendations for stormwater management, erosion control, pavement design, site specific seismic and liquefaction analyses, pile analysis and design, slope stability analyses, FEMA 100-year flood elevation, historic uses of site, contaminated soil and groundwater treatment and disposal requirements and techniques, and cost or quantity estimates are not included in our scope of work.

LGCI's scope of services does not include an environmental assessment for the presence or absence of wetlands or analytical testing for hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site, or mold in the soil or in any structure at the site. Any statements regarding odors, colors, or unusual or suspicious items or conditions are strictly for the information of the client.

1.3 Site Description

Our understanding of the site is based on our field observations, our discussions with Arrowstreet, and on the following drawings:

- Drawings TP-1 to TP-5 titled: "Topographic Plan, Neary Elementary School, Southborough, MA (Worcester County)," (Existing Conditions Plan) prepared by Beals and Thomas, dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on September 3, 2024.

The site is located at 53 Parkerville Road in Southborough, Massachusetts as shown in Figure 1. The site is bordered by wooded land and private properties on the southern side, by Clifford Street and private properties on the western side, by wooded land and the existing Trottier Middle School on the northern side, and by Parkerville Road and private properties on its eastern side. The site is currently occupied by the existing school building, paved parking lots, athletic fields, including a baseball field, a soccer field, a practice field, tennis courts, and grass and landscaped areas. We understand that an existing leach field is present at the site. Based on the information provided to us by Arrowstreet, we understand that there may be a capped landfill within a portion of the site. We understand that the northern portion of the site is located within a flood zone.

Based on the Existing Conditions Plan, we understand that the existing grades at the site range between El. 262 feet near the northern portion of the site and El. 290 feet near the southern portion of the site. The existing grades vary across the site as describes below:

- Flood zone located to the north of the existing school – The elevations range between El. 262 feet near the northeastern corner of the site and El. 280 feet near the northwestern corner of the site.

- The existing tennis court – The elevations range between El. 271 feet and El. 272 feet.
- The existing baseball field north of the existing school – The elevations range between El. 270 feet and El. 273 feet.
- The existing soccer field east of the existing school – The elevations range between El. 268 feet and El. 269 feet.
- The existing parking lot east of the existing school – The elevations range between El. 267 feet and El. 272 feet.
- The existing parking lot located to the west of the existing school – The elevations range between El. 270 feet and El. 273 feet. The grades around the existing school range between El. 270 feet and El. 274 feet.

1.4 Project Description

Our understanding of the proposed construction is based on our conversations with Arrowstreet and on the following document:

- Drawing titled: "Building Footprint, Neary Elementary School, 53 Parkerville Rd., Southborough, MA 01772," (Building Layout) prepared by Arrowstreet, dated April 23, 2024, and provided to LGCI by Arrowstreet via e-mail on September 3, 2024.

We understand that the City of Southborough has engaged Arrowstreet to design the new Neary Elementary School. Based on the Building Layout, we understand that the proposed construction will consist of an irregular-shaped building located mostly within the footprint of the existing school building. We understand that the project is in the preliminary phases and the footprint, number of stories, finished floor elevation (FFE) of the proposed building, and the proposed exterior grades have not been established at the time of this preliminary geotechnical report. We understand that the existing building will be demolished to allow for the construction of the proposed building.

1.5 Elevation Datum

We understand that the elevations provided in the Existing Conditions Plan are referenced with respect to the North American Vertical Datum of 1988 (NAVD88). Elevations are in feet.

2. SITE AND SUBSURFACE CONDITIONS

2.1 Surficial Geology

LGCI reviewed a surficial geologic map titled: “Surficial Materials Map of the Marlborough Quadrangle, Massachusetts,” prepared by Stone, J.R., and Stone, B.D., Scientific Investigation Map 3402, Quadrangle 92 – Marlborough, 2018.

The surficial geologic map of the site indicates that the natural soils in the general vicinity of the site consist of coarse deposits and swamp deposits.

The coarse deposits consist of Sand Deposits, Sand and Gravel Deposits, and Gravel Deposits as described below.

Sand Deposits – The sand deposits are comprised mostly of fine to coarse sand. Coarser layers may contain up to 25 percent gravel. Finer layers may contain very fine sand, silt, and clay.

Sand and Gravel Deposits – The sand and gravel deposits occur as a mixture of gravel and sand within individual layers and as alternating layers of sand and gravel. The sand and gravel layers range between 25 to 50 percent gravel and 50 to 75 percent sand.

Gravel Deposits – The gravel deposits are comprised of at least 50 percent gravel, cobbles, and boulders. Sand occurs within gravel beds and as separate layers within the gravel.

The swamp deposits are described as organic muck and peat that contain minor amounts of sand, silt, and clay, are stratified and are poorly sorted, and occur in swamps and freshwater marshes, in kettle depressions, or in poorly drained areas.

The Surficial Geologic Map is shown in Figure 2.

2.2 LGCI’s Explorations

2.2.1 General

LGCI coordinated our exploration locations with Arrowstreet and marked the exploration locations in the field. LGCI notified Dig Safe and the Town of Southborough for utility clearance prior to starting our explorations at the site.

Unless notified otherwise, we will dispose of the soil samples obtained during our explorations after three (3) months.

2.2.2 LGCI’s Soil Borings

As part of our initial preliminary explorations, LGCI engaged Soil X Corp. (Soil X) of Leominster, Massachusetts to advance four (4) soil borings (B-1 to B-4) at the site on April

15, 2024. The borings were advanced with a Diedrich D-70 Turbo ATV drill rig using 4-¼-inch inner-diameter hollow stem augers. The borings extended to depths ranging between 15.0 and 21.3 feet beneath the ground surface. Upon completion, the boreholes were backfilled with the drill cuttings.

As part of our additional preliminary explorations, LGCI engaged Soil X to advance an additional four (4) soil borings (B-101 to B-104) at the site on August 22, 2024. The borings were advanced with a Diedrich D-70 Turbo ATV drill rig using 4-¼-inch inner-diameter hollow stem augers. The borings extended to depths ranging between 19.3 and 20.8 feet beneath the ground surface. Upon completion, the boreholes were backfilled with the drill cuttings, sand, gravel, and concrete (as noted in the boring logs). The ground surface was restored with cold patch asphalt in paved areas.

Soil X performed Standard Penetration Tests (SPT) and obtained split spoon samples with an automatic hammer at typical depth intervals of 2 feet or 5 feet as noted on the boring logs in general accordance with ASTM D-1586.

An LGCI geotechnical field representative observed and logged the borings in the field.

2.2.3 Exploration Logs and Locations

The boring locations are shown in Figure 3. Appendix A contains LGCI's boring logs and Table 1 includes a summary of LGCI's borings.

2.3 Subsurface Conditions

The subsurface description in this report is based on a limited number of borings and is intended to highlight the major soil strata encountered during our explorations. The subsurface conditions are known only at the actual boring locations. Variations may occur and should be expected between boring locations. The boring logs represent conditions that we observed at the time of our explorations and were edited, as appropriate, based on the results of the laboratory test data and inspection of the soil samples in the laboratory. The strata boundaries shown in our boring logs are based on our interpretations and the actual transitions may be gradual. Graphic soil symbols are for illustration only.

The soil strata encountered in LGCI's borings were as follows, starting at the ground surface.

Topsoil – A layer of surficial organic topsoil was encountered at the ground surface in all borings, except in borings B-101 and B-102. The thickness of the topsoil ranged between 0.8 and 2.0 feet.

Asphalt – A layer of surficial asphalt was encountered at the ground surface in borings B-101 and B-102. The thickness of the asphalt ranged between 0.5 and 0.8 feet.

Subsoil – A layer of subsoil was encountered beneath the topsoil in boring B-4. The subsoil extended to a depth of 2 feet beneath the ground surface. The sample in this layer was described as poorly graded sand with silt. The fines content in the subsoil ranged between 10 and 15 percent, and the gravel content ranged between 10 and 15 percent.

The SPT N-value in this layer was 16 blows per foot (bpf), indicating medium dense material. Please note that the high SPT N-values recorded in the subsoil may be due to obstructions such as cobbles and boulders present in the subsoil and may not represent the true density of the subsoil.

Fill – A layer of fill was encountered beneath the topsoil and asphalt in all borings except in borings B-3 and B-4. The fill extended to depths ranging between 3.0 and 10.5 feet beneath the ground surface. The samples in this layer were mostly described as silty sand, poorly graded sand, and well graded sand. One (1) sample was described as buried organic soil, one (1) sample was described as poorly graded gravel, and one (1) sample was described as well graded gravel. The fines content in the fill ranged between 0 and 40 percent, and the gravel content ranged between 0 and 30 percent. When described as gravel, the sand content in the fill ranged between 30 and 35 percent. The fill contained traces of organic soil, wood, roots, and asphalt. One (1) sample in the fill contained traces of weathered rock.

The SPT N-values in this layer ranged between 3 blows per foot (bpf) and refusal, with most values lower than 30 bpf, indicating mostly loose to medium dense material. Please note that the high SPT N-values recorded in the fill may be due to obstructions such as cobbles and boulders present in the fill and may not represent the true density of the fill.

Swamp Deposit – A layer of swamp deposit was encountered beneath the fill in boring B-101. The swamp deposit extended to a depth of 11 feet beneath the ground surface. The samples in this layer were described as a silty sand. The fines content in the subsoil ranged between 30 and 55 percent, and the gravel content was approximately 0 percent. This layer contained traces of wood and organic soil.

The SPT N-values in this layer were 13 and 18 bpf, indicating medium dense material. Please note that the high SPT N-values recorded in the swamp deposit may be due to obstructions such as cobbles and boulders present in the swamp deposit and may not represent the true density of the swamp deposit.

Sand and Gravel – A layer of sand and gravel was encountered beneath the layer of topsoil, fill, subsoil, and swamp deposits in all borings. The sand and gravel extended to the termination depths in all the borings, except boring B-104, where the sand and gravel layer extended to a depth of 19 feet beneath the ground surface. The samples in this layer were described mostly as silty sand. Five (5) samples were described as poorly graded sand, five (5) samples were described as well graded sand, and one (1) sample was described as silty gravel. The fines content in this layer ranged between 5 and 40 percent, and the gravel content ranged between 0 and 40 percent. When described as a gravel, the sand content ranged between 25 and 30 percent. The sand and gravel contained traces of weathered rock.

The SPT N-values in this layer ranged between 9 bpf and refusal, with most values higher than 30 bpf, indicating mostly dense to very dense material. Please note that the high SPT N-values in the sand and gravel may be due to obstructions such as cobbles and boulders in the sand and gravel and may not represent the true density of the sand and gravel.

Weathered Rock – A layer of weathered was encountered within and beneath the sand and gravel layer in borings B-102 and B-104, respectively. The weathered rock was encountered in boring B-102 between depths of 9 and 16 feet beneath the ground surface, and it extended to the termination depth of boring B-104. The samples in this layer were described as silty sand. The fines content in this layer ranged between 20 and 25 percent, and the gravel content ranged between 20 and 35 percent.

The SPT N-values in this layer ranged between 9 bpf and refusal with most values greater than 15 bpf, indicating medium dense to very dense material. Please note that the high SPT N-values in the weathered rock may be due to obstructions such as cobbles and boulders in the weathered rock and may not represent the true density of the weathered rock.

2.4 Groundwater

Groundwater was encountered in all borings in the initial preliminary explorations on April 15, 2024, at depths ranging between 2.0 feet and 10.0 feet beneath the ground surface; and groundwater was encountered in all borings in the additional preliminary explorations on August 22, 2024, at depths ranging between 0.0 feet and 16.0 feet beneath the ground surface as shown in Table 1 and in the boring logs.

The groundwater information reported herein is based on observations made during or shortly after the completion of drilling. In addition, groundwater was Therefore, the reported groundwater levels may not represent the actual groundwater conditions, as additional time may be required for the groundwater levels to stabilize. The groundwater information presented in this report only represents the conditions encountered at the time and location of the explorations. Seasonal fluctuation should be anticipated.

2.5 Laboratory Test Data

LGCI submitted six (6) soil samples collected from the borings for grain-size analysis. The results of the grain-size analyses are provided in the test data sheets included in Appendix B and are summarized in the table below:

Grain-Size Analysis Test Results

Boring No.	Sample No.	Stratum	Sample Depth (ft.)	Percent Gravel	Percent Sand	Percent Fines
B-1	S2	Fill	2 - 4	19.8	43.2	37.0
B-2	S3	Fill	4 – 6	20.9	48.8	30.3
B-3	S2 Bot. 13”	Native Soil	2 – 4	37.6	54.0	8.4
B-4	S2	Native Soil	2 – 4	34.5	50.3	15.2
B-102	S2	Native Soil	3 – 5	37.9	53.7	8.4
B-104	S2	Fill	2 – 4	15.9	78	6.1

3. EVALUATION AND RECOMMENDATIONS

3.1 General

Based on our understanding of the proposed construction, our observation of our borings, and the results of our laboratory testing, there are a few issues that we would like to highlight for consideration and discussion.

3.1.1 Surficial asphalt, Topsoil, Subsoil, Existing Fill, and Swamp Deposits

- Asphalt, surficial topsoil, subsoil, existing fill, and swamp deposits were encountered in the borings. These materials are not suitable to support foundations.

- The topsoil should be removed from within the entire construction area, including the proposed building footprint and the paved areas.

- The subsoil and swamp deposits should be entirely removed from within the proposed building footprint. Furthermore, the existing fill was observed to be variable in composition and density. In addition, the existing fill contained traces of organic soil, wood, roots, and asphalt. Existing fill that was not placed with strict moisture, density, and gradation control presents risk of unpredictable settlement that may result in poor performance of floor slabs and foundations. Due to these risks, the existing fill should be entirely removed from within the proposed building footprint and replaced with Structural Fill. We anticipate that the removal will extend up to depths of about 11 feet. The removal may extend to greater depths at locations not explored by LGCI. Laterally, the removal should extend beyond the proposed building footprint a distance equal to the distance between the bottom of the proposed footings and the top of the natural sand and gravel, or 5 feet, whichever is greater.

- LGCI considered the alternative option of improving the existing fill and swamp deposits with aggregate piers (APs) or rigid inclusions (RIs). However, this option would not be viable where the existing fill is shallower than 6 feet. We recommend preparing the current documents assuming the “remove and replace” option. LGCI will further evaluate the ground improvement option by means of APs or RIs after additional explorations are performed at the site. The remainder of the report was prepared assuming the “remove and replace” option.

- The subgrade of footings should be prepared in accordance with the recommendations in Section 4.1.

- Within paved areas, the existing fill and subsoil should be removed to the top of the natural sand and gravel or to a depth of 18 inches beneath the bottom of the proposed pavement, whichever occurs first. Where organic soil is exposed, the organic soil should be removed. The existing fill and subsoil deeper than 18 inches beneath the bottom of the proposed pavement can remain in place provided these materials are firm and unyielding following proofrolling as described in Section 4.1.

- If the swamp deposits are encountered at shallow depths, they should be improved following the recommendation above after removing the top 24 inches beneath the bottom of the proposed pavement.

3.1.2 Shallow Footings and Slabs-on-Grade

Based on the results of the borings, the subsurface conditions are suitable to support shallow spread and continuous footings bearing on Structural Fill placed directly on top of the sand and gravel layer after entirely removing the topsoil, subsoil, the existing fill, and the swamp deposits. The proposed slabs may be designed as slabs-on-grade. Our recommendation for net allowable bearing capacity in the sand and gravel is presented in Section 3.2.1. Our recommendations for slabs-on-grade are presented in Section 3.3. Our recommendations for lateral pressures for the proposed basement walls and other retaining walls, if any, are presented in Section 3.5. Section 4.1 provides recommendations for preparation of subgrades.

3.1.3 Additional Explorations

We recommend performing additional explorations at the site. We recommend performing soil borings and test pits. We also recommend installing at least two (2) groundwater observation wells at the site. LGCI will provide a proposal for the additional services after the proposed building layout, size, and locations are established.

3.2 Foundation Recommendations

3.2.1 Footing Design

- We recommend entirely removing the surficial topsoil, the subsoil, the existing fill, and swamp deposits from within the proposed building footprint as described in Section 3.1.1.

- We recommend supporting the proposed building on spread footings bearing on Structural Fill placed directly on the natural sand and gravel.

- We recommend designing the proposed footings using a net allowable bearing pressure of 5 kips per square foot (ksf). We recommend that the footings bear on a minimum of 12 inches of Structural Fill placed directly on top of the natural sand and gravel or on weathered rock. The Structural Fill should extend at least 1 foot laterally beyond the limits of the footings.

- Footing subgrades should be prepared in accordance with the recommendations in Section 4.1.

- Foundations should be designed in accordance with The Commonwealth of Massachusetts State Building Code 780 CMR, Ninth Edition (MSBC 9th Edition).

- Exterior footings and footings in unheated areas should be placed at a minimum depth of 4 feet below the final exterior grade to provide adequate frost protection. Interior footings in heated areas may be designed and constructed at a minimum depth of 2 feet below finished floor grades.

- Wall footings should be designed and constructed with continuous, longitudinal steel reinforcement for greater bending strength to span across small areas of loose or soft soils that may go undetected during construction.

- A representative of LGCI should be engaged to observe that the subgrade has been prepared in accordance with our recommendations.

3.2.2 Settlement Estimates

Based on our experience with similar soils and designs using a net allowable bearing pressure of 5 ksf, we anticipate that the total settlement will be approximately 1 inch, and that the differential settlement of the footings will be 3/4 inch or less over a distance of 25 feet. We believe that total and differential settlements of this magnitude are tolerable for a similar structure. However, the tolerance of the proposed structure to the predicted total and differential settlements should be assessed by the structural engineer.

3.3 Concrete Slab Considerations

3.3.1 Slabs-on-Grade

- Floor slabs should be constructed as a slabs-on-grade bearing on a minimum of 12 inches of Structural Fill placed directly on top of the sand and gravel. The subgrade of the slabs should be prepared as described in Section 4.1.

- To reduce the potential for dampness in the proposed floor slab, the project architect may consider placing a vapor barrier beneath the floor slab. The vapor barrier should be protected from puncture during the placement of the proposed slab reinforcement.

- For the design of the floor slab bearing on the materials described above, we recommend using a modulus of subgrade reaction, k_{s1}, of 100 tons per cubic foot (tcf). Please note that the values of k_{s1} are for a 1 x 1 square foot area. These values should be adjusted for larger areas using the following expression:

$$Modulus\ of\ Subgrade\ \mathrm{Re}\,action\,(k_s) = k_{s1} * \left(\frac{B+1}{2B}\right)^2$$

where:

k_s = Coefficient of vertical subgrade reaction for loaded area;
k_{s1} = Coefficient of vertical subgrade reaction for a 1 x 1 square foot area; and
B = Width of area loaded, in feet.

Please note that cracking of slabs-on-grade can occur as a result of heaving or compression of the underlying soil, but also as a result of concrete curing stresses. To reduce the potential for cracking, the precautions listed below should be closely followed during the construction of all slabs-on-grade:

- Construction joints should be provided between the floor slab and the walls and columns in accordance with the American Concrete Institute (ACI) requirements, or other applicable code.

- The backfill in interior utility trenches should be properly compacted.

- In order for the movement of exterior slabs not to be transmitted to foundations or superstructures, exterior slabs, such as approach slabs and sidewalks, should be isolated from the superstructure.

3.3.2 Under-slab Drains and Waterproofing

The finished floor elevation (FFE) of the proposed ground floor was not provided to us. LGCI will make a recommendation about the need for an under-slab drainage system after additional explorations are performed, and the groundwater observation wells monitored; and after the proposed FFE is established.

3.4 Seismic Design

Based on the SPT N-values from the borings, we estimate that the seismic criteria for the site are as follows:

- Site Class: D
- Spectral Response Acceleration at short period (Ss): 0.191g
- Spectral Response Acceleration at 1 sec. (S_1): 0.067g
- Site Coefficient Fa (Table 1613.5.3(1)): 1.6
- Site Coefficient Fv (Table 1613.5.3(2): 2.4
- Adjusted spectral response S_{MS}: 0.306g
- Adjusted spectral response S_{M1}: 0.161g

Based on the SPT data from the borings, the site soils are not susceptible to liquefaction.

3.5 Lateral Pressures for Wall Design

3.5.1 Lateral Earth Pressures

Lateral earth pressures for the design of below-grade walls, and site retaining walls, if any, are provided below.

Coefficient of Active Earth Pressure, K_A:	0.31
Coefficient of At-Rest Earth Pressure, K_o:	0.47
Coefficient of Passive Earth Pressure, K_p:	3.25
Total Unit Weight γ:	125 pcf

Note: The values in the table are based on a friction angle for the backfill of 32 degrees and neglecting friction between the backfill and the wall. The design active and passive coefficients are based on horizontal surfaces (non-sloping backfill) on both the active and passive sides, and on a vertical wall face.

- Exterior walls of below-ground spaces and other retaining walls braced at the top to restrain movement/rotation, should be designed using the “at-rest” pressure coefficient.

- We recommend placing free-draining material within the 3 feet immediately behind retaining walls.

- We recommend providing weep holes at the bottom of site retaining walls, including temporary SOE systems, to promote drainage where possible. Alternatively, a pipe should be placed at the base of the wall to collect the water. Groundwater collected by the wall drains should be discharged into a lower area if gravity flow is possible.

- Passive earth pressures should only be used at the toe of the wall where special measures or provisions are taken to prevent the disturbance or future removal of the soil on the passive side of the wall, or in areas where the wall design includes a key. In any case, the passive pressures should be neglected in the top 4 feet.

- Where a permanent vertical uniform load will be applied to the active side immediately adjacent to the wall, a horizontal surcharge load equal to half of the uniform vertical load should be applied over the height of the wall. At a minimum, a temporary lateral construction surcharge load of 100 pounds per square foot (psf) should be applied uniformly over the height of the wall.

- We recommend using an ultimate friction factor of 0.5 between the weathered rock and the bottom of the wall. Below-grade walls should be designed for minimum factors of safety of 1.5 for sliding and 2.0 for overturning.

3.5.2 Seismic Pressures

In accordance with the Massachusetts State Building Code, 9th Edition (MSBC 9th Edition), Section 1610, a lateral earthquake force equal to $0.100*(S_s)*(F_a)*\gamma*H^2$ should be included in the design of the walls (for horizontal backfill), where S_s is the maximum considered earthquake spectral response acceleration (defined in Section 3.4), F_a is the site coefficient (defined in Section 3.4), γ is the total unit weight of the soil backfill, and H is the height of the wall.

The earthquake force should be distributed as an inverted triangle over the height of the wall. In accordance with MSBC 9th Edition, Section 1610.2, a load factor of 1.43 should be applied to the earthquake force for wall strength design.

Temporary surcharges should not be included when designing for earthquake loads. Surcharge loads applied for extended periods of time should be included in the total static lateral soil pressure, and their earthquake lateral force should be computed and added to the force determined above.

3.5.3 Perimeter Drains

- We recommend that free-draining material be placed within 3 feet of the exterior of walls of below-ground spaces, if any. To reduce the potential for dampness in below-ground spaces, proposed below-ground walls should be damp-proofed.

- We recommend that drains be provided behind the exterior of walls of below-ground spaces. The drains should consist of 4-inch perforated PVC pipes installed with the slots facing down. Perimeter drains should be installed at the bottom of the wall in 18 inches of crushed stone wrapped in a geotextile for separation and filtration.

- To the extent possible, groundwater collected by the wall drains should be discharged in a lower area if gravity flow is possible. In any case, the groundwater collected by the wall drains should be discharged in accordance with municipal, state, and other applicable standards.

3.6 Parking Lots, Driveways, and Sidewalks

3.6.1 General

The subsurface conditions encountered at the site are generally suitable to support the proposed driveways, parking lots, and sidewalks after preparation of the subgrade as described in Section 4.1.

- We recommend entirely removing the topsoil from within the footprint of the proposed driveways and parking lots.

- The existing fill, subsoil, and swamp deposits should be improved in accordance with the recommendations in Section 4.1.

- Cobbles and boulders should be removed to at least 18 inches below the bottom of the pavement.

3.6.2 Sidewalks

- Sidewalks should be placed on a minimum of 12 inches of Structural Fill with less than 5 percent fines.

- To reduce the potential for heave caused by surface water penetrating under the sidewalk, the joints between sidewalk concrete sections should be sealed with a waterproof compound. The sidewalks should be sloped away from the building or other vertical surfaces to promote flow of water. To the extent possible, roof leaders should not discharge onto sidewalk surfaces.

3.6.3 Pavement Sections

A typical, minimum, standard-duty pavement section that could be used for parking areas is as follows:

1.5" Asphalt "Top Course"
2.0" Asphalt "Base Course"
8" Processed Gravel for Sub-Base (MassDOT M1.03.1)

A typical, minimum, heavy-duty pavement section that could be used for areas of heavy truck traffic is as follows:

2.0" Asphalt "Top Course"
2.5" Asphalt "Base Course"
12" Processed Gravel for Sub-Base (MassDOT M1.03.1)

The pavement sections shown above represent minimum thicknesses representative of typical local construction practices for similar use. Periodic maintenance should be anticipated.

Pavement material types and construction procedures should conform to specifications of the "Standard Specifications for Highways and Bridges," prepared by the Commonwealth of Massachusetts Department of Transportation dated 2023.

Areas to receive relatively highly concentrated, sustained loads such as dumpsters, loading areas, and storage bins are typically installed over a rigid pavement section to distribute concentrated loads and reduce the possibility of high stress concentrations on the subgrade.

Typical rigid pavement sections consist of 6 inches of concrete placed over a minimum of 12 inches of subbase material.

3.7 Underground Utilities

Boulders at the bottom of utility trenches should be removed to at least 12 inches below the pipe invert and the resulting excavation should be backfilled with suitable backfill. Utilities should be placed on suitable bedding material in accordance with the manufacturer's recommendations. "Cushion" material should be placed, by hand, above the utility pipe in maximum 6-inch lifts. The lift should be compacted by hand to avoid damage to the utility. Where the bedding/cushion material consists of crushed stone, it should be wrapped in a geotextile fabric.

Compaction of fill in utility trenches should be in accordance with our recommendations in Section 4.3. To reduce the potential for damage to utilities, placement and compaction of fill immediately above the utilities should be performed in accordance with the manufacturer's recommendations.

4. CONSTRUCTION CONSIDERATIONS

4.1 Subgrade Preparation

- Asphalt, topsoil, organic materials, existing fill, buried organic soil, buried subsoil, swamp deposits, abandoned utilities, buried foundations, and other below-ground structures should be entirely removed from within the footprints of the proposed buildings and site structures, including site retaining walls, and exterior stairs, if any, before the start of foundation work.

- Tree stumps, root balls, and roots larger than ½ inch in diameter should be removed and the cavities filled with suitable material and compacted per Section 4.3 of this report.

- Cobbles and boulders should be removed at least 6 inches from beneath footings and 18 inches beneath the bottom of slabs and paved areas. The resulting excavations should be backfilled with compacted Structural Fill under the building and with Ordinary Fill under the subbase of paved areas.

- The bottom of the excavation resulting from the removal of the existing fill and subsoil, or natural soil should be compacted with a dynamic vibratory compactor imparting a minimum of 40 kips of force to the subgrade.

- The base of the footing excavations in granular soil should be compacted with a dynamic vibratory compactor weighing at least 200 pounds and imparting a minimum of 4 kips of force to the subgrade.

- After the surficial existing fill and subsoil are removed to a depth of 18 inches and the swamp deposits, if any are removed to a depth of 24 inches beneath the bottom of the proposed pavement and within walkways in accordance with the recommendations in Section 3.1, the exposed existing fill and subsoil deeper than 18 inches and the swamp deposits deeper than 24 inches beneath the bottom of the proposed pavement should be improved by compacting the exposed surface with at least six (6) passes of a vibratory roller compactor imparting a dynamic effort of at least 40 kips. Where soft zones of soil are observed, the soft soil should be removed, and the grade should be restored using Ordinary Fill to the bottom of the proposed subbase layer. If pumping of the existing fill deeper than 18 inches beneath the bottom of the proposed pavement is observed, the soft and/or pumping material should be removed and replaced.

- Fill placed within the footprint of the proposed buildings should meet the gradation and compaction requirements of Structural Fill, shown in Section 4.3.1.

- Fill placed under the subbase of paved areas should meet the gradation and compaction requirements of Ordinary Fill, shown in Section 4.3.2.

- Fill placed in the top 12 inches beneath sidewalks should consist of Structural Fill with less than 5 percent fines.

- Loose or soft soils identified during the compaction of the footing or floor slab subgrades should be excavated to a suitable bearing stratum, as determined by the representative of LGCI. Grades should be restored by backfilling with Structural Fill or crushed stone.

- When crushed stone is required in the drawings or is used for the convenience of the contractor, it should be wrapped in a geotextile fabric for separation except where introduction of the geotextile fabric promotes sliding. A geotextile fabric should not be placed between the bottoms of the footings and the crushed stone.

- An LGCI representative should observe the exposed subgrades prior to fill and concrete placement to verify that the exposed bearing materials are suitable for the design soil bearing pressure. If soft or loose pockets are encountered in the footing excavations, the soft or loose materials should be removed and the bottom of the footing should be placed at a lower elevation on firm soil, or the resulting excavation should be backfilled with Structural Fill, or crushed stone wrapped in a filter fabric.

4.2 Subgrade Protection

The onsite fill and natural soils are frost susceptible. If construction takes place during freezing weather, special measures should be taken to prevent the subgrade from freezing. Such measures should include the use of heat blankets or excavating the final 6 inches of soil just before pouring the concrete. Footings should be backfilled as soon as possible after footing construction. Soil used as backfill should be free of frozen material, as should the ground on which it is placed. Filling operations should be halted during freezing weather.

Materials with high fines contents are typically difficult to handle when wet, as they are sensitive to moisture content variations. Subgrade support capacities may deteriorate when such soils become wet and/or disturbed. The contractor should keep exposed subgrades properly drained and free of ponded water. Subgrades should be protected from machine and foot traffic to reduce disturbance.

4.3 Fill Materials

Structural Fill and Ordinary Fill should consist of inert, hard, durable sand and gravel free from organic matter, clay, surface coatings, and deleterious materials, and should conform to the gradation requirements shown below.

4.3.1 Structural Fill

The Structural Fill should have a plasticity index of less than 6 and should meet the gradation requirements shown below. Structural Fill should be compacted in maximum 9-inch loose lifts to at least 95 percent of the Modified Proctor maximum dry density (ASTM

D1557), with moisture contents within ±2 percentage points of the optimum moisture content.

Sieve Size Percent	Passing by Weight
3 inches	100
1 ½ inch	80-100
½ inch	50-100
No. 4	30-85
No. 20	15-60
No. 60	5-35
No. 200*	0-10

* 0 – 5 for the top 12 inches under sidewalks, exterior slabs, pads, and walkways

4.3.2 Ordinary Fill

Ordinary Fill should have a plasticity index of less than 6 and should meet the gradation requirements shown below. Ordinary Fill should be compacted in maximum 9-inch loose lifts to at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557), with moisture contents within ±2 percentage points of the optimum moisture content.

Sieve Size Percent	Passing by Weight
6 inches	100
1 inch	50-100
No. 4	20-100
No. 20	10-70
No. 60	5-45
No. 200	0-20

4.4 Reuse of Onsite Materials

Based on our field observations and the results of the grain-size analyses, most of the onsite fill is too silty and does not meet the gradation requirements for Ordinary Fill or Structural Fill. The existing fill can be used in landscaped areas. The natural sand and gravel may be used as Ordinary Fill.

The contractor should avoid mixing the reusable soils with fine-grained and/or organic soils. The soils to be reused should be excavated and stockpiled separately for compliance testing. Soils with 20 percent or greater fines contents are generally very sensitive to moisture content variations and are susceptible to frost. Such soils are very difficult to compact at moisture contents that are much higher or much lower than the optimum moisture content determined from the laboratory compaction test. Therefore, strict moisture control should be implemented during the compaction of onsite soils with fines contents of 20 percent or greater. The contractor should be prepared to remove and replace such soils if pumping occurs.

Suitable imported material and amended/improved onsite materials should be stockpiled separately from unimproved onsite soils.

Materials to be used as fill should first be tested for compliance with the applicable gradation specifications.

4.5 Groundwater Control Procedures

Based on the groundwater levels measured in our borings, we anticipate that groundwater control procedures will be needed during construction. We anticipate that filtered deep sump pumps and sump pumps installed in a series of pits located at least 3 feet below the bottom of planned excavations may be sufficient to handle groundwater and surface runoff that may enter the excavation during wet weather. The contractor should be prepared to use multiple sump pumps to maintain a dry excavation during the removal of the existing fill.

The contractor should be permitted to employ whatever commonly accepted means and practices are necessary to maintain the groundwater level below the bottom of the excavation and to maintain a dry excavation during wet weather. Groundwater levels should be maintained at a minimum of 1 foot below the bottom of the excavations during construction. The placement of reinforcing steel or concrete in standing water should not be permitted.

To reduce the potential for sinkholes developing over sump pump pits after the sump pumps are removed, the crushed stone placed in the sump pump pits should be wrapped in a geotextile fabric. Alternatively, the crushed stone should be entirely removed after the sump pump is no longer in use, and the sump pump pit should be restored with suitable backfill.

4.6 Temporary Excavations

All excavations to receive human traffic should be constructed in accordance with OSHA guidelines.

The site soils should generally be considered Type “C” and should have a maximum allowable slope of 1.5 Horizontal to 1 Vertical (1.5H:1V) for excavations less than 20 feet deep. Deeper excavations, if needed, should have shoring designed by a professional engineer.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain the stability of the excavation sides and bottom.

5. RECOMMENDATIONS FOR FUTURE WORK

We recommend engaging LGCI to perform the following services:

- Perform additional explorations at the site and update our geotechnical report.

- Prepare Earth Moving Specifications and review the geotechnical aspect of contract drawings.

- Review contractor submittals and Request for Information (RFIs);

- Provide a field representative during construction to observe the removal of the unsuitable soil, and to observe the subgrade of footings and slabs.

6. REPORT LIMITATIONS

Our analyses and recommendations are based on project information provided to us at the time of this report. If changes to the type, size, and location of the proposed structures or to the site grading are made, the recommendations contained in this report shall not be considered valid unless the changes are reviewed, and the conclusions and recommendations modified in writing by LGCI. LGCI cannot accept responsibility for designs based on our recommendations unless we are engaged to review the final plans and specifications to determine whether any changes in the project affect the validity of our recommendations, and whether our recommendations have been properly implemented in the design.

It is not part of our scope to perform a more detailed site history; therefore, we have not explored for or researched the locations of buried utilities or other structures in the area of the proposed construction. Our scope did not include environmental services or services related to moisture, mold, or other biological contaminants in or around the site.

The recommendations in this report are based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from anticipated conditions are encountered, it may be necessary to revise the recommendations in this report. We cannot accept responsibility for designs based on recommendations in this report unless we are engaged to 1) make site visits during construction to check that the subsurface conditions exposed during construction are in general conformance with our design assumptions and 2) ascertain that, in general, the work is being performed in compliance with the contract documents.

Our report has been prepared in accordance with generally accepted engineering practices and in accordance with the terms and conditions set forth in our agreement. No other warranty, expressed or implied, is made. This report has been prepared for the exclusive use of Arrowstreet for the Proposed Neary Elementary School in Southborough, Massachusetts as conceived at this time.

7. REFERENCES

In addition to the references included in the text of the report, we used the following references:

American Society of Civil Engineers, “Minimum Design Loads and Associated Criteria for Buildings and Other Structures,” ASCE/SEI 7-16, 2017.

The Commonwealth of Massachusetts (2017), “The Massachusetts State Building Code, Ninth (9th) Edition.”

The Department of Labor, Occupational Safety and Health Administration (1989), “Occupational Safety and Health Standards - Excavations; Final Rule,” 20 CFR Part 1926, Subpart P.

USGS Southborough, MA topographic map from http://mapserver.mytopo.com.

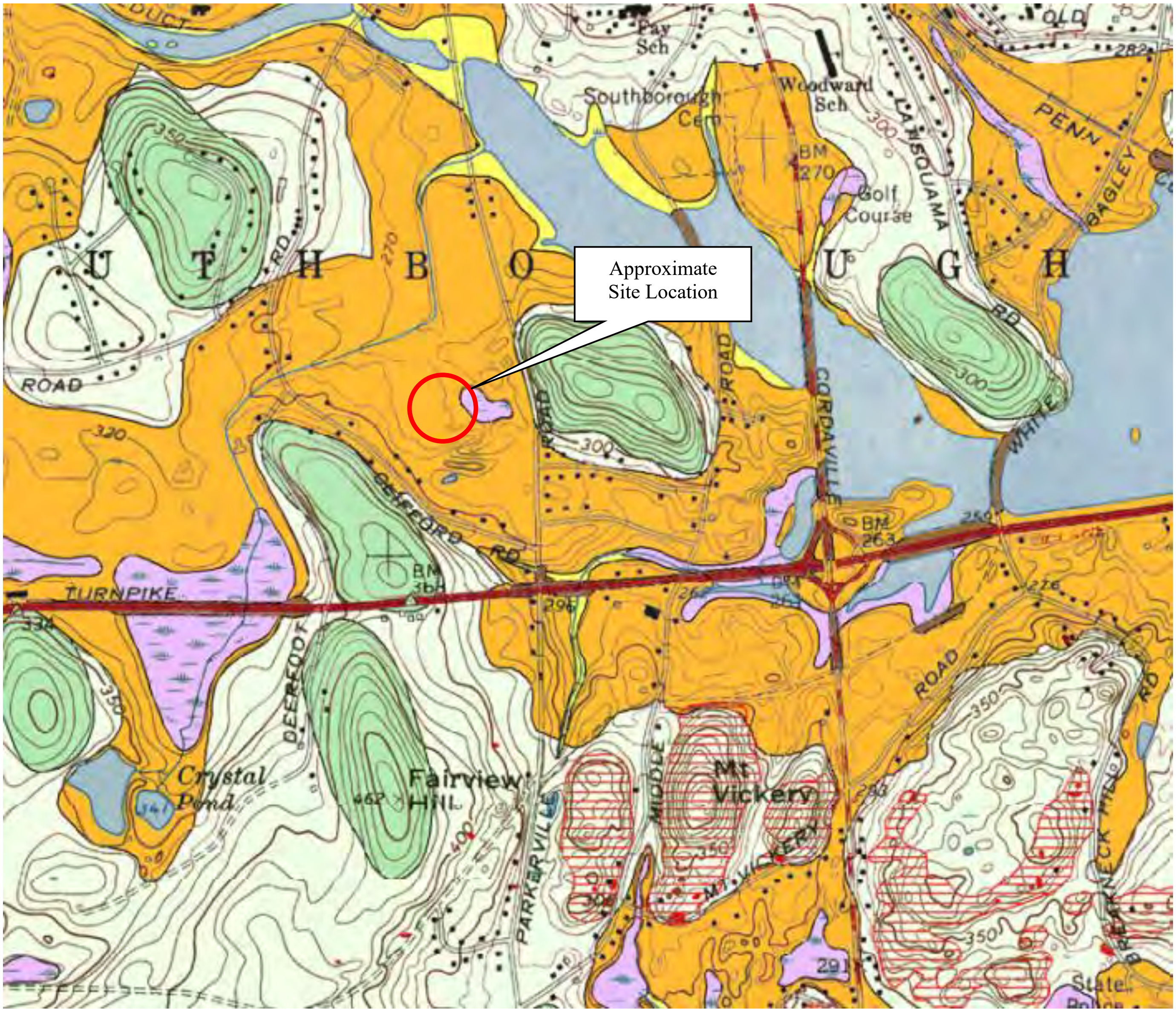
Table 1 - Summary of LGCI's Borings
Proposed Neary Elementary School
Southborough, MA
LGCI Project No. 2404

Boring No.	Ground Surface Elevation (ft.)[1]	Groundwater[2] Depth / El. (ft.)	Bottom of Topsoil / **Asphalt** Depth / El. (ft.)	Bottom of Fill / **Subsoil** Depth / El. (ft.)	Bottom of Swamp Deposits Depth / El. (ft.)	Bottom of Sand and Gravel Depth / El. (ft.)	Bottom of Weathered Rock Depth / El. (ft.)	Bottom of Boring Depth / El. (ft.)
Preliminary Phase Explorations								
B-1	275.0	4.2 / **270.8**	1.0 / **274.0**	6.0 / **269.0**	- / **-**	21.3 [3]/ **253.7**	- / **-**	21.3 / **253.7**
B-2	274.0	2.9 / **271.1**	1.0 / **273.0**	6.2 / **267.8**	- / **-**	15.0 [4]/ **259.0**	- / **-**	15.0 / **259.0**
B-3	277.0	2.0 / **275.0**	1.2 / **275.8**	- / **-**	- / **-**	17.0 [3]/ **260.0**	- / **-**	17.0 / **260.0**
B-4	276.0	3.1 / **272.9**	0.8 / **275.2**	**2.0** / **274.0**	- / **-**	19.0 [3]/ **257.0**	- / **-**	19.0 / **257.0**
Additional Preliminary Phase Explorations								
B-101	270.0	7.0 / **263.0**	**0.5** / **269.5**	7.0 / **263.0**	11.0 / **259.0**	20.8 [3]/ **249.2**	- / **-**	20.8 / **249.2**
B-102	272.0	5.0 / **267.0**	**0.8** / **271.2**	3.0 / **269.0**	- / **-**	19.4 [3,5]/ **252.6**	- / **-**	19.4 / **252.6**
B-103	273.0	4.0 / **269.0**	2.0 / **271.0**	6.0 / **267.0**	- / **-**	19.3 [3]/ **253.7**	- / **-**	19.3 / **253.7**
B-104	272.0	0.0 / **272.0**	0.8 / **271.2**	10.5 / **261.5**	- / **-**	19.0 / **253.0**	19.4 [6]/ **252.6**	19.4 / **252.6**

1. The ground surface elevation was interpolated to the nearest foot from drawings TP-4 and TP-5 (Sheets 4 and 5 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepetmber 3, 2024.
2. Groundwater was measured during drilling, at the end of drilling, after drilling, or based on sample moisture whichever is shallower.
3. Boring terminated in the sand and gravel layer.
4. Boring terminated on refusal in the sand and gravel layer.
5. A layer of weathered rock was encountered in boring B-102, between depths of 9 and 16 feet beneath the ground surface.
6. Boring terminated in the weathered rock layer.
7. "-" means groundwater or layer was not encountered.

Note: Figure based on USA Topo Maps of Southborough, MA *ngmdb.usgs.gov/topoview/viewer*

Client: Arrowstreet	Project: Proposed Neary Elementary School	Figure 1 – Site Location Map	
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Southborough, MA	LGCI Project No.: 2404	Date: Sept. 2024



N

🟧 **Coarse deposits** consist of *gravel deposits*, *sand and gravel deposits*, and *sand deposits*, not differentiated in this report. *Gravel deposits* are composed of at least 50 percent gravel-size clasts; cobbles and boulders predominate; minor amounts of sand occur within gravel beds, and sand comprises a few separate layers. Gravel layers generally are poorly sorted, and bedding commonly is distorted and faulted due to postdepositional collapse related to melting of ice. *Sand and gravel deposits* occur as mixtures of gravel and sand within individual layers and as layers of sand alternating with layers of gravel. Sand and gravel layers generally range between 25 and 50 percent gravel particles and between 50 and 75 percent sand particles. Layers are well sorted to poorly sorted; bedding may be distorted and faulted due to postdepositional collapse. *Sand deposits* are composed mainly of very coarse to fine sand, commonly in well-sorted layers. Coarser layers may contain up to 25 percent gravel particles, generally granules and pebbles; finer layers may contain some very fine sand, silt, and clay

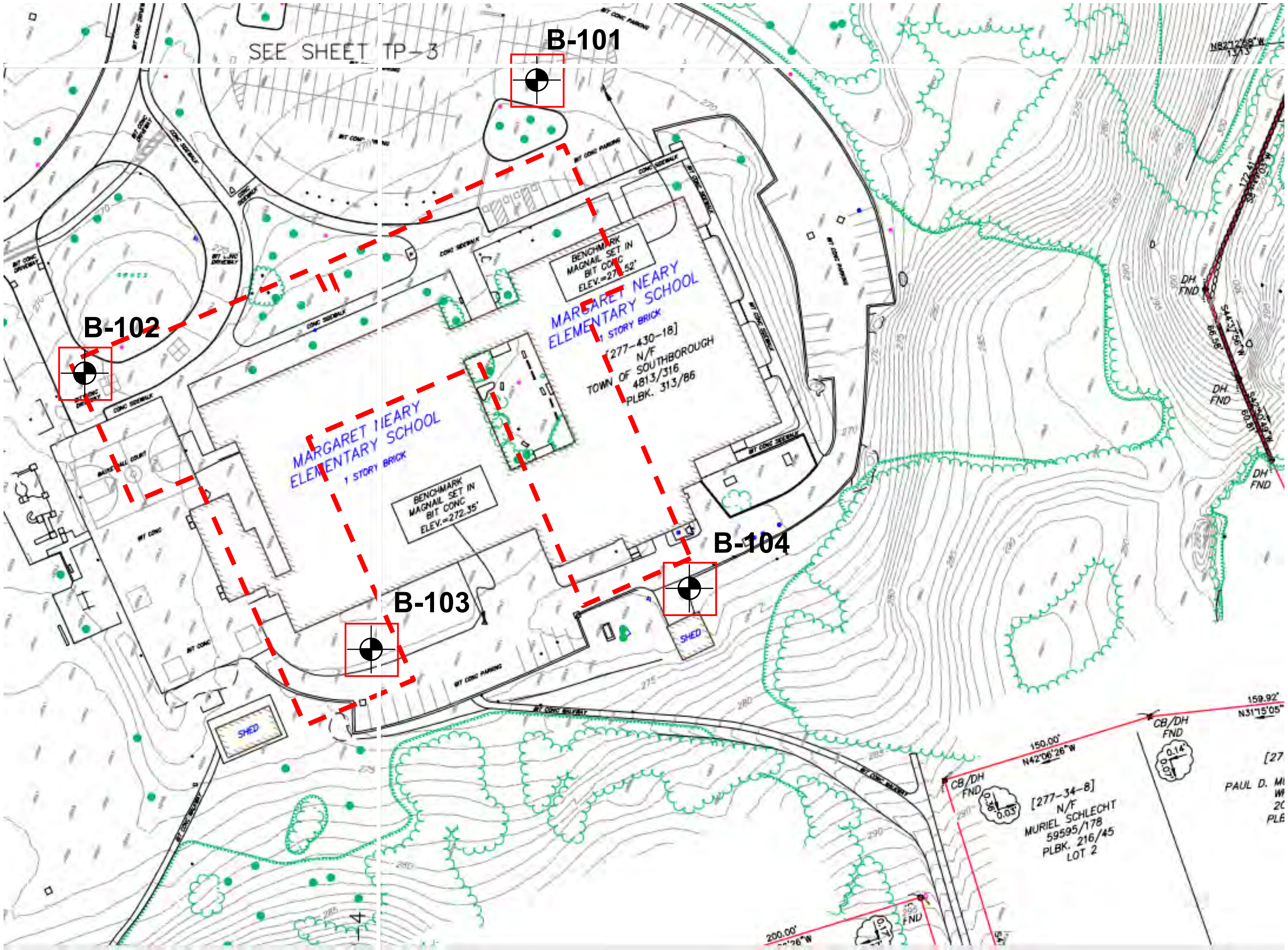
🟪 **Swamp deposits**—Organic muck and peat that contain minor amounts of sand, silt, and clay, are stratified and poorly sorted, and occur in swamps and freshwater marshes, in kettle depressions, or in poorly drained areas. Unit is shown only where deposits are estimated to be at least 3 ft thick; most deposits are less than 10 ft thick. Swamp deposits overlie glacial deposits or bedrock. They locally overlie glacial till even where they occur within thin glacial meltwater deposits

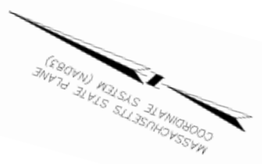
Note: Figure based on map titled: "Surficial Materials Map of the Marlborough Quadrangle, Massachusetts," prepared by Stone J.R. and Stone, B.D., Scientific Investigation Map 3402 , Quadrangle 92 – Marlborough, 2018.

Client: Arrowstreet	Project: Proposed Neary Elementary School	Figure 2 – Surficial Geologic Map	
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Southborough, MA	LGCI Project No.: 2404	Date: Sept. 2024

Legend

⌖ Approximate location of borings advanced by Soil X Corporation of Leominster, MA on August 22, 2024, and observed by Lahlaf Geotechnical Consulting, Inc. (LGCI).





Approximate Scale (ft.)

Note:
Figure based on drawing TP-5 (Sheet 5 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on September 3, 2024.

Client:
Arrowstreet

Project:
Proposed Neary Elementary School

Figure 3A – Boring Location Plan

LGCI
Lahlaf Geotechnical Consulting, Inc.

Project Location:
Southborough, MA

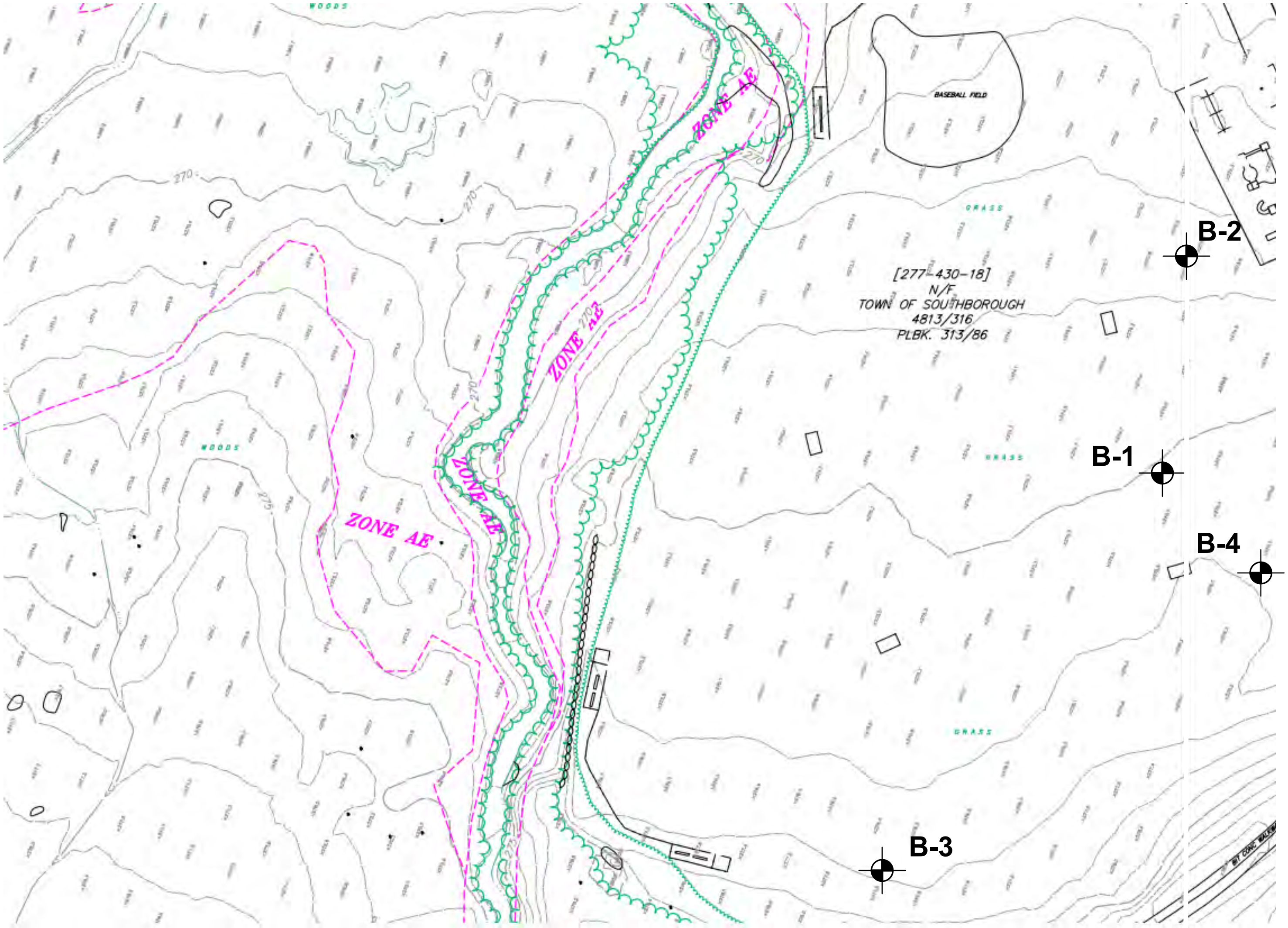
LGCI Project No.:
2404

Date:
Sept. 2024

Legend

⊕ Approximate location of borings advanced by Soil X Corporation of Leominster, MA on April 15, 2024, and observed by Lahlaf Geotechnical Consulting, Inc. (LGCI).

Approximate Scale (ft.)



Note:
Figure based on drawing TP-4 (Sheet 4 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on September 3, 2024.

Client: Arrowstreet	Project: Proposed Neary Elementary School	Figure 3B – Boring Location Plan	
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Southborough, MA	LGCI Project No.: 2404	Date: Sept. 2024

Appendix A – LGCI's Boring Logs

LGCI
Lahlaf Geotechnical Consulting, Inc.
100 Chelmsford Rd.
North Billerica, MA 01862
Telephone: 9783305912
Fax: 9783305056

BORING LOG

B-1
PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 4/15/24 **DATE COMPLETED:** 4/15/24
BORING LOCATION: Near center of site
COORDINATES: NA
SURFACE El.: 275 ft. (see note 1) **TOTAL DEPTH:** 21.3 ft.
WEATHER: 40's / Sunny
GROUNDWATER LEVELS:
▽ **DURING DRILLING:** 10.0 ft. / El. 265.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 4.2 ft. / El. 270.8 ft.
▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: SG **CHECKED BY:** AS

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0–2	S1	3-3-31-39 (34)	24/17		Topsoil		S1 - Top 12": Topsoil
							Fill	1.0 274.0	Bot. 5": Poorly Graded Gravel with Sand (GP), fine to coarse, subangular, ~30% fine to coarse sand, ~5% fines, brown and white, moist
		2–4	S2	34-35-56-39 (91)	24/16				S2 - Silty SAND with Gravel (SM), fine to coarse, 35-40% fines, ~20% fine subangular gravel, brown grey, moist
5	270.0	4–6	S3	26-24-21-12 (45)	24/15				▼ S3 - Similar to S2
		6–6.7	S4	19-81/2" (81/2")	8/8	1 2	Sand and Gravel	6.0 269.0	S4 - Silty SAND with Gravel (SM), fine to medium, 15-20% fines, 15-20% fine subrounded gravel, brown grey, moist REMARK 1: SS bouncing on possible boulder at depth of 6.7 feet. REMARK 2: HSA grinding on possible boulder from depths between 6.7 and 8 feet.
		8–10	S5	13-15-21-19 (36)	24/8				S5 - Similar to S4
10	265.0	10–11.3	S6	13-19-95/3" (114/9")	15/15				▽ S6 - Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 20-25% fine to coarse subangular gravel, brown grey, wet
						3			REMARK 3: HSA grinding on possible boulder from depths between 11.5 and 15 feet.
15	260.0	15–17	S7	17-28-14-13 (42)	24/17				S7 - Silty SAND with Gravel (SM), fine to coarse, 15-20% fines, 20-25% fine to coarse subangular gravel, brown grey, wet
20	255.0	20–21.3	S8	19-85-60/3" (145/9")	15/15			21.3	S8 - Similar to S7
									Bottom of borehole at 21.3 feet. Backfilled borehole with drill cuttings.
25	250.0								

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-4 (Sheet 4 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

Lahlaf Geotechnical Consulting, Inc.

100 Chelmsford Rd.
North Billerica, MA 01862
Telephone: 9783305912
Fax: 9783305056

BORING LOG

B-2
PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 4/15/24 **DATE COMPLETED:** 4/15/24
BORING LOCATION: Near eastern side of site
COORDINATES: NA
SURFACE El.: 274 ft. (see note 1) **TOTAL DEPTH:** 15.01 ft.
WEATHER: 50's / Sunny
GROUNDWATER LEVELS:
▽ **DURING DRILLING:** 4.0 ft. / El. 270.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 2.9 ft. / El. 271.1 ft.
▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: SG **CHECKED BY:** AS

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0	S1	2-6-13-18 (19)	24/20		Topsoil		S1 - Top 12": Topsoil
							Fill	1.0 273.0	Bot. 8": Well Graded GRAVEL with Silt and Sand (GW-GM), fine to coarse, subangular, ~5% fines, 30-35% fine to coarse sand, grey and white, moist
		2	S2	20-20-22-80/3" (42)	21/13			▼	S2 - Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 15-20% fine to coarse subangular gravel, grey, moist
	270.0	3.8 4						▽	
5			S3	10-10-9-7 (19)	24/12				S3 - Silty SAND with Gravel (SM), fine to coarse, ~30% fines, ~20% fine subangular gravel, grey, wet
		6	S4	8-17-28-27 (45)	24/17		Sand and Gravel	6.1 267.9	S4 - Top 1": Buried Organic Soil Bot. 16": Silty SAND with Gravel (SM), fine to coarse, ~30% fines, ~20% fine subangular gravel, trace of weathered rock, grey, wet
	265.0	8				1			REMARK 1: HSA grinding on possible boulder at depth of 9 feet.
10		10	S5	17-20-20-31 (40)	24/12				S5 - Poorly Graded SAND with Silt and Gravel (SP-SM), fine to coarse, 10-15% fines, 20-25% fine to coarse subrounded gravel, brown, wet
		12				2			REMARK 2: HSA grinding on possible boulder/cobbles at depths between 12 and 15 feet.
	260.0								
15		15	S6	100/0"	0/0			15.0	S6 - No Recovery Bottom of borehole at 15.0 feet. Backfilled borehole with drill cuttings.
	255.0								
20									
	250.0								
25									

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-4 (Sheet 4 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

LGCI Lahlaf Geotechnical Consulting, Inc.

100 Chelmsford Rd.
North Billerica, MA 01862
Telephone: 9783305912
Fax: 9783305056

BORING LOG

B-3

PAGE 1 OF 1

CLIENT: Arrowstreet

PROJECT NAME: Proposed Neary Elementary School

LGCI PROJECT NUMBER: 2404

PROJECT LOCATION: Southborough, MA

DATE STARTED: 4/15/24 **DATE COMPLETED:** 4/15/24

BORING LOCATION: Near weastern side of site

COORDINATES: NA

SURFACE El.: 277 ft. (see note 1) **TOTAL DEPTH:** 17 ft.

WEATHER: 50's / Sunny

GROUNDWATER LEVELS:

∇ **DURING DRILLING:** 2.0 ft. / El. 275.0 ft. Based on sample moisture

▼ **AT END OF DRILLING:** 2.5 ft. / El. 274.5 ft.

▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.

DRILLING FOREMAN: Edwin Fajardo

DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)

DRILL RIG TYPE/MODEL: Diedrich D-70 turbo

HAMMER TYPE: Automatic

HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.

SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.

CORE BARREL SIZE: NA

LOGGED BY: SG **CHECKED BY:** AS

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
	275.0	0 2	S1	1-2-7-12 (9)	24/19		Topsoil Sand and Gravel	1.2 275.8	S1 - Top 14": Topsoil Bot. 5": Poorly Graded SAND with Silt (SP-SM), fine to medium, 5-10% fines, 0-5% ∇ fine gravel, grey with orange stripes, moist
		2 4	S2	28-26-33-31 (59)	24/17				▼ S2 - Top 4": Similar to S1, Bot. 5" Bot. 13": Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 35-40% mostly fine subangular gravel, brown grey, wet
5		4 6	S3	15-20-21-13 (41)	24/16				S3 - Top 7": Similar to S2, Bot. 13" Bot. 9": Silty SAND with Gravel (SM), fine to medium, 15-20% fines, 15-20% fine to coarse subrounded to subangular gravel, brown, wet
	270.0	6 8	S4	15-13-18-19 (31)	24/4				S4 - Similar to S3, Bot. 9", fine to coarse
		8							
10	265.0	10 12	S5	25-31-61-50 (92)	24/14				S5 - Silty GRAVEL with Sand (GM), fine to coarse, angular, 15-20% fines, 25-30% fine to coarse sand, grey, wet
15		12							
	260.0	15 17	S6	20-25-26-25 (51)	24/12			17.0	S6 - Silty SAND with Gravel (SM), fine to medium, 15-20% fines, 15-20% fine to coarse subangular gravel, grey, wet
									Bottom of borehole at 17.0 feet. Backfilled borehole with drill cuttings.
20	255.0								
25									

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-4 (Sheet 4 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

LGCI
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North Billerica, MA 01862
Telephone: 9783305912
Fax: 9783305056

BORING LOG

B-4

PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 4/15/24 **DATE COMPLETED:** 4/15/24
BORING LOCATION: Near southern center of site
COORDINATES: NA
SURFACE El.: 276 ft. (see note 1) **TOTAL DEPTH:** 19 ft.
WEATHER: 50's / Sunny
GROUNDWATER LEVELS:
▽ **DURING DRILLING:** 4.0 ft. / El. 272.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 3.1 ft. / El. 272.9 ft.
▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: SG **CHECKED BY:** AS

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
	275.0	0 2	S1	1-4-12-10 (16)	24/17		Topsoil	0.8 275.2	S1 - Top 10": Topsoil
							Subsoil	2.0 274.0	Bot. 7": Poorly Graded SAND with Silt and Gravel (SP-SM), fine to medium, 10-15% fines, 10-15% fine subrounded gravel, light brown, moist
		2 4	S2	11-14-15-17 (29)	24/13		Sand and Gravel	▼ ▽	S2 - Silty SAND (SM), fine to coarse, ~15% fines, ~35% fine to coarse subrounded gravel, brown, moist
5	270.0	4 6	S3	14-13-9-8 (22)	24/9				S3 - Silty SAND (SM), fine to medium, 20-25% fines, 5-10% fine subrounded gravel, trace of weathered rock, brown grey, wet
		6 8	S4	8-7-8-12 (15)	24/8				S4 - Similar to S3
		8				1			REMARK 1: HSA grinding on possibe boulder/cobbles at depth of 8 feet.
10	265.0	10 12	S5	9-9-6-7 (15)	24/12				S5 - Silty SAND with Gravel (SM), fine to coarse, ~15% fines, 15-20% fine to coarse gravel, trace of weathered rock, brown grey, wet
15	260.0	15 17	S6	6-6-6-5 (12)	24/7				S6 - Silty SAND (SM), fine to medium, trace of coarse, 35-40% fines, 5-10% fine to coarse subrounded gravel, grey, wet
		17 19	S7	7-13-17-26 (30)	24/14			19.0	S7 - Poorly Graded SAND with Silt and Gravel (SP-SM), fine to medium, ~10% fines, 15-20% fine to coarse subangular gravel, trace of weathered rock, grey with red, wet
20	255.0								Bottom of borehole at 19.0 feet. Backfilled borehole with drill cuttings.
25									

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-4 (Sheet 4 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

Lahlaf Geotechnical Consulting, Inc.
100 Chelmsford Rd.
North Billerica, MA 01862
Telephone: 9783305912
Fax: 9783305056

BORING LOG

B-101
PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 8/22/24 **DATE COMPLETED:** 8/22/24
BORING LOCATION: NE of existing school
COORDINATES: NA
SURFACE El.: 270 ft. (see note 1) **TOTAL DEPTH:** 20.8 ft.
WEATHER: 70's / Sunny
GROUNDWATER LEVELS:
▽ **DURING DRILLING:** 7.0 ft. / El. 263.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 7.0 ft. / El. 263.0 ft.
▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: BH **CHECKED BY:** JKW

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
							Asphalt	0.5 269.5	
		1	S1	15-21-25-24 (46)	24/13		Fill		S1 - Poorly Graded SAND (SP), fine to medium, trace coarse, 0-5% fines, 25-30% fine to coarse subangular gravel, trace of asphalt, dark brown, moist
		3	S2	21-22-22-16 (44)	24/12				S2 - Poorly Graded SAND with Silt (SP-SM), fine to medium, trace coarse, 10-15% fines, 25-30% fine to coarse subangular gravel, trace of asphalt, dark brown, moist
5	265.0	5	S3	18-18-11-11 (29)	24/11				S3 - Similar to S2
		7	S4	7-6-7-9 (13)	24/15		Swamp Deposits	7.0 ▼ 263.0	S4 - Silty SAND (SM), fine, 30-35% fines, trace of wood, trace of organic odor, trace of organic soil, grey to dark brown, wet
10	260.0	9	S5	6-8-10-8 (18)	24/19				S5 - Similar to S4, dark grey
		11	S6	4-6-12-14 (18)	24/19	1	Sand and Gravel	11.0 259.0	REMARK 1: HSA chattering between depths of 11 to 19 feet beneath the ground surface. S6 - Poorly Graded SAND with Silt (SP-SM), fine to coarse, 10-15% fines, dark grey, wet
		13	S7	13-12-11-10 (23)	24/16				S7 - Silty SAND (SM), fine to coarse, ~20% fines, 0-5% fine subangular gravel, dark grey, wet
15	255.0	15	S8	18-14-38-16 (52)	24/11				S8 - Silty SAND (SM), fine to medium, trace coarse, 20-25% fines, 35-40% fine to coarse subangular gravel, trace of weathered rock, grey, wet
		17							
20	250.0	19	S9	40-48-18-93/4" (66)	22/11				S9 - Similar to S8, 30-35% fine to coarse subangular gravel
		20.8						20.8	Bottom of borehole at 20.8 feet. Backfilled borehole with drill cuttings and 2 bags of gravel. Restored roadway with cold patch asphalt.
25	245.0								

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-5 (Sheet 5 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

LGCI
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Telephone: 9783305912
Fax: 9783305056

BORING LOG

B-102

PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 8/22/24
DATE COMPLETED: 8/22/24
BORING LOCATION: North of existing school
COORDINATES: NA
SURFACE El.: 272 ft. (see note 1)
TOTAL DEPTH: 19.4 ft.
WEATHER: 70's / Sunny
GROUNDWATER LEVELS:
∇ **DURING DRILLING:** 5.0 ft. / El. 267.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 8.6 ft. / El. 263.4 ft.
▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb.
HAMMER DROP: 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: BH
CHECKED BY: JKW

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0 0.8	G1		10/10		Asphalt	0.8 271.2	G1 - Asphalt
	270.0	1 2.6	S1	14-16-68-45/1" (84)	19/12		Fill	3.0 269.0	S1 - Silty SAND with Gravel (SM), fine to coarse, 15-20% fines, 25-30% fine to coarse subangular gravel, dark brown, moist
		3 5	S2	15-21-32-31 (53)	24/14		Sand and Gravel		S2 - Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 35-40% fine subangular gravel, brown, moist
5	265.0	5 7	S3	19-18-16-16 (34)	24/16			∇	S3 - Well Graded SAND with Silt (SW-SM), fine to coarse, 10-15% fines, 5-10% fine to coarse subangular gravel, brown, wet
								▼ 9.0 263.0	
10		9 10.3	S4	24-63-43/4" (106/10")	16/9		Weathered Rock		S4 - Silty SAND with Gravel (SM), fine to coarse, 20-25% fines, 30-35% fine to coarse subangular gravel, trace of weathered rock, brown, wet
15	260.0	14 16	S5	27-29-30-24 (59)	24/14				S5 - Silty SAND with Gravel (SM), fine to coarse, 20-25% fines, 20-25% fine to coarse subangular gravel, trace of weathered rock, light brown to grey, wet
20	255.0	19 19.4	S6	101/5"	5/5			19.4	S6 - Silty SAND with Gravel (SM), fine to coarse, 15-20% fines, 15-20% fine to coarse subangular gravel, brown, wet Bottom of borehole at 19.4 feet. Backfilled borehole with drill cuttings, 1 bag of gravel, 1 bag of sand, and 1 bag of concrete. Restored roadway with cold patch asphalt.
25	250.0								

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-5 (Sheet 5 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

LGCI
Lahlaf Geotechnical Consulting, Inc.
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Telephone: 9783305912
Fax: 9783305056

BORING LOG

B-103

PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 8/22/24
DATE COMPLETED: 8/22/24
BORING LOCATION: West of existing school
COORDINATES: NA
SURFACE El.: 273 ft. (see note 1)
TOTAL DEPTH: 19.3 ft.
WEATHER: 70's / Sunny
GROUNDWATER LEVELS:
▽ **DURING DRILLING:** 4.0 ft. / El. 269.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 16.0 ft. / El. 257.0 ft.
▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb.
HAMMER DROP: 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: BH
CHECKED BY: JKW

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0 – 2	S1	2-3-4-6 (7)	24/11		Topsoil	2.0 271.0	S1 - Topsoil
	270.0	2 – 4	S2	3-3-3-5 (6)	24/19		Fill		S2 - Silty SAND (SM), 30-35% fines, 0-5% fine subangular gravel, trace of wood, trace of organic soil, dark brown, moist
5		4 – 6	S3	3-4-11-13 (15)	24/19			6.0 267.0	▽ S3 - Top 10": Similar to S2, wet Bot. 9": Silty SAND (SM), mostly fine, 30-35% fines, grey, trace of wood, wet
	265.0	6 – 8	S4	17-15-16-15 (31)	24/10		Sand and Gravel		S4 - Silty SAND (SM), fine to coarse, 20-25% fines, 25-30% fine to coarse subangular gravel, brown, wet
10		9 – 11	S5	7-5-13-16 (18)	24/9				S5 - Silty SAND (SM), fine to medium, trace coarse, 15-20% fines, 0-5% fine subangular gravel, brown, wet
	260.0								
15		14 – 16	S6	5-9-11-13 (20)	24/11				S6 - Silty SAND (SM), fine to medium, 30-35% fines, 0-5% fine subangular gravel, light brown, wet ▼
	255.0								
		19 – 19.3	S7	101/3"	3/0			19.3	S7 - No Recovery Bottom of borehole at 19.3 feet. Backfilled borehole with drill cuttings and 2 bags of gravel.
20									
	250.0								
25									

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-5 (Sheet 5 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

LGCI
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100 Chelmsford Rd.
North Billerica, MA 01862
Telephone: 9783305912
Fax: 9783305056

BORING LOG

B-104

PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 8/22/24
DATE COMPLETED: 8/22/24
BORING LOCATION: SW of existing school
COORDINATES: NA
SURFACE El.: 272 ft. (see note 1)
TOTAL DEPTH: 19.4 ft.
WEATHER: 70's / Sunny
GROUNDWATER LEVELS:
▽ **DURING DRILLING:** 0.0 ft. / El. 272.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 6.6 ft. / El. 265.4 ft.
▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb.
HAMMER DROP: 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: BH
CHECKED BY: JKW

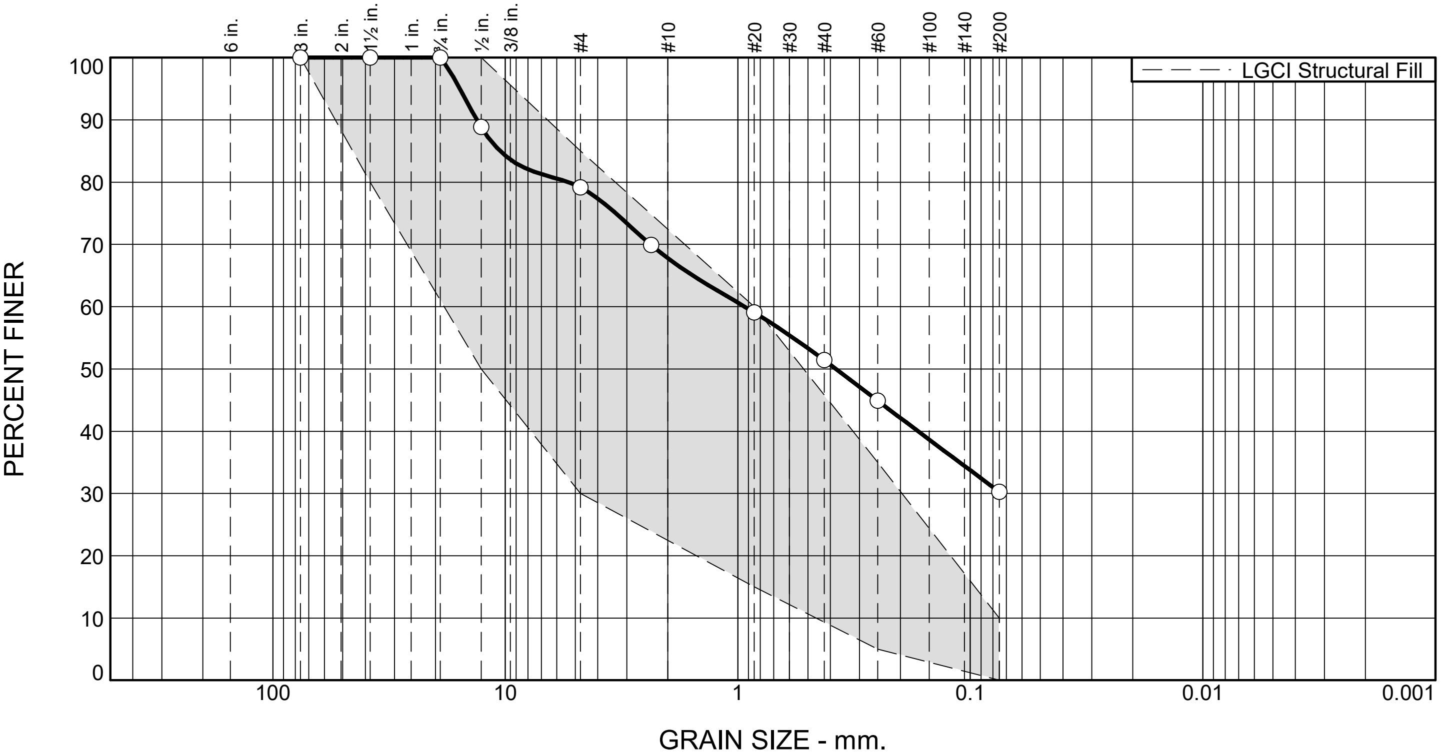
Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0	S1	3-3-2-0 (5)	24/13		Topsoil	0.8 271.2	S1 - Top 9": Topsoil Bot. 4": Well Graded SAND with Silt (SW-SM), fine to coarse, ~10% fines, 0-5% fine subangular gravel, brown, wet
	270.0	2	S2	1-2-4-6 (6)	24/8		Fill		S2 - Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 15-20% fine to coarse subangular gravel, brown, wet
5		4	S3	2-1-2-2 (3)	24/6				S3 - Silty SAND (SM), fine to coarse, 30-35% fines, 0-5% fine subangular gravel, trace of organic soil, trace of roots, dark brown to black, wet
	265.0	6	S4	1-2-2-2 (4)	24/7			▼	S4 - Similar to S3, 10-15% fine to coarse subangular gravel
		8	S5	2-2-3-16 (5)	24/15				S5 - Silty SAND (SM), fine to coarse, 30-35% fines, ~5% fine subangular gravel, trace of roots, grey, wet
10		10	S6	6-19/0" (19/0")	6/0	1		10.5 261.5	S6 - No Recovery REMARK 1: Split spoon bouncing observed at depth of 10.5 feet beneath the ground surface. Sampling terminated early to observe sample.
	260.0	10.5	S7	25-17-16-14 (33)	24/6		Sand and Gravel		S7 - Silty SAND with Gravel (SM), fine to coarse, 30-35% fines, 30-35% fine subangular gravel, grey, wet
		12.5							
15		14	S8	17-12-15-17 (27)	24/10				S8 - Similar to S7, 20-25% fines, brown to grey
	255.0	16							
		19	S9	102/5"	5/4		Weathered Rock	19.0 253.0 19.4	S9 - Silty SAND (SM), fine to coarse, 20-25% fines, 25-30% fine to coarse subangular gravel, trace of weathered rock, brown, wet Bottom of borehole at 19.4 feet. Backfilled borehole with drill cuttings.
20		19.4							
	250.0								
25									

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-5 (Sheet 5 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

Appendix B – Laboratory Test Results

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	20.9	11.3	16.4	21.1	30.3	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	100.0		
0.5"	88.9	50.0 - 100.0	
#4	79.1	30.0 - 85.0	
#8	69.9		
#20	59.1	15.0 - 60.0	
#40	51.4		
#60	44.9	5.0 - 35.0	X
#200	30.3	0.0 - 10.0	X

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Silty SAND with Gravel (SM), fine to coarse, 30% fines, 20% fine gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}=	13.2571	D_{85}=	10.5117	D_{60}=	0.9340
D_{50}=	0.3778	D_{30}=		D_{15}=	
D_{10}=		C_u=		C_c=	

Remarks

Fill Material

Date Received: 4/15/24 **Date Tested:** 4/30/24

Tested By: SG

Checked By: SL

Location: B-2

Sample Number: S3 **Depth:** 4'-6'

Date Sampled: 4/15/24

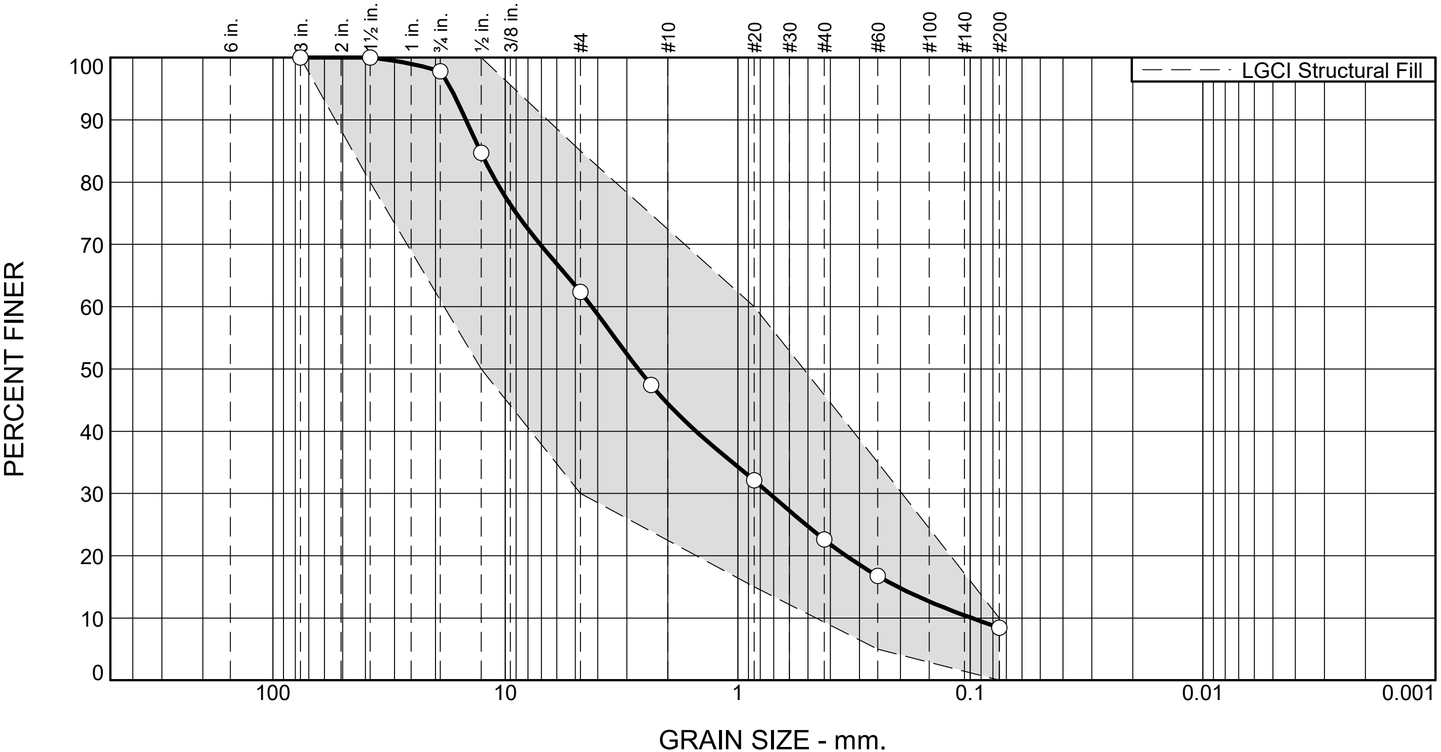
LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: Arrowstreet

Project: Proposed Neary Elementary School
Southborough, Massachusetts

Project No: 2404 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	2.2	35.4	18.0	21.8	14.2	8.4	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	97.8		
0.5"	84.7	50.0 - 100.0	
#4	62.4	30.0 - 85.0	
#8	47.4		
#20	32.1	15.0 - 60.0	
#40	22.6		
#60	16.8	5.0 - 35.0	
#200	8.4	0.0 - 10.0	

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 35-40% mostly fine gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}= 14.7722	D_{85}= 12.8177	D_{60}= 4.2431
D_{50}= 2.6797	D_{30}= 0.7306	D_{15}= 0.2046
D_{10}= 0.0986	C_u= 43.05	C_c= 1.28

Remarks

Natural Soil Material

Date Received: 4/15/24 **Date Tested:** 4/30/24

Tested By: SG

Checked By: SL

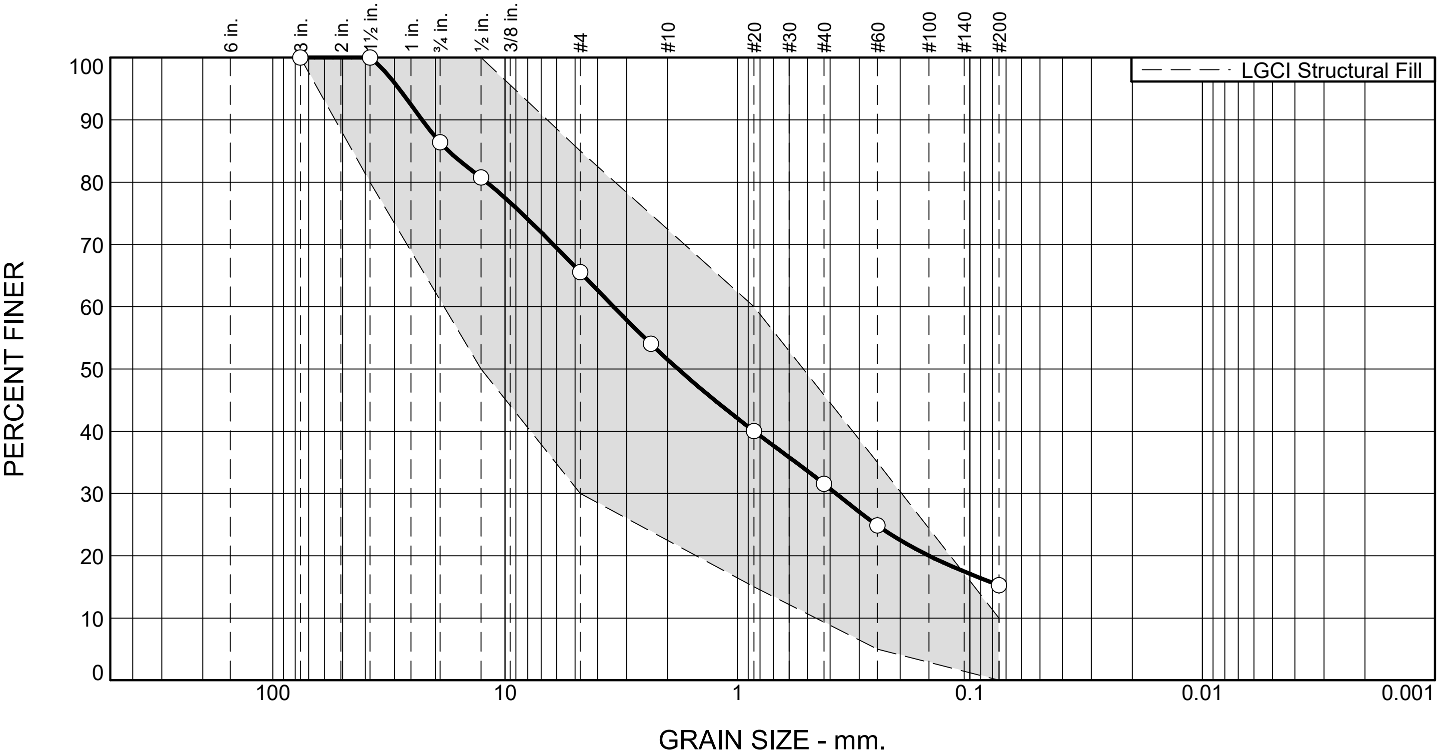
Location: B-3
Sample Number: S2 Bot. 13" **Depth:** 2'-0"

Date Sampled: 4/15/24

LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: Arrowstreet
Project: Proposed Neary Elementary School
Southborough, Massachusetts
Project No: 2404 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	13.6	20.9	14.0	19.9	16.4	15.2	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	86.4		
0.5"	80.7	50.0 - 100.0	
#4	65.5	30.0 - 85.0	
#8	54.0		
#20	40.0	15.0 - 60.0	
#40	31.6		
#60	24.9	5.0 - 35.0	
#200	15.2	0.0 - 10.0	X

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Silty SAND with Gravel (SM), fine to coarse, 15-20% fines, 30-35% fine to coarse gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}=	22.7705	D_{85}=	17.5075	D_{60}=	3.4161
D_{50}=	1.8018	D_{30}=	0.3765	D_{15}=	
D_{10}=		C_u=		C_c=	

Remarks

Natural Soil Material

Date Received: 4/15/24 **Date Tested:** 4/30/24

Tested By: SG

Checked By: SL

Location: B-4

Sample Number: S2 **Depth:** 2'-4'

Date Sampled: 4/15/24

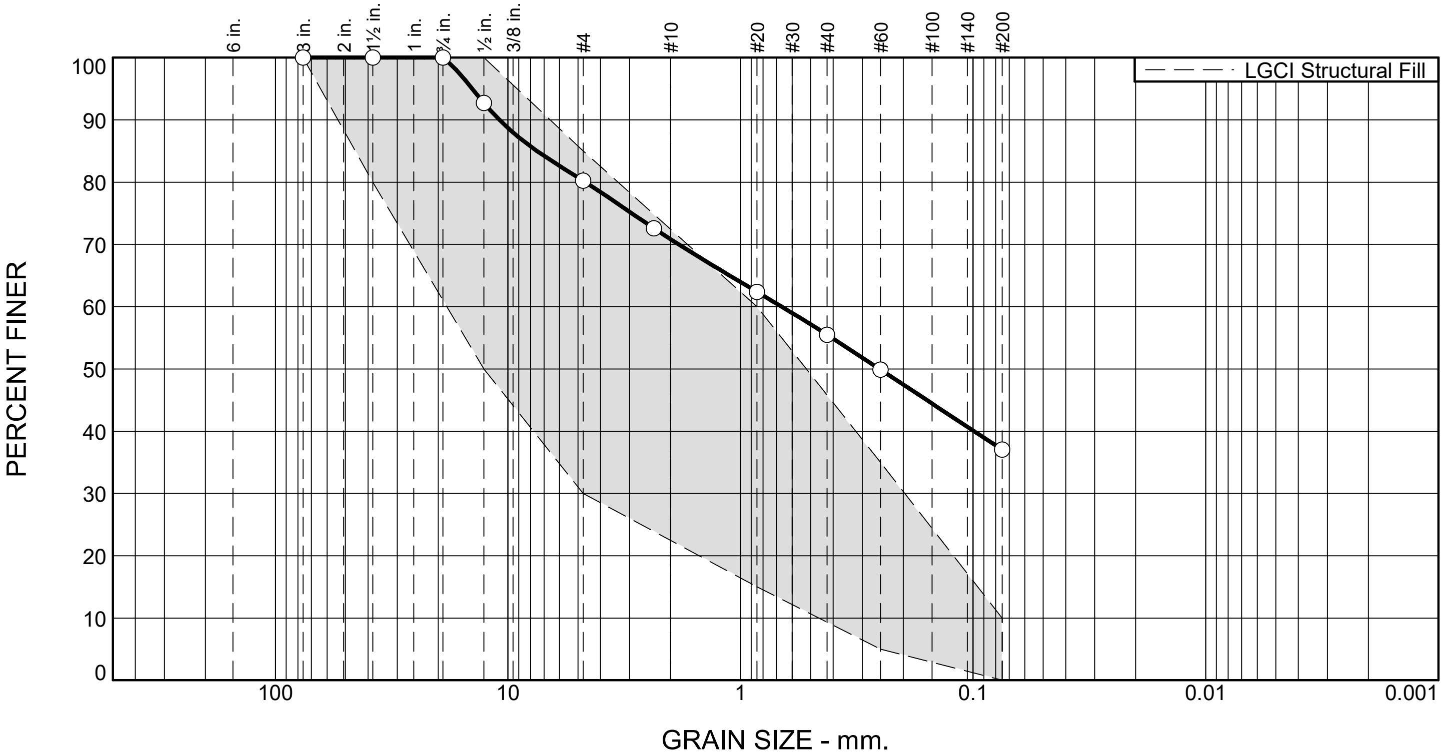
LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: Arrowstreet

Project: Proposed Neary Elementary School
Southborough, Massachusetts

Project No: 2404 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	19.8	9.3	15.4	18.5	37.0	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	100.0		
0.5"	92.7	50.0 - 100.0	
#4	80.2	30.0 - 85.0	
#8	72.6		
#20	62.4	15.0 - 60.0	X
#40	55.5		
#60	49.9	5.0 - 35.0	X
#200	37.0	0.0 - 10.0	X

* LGCI Structural Fill

Material Description

STM (D 2488) Classification: Silty SAND with Gravel (SM), fine to coarse, 35-40% fines, 15-20% fine gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}= 10.8651	D_{85}= 7.4884	D_{60}= 0.6656
D_{50}= 0.2525	D_{30}=	D_{15}=
D_{10}=	C_u=	C_c=

Remarks

Fill Material

Date Received: 4/15/24 **Date Tested:** 4/30/24

Tested By: SG

Checked By: SL

Location: B-5

Sample Number: S2 **Depth:** 2'-4'

Date Sampled: 4/15/24

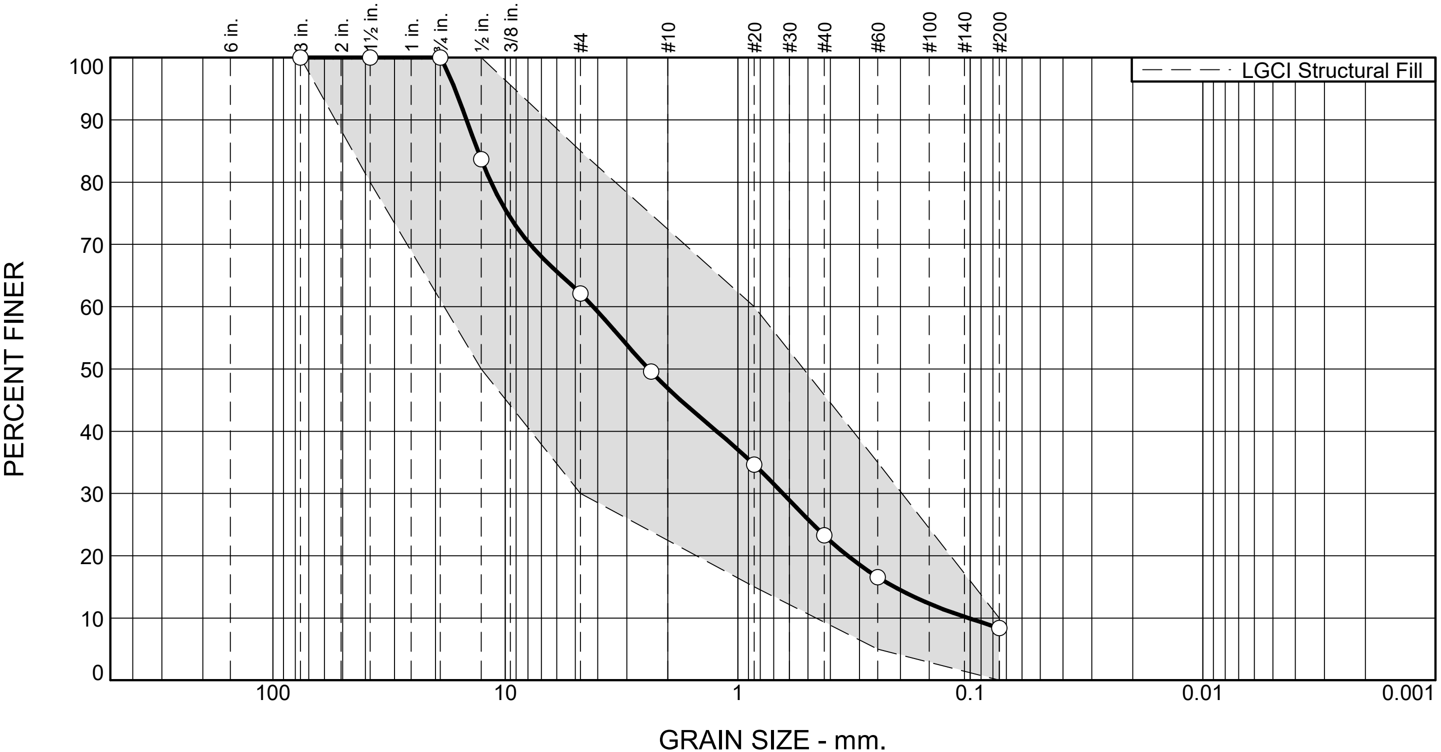
LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: Arrowstreet

Project: Proposed Neary Elementary School
Southborough, Massachusetts

Project No: 2404 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	37.9	15.2	23.6	14.9	8.4	

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3	100.0	100.0	
1.5	100.0	80.0 - 100.0	
0.75	100.0		
0.5	83.7	50.0 - 100.0	
#4	62.1	30.0 - 85.0	
#8	49.6		
#20	34.6	15.0 - 60.0	
#40	23.3		
#60	16.6	5.0 - 35.0	
#200	8.4	0.0 - 10.0	

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 35-40% fine subangular gravel, brown

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}= 14.6883	D_{85}= 13.1130	D_{60}= 4.1852
D_{50}= 2.4207	D_{30}= 0.6406	D_{15}= 0.2122
D_{10}= 0.1022	C_u= 40.95	C_c= 0.96

Remarks

Natural sand and gravel sample.

Date Received: 8/22/24 **Date Tested:** 8/30/24

Tested By: JKW

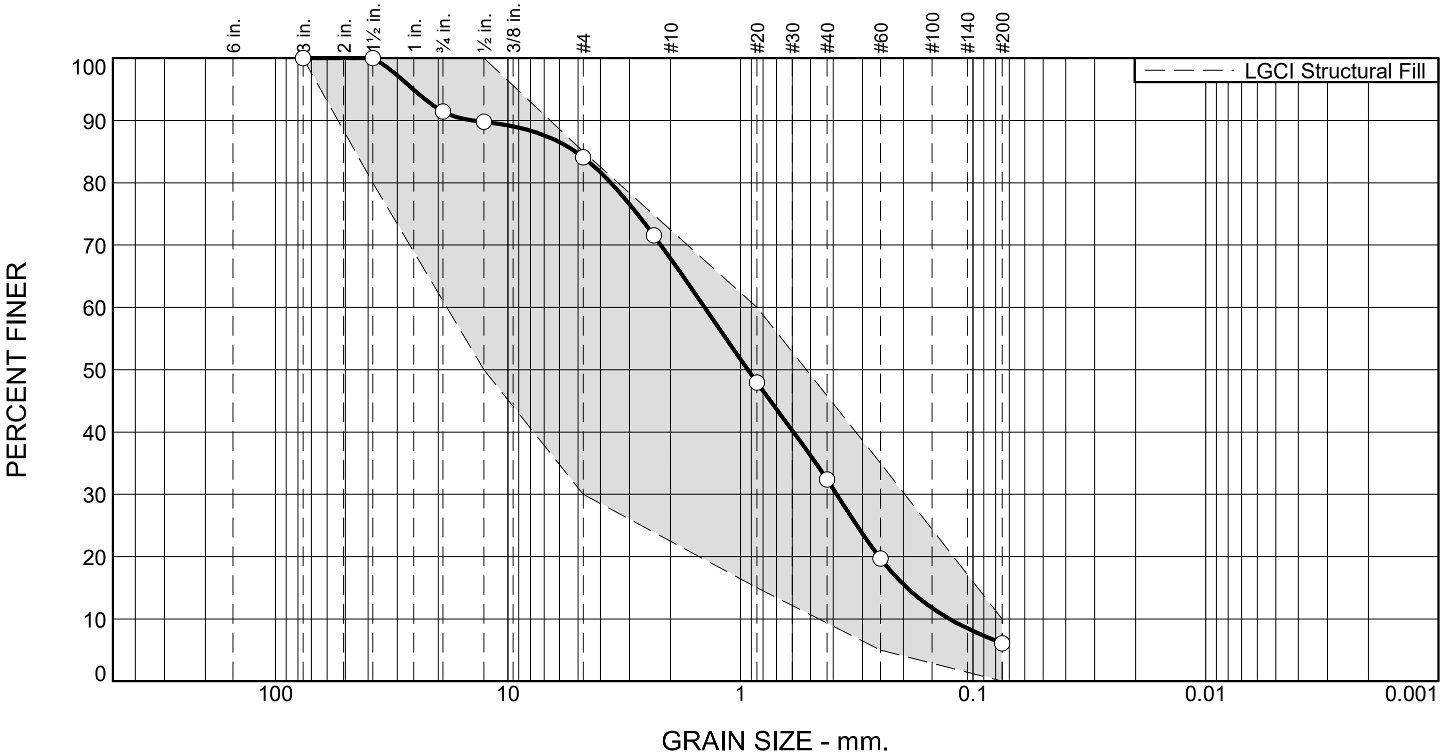
Checked By: SG

Location: Boring B-102
Sample Number: S2 **Depth:** 3.0'-5.0'
Date Sampled: 8/22/24

LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: Arrowstreet
Project: Proposed Neary Elementary School, Southborough, MA
Project No: 2404 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.6	7.3	16.2	35.5	26.3	6.1	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	91.4		
0.5"	89.8	50.0 - 100.0	
#4	84.1	30.0 - 85.0	
#8	71.6		
#20	47.9	15.0 - 60.0	
#40	32.4		
#60	19.7	5.0 - 35.0	
#200	6.1	0.0 - 10.0	

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 15-20% fine to coarse subangular gravel, brown

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}= 14.1142 D_{85}= 5.1317 D_{60}= 1.4263

D_{50}= 0.9309 D_{30}= 0.3858 D_{15}= 0.1922

D_{10}= 0.1264 C_u= 11.28 C_c= 0.83

Remarks

Fill sample.

Date Received: 8/22/24 **Date Tested:** 8/30/24

Tested By: JKW

Checked By: SG

Location: Boring B-104

Sample Number: S2 **Depth:** 2.0'-4.0'

Date Sampled: 8/22/24

Lahlaf Geotechnical Consulting, Inc.

Client: Arrowstreet

Project: Proposed Neary Elementary School, Southborough, MA

Project No: 2404 **Figure**

Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

TOWN OF SOUTHBOROUGH
Owner Name

17 COMMON STREET
Street Address

Map/Lot # 43-18

SOUTHBOROUGH
City

MA
State

Zip Code 01772

53 PARKERVILLE ROAD

B. Site Information

1. (Check one) ☑ New Construction ☐ Upgrade ☐ Repair

2. Soil Survey Available? ☑ Yes ☐ No If yes: NRCS SOIL SURVEY
Source
420B + 651
Soil Map Unit

CANTON & UDORTHENTS
Soil Name

Soil Limitations

Soil Parent material

Landform

3. Surficial Geological Report Available? ☑ Yes ☐ No If yes:
Year Published/Source
Map Unit

HOPE VALLEY ALASKITE GNEISS
Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☑ No

5. Within a velocity zone? ☐ Yes ☑ No

6. Within a Mapped Wetland Area? ☐ Yes ☑ No If yes, MassGIS Wetland Data Layer:
Wetland Type

7. Current Water Resource Conditions (USGS):
Month/Day/ Year
Range: ☐ Above Normal ☐ Normal ☐ Below Normal

8. Other references reviewed: SUDBURY RIVER

Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 7/24-1 Hole # 7/24/24 Date AM Time CLOUDY 60's Weather 42.299 Latitude -71.541 Longitude:

1. Land Use GRASS/FIELD (e.g., woodland, agricultural field, vacant lot, etc.) GRASS Vegetation N/A Surface Stones (e.g., cobbles, stones, boulders, etc.) 2-6% Slope (%)

   Description of Location: ______

2. Soil Parent Material: SANDY LOAM KAME Landform SIDE SLOPE Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Wetlands ____ feet
   Property Line ____ feet Drinking Water Well ____ feet Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☑ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: ____ Depth Weeping from Pit ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-76"	FILL										
76"-136"	C	SANDY LOAM	25Y 4/4	72"	7.5YR5/8						THREE HORIZONS OF FILL

Additional Notes:
WEEPAGE 72"

Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 724-2 (Hole #) 7/24/24 (Date) AM (Time) CLOUDY 60s (Weather) 42.299 (Latitude) -71.541 (Longitude:)

1. Land Use: LAWN (e.g., woodland, agricultural field, vacant lot, etc.) GRASS (Vegetation) N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-5% (Slope (%))

Description of Location: ______

2. Soil Parent Material: SANDY LOAM KAME (Landform) SIDE SLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Wetlands ____ feet
Property Line ____ feet Drinking Water Well ____ feet Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: ____ Depth Weeping from Pit ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-17"	AP	SANDY LOAM	10YR3/2								
17"-94"	C	↓	2.5Y4/4	42"	7.5YR5/8			5%			

Additional Notes:
WEEPAGE AT 86"
NO 'B' HORIZON

Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 724-3 (Hole #)   7/24/24 (Date)   AFG (Time)   CLOUDY 60S (Weather)   42.299 (Latitude)   -71.541 (Longitude:)

1. Land Use: LAWN (e.g., woodland, agricultural field, vacant lot, etc.)   GRASS (Vegetation)   N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.))   2-8% (Slope (%))

Description of Location: ______

2. Soil Parent Material: SANDY LOAM   KAME (Landform)   SIDE SLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body ____ feet   Drainage Way ____ feet   Wetlands ____ feet
Property Line ____ feet   Drinking Water Well ____ feet   Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No   If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No   If yes: ____ Depth Weeping from Pit   ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-11"	Ap	SANDY LOAM	10YR 3/2								
11"-27"	Bw		10YR 5/6								
27"-87"	C		2.5Y 4/4	45"	7.5YR 5/8			5%			

Additional Notes:
NO GROUNDWATER
NO WEEPAGE

Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:	Obs. Hole # _____	Obs. Hole # _____
☐ Depth observed standing water in observation hole	_____ inches	_____ inches
☑ Depth weeping from side of observation hole	_____ inches	_____ inches
☑ Depth to soil redoximorphic features (mottles)	_____ inches	_____ inches
☐ Depth to adjusted seasonal high groundwater (S_h) (USGS methodology)	_____ inches	_____ inches

Index Well Number _____ Reading Date _____

$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$

Obs. Hole/Well# _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

2. Estimated Depth to High Groundwater: _____ inches

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

☑ Yes ☐ No

b. If yes, at what depth was it observed (exclude A and O Horizons)? Upper boundary: VARIABLE inches Lower boundary: _____ inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator

Date: 7/24/24

Typed or Printed Name of Soil Evaluator / License #: LAWRENCE L GREENE 2688

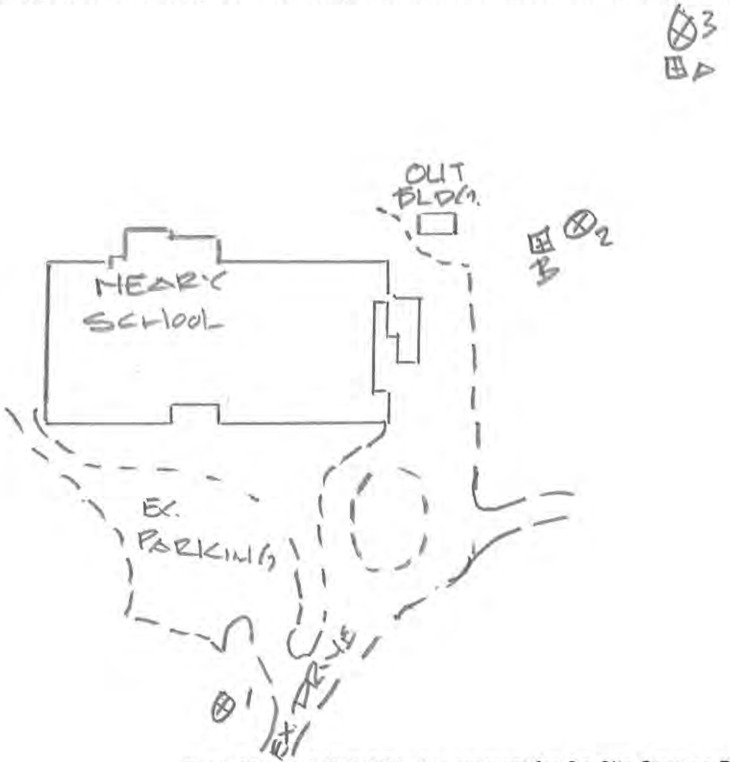
Expiration Date of License: 6/30/25

Name of Approving Authority Witness: SOUTHBORO BOARD OF HEALTH

Approving Authority:

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Field Diagrams: Use this area for field diagrams:



Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH

Percolation Test

Form 12

Percolation test results must be submitted with the Soil Suitability Assessment for On-site Sewage Disposal. DEP has provided this form for use by local Boards of Health. Other forms may be used, but the information must be substantially the same as that provided here. Before using this form, check with the local Board of Health to determine the form they use.

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

A. Site Information

TOWN OF SOUTHBOROUGH
Owner Name

17 COMMON STREET
Street Address or Lot #

SOUTHBOROUGH
City/Town

MA
State

01772
Zip Code

Contact Person (if different from Owner)

Telephone Number

B. Test Results

53 PARKERVILLE ROAD

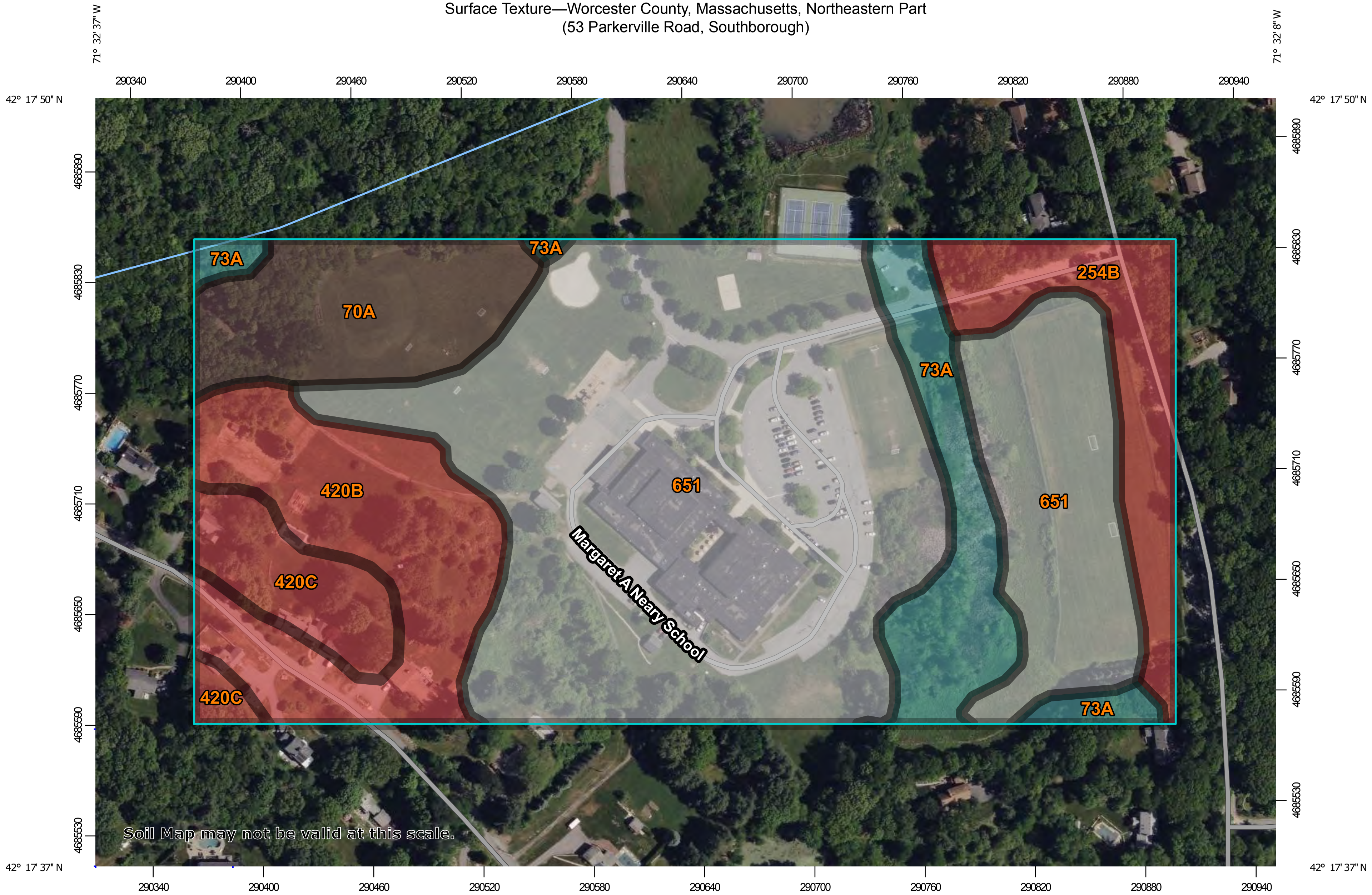
	Date 7/24/24	Time	Date 7/24/24	Time
Observation Hole #	724-3-PERC-A		724-2-PERC-B	
Depth of Perc	45"		39"	
Start Pre-Soak	8:28		9:12	
End Pre-Soak				
Time at 12"	8:43		9:28	
Time at 9"	9:25		10:18	
Time at 6"	10:30		11:45	
Time (9"-6")	65 MIN		87 MIN	
Rate (Min./Inch)	22 MIN/INCH		29 MIN/INCH	
	Test Passed: ☑		Test Passed: ☑	
	Test Failed: ☐		Test Failed: ☐	

LAR GREENE-McCARTY
Test Performed By:

SOUTHBOROUGH BOARD OF HEALTH
Board of Health Witness

Comments:

Surface Texture—Worcester County, Massachusetts, Northeastern Part
(53 Parkerville Road, Southborough)



Map Scale: 1:2,930 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- ▭ Area of Interest (AOI)

Soils

Soil Rating Polygons
- 🟥 Fine sandy loam
- 🟫 Moderately decomposed plant material
- 🟦 Peat
- ⬜ Not rated or not available

Soil Rating Lines
- 〰 Fine sandy loam
- 〰 Moderately decomposed plant material
- 〰 Peat
- 〰 Not rated or not available

Soil Rating Points
- ■ Fine sandy loam
- ■ Moderately decomposed plant material
- ■ Peat
- ■ Not rated or not available

Water Features
- 〰 Streams and Canals

Transportation
- ┼┼┼ Rails
- 〰 Interstate Highways
- 〰 US Routes
- 〰 Major Roads
- 〰 Local Roads

Background
- ▨ Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Worcester County, Massachusetts, Northeastern Part
Survey Area Data: Version 18, Sep 10, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Surface Texture

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
70A	Ridgebury fine sandy loam, 0 to 3 percent slopes	Moderately decomposed plant material	3.1	9.0%
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	Peat	3.0	8.7%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	Fine sandy loam	2.7	7.9%
420B	Canton fine sandy loam, 3 to 8 percent slopes	Fine sandy loam	4.7	13.6%
420C	Canton fine sandy loam, 8 to 15 percent slopes	Fine sandy loam	1.7	5.0%
651	Udorthents, smoothed		19.4	55.8%
Totals for Area of Interest			**34.8**	**100.0%**

Description

This displays the representative texture class and modifier of the surface horizon.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

Test Hole-1

Test hole-2

Test hole-3

Waterline Diagram

Sustainability

Green Building Rating System

The MSBA's Green Schools Program was updated in June 2023. The new policy requires all MSBA projects to register and achieve the Silver certification level of the most recent version of LEED BD+C Schools (LEED-S) or Verified certification for NE-CHPS. In addition, specific credits from each of the rating systems related to indoor air quality and materiel health are required. Lastly, the project must meet the minimum energy efficiency requirements of the 225 CMR 23 MA Stretch Energy Code. The district has selected to follow the LEED BD+C Schools rating system for this project. The Town of Southborough is a Stretch Code community.

The updated 2023 Green Schools policy provides incentives to a district to increase the energy efficiency and sustainability for new construction and major renovation/addition projects. For an additional 3% reimbursement, projects must meet the minimum energy efficiency requirements of the Massachusetts Opt-in Specialized Energy Code. For an additional 1% reimbursement, projects must achieve a minimum of 5 of 7 points in the LEED indoor air quality category or 8 of 10 in the NE-CHPS indoor air quality category. This project is targeting both strategies for 4% additional reimbursement.

LEED BD+C Schools Rating System

The current applicable LEED rating system is LEED v4 Building Design and Construction: Schools. Points from LEED v4.1 will be substituted as relevant to the project. For a LEED BD+C Schools Silver design, a project must satisfy all prerequisites and earn a minimum of 50 points of 110 points. The LEED Schools rating system is appropriate for buildings made up of core and ancillary learning spaces on K-12 school grounds. LEED BD+ C Schools certifications are awarded according to the following scale:

Certified 40—49 points, Silver 50—59 points, Gold 60—79 points, Platinum 80—110 points

The LEED Green Building Rating Systems address these topics:

- Integrative Progress
- Location and Transportation
- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Environmental Quality
- Innovation
- Regional Priorities

Optimize Energy Performance

The Commonwealth of Massachusetts approved an update to the Stretch Energy Code which took affect July 1, 2023. This updated code included new thresholds. As Southborough is a Stretch Code Community, the project will meet the new updated Stretch Energy Code as a required baseline. In addition, the Neary Building Committee Sustainability Subcommittee prefers that the project comply with requirements for the Massachusetts Opt-In Specialized Code through the All-electric path for an additional 3% reimbursement. The committee has proposed the building explore net-zero energy, which is an all-electric building with all energy use offset by renewable energy, further during Schematic Design.

Through the sustainability workshop with the Sustainability Subcommittee, several all-electric options for mechanical systems were reviewed. The following is a ranking of options in order of preference:

1. Ground-water heat pump chiller/ heating plant with displacement ventilation (this option would achieve net zero as defined by achieving an EUI of 25 or less.
2. Air-water heat pump chiller heating plant with displacement ventilation

3. VRF with overhead ventilation. It was noted that this option might achieve net zero. Solar would be required. Further study and agreements are needed.

The Design Team also presented available Mass Save and Federal Investment Tax Credit incentives, to understand how the incentives correlate to different energy systems and reduction targets. After reviewing this information, the Sustainability Subcommittee decided to study net zero in greater detail during Schematic Design phase of the project. In Schematic Design, the Design Team will perform an energy model and engineering economic assessment for the project as well as develop more detailed site and building analysis.

The building design optimizes load reductions from the envelope in several ways. The classroom wings are oriented to minimize east and west exposures. The orientation will also benefit optimizing daylight and reducing glare. The massing is compact and simplified with double-loaded corridors. The envelope design will utilize passive building principles with air-tight, thermally enhanced assemblies and a window-to-wall ratio of 25% or less.

Additional Building Performance Goals

Through the sustainability workshop with the School Building Committee, several sustainable, wellness, and resilience goals were identified. These include designing for Wellness, Energy, Equitable Community, Ecology, and Change.

The LEED Schools rating system will be used to help provide standards for meeting these goals. See appendices for the preliminary LEED Schools Checklist.

To minimize site impacts, the building was sited to provide maximum distance to wetland set backs and minimize the necessity for soil removal. The geotechical evaluation determined existing soil has a high organic content and does not have sufficient bearing capacity. Massing for the building is compact and rectilinear lending itself to simple construction.

Resiliency

The building will be sited outside of the FEMA flood zones and at or above the current floor elevation. All of the building materials will be durable with long-lifespans and designed and fastened to sustain the 125 MPH winds in risk category II for Southborough listed in 780 CMR Table 1604.11. All of the MEP options considered will include redundancy if one part of the systems fails. Ahave an emergency generator willto provide power for required life safety systems and minimal conditioning to prevent freezing.

Preferred Scheme Drawings

Drawings and Diagrams on the following pages.

PROJECT SCHEDULE

A proposed project schedule can be found on page ‹?›.

LEED v4/4.1 for BD+C: Schools

Project Checklist

all credits will follow v4.1 criteria unless otherwise noted

Project Name: Southborough Neary School

Date: 11/12/2024 Prepared By: Arrowstreet

Y	?	N			Possible
	1		Credit 1	Integrative Process	1

2	5	8	**Location and Transportation**		15
		na	Credit 1	LEED for Neighborhood Development Location	15
1			Credit 2	v4 Sensitive Land Protection	1
	2		Credit 3	v4 High Priority Site	2
	2	3	Credit 4	v4 Surrounding Density and Diverse Uses	5
		4	Credit 5	Access to Quality Transit	4
		1	Credit 6	Bicycle Facilities	1
	1		Credit 7	Reduced Parking Footprint	1
1			Credit 8	Electric Vehicles	1

6	3	3	**Sustainable Sites**		12
Y			Prereq 1	Construction Activity Pollution Prevention	Required
Y			Prereq 2	Environmental Site Assessment	Required
1			Credit 1	v4 Site Assessment	1
		2	Credit 2	Protect or Restore Habitat	2
	1		Credit 3	v4 Open Space	1
1	1	1	Credit 4	Rainwater Management	3
2			Credit 5	v4 Heat Island Reduction	2
1			Credit 6	v4 Light Pollution Reduction	1
	1		Credit 7	Site Master Plan	1
1			Credit 8	Joint Use of Facilities	1

5	4	3	**Water Efficiency**		12
Y			Prereq 1	Outdoor Water Use Reduction	Required
Y			Prereq 2	Indoor Water Use Reduction	Required
Y			Prereq 3	Building-Level Water Metering	Required
1	1		Credit 1	Outdoor Water Use Reduction	2
2	2	3	Credit 2	Indoor Water Use Reduction	7
1	1		Credit 3	Optimize Process Water Use	2
1			Credit 4	Water Metering	1

14	15	2	**Energy and Atmosphere**		31
Y			Prereq 1	Fundamental Commissioning and Verification	Required
Y			Prereq 2	Minimum Energy Performance	Required
Y			Prereq 3	Building-Level Energy Metering	Required
Y			Prereq 4	Fundamental Refrigerant Management	Required
6			Credit 1	Enhanced Commissioning	6
8	6	2	Credit 2	Optimize Energy Performance	16
	1		Credit 3	Advanced Energy Metering	1
	2		Credit 4	Grid Harmonization	2
	5		Credit 5	Renewable Energy	5
	1		Credit 6	Enhanced Refrigerant Management	1

Y	?	N			Possible
6	**3**	**4**		**Materials and Resources**	**13**
Y			Prereq 1	Storage and Collection of Recyclables	Required
Y			Prereq 2	Construction and Demolition Waste Management Planning	Required
2	1	2	Credit 1	Building Life-Cycle Impact Reduction	5
1		1	Credit 2	Building Product Disclosure and Optimization - EPDs	2
	1	1	Credit 3	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
2			Credit 4	Building Product Disclosure and Optimization - Material Ingredients	2
1	1		Credit 5	v4 Construction and Demolition Waste Management	2

9	5	2	**Indoor Environmental Quality**		16
Y			Prereq 1	Minimum Indoor Air Quality Performance	Required
Y			Prereq 2	Environmental Tobacco Smoke Control	Required
Y			Prereq 3	Minimum Acoustic Performance	Required
2			Credit 1	Enhanced Indoor Air Quality Strategies	2
2	1		Credit 2	Low-Emitting Materials	3
1			Credit 3	Construction Indoor Air Quality Management Plan	1
1	1		Credit 4	Indoor Air Quality Assessment	2
	1		Credit 5	Thermal Comfort	1
1		1	Credit 6	Interior Lighting	2
1	1	1	Credit 7	Daylight	3
1			Credit 8	Quality Views	1
	1		Credit 9	Acoustic Performance	1

6			**Innovation**		6
1			Credit 1.1	Exemplary Performance: EPDs	1
1			Credit 1.2	Pilot Credit: Composting	1
1			Credit 1.3	Innovation: Design for Active Occupants	1
1			Credit 1.4	Innovation: Green Building Education	1
1			Credit 1.5	Innovation: TBD	1
1			Credit 2	LEED Accredited Professional	1

2	2		**Regional Priority**		4
1			Credit 1	Optimize Energy Performance Threshold 8pt	1
1			Credit 2	Building Life-Cycle Impact Reduction Threshold 2pt	1
	1		Credit 3	Renewable Energy Threshold 2pt	1
	1		Credit 4	Outdoor Water Use Reduction	1

50	38	22	**TOTALS**	Possible Points:	110

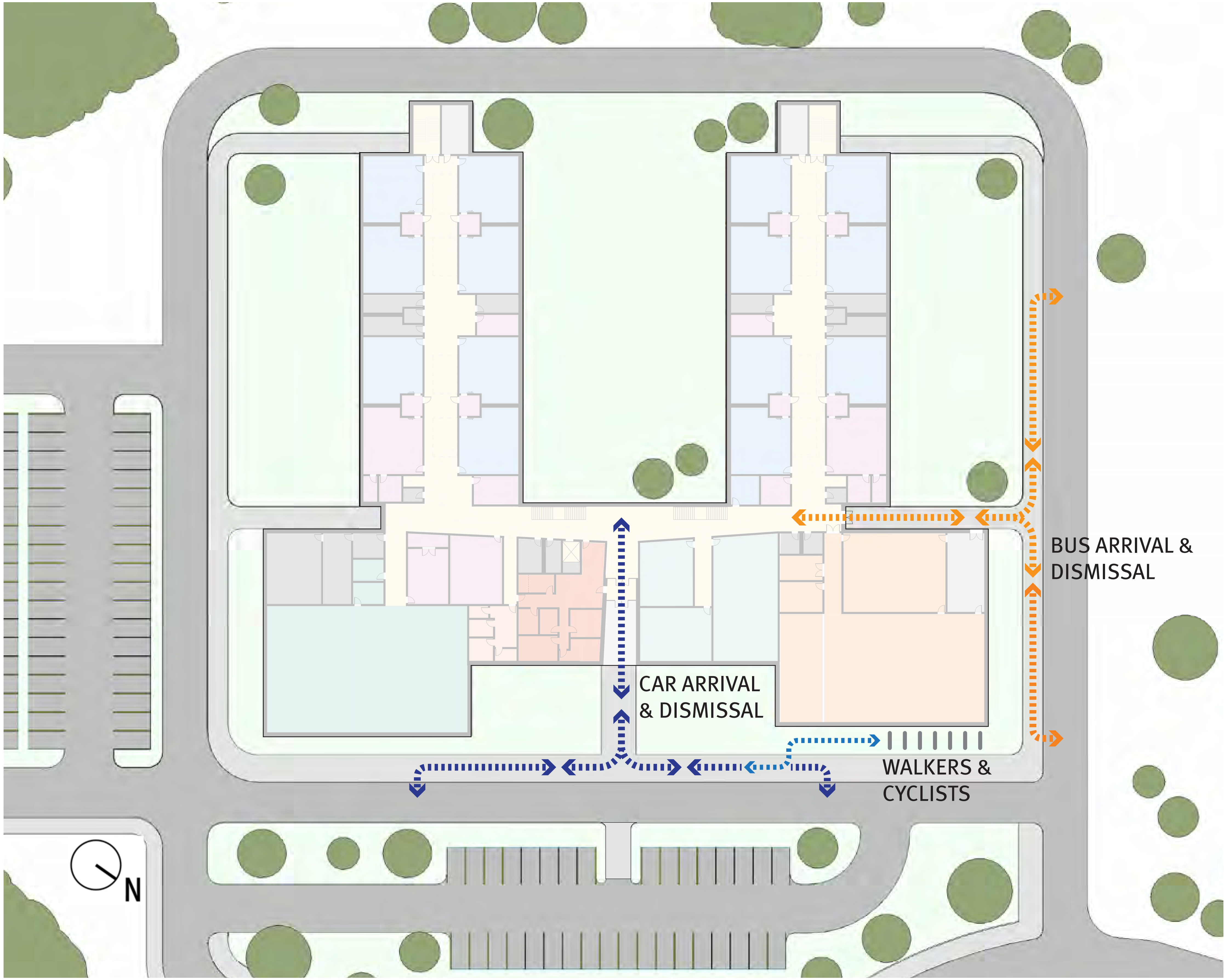
Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

ARROWSTREET

ARRIVAL / DISMISSAL

During arrial and dismissal, bus and car drop-offs are separated to prevent vehicular congestion and provide security to pedestrians.

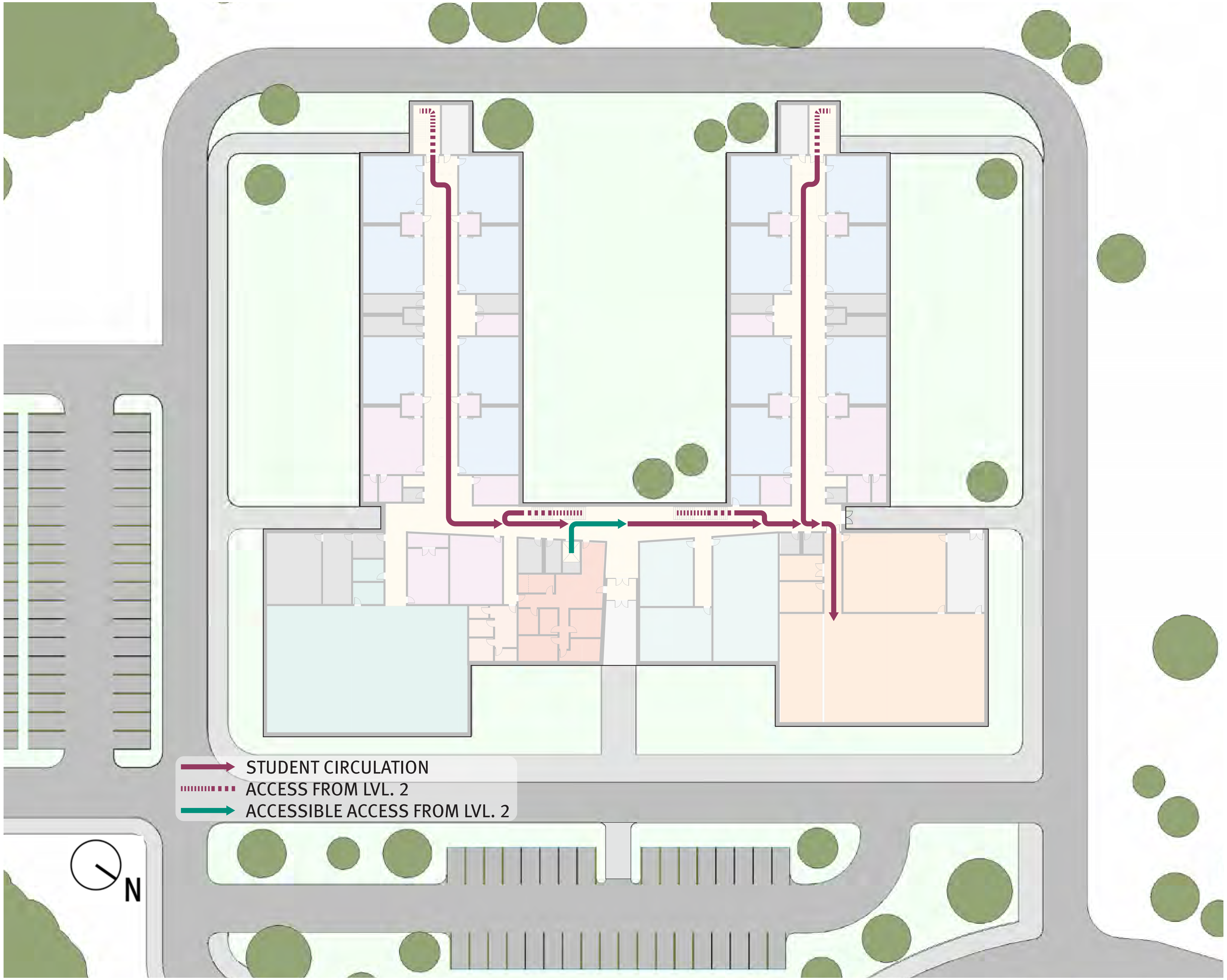
- Buses circle behind the building and queue separately from passenger cars.
- New queuing pattern allows for passenger cars to line up in front of the school for drop-off and pick-up.
- Walkers and cyclists enter through the main entry.



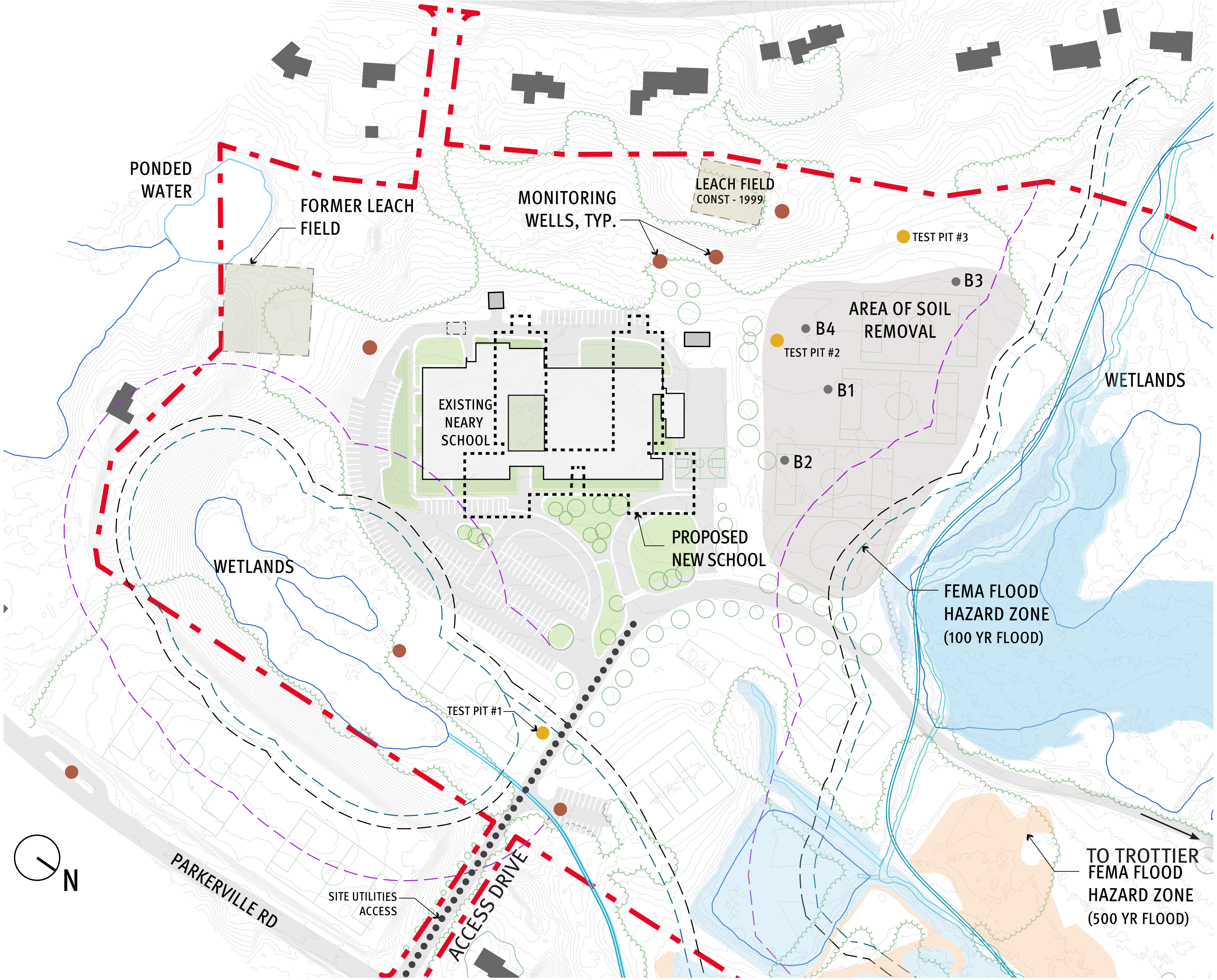
STUDENT CIRCULATION

The building is arranged around a central spine which connects the gym, administration suite, music rooms and the cafeteria on the first level. The two classroom wings spring off the central spine with a central courtyard between.

- The second level is accessed by way of stairs within the central spine or stairs at the end of each classroom wing.
- Accessible access is by way of a centrally located elevator.



SITE CONSTRAINTS



EXISTING SITE CONSTRAINTS

- Riverfront and wetlands setbacks along northern and southeast boundaries
- 100 Yr Flood Hazard Zone along stream at northern boundary of the site
- Existing landfill (capped 1999-2002) adjacent to southeast corner of the site
- Existing and former septic system and leaching fields along western site boundary
- High Groundwater Table

FACTORS IN LOCATING BUILDING

- Existing access road is shared with Trottier Middle School and needs to be maintained
- Borings on existing fields indicate 6’ of soil would need to be removed and replaced in order to meet the necessary bearing capacity
- Riverfront and wetlands setbacks along northern and southeast boundaries. Construction within area of the 200 foot Riverfront Buffer requires DEP and ConsComm ‘Alternatives Analysis’
- Site slopes steeply on South and West sides of the site so construction in these areas would require additional earth moving

SITE CIRCULATION

The school site is shared with the Trottier Middle School. There is a single entrance drive from Parkerville Road. The access drive will remain open during construction and will continue to serve both schools after construction is complete.

New site circulation includes the following features:

- Main entrance visible upon entry to the campus.
- Buses circle behind the building and queue separately from passenger cars.
- New queuing pattern allows for passenger cars to line up in front of the school for drop-off and pick-up.
- Visitor and community parking located at the front of the building close to the main entrance.
- Staff parking located to the south side of the building
- Emergency / FD access is maintained around the entire perimeter of the building.

Neary Elementary School

Southborough, Massachusetts

Project # 23072

City of Southborough Zoning Ordinance

Zoning district:	*RA*
Min. lot area (SF)	*43,560*
Min. frontage (ft)	*150*
Min. front yard (ft)	*35*
Min. side yards (ft)	*25*
Min. rear yard (ft)	*50*
Max. stories (2)	*2.5*
Max. height (ft) (11)	*35*

General Residence Districts
Schools permitted

Date: 11/12/2024

TOWN OF SOUTHBOROUGH

TOWN HOUSE · 17 COMMON STREET · SOUTHBOROUGH, MASSACHUSETTS 01772-1662
(508) 485-0710

August 20, 2024

Project Coordinator
Massachusetts School Building Authority
40 Broad Street – 5th Floor
Boston, MA 02109

RE: Capital Budget Statement

The following is the narrative of the Town of Southborough fiscal condition and purposed plan for the financing and construction expense of a new elementary school project.

Town Not-To-Exceed Total Budget:

The Neary School Building Committee voted and approved Option C.4, New Construction Neary, 610 Enrollment, as the District's Preferred Option with a vote on August 12, 2024. The cost breakdown (all estimated) of the preferred option is:

Total Budget:	$113,400,000
Construction Budget:	$92,000,000
Town Share:	$83,400,000
MSBA Share:	$30,000,000

Not to Exceed Budget: $113,400,000

Outstanding Debt:

At the end of Fiscal Year 2023, the Town of Southborough had total bonded debt outstanding of over $26.7 million. Of this amount approximately $24.0 million represents debt of the governmental activities and approximately $2.7 million represents debt of business-type activities.

The Town's total debt balance, including unamortized bond premiums, decreased by over $2.9 million. During the fiscal year the Town made regular scheduled maturities of governmental activities and business-type activities debt totaled approximately $2.6 million and $0.4 million, respectively. The remaining changes relate to unamortized bond premiums.

Remaining debt principal as of 6/30/24 is projected to be:

Septic Fund	$177,365
General Fund Town	$22,480,000
General Fund School	$731,008
Community Preservation Fund	$2,830,000
Water Enterprise Fund	$2,983,582

*Note: some other funds are used to offset general fund debt, most notably ambulance receipts that are used to offset fire and some police debt, typically in the range of $400-600K annually.

Bond Anticipation Notes Outstanding Due 6-12-25:

Neary School Feasability Study	$570,000
Town House Renovations (CPA Funded)	$500,000

The feasibility study was authorized for $950,000. The Town will permanently finance the BANs upon completion of the project. The total Town commitment will likely be approximately $570,000.

The Town maintains a bond rating of “AAA” as set by Standard and Poor’s for general obligation debt.

At the Annual Town Meeting in March 2024 the Town authorized a total of $2,186,000 for Town debt related to Town capital equipment.

State statutes limit the amount of general obligation debt a governmental entity may issue to 5.0% percent of its total assessed valuation. The current debt limitation for the Town is approximately $152 million, which is in excess of the Town’s outstanding general obligation debt. See below:

DEBT STATEMENT
of the
Town of Southborough, Massachusetts

(A) Equalized valuation under G.L. c.58, s.10C as of January 1, 2022			$3,033,118,400
(B) Debt limit (5%)			$ 151,655,920
Total outstanding debt	$ 29,132,365		
Debt authorized but not yet incurred, including this issue		$ 6,508,000	
(C) Gross debt		$ 35,640,365	
(D) Amount of outstanding debt which is outside the debt limit		$ 5,080,365	
(E) Amount of authorized but not yet incurred debt which is outside the debt limit (Itemized on page 2)		$ 700,000	

(F) Outstanding debt outside the debt limit plus authorized but not yet incurred debt outside the debt limit (D plus E)	$ 5,780,365	
(G) Net debt subject to the debt limit (C minus F)		$ 29,860,000
Remaining borrowing capacity under debt limit (B minus G)		$ 121,795,920

List of Other Capital Projects:

List of other Town Projects Underway: There are no other major capital projects concurrent with this School project. The next major Town project will be a possibly Library project which if approved will require issuing long term debt that would begin payments in FY28/FY29.

Description of the Local Process for Authorization and Funding of the Proposed Project:

The Neary School Building Committee has voted to support the submission of this project for approval by the MSBA. Upon MSBA's approval of a schematic design and funding, the Town will consider its options for local approval of this project pursuant to MA General Laws Chapter 59, Section 21C.

Tax Impact:

Based on an assumption of a project cost to the Town or $83,400,000 (amount from Town's share above) and borrowing for 30 years, the impact to the tax rate of covering that debt service would be $1.45 or an annual increase of approximately $1,290 for the average single family home.

Please advise if we can be of further assistance.

TOWN OF SOUTHBOROUGH

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(508) 485-0710

August 27, 2024

Mr. Michael McGurl
Director of Capital Planning
40 Broad Street
Boston, MA 02109

Dear Mr. McGurl:

This is to certify that the enclosed final minutes of the Neary School Building Committee held on August 26th, 2024 accurately reflect the votes taken in support of the District's submission of the Preferred Schematic Report materials.

Jason Malinowski, Chair
Neary School Building Committee

Enclosures:
Vote Tally
Minutes

Town of Southborough, Massachusetts

Neary Building Committee

August 26, 2024

8:00 AM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Chris Evers, Mark Davis, Andrew Pfaff, Kathryn Cook, Denise Eddy, and Jason Malinowski

Members Absent: None

Ex-Officio

Members Present: Mark Purple, Town Administrator, and Brian Ballantine Town Treasurer/ Finance Director

Members Absent: Gregory Martineau Superintendent of Schools, Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, Keith Lavoie Assistant Superintendent of Operations, Rebecca Pellegrino, Assistant Superintendent of Finance, Kathleen Valenti, Neary School Principal, Steven Mucci, Principal of Woodward School,

I. Call Meeting to Order

Jason Malinowski called the Neary Building Committee into order at 8:01 AM.

II. Approval of Meeting Minutes from August 9, 2024, August 12, 2024, and August 19, 2024

Jason Malinowski moved, Denise Eddy seconded, and it was unanimously voted by roll call, "To approve the August 9,2024 (joint with Finance SC), August 12, 2024, and August 19, 2024 meeting minutes with the edits discussed during the meeting."

Approval of Meeting Minutes

Roll Call:
For: Malinowski, Eddy, Challen, Davis, Pfaff, Cook, Davis
Opposed: None
Abstained: None

III. Approval of Executive Session Meeting Minutes from August 9, 2024

Minutes to be prepared for the next meeting. No action required during today's meeting.

IV. Approval of Preferred Schematic Report Submission to MSBA

The Committee reviewed a summary of the changes made since the public meeting last week.

Approval of PSR Submission to MSBA

Jason Malinowski moved, Denise Eddy seconded, and it was unanimously voted by roll call, "To authorize Skanska USA to submit the Preferred Schematic Report to the MSBA no later than August 28, 2024."

Roll Call:
For: Malinowski, Eddy, Challen, Davis, Pfaff, Cook, Davis
Opposed: None
Abstained: None

V. Public Comment (None at this time)

VI. Meeting Schedule – September 16, 2024

VII. Approval of August 26, 2024 Meeting Minutes

Approval of 8/26 Meeting Minutes

Jason Malinowski moved, Denise Eddy seconded, and it was unanimously voted by roll call, "To approve the August 26, 2024 meeting minutes, as updated for the discussion during the meeting."

Roll Call:
For: Malinowski, Eddy, Challen, Davis, Pfaff, Cook, Davis
Opposed: None
Abstained: None

VIII. Other business that may properly come before the Committee (None at this time)

IX. Adjournment

MOTION TO ADJOURN

Jason Malinowski moved, Denise Eddy seconded, and it was unanimously voted by roll call, "To adjourn."

Roll Call:
For: Malinowski, Eddy, Challen, Davis, Pfaff, Cook, Davis
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 8:19 AM.

Respectfully submitted,

Jason Malinowski

Chair

List of documents used at this meeting:

1. Neary Building Committee Agenda of August 26, 2024
2. Draft Meeting Minutes – August 9, 2024 (joint with Finance SC)
3. Draft Meeting Minutes – August 12, 2024
4. Draft Meeting Minutes – August 19, 2024
5. PSR Volume 1
6. PSR Volume 2
7. Draft Meeting Minutes – August 26, 2024

TOWN OF SOUTHBOROUGH

INCORPORATED JULY 6, 1727

TOWN HOUSE · 17 COMMON STREET · SOUTHBOROUGH, MASSACHUSETTS 01772-1662
(508) 485-0710

August 27 2024
Mr. Michael McGurl
Director of Capital Planning
40 Broad Street
Boston, MA 02109

Dear Mr. McGurl:

At its meeting on Monday August 26th, 2024 the Neary School Building Committee voted the following:

The Neary School Building Committee voted unanimously to authorize Skanska to submit the Preferred Schematic Report to the Massachusetts School Building Authority on behalf of the Neary School Building Committee.

Motion by: Jason Malinowski
Second by: Denise Eddy

Roll call:
For: Roger Challen, Kathryn Cook, Mark Davis, Denise Eddy, Christopher Evers, Andrew Pfaff, Jason Malinowski
Opposed: None
Abstained: None

Respectfully submitted:

Jason Malinowski, Chair
Neary School Building Committee

MELANIE OTSUKA
Notary Public
Commonwealth of Massachusetts
My Commission Expires
April 1, 2027

Melanie Otsuka

TOWN OF SOUTHBOROUGH
NEARY SCHOOL BUILDING COMMITTEE ("NBC")
DATE: August 26, 2024

VOTE TALLY SHEET to Recommend Authorization to Submit PSR

Motion: To approve the submission of the Preferred Schematic Report and authorize Skanska to submit the Preferred Schematic Report to the Massachusetts School Building Authority.

Neary School Building Committee - VOTING MEMBERS	In Favor	Opposed	Abstained	Absent
Jason Malinowski, Chair and Capital Planning Representative	x			
Denise Eddy, Vice Chair & Citizen-at-large	x			
Andrew Pfaff, Clerk & Advisory Community Representative	x			
Roger Challen, School Committee Representative	x			
Kathryn Cook, Select Board Representative	x			
Mark Davis, Citizen-at-large	x			
Christopher Evers, Citizen-at-large	x			
TOTAL	**7**	0		

TOWN OF SOUTHBOROUGH

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Module 3 Grade Reconfiguration and Districting Approval Certification

September 16, 2024

Ms. Mary Pichetti
Director of Capital Planning
40 Broad Street
Boston, Massachusetts 02109

Dear Ms. Pichetti:

The Southborough School Committee (the "SSC") understands the proposed change to existing elementary grade structure (Current: PreK-1, 2-3, 4-5; Proposed: PreK-1 and 2-5) that is being proposed in the Preferred Schematic Report for the Margaret A. Neary School project (the "Project"). The SSC voted on August 26, 2024, to approve and authorize the proposed change to the existing grade structure as described in the Feasibility Study related materials. A certified copy of the SSC meeting minutes, which includes the specific language of the vote and the number of votes in favor, opposed, and abstained, are attached. Leading up to the vote, the SSC met jointly with the Neary Building Committee (NBC) on July 15, 2024; July 22, 2024; and August 12, 2024; to discuss grade configuration during construction and a potential new building. The SSC met in a public meeting on August 5, 2024 to further deliberate on the grade configuration options.

The Town of Southborough's Capital Planning School Research Subcommittee, which included District leaders and a SSC member, held meetings to discuss enrollment and grade configuration. The meetings took place on: January 7, 2022; January 10, 2022; January 20, 2022; January 21, 2022; January 25, 2022; February 4, 2022; February 9, 2022 (12:30 PM); February 9, 2022 (6:30 PM); February 15, 2022, and February 28, 2022.

Furthermore, the NBC hosted public forums to present the grade-level configuration proposal, as described in the Feasibility Study. The forums were held on February 29, 2024; March 11, 2024; April 11, 2024; May 7, 2024 and June 25, 2024. The goals of the forum were to communicate the proposed grade structure and seek input from the community. These meetings complied with the state Open Meeting Law.

Summary of feedback:
Questions centered on the logistics during construction if a 2-5 elementary school was constructed.
Feedback centered on the cost.
No concerns were shared about the proposed change in grade configuration.
Questions about the plan for PreK. (If approved the grade configurations will be PreK-1 and 2-5).
All stakeholders discussed the positive educational impacts of a 2-5 grade configuration.

Lastly, a community survey was conducted in the late winter and early spring of 2024 to solicit input and feedback on the proposed grade configuration. Of the respondents, 58.36% preferred the proposed 2-5 grade configuration.

To the best of my knowledge and belief, each of the meetings listed above complied with the requirements of the Open Meeting Law, M.G.L. c. 30A, §§ 18-25 and 940 CMR 29 *et seq*.

If you have any questions or require any additional information, please contact Gregory L. Martineau, Superintendent of Schools.

By signing this Grade Reconfiguration and Districting 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:

Mark Purple
Title: Chief Executive Officer

Date: 11-8-2024

By signing this Grade Reconfiguration and Districting 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.

Gregory J Martineau
By:

Gregory Martineau
Title: Superintendent of Schools

Date: 11.8.24

By signing this Grade Reconfiguration and Districting 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:

Chelsea Malinowski
Title: Chair of the School Committee

Date: 11/8/24

SOUTHBOROUGH SCHOOL COMMITTEE
SPECIAL OPEN MEETING

Algonquin Regional High School
Library

79 Bartlett Street Northborough, MA 01532
Monday, August 26, 2024
8:00 PM

Southborough K-8 School Committee:
Present: Chelsea Malinowski, Roger Challen, Laura Kauffmann, and Alan Zulick

Absent: None

Administration:
Present: Gregory Martineau

1. Call Meeting to Order

   Chelsea Malinowski called the Southborough School Committee Special Open Meeting to order at 8:45 pm.

2. Approval of Neary Preferred Schematic Report (PSR) submission to Massachusetts School Building Authority (MSBA)

   Committee members reviewed the Preferred Schematic Report.

Chelsea Malinowski moved, Roger Challen seconded, and it was unanimously voted, "To approve the Preferred Schematic Report submitted by Skanska to the Massachusetts School Building Authority on behalf of the Neary School Building Committee."

MOTION TO APPROVE THE PREFERRED SCHEMATIC DESIGN

3. Approval of updated grade configuration for Neary School

   Committee members reviewed the updated grade configuration of grades two through five as outlined in the Preferred Schematic Report.

Chelsea Malinowski moved, Laura Kauffmann seconded, and it was unanimously voted, "The Southborough School Committee supports the elementary grade configuration, of grades two through five for the new Neary School Building, as outlined in the Preferred Schematic Report."

MOTION TO APPROVE THE GRADE CONFIGURATION

4. Adjournment

MOTION TO ADJOURN

Chelsea Malinowski moved, Alan Zulick seconded, and it was unanimously voted, "To adjourn."

Chelsea Malinowski adjourned the Southborough School Committee Special Open Meeting at 9:05 pm.

Respectfully submitted,
Gregory L. Martineau
Superintendent of Schools

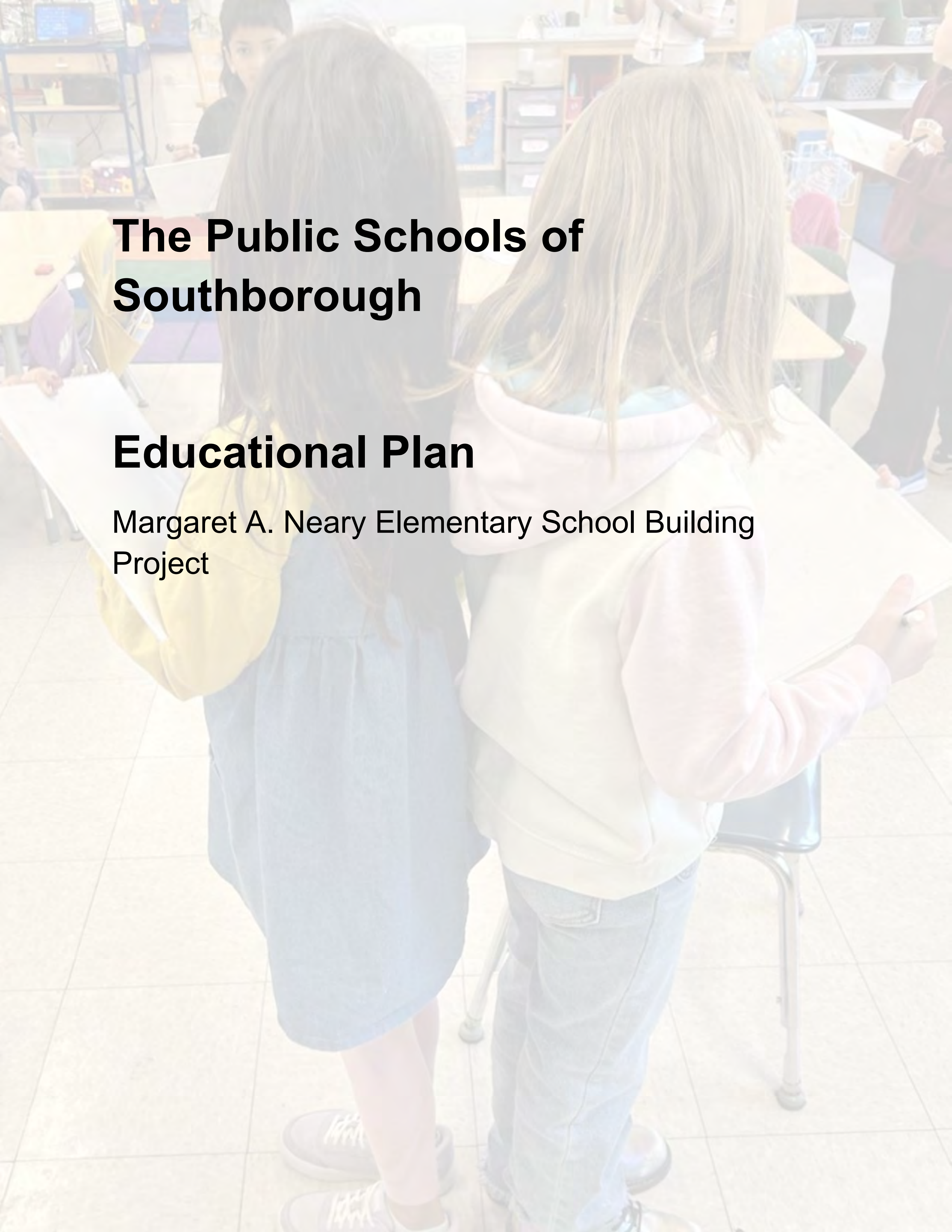
List of documents used at this meeting:

1. Southborough School Committee Special Open Meeting Agenda of August 26, 2024
2. Neary Preferred Schematic Report (PSR)

Approved: 09/11/2024

Chelsea Malinowski
Southborough School Committee Chair

B: Educational Plan With Design Responses



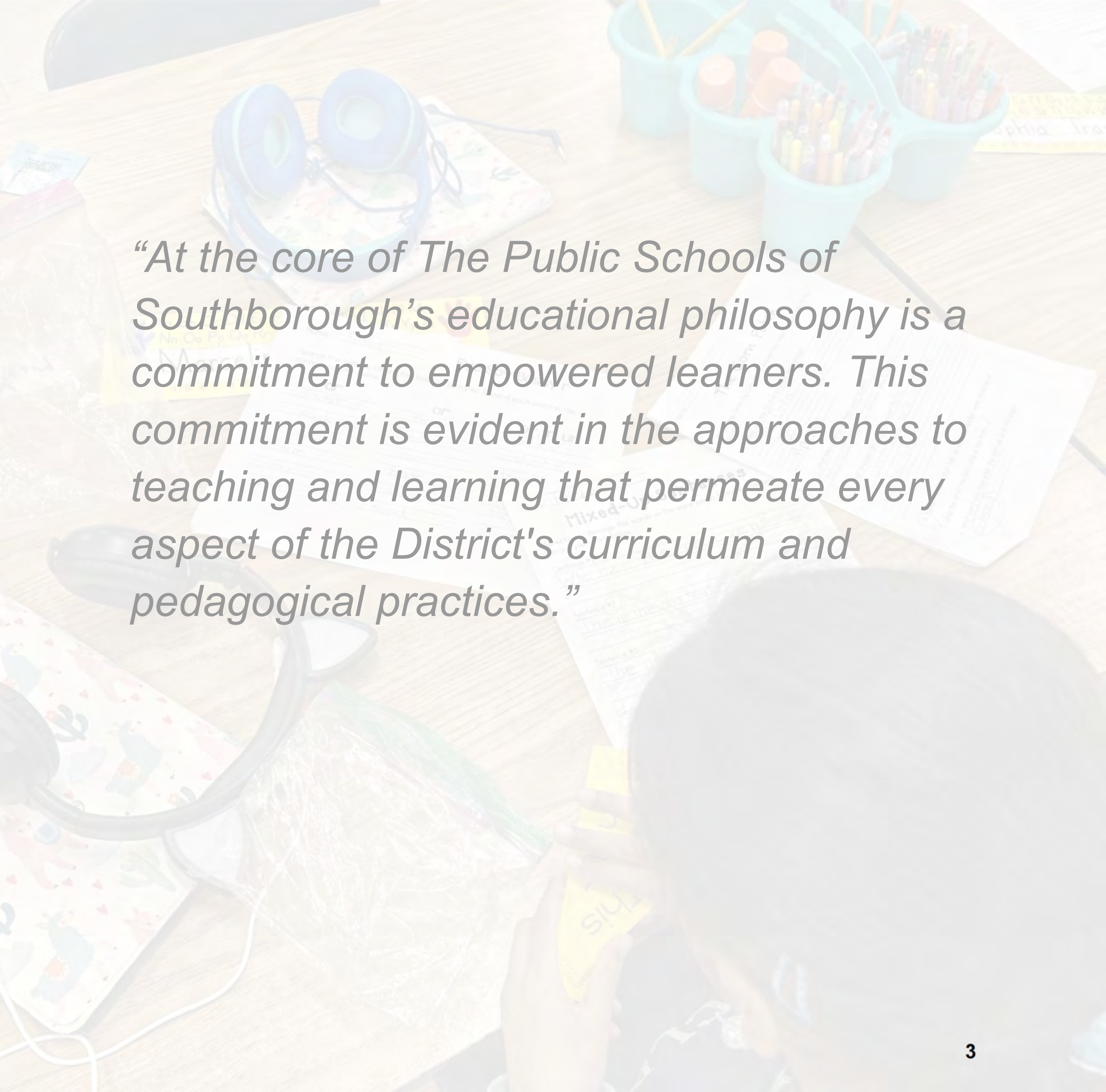
The Public Schools of Southborough

Educational Plan

Margaret A. Neary Elementary School Building Project

MODULE 3: PRELIMINARY DESIGN PROGRAM

Table of Contents



> *"At the core of The Public Schools of Southborough's educational philosophy is a commitment to empowered learners. This commitment is evident in the approaches to teaching and learning that permeate every aspect of the District's curriculum and pedagogical practices."*

INTRODUCTION

The Public Schools of Southborough, guided by its mission to Educate, Inspire, and Challenge, embarked on a forward-looking journey in the 2019-2020 academic year with the strategic planning process culminating in *Vision 2026: Educate, Inspire, Challenge*. This roadmap, crafted through the collaborative efforts of a broad spectrum of stakeholders—including parents, community members, educators, students, and school and District leadership—sets the course for an educational experience that not only meets today's standards but anticipates the needs and possibilities of tomorrow.

In the subsequent year, the District's commitment to inclusivity and excellence prompted a District equity audit in partnership with an outside consulting group, a critical step toward understanding and enhancing how the District's policies, practices, and systems affect all members of the school community, especially those historically marginalized.

In *Vision 2026: Educate, Inspire, Challenge*, the District articulates the profile of a learner who will navigate the complexities of the modern world as:

Collaborators

- Enrich the learning of self and others through teamwork.
- Solicit and respect diverse perspectives and contributions.
- Seek, contribute, and react to feedback to achieve shared outcomes.
- Recognize and leverage strengths to build collective commitment, action, and understanding.

Critical and Creative Thinkers

- Transfer and connect knowledge and skills to deepen understanding.
- Demonstrate thinking that is clear, rational, open-minded, and informed by evidence.
- Use disciplinary knowledge and skills in routine and innovative ways.
- Make informed decisions, solve problems, and use a variety of tools to deepen learning.

Communicators

- Articulate thoughts and ideas using oral, written, and non-verbal communication skills for a range of purposes and audiences.
- Listen to decipher meaning, including knowledge, values, attitudes, and intentions.
- Use technological skills and contemporary digital tools to explore and exchange ideas.

Socially and Civically Engaged

- Demonstrate personal, civic, and social integrity through ethical and empathetic behaviors.
- Recognize individual and communal impact on others and the natural world.
- Value and embrace diverse cultures and unique perspectives through mutual respect and open dialogue.

Growth-Oriented

- Cultivate positive attitudes and habits about learning.
- Pursue one's own interests and curiosity to experience new learning.
- Consistently improve the quality of one's own thinking by skillfully analyzing, assessing, and reconstructing.
- Persist to accomplish difficult tasks and to overcome academic and personal barriers to meet goals.

Healthy and Balanced

- Develop and demonstrate awareness, sensitivity, concern, and respect to connect with self and others' feelings, opinions, experiences, and cultures.
- Use reflective practices to understand one's personal strengths, challenges, and passions.
- Make choices to support a lifestyle that is healthy, both physically and mentally.
- Demonstrate resilience through the ability to manage emotions, stress, and challenges.

The Public Schools of Southborough's work is anchored by six core values that guide all members of the learning organization: Integrity, Empathy, Inclusivity, Equity, Perseverance, and Respect. These values guide all interactions and inform its policies and practices, ensuring that the educational environment is supportive, challenging, and accessible to all.

To realize the District's vision, the District's work is centered around five strategic objectives:

- Empowering Learners**:** Implement instructional practices that engage students in developing and demonstrating their knowledge and skills through rigorous, innovative, and relevant learning experiences.
- Equity of Opportunity**:** Provide all students access to challenging and culturally responsive learning experiences that meet their individual needs.
- Healthy and Balanced Learners**:** Prioritize the social, emotional, and physical well-being of students.
- Educator Learning and Leadership**:** Demonstrate continual growth through professional collaboration.
- Finance and Operations to Support Teaching and Learning**:** Develop, support, and operate sustainable, functional, and well-maintained schools.

In the District's commitment to continuous improvement, it completed an equity audit to better understand and address the disparities within its systems, policies, and practices. Recognizing that true equity is an ongoing process, the District is committed to fostering an environment where every member of the community is equipped to view their roles through an equity lens, continuously working towards an inclusive and equitable educational landscape.

In a time of rapid change and complex challenges, The Public Schools of Southborough remain committed to educating, inspiring, and challenging ALL students to be prepared for a modern world.

The Statement of Interest submitted to the Massachusetts School Building Authority (MSBA) in 2022 articulates that the current Margaret A. Neary Elementary School building only allows for basic functionality and is insufficient for the delivery of the educational program. While maintained over the years, the majority of the facility's building systems and components are nearing the end of life expectancy. To support this determination, the District contracted with Vertex Companies, Inc. to complete a Facilities Conditions Assessment (March 2021). This assessment confirmed the need for renovation or replacement of the roof, electrical, and other building modifications to meet building code requirements. The District's priority is to modernize the Margaret A. Neary Elementary School to a condition that rectifies current deficiencies and satisfies projected future requirements for educational programs, such as spaces with integrity for world language, art, music, science, and technology.

At the core of The Public Schools of Southborough's educational philosophy is a commitment to empowered learners. This commitment is evident in the approaches to teaching and learning that permeate every aspect of the District's curriculum and pedagogical practices. By infusing technology seamlessly into daily activities, the District enables students to explore and pursue their interests and allows teachers to provide all students access to learning. This educational philosophy is further enriched by an integrated curriculum that promotes inquiry-based and interdisciplinary experiences, seamlessly incorporating STEAM (Science, Technology, Engineering, Arts, and Mathematics) principles.

Central to the District's approach is the application of Universal Design for Learning (UDL) principles and a multi-tiered system of support. These frameworks ensure that instruction is accessible and challenging for all learners, providing multiple pathways to understanding, engagement, and expression. By doing so, the District guarantees that every student has the opportunity to exercise agency in their learning journey.

Small group instruction is pivotal to ensure the success of each student. Through targeted and responsive teaching methods, students receive the support and enrichment they need to thrive socially, emotionally, and academically.

Recognizing the essential role of professional collaboration, The Public Schools of Southborough have invested significantly in developing a culture of professional collaboration among educators. Teacher teams are an integral part of our educational ecosystem, regularly convening to analyze achievement data, exchange insights on student work, develop instructional resources, and plan coherent and impactful lessons.

To further support this culture of collaboration, it is essential that a new facility is designed with the dual purpose of enhancing professional collaboration among staff during the school day and providing versatile spaces for educators to engage with families in both private and public settings. A design needs to include spaces that are adaptable and promote effective collaboration.

In 2022, The Public Schools of Southborough, in collaboration with the Town of Southborough's Capital Planning Committee - School Research Subcommittee, completed a Grade Level Configuration Evaluation. The evaluation took into consideration current facilities, enrollment, and educational programming. The evaluation resulted in a recommendation to study the reduction of the number of elementary school transitions from two transitions to one transition. Currently, elementary students experience school transitions from grades 1-2 and grades 3-4.

As part of the feasibility study, the District is required to study three enrollment alternatives: 1) Grades 4-5, 2) Grade 3-5, and 3) Grades 2-5.

Alternative 1:
Grades PreK-1: Mary E. Finn Elementary School
Grade 2-3: Albert S. Woodward Memorial Elementary School
Grades 4-5: Margaret A. Neary Elementary School

Alternative 2:
Grades PreK-1: Mary E. Finn Elementary School
Grade 2: Albert S. Woodward Memorial Elementary School
Grades 3-5: Margaret A. Neary Elementary School

Alternative 3:
Grades K-1: Albert S. Woodward Memorial Elementary School
Grades 2-5: Margaret A. Neary Elementary School

The District's recommendation, which was considered during MSBA's Eligibility Phase, was the 2-5 grade configuration as it provides benefits, which include:

1. Provides for greater collaboration and vertical curriculum alignment between grades 2-5;
2. Allows and maximizes District resources and builds a greater sense of school community;
3. Reduces the number of school transitions;
4. Provides more opportunity to maximize resources (people and materials);
5. siblings within the grade range to be at the same school, facilitating both bus transportation for children in the same family as well as parental transportation to and from school and/or extended care and;
6. Reduces the amount of time students are on buses and the number of transportation routes, which is a logistical benefit as well as an avoidance of significant additional costs that would require financial resources to be redirected from the educational program (see accompanying document);

Visioning Summary

In the winter of 2024, members of The Public Schools of Southborough – including leadership, staff, parents, and community members – participated in visioning and programming sessions led by Educational Planner Mike Pirollo (MLP Integrated Design) and Arrowstreet. Each session was part of a collaborative process designed to inform the Margaret A. Neary Elementary School Massachusetts School Building Authority (MSBA) Feasibility Study and pre-design process.

Utilizing school tours, observational building walk-throughs, program verification meetings, and visioning sessions, participants worked through a step-by-step process aimed at capturing their thinking around the following key areas:

- Educational, architectural, and community goals and priorities
- Child development, including the physical, academic, and social-emotional needs of the elementary learner
- Impacts of various grade configurations and design enrollments
- Vision of teaching and learning, including practices, strategies, programs, and structures
- A vision of the ideal learning environment, including space types, design features, and adjacencies

Overarching Project Goals & Priorities:

At the core of the District's educational vision are a series of overarching goals:

- Students and teachers are at the heart
- Spaces and instructional practices that support innovation in education
- Supporting a climate of belonging, community, connection, and well-being
- Flexible, adaptable space to support equitable and active access
- Opportunities for outdoor and indoor connection
- An academically, financially, and environmentally sustainable building
- Long-term adaptability
- A logical and efficient building

Participants

Name	**Title:**
Greg Martineau	Superintendent
Stefanie Reinhorn	Assistant Superintendent
Kathleen Valenti	Principal
Steve Mucci	Principal
Clayton Ryan	Principal
Megan Kelty	ELA Coordinator
Helene Desjardins	Assistant Director of Student Support
Jennifer Lipton-O'connor	Coordinator of SEL
Kathy Lizotte	Mathematics Coordinator
Julie Doyle	Director of Instructional Technology
Mary Ellen Duggan	District Wellness Coordinator and Nurse Leader
Selvi Oyola	Director of Multilingual Learners & Equity
Jennifer Henry	Early Childhood Administrator
Jason Malinowski	Neary Building Committee Chairperson
Roger Challen	School Committee Member

Chelsea Malinowski	School Committee Member
David Finneran	Neary Teacher & STA Representative
Kristin Theve	Neary Teacher
Jen Turieo	Neary Teacher
Lisa Goulet	Woodward Teacher
Jill Henebury	Woodward Teacher
Kristin Peterson	Finn K Teacher (K Team Leader)
Alysun Stephens	Finn Teacher
Nutan Mathew	Specialist
Tiffany Goode	Specialist
Jeanette Morgan	Finn Music Teacher (Specialist Team Leader)
Gela Ebert	ELPAC Co-Chair
Marie Sajous	ELPAC Co-Chair
Sarah Fulton	PTO
Stephanie Iodice	PTO
Kristin Gould	PTO
Matt Gilmore	NSPAC
Andrea Hamilton	NSPAC
Tim Davis	Director of Southborough Recreation
Kathy Cook	Select Board Member
Ryan Newell	Police Chief

GRADE & SCHOOL CONFIGURATION

School Facilities Summary

The Public Schools of Southborough has four school facilities, serving grades PreK-8. All of the District’s schools have strong school cultures, exceptional faculties and staff dedicated to students, and parents and guardians who are invested in The Public Schools of Southborough.

Mary E. Finn Elementary School

The Mary E. Finn Elementary School is an early childhood center currently serving students in grades Pre-Kindergarten to Grade One. The building was originally constructed in 1967 and was then renovated and expanded in 2000 to 76,000 square feet. The building’s renovation was designed for the District’s youngest learners.

Albert S. Woodward Memorial Elementary School

The Albert S. Woodward Memorial Elementary School currently serves students in Grade Two and Grade Three. The building site was the original middle school for Southborough until the P. Brent Trottier Middle School was built in 1998. The original building was torn down and the footprint was used to build the 68,000-square-foot facility, which opened in 2004.

Margaret A. Neary Elementary School

Originally constructed in 1970, the Margaret A. Neary Elementary School currently serves Grade Four and Grade Five. The building is a 62,736 gross square foot facility on a single level located on an eighty-one (81) acre site. The Margaret A. Neary Elementary School is the only

Southborough school that has not yet been renovated.

P. Brent Trottier Middle School

The P. Brent Trottier Middle School established in 1998 and expanded in 2004 is a 130,000 square foot middle school for students in Grade Six, Grade Seven, and Grade Eight. The three-year experience provides students with the skills and knowledge to be successful in high school.

Current student enrollment in the five schools as of March 2024 is:

School	Current Grade Configuration	Current Enrollment
Mary E. Finn Elementary School (Finn)	PreK-1	260
Albert S. Woodward Memorial Elementary School (Woodward)	2-3	248
Margaret A. Neary Elementary School (Neary)	4-5	282
P. Brent Trottier Middle School (Trottier)	6-8	409

Current

The Margaret A. Neary Elementary School has nineteen classrooms, fourteen of the classrooms are split evenly between fourth and fifth grades, and five of the classrooms are designated as Central Office. Each classroom, designed with a dividing wall for coats and student belongings results in a reduced instructional area. This constraint, coupled with limited storage within classrooms, necessitates the use of additional spaces within the school to house curriculum supplies and materials.

Class sizes at Neary average between 18 to 22 students, yet the infrastructure, particularly in specialty areas like art and music, falls short of optimal educational environments. These subjects are taught in spaces not originally intended for their respective disciplines, affecting the quality of instruction and student engagement. There are no designated spaces for string lessons and instruments can be found lining the hallways. Similarly, the library's inadequate wiring and infrastructure hinder the library media specialist in offering STE infused media classes, failing to align with the educational needs of both teachers and students.

Physical education faces its own set of challenges, with two small gymnasiums that complicate the delivery of indoor PE classes.

The English Language Development Program relies on modular classrooms that, despite being over two decades old and initially intended for temporary use, are still in operation today. These modules fall short of the spatial and environmental standards required for effective learning.

Special education and related services grapple with spatial constraints, utilizing whatever spaces are available, including areas not designed for instructional purposes. Meetings and administrative tasks often take place in less-than-ideal conditions, such as unheated conference spaces, shared offices, or converted closets used as offices. Grade-level teacher meetings are confined to the limited space of available classrooms.

The electrical infrastructure across Neary is antiquated, with a scarcity of outlets hampering the use of modern technological tools, thereby impacting teaching and learning.

Culinary services are compromised by an inoperative kitchen, including inadequate refrigeration and cooking appliances, requiring the P. Brent Trottier Middle School to function as a satellite kitchen, with meals being transported to Neary.

Lastly, parent pickup and drop-off is currently situated in the main parking lot and presents issues for pedestrian safety.

The District-run Southborough Extended Day Program functions as a before and after-school program for Southborough students. Currently, there is no office space for the program nor designated storage. The extended day educators use a partitioned portion of the faculty lunch room for storage and other make-shift spaces.

In the current grade configuration, school transitions demand significant efforts from the dedicated teachers and staff at Finn, Woodward, and Neary. They invest considerable time and energy in welcoming new families and ensuring a smooth progression for outgoing students. Since each elementary school is a two-year span, grade levels move quickly from entry to exit in the transition process. The process, starting as early as January, involves extensive inter-school meetings aimed at fostering a seamless transition, reflecting the commitment of District educators to student welfare.

However, this essential transitional phase also brings to light certain challenges that impact the efficiency of these endeavors. The different start and end times between schools complicate collaboration, making it difficult to synchronize efforts and share resources. This scheduling discrepancy not only hinders staff coordination but also affects vertical alignment meetings, which are crucial for maintaining continuity in educational objectives and strategies across grades.

For many students and their families, these transitions, although well-intentioned, can result in anxiety and stress. Despite the efforts to ease these shifts, the varied experiences of students indicate that transitions are still emotionally and educationally challenging.

Parents and guardians, especially those with children across all three elementary levels, often express concerns regarding the logistical difficulties posed by disparate schedules, which complicate daily routines such as drop-offs and pickups.

In response to these challenges, it is essential to explore strategies that can streamline the transition process and enhance collaboration between the schools involved. This may include aligning school schedules to facilitate easier transitions for families and enabling more frequent and effective vertical alignment meetings. By doing so, we can minimize the disruption to students' educational experiences and alleviate the concerns of their families.

Improving the transition experience in The Southborough Public Schools is not just about logistics and scheduling; it is about creating a cohesive, supportive environment that nurtures student growth and reduces anxiety. Through improved communication, collaboration, and coordination, we can ensure that every student feels prepared, supported, and confident as they progress through their elementary school journey.

Proposed:
Design Alternative 1: Grades 4 and 5

School	Grade Span	Alt. 1 Enrollment
Mary E. Finn Elementary School	PreK-1	260
Albert S. Woodward Memorial Elementary School	2-3	248
Margaret A. Neary Elementary School	4-5	305
P. Brent Trottier Middle School	6-8	409

The vision for Margaret A. Neary Elementary School encompasses a redesign to foster an educational environment where every space is purposefully crafted to support and enhance the learning journey.

There is a strong desire within our community for the construction of a school that preserves a close-knit atmosphere. This vision includes the implementation of learning neighborhoods. Such a structural and pedagogical arrangement supports a sense of community even in configurations with multiple grade levels. By embracing this model, we aim to enhance educational experiences in a way that is both innovative and deeply aligned with the values of the Southborough community. More details of the composition of the learning neighborhood follows.

Classroom design would prioritize flexibility, accommodating diverse groupings of students to support differentiated instruction and collaborative learning projects. Modern infrastructure would be a given, with classrooms outfitted to seamlessly incorporate technology into daily learning, ensuring that students are prepared for the digital age. Furthermore, small group rooms would be located between general education classrooms in each learning neighborhood, to support collaborative group work in break-out spaces and provision of specially designed instruction, academic intervention or extension lessons in close proximity to the classroom. Each learning neighborhood would include a learning commons that would serve as breakout space for differentiated learning science, technology, engineering, and media lessons and as a gathering space for larger groups of students and teachers. In the learning commons, flexible furniture and appropriate technology would support these goals.

Central to this vision is a library transformed into a modern media center, suited for fostering 21st-century media literacy skills. This space would become the heart of the school, a hub for innovation, learning, and discovery. This space would be staffed by a library media specialist, both current members of the faculty. The art room would also be located adjacent to the media center and would be fully outfitted for technology infused art and digital literacy projects not only allowing for a STE inquiry focus but also providing for future flexibility in how spaces are used as educational demands and goals evolve. The art room would also be designed to meet the specific needs of the discipline with sufficient storage and space for creative endeavors.

In this design, music classrooms would be specifically planned to cater to their unique instructional needs, equipped with sufficient storage and spacious areas for students to freely explore. The gymnasium would be expansive, accommodating a comprehensive wellness program that nurtures students' physical education (PE), health education, and social emotional development. The gym would have a smaller space that can accommodate adaptive PE as well as yoga and dance.

Special education classrooms would be thoughtfully located in learning neighborhoods adjacent to general education classrooms, promoting inclusivity and allowing for a fluid transition between small-group instruction and mainstream classroom activities. These special education classrooms would include two substantially separate programs and learning centers for students on individualized education plans that require pull-out services. Adjacent to each substantially separate classroom would be a calming room that is available to all students in the learning neighborhoods. Related service providers (OT, PT, SLP) would benefit from designated spaces that ensure privacy and proximity to classroom activities, facilitating collaboration and accessibility. The school would feature dedicated areas for special education team meetings, assessments, and ensuring the highest quality continuum of services and appropriate levels of confidentiality.

The proposed Neary School would also include designated offices for the school psychologist, team chairperson, and behavior specialist. Importantly, there would be a conference room dedicated to special education meetings.

The proposed design would also include an instructional suite to support literacy, math and English Language Development (ELD) instruction. The instructional suite would have offices for the reading and math specialists that could accommodate small group instruction or small professional planning sessions with educators. English Language Development (ELD) teachers would each have a dedicated space sufficient to function as an office and an instructional classroom space for providing Tier 1 English Language Development instruction which must be provided outside the general education classroom. However, placing this classroom in close proximity to the general education classes promotes the inclusive culture to which the community is committed. With increasing numbers of English Language Learners (ELLs) in our community, an ELD classroom would be located between every two learning neighborhoods, able to service two grade levels. By being in close proximity to the learning neighborhoods, we would achieve our goals of inclusivity.

The instructional suite would be adjacent to a teacher collaboration space for each learning neighborhood. Educators would benefit from dedicated spaces for grade-level planning, professional learning, data analysis, and professional collaboration, enhancing the quality of instruction through improved instructional practices as well as shared resources and strategies. Between learning neighborhoods, a staff lunchroom would also serve as a teacher preparation space and provide workstations for educational support professionals and itinerant employees who do not have dedicated offices or classrooms within the building.

The cafeteria would not only house a fully operational kitchen but also offer flexible and efficient dining arrangements, making meal times a more enjoyable and social experience for all students. Furthermore, the redesign of the Neary Office space would prioritize a welcoming atmosphere that underscores the importance of safety,security and confidentiality for the entire school community.

This reimagined Margaret A. Neary Elementary School would stand as a testament to the exceptional teaching and learning that occurs within its walls. Every aspect of the building's design would reflect a commitment to safety, inclusivity, wellness, and the highest standards of educational excellence, creating a nurturing and dynamic environment where students, faculty, and staff can thrive.

Design Alternative 2: Grades 3-5 at a Consolidated Margaret A. Neary Elementary School and Grade 2 at Woodward Elementary School

School	Grade Span	Alt. 2 Enrollment
Mary E. Finn Elementary School	PreK-1	260

Albert S. Woodward Memorial Elementary School	2	124
Margaret A. Neary Elementary School	3-5	429
P. Brent Trottier Middle School	6-8	409

*The proposed Neary school Design Alternative 2 matches the description for Design Alternative 1 scaled to accommodate three grade levels.

Reconfiguring the grade levels to encompass grades 3-5 at Margaret A. Neary Elementary School presents an opportunity to significantly enhance the educational journey for students. This adjustment promises a multitude of benefits stemming from a more stable and extended period at a single institution. Over the course of three years, students and their families have the opportunity to forge deeper and more meaningful relationships with faculty and staff, fostering a sense of belonging and community that is essential for a supportive learning environment.

This extended tenure at Neary would facilitate unparalleled collaboration among educators across the third, fourth, and fifth grades. Such collaboration is crucial for creating a cohesive and aligned educational experience, enabling teachers to build upon each other's work, share insights, and develop strategies that address the needs of all students more effectively. In turn, this unified approach can significantly enhance the consistency and quality of instruction that students receive.

Furthermore, a three-year span at Neary would allow for a more seamless continuum of services, particularly in areas such as special education. This stability is key for students requiring additional support, as it ensures they have sustained access to familiar resources and personnel dedicated to their success, minimizing disruptions and maximizing the effectiveness of individualized education programs.

The benefits of this grade-level configuration extend beyond the classroom. Neary educators, families and students have an additional year at the Neary school to build relationships and focus on teaching and learning.
A three-year grade configuration fosters greater curricular coherence. With educators working closely within the same school, there is a greater opportunity to align curricula, ensuring that learning objectives are met sequentially and systematically. This alignment supports a more integrated and comprehensive approach to education, laying a strong foundation for student learning and achievement.

With this proposed reconfiguration, students and families would still experience two school transitions during their time, once from grade 1 to 2 and another from grade 2 to 3. Students and families would experience the Albert S. Woodward Memorial Elementary School for one year as it would house Grade 2.

Design Alternative 3: Grades 2-5 at a Consolidated Margaret A. Neary Elementary School and Woodward Elementary School

Proposed:

School	Grade Span	Alt 3 Enrollment
Mary E. Finn Elementary School	0	0
Albert S. Woodward Memorial Elementary School	K-1	260
Margaret A. Neary Elementary School	2-5	610
P. Brent Trottier Middle School	6-8	409

*The proposed Neary school Design Alternative 3 matches the description for Design Alternative 1 scaled to accommodate four grade levels.

Reconfiguring the grade levels to encompass grades two-five at Margaret A. Neary Elementary School presents an opportunity to significantly enhance the educational journey for students. The benefits include an extended period at a single school and the ability to maximize resources at the Neary School. Over the course of four years, students and their families have the opportunity to forge deeper and more meaningful relationships with faculty and staff, fostering a sense of belonging and community that is essential for a supportive learning environment.

In this configuration, collaboration among educators would span across second, third, fourth, and fifth grades. Such collaboration is crucial for crafting a coherent and aligned educational experience, enabling teachers to build upon each other's work, share insights, and develop strategies that address the needs of all students more effectively. This is true in the arts, music, physical education, library media, and health classes, and all other academic subjects. There are also increased opportunities for sustained, embedded professional learning and collaboration. This alignment supports a more integrated and comprehensive approach to education, laying a strong foundation for student learning and achievement.

Furthermore, a four-year span at Neary would allow for a seamless continuum of services, particularly in areas such as special education and English Language Development. This stability is key for students requiring specially designed instruction, as it ensures they have access to familiar resources and personnel dedicated to their success, minimizing disruptions and maximizing the effectiveness of individualized education programs. Additionally, this configuration allows for cross-grade level groupings to support students with intensive special needs and for students to have more appropriate cohorts of peers with whom they work.

The benefits of this grade-level configuration extend beyond the classroom. In this configuration, students would transition once during their elementary school years. As a result, the time investment for transitioning students can be shifted to a focus on teaching and learning.

In summary, transitioning to a grades two-five configuration at Margaret A. Neary Elementary School offers a strategic approach to enriching the educational experience. It also achieves important goals of maximizing collaboration, achieving curriculum coherence, and reducing school transitions by one.

SCHOOL COMMITTEE CLASS SIZE POLICY

Current

The Public Schools of Southborough's *Class Size Policy* sets forth guidelines for determining class sizes for core courses in grades K-8, grounded in the school district's Core Values, Mission Statement, and Budget Priorities as established by the School Committee. It takes into account several criteria when deciding on class sizes, including class composition (which encompasses academics, behaviors, emotional support, language needs, and social aspects), class enrollments, educational philosophy, facility and financial constraints, and legal mandates.

The School Committee has recommended desirable class size ranges that vary by grade level: 16-20 students for grades K-2, 16-22 students for grades 3-5, and 18-22 students for grades 6-8, aiming to optimize the learning environment and educational outcomes.

The process for implementing these desirable class size ranges involves a yearly assessment during the budgetary process, where each school's principal, in collaboration with onsite staff, proposes staffing needs to the Superintendent in alignment with the Class Size Policy. Should class sizes exceed these desirable ranges due to various constraints or changes in student numbers, a thorough review process is initiated. This involves gathering input from teachers and administrators to make informed decisions on how to best support the affected classes, possibly including recommendations for additional resources or support. Moreover, should unforeseen conditions arise during the school year that impact the policy's implementation, principals are tasked with developing action plans, in consultation with teaching staff, to address these challenges, thereby ensuring that class sizes remain conducive to effective teaching and learning.

Proposed

Regardless of the preferred option, there is not a planned change to the District's Class Size Policy. The District is committed to fostering an inclusive educational setting, as emphasized in its Class Size Policy. Adhering to the policy is essential to accommodate the varied learning profiles present within each classroom, enabling educators to effectively engage and educate every student. Recognizing the legal and ethical mandate for placing students in the least restrictive environment possible, our classrooms have become increasingly diverse. This diversity underscores the importance of smaller class sizes, which are pivotal in allowing teachers to craft and deliver lessons that cater to the unique needs of each student, thereby maximizing their potential. The community is committed to maintaining small class sizes so we will design to remain consistent with the District's policy language, 16-20 students for grades K-2, 16-22 students for grades 3-5, and 18-22 students for grades 6-8.

SCHOOL SCHEDULING METHODS

Current

The process of crafting elementary school schedules is a thoughtful and dynamic exercise, undertaken annually with a commitment to continuous improvement and alignment with the District's educational priorities and District time on learning guidelines. District administrators and school leaders convene in collaborative sessions to ensure that the scheduling framework not only reflects the overarching goals and guiding principles of the District's educational mission but also optimizes the learning experience for every student. This partnership extends to include a dedicated committee of teachers, allowing for a broad spectrum of insights and expertise to guide decision-making, ensuring that the schedules are crafted with a keen awareness of both student needs and educational standards.

Elementary Time on Learning Guidelines

Content Area (K-2)	Minutes each Day (Minimum)	Notes
ELA (Reading and Writing)	120	*Integrating Science and History/Social Science, Digital Literacy and Computer Science (DLCS), Social Emotional Learning (SEL)*
Mathematics	75	
Science or History/Social Science	45 mins, 3 days per week	*Integrating Reading and Writing, DLCS, SEL*
Specials/World Language	45 - 60	
Lunch/Recess	Up to 50	
Snack/ Stretch	Up to 10	

Morning Meeting	30	
	375	

Content Area (Gr. 3-5)	Minutes Per Day (Minimum)	Notes
ELA (Reading and Writing)	120	*Integrating Science and History/Social Science, Digital Literacy and Computer Science (DLCS), Social Emotional Learning (SEL)*
Mathematics	75	
Science or History/Social Science	45 mins, 3 days per week	*Integrating Reading and Writing, DLCS, SEL*
Specials/ World Language	45 - 60	
Lunch/Recess	Up to 50	
Snack/ Stretch	Up to 10	
Morning Meeting	30	
	375	

As the student experience is designed, it is done with the understanding of the pace of learning, the importance of balance, and the necessity of providing an environment conducive to social emotional and academic growth. The structured student day is designed to maximize engagement, foster educational exploration, and support the well-being of every learner.

In addition, scheduling endeavors to maximize time for grade-level educators' common planning, data teams, and cross-grade level educator collaboration. Currently, with the varying start and end times, cross-grade collaboration between schools happens infrequently.

The scheduling process within each school adopts a collaborative team-based methodology, emphasizing the strategic timing of grade-level specials to coincide across each grade level. This alignment is designed to provide teachers the opportunity for weekly common planning time, facilitating cross-curricular planning initiatives and enabling a consistent and collective review of data. The approach enhances the coordination and quality of instruction and creates a more unified and integrated educational experience for students. Furthermore, this scheduling strategy benefits service providers by creating dedicated time slots to engage with specific grade levels for specific disciplines as required, ensuring that the needs of all students are met more efficiently and effectively. Through this approach to scheduling, schools are able to optimize instructional support and foster a more cohesive learning environment.

For the successful inclusion of subjects like art, music, physical education, library, and world language classes within the new scheduling framework, the specific design alternative chosen will directly influence the number of dedicated teaching spaces required, as noted in each of the subsections below. This provision is essential to support the scheduling of Specials, guaranteeing that each discipline benefits from an environment designed to meet its distinct instructional demands. The decision on the precise number of teaching stations necessary will be based on the design alternative selected, showcasing the District's commitment to offering a balanced and enriched educational experience for students through thoughtfully designed and equipped spaces.

NEARY MASTER SCHEDULE

	Monday	Tuesday	Wednesday	Thursday	Friday
8:50- 9:35	Art- Dolan PE- Schwepp Music- Soldo Lib/ IT- Finneran	Art - Grenier PE- Turieo Lib/ IT - Wallack	Art- Theve PE- Finneran Lib.IT - Ahearn Music- Collins	Music- Grenier Lib/IT - Turieo PE - Wallack	Music - Ahearn PE - Finneran Lib/ IT - Theve
9:35 - 10:20	Art- Schwepp PE - Dolan Music- Finneran Lib/IT - Soldo	PLC Grade 5/ SEL + Stretch Led by Grade4	Lib/IT- Head Music- Dolan PE- Schwepp	PLC Grade 4 / SEL + Stretch Led by Grade5	Lib/ IT - Head Music - Schwepp PE- Dolan
10:20- 10:30	Stretch		Stretch		Stretch
10:30- 11:15	Art- Wallack Lib/ IT - Tureio	Art- Soldo PE- Flannigan Lib/IT - Schwepp	Lib/IT - Gernier PE - Fisher Art - Turieo Music - Wallack	Music- Head Lib/IT - Schwepp PE Collins	Lib/ IT - Fisher Music- Turieo PE - Wallack
11:15- 12:00		Art- Finneran Lib/ IT- Theve PE- Ahearn	Lib/ IT - Fisher PE - Grenier Art -Gardula	Music- Gardula PE- Finnegan Lib/ IT - Soldo	Lib/ IT - Grenier
12:00- 12:45 (Grade 4 lunch)		Fourth Grade Art Studio	Lib/ IT - Wallack PE- Turieo		PE- Soldo Lib/ IT - Finnegan
12:45 - 1:30 (Grade 5 lunch)	Art- Fisher PE- Grenier Lib/ IT - Gardula	PE Fisher	Fifth Grade Art Studio	Music - Theve Lib/ IT- Finneran PE - Gardula	
1:30 - 2:15	Lib/IT- Finneran PE Theve Art - Ahern	PE Head Lib/ IT - Dolan	Art- Finnegan PE -Soldo	Music - Finneran PE - Theve Lib/ IT - Ahearn	Lib/ IT - Gardula PE Collins
2:15 - 3:00	PE- Head Lib/ IT - Collins	Art - Head PE- Gardula Lib/iT - Collins	Art- Collins	Music Fisher PE- Ahearn Lib/ IT -- Dolan	Band / Orchestra
3:00 -					

3:10					

- Instrumental Lessons are scheduled throughout the day.

Woodward Master Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
8:55-9:25		Gr 2 Enrichment	Gr 3 Enrichment		9:00- CARE
9:30 - 10:15	Art-McLean Lib Media- Farrar PE-Serra	Art- Farrar Library Media- Kelleher PE McLean	Art-Serra Lib Media - McLean PE Farrar	Lib Media- Serra Music: McLean PE: Farrar	Lib Media: Coyle PE: McLean Music: Farrar
10:15-11:00	Art-Kelleher Lib Media - Farrar PE Coyle Strings- Lehane	Art- Coyle Lib Media - Kelleher PE- Serra Strings McLean/Lehane	Lib Media- McLean PE Kelleher Music Coyle	Lib Media- Serra Music: Kelleher PE: Coyle	Lib Media: Coyle PE: Kelleher Music: Serra
11:45	Art-Lehane PE-Robison Music:	Art-Robison Lib Media- Lehane PE- Henebury	Lib media- Henebury PE Robison Music- Lehane	Lib Media - Robison PE: Lehane Music:	Music: Robison PE - Lehane
11:45 - 12:30	Art-Henebury Strings: Kelly	Lib Media- Lehane Strings: Kelly	Lib media - Henebury	Music - Henebury	PE- Henebury Lib Media- Kelly
Grade 2 lunch 11:45					
Grade 3 Lunch 12:30					
12:45 - 1:30	Lib Media: Black PE Guccione	Art: Black	Music: Black PE: Guccione	PE: Black Lib Media: Robison	Music: Guccione
1:30 - 2:15	Art: Duchane Lib Media: Black PE: Foy Strings: McLean	Art-Foy Lib Media - Duchane Strings:	Lib Media- Foy PE: Duchane Strings: Henebury	Lib Media - Guccione Music Duchane PE: Foy	Lib media: Kelly PE: Black Music: Foy

		Henebury			
2:15 - 3:00	Art: Kelly Strings: Kelleher	Art- Guccione Lib Media- Duchane Music Kelly	Lib media: Foy PE: Kelly Strings: Kelleher	PE: Kelly Lib Media: Guccione Strings: Duchane	PE: Duchane
3:00 - 3:10					

The current scheduling model for supporting students with special needs at Neary and Woodward involves collaboration among classroom teachers and special educators, and the plans for the new Neary School are designed to continue this approach. Emphasizing an inclusive philosophy, the majority of academic support and interventions are scheduled to be integrated within the classroom setting to ensure all students' needs are met in a least restrictive environment. For students requiring a quieter space for concentration or multilingual learners in need of specialized language instruction, additional support outside the classroom is scheduled. Consequently, the new Neary design would include smaller, strategically placed learning spaces within each learning neighborhood for focused and targeted instruction. These spaces would be intentionally located near general education classrooms to optimize learning time for all students, and best support students' schedules.

Additionally, the District acknowledges that the educational landscape of tomorrow may diverge significantly from today's practices. Therefore, it is imperative to prioritize a facility design for forthcoming schools that can adapt to these evolving requirements. An illustrative focus lies in fostering an environment conducive to nurturing students' capacities in digital literacy, communication, and collaboration. Consequently, the District commits to revisiting scheduling procedures and time allocations, ensuring ample opportunities for students to engage in learning in dynamic, adaptable spaces. These spaces will empower students to intricately plan, execute, and articulate their learning experiences through flexible configurations tailored to their needs.

Proposed

There are no proposed changes to the Time on Learning expectations or the approach to student and educator schedules. However, the District continues to support educators in collaborating across disciplines for integration across subjects. This is a crucial component of the District's approach to scheduling and professional planning in order to meet the time on learning guidelines and addressing the full array of standards while also provided a well-rounded experience that includes world language and the fine and performing arts.

Design Alternatives 2 and 3 would impact the start and end time of the school day.

Design Alternative 1: Grades 4-5 at Margaret A. Neary Elementary Elementary School

School	Start Time	School End Time
Finn	9:10 AM	3:25 PM
Woodward	8:55 AM	3:10 PM
Neary	8:45 AM	3:00 PM

Design Alternative 2: Grades 3-5 at a Consolidated Margaret A. Neary Elementary School

School	Start Time	School End Time
Finn	9:10 AM	3:25 PM
Woodward	8:55 AM	3:10 PM
Neary	8:45 AM	3:00 PM

Design Alternative 3: Grades 2-5 at a Consolidated Margaret A. Neary Elementary School

School	Start Time	School End Time
Woodward (PK-1)	9:10 AM	3:25 PM
Neary (2-5)	8:45 AM	3:00 PM

TEACHING AND LEARNING

Administrative and Academic Organization

Current

At the Margaret A. Neary Elementary School, educators are on grade-level teams, each composed of six to eight teachers responsible for teaching core subjects such as math, science, social studies, and English Language Arts (ELA). However, the building does not support logical groupings of grade level classrooms by teams. The school operates under the guidance of a full-time principal who oversees both the teaching and the academic support staff.

Proposed

	Current	**Design Alt 1 (4-5)**	**Design Alt 2 (3-5)**	**Design Alt 3 (2-5)**
Learning Neighborhoods	0	2	3	4
Administrative Structure	1 principal	1 principal	1 principal 1 AP	1 principal 1 AP

A redesign of the Margaret A. Neary Elementary School would include the introduction of learning neighborhoods to support interconnected learning communities within the school. Each learning neighborhood would have a learning commons equipped with technology and flexible furniture to support small group breakout sessions, collaborative projects, and independent work and learning experiences related to science, technology and engineering. In addition, small group rooms will be located between general education classrooms to provide a quiet, distraction-free setting for targeted instruction for small groups, collaboration among peers or pull-out services close to the general education setting. Learning centers and substantially separate special education rooms would also be located in the learning neighborhoods to promote a more inclusive environment. These learning neighborhoods would support collaboration, relationship building, and flexible grouping across classrooms. This strategy is aimed at breaking down the barriers presented by the traditional school layout, paving the way for a more inclusive, dynamic, and collaborative educational setting that enriches the learning experience for all students.

In Design Alternatives 2 and 3, the principal would be supported by an assistant principal in leading the school.

Curriculum and Instructional Practices

Overview, Mathematics, English Language Arts/Literacy, Social Studies, Science, Technology, and Engineering, World Languages, Digital Literacy, Computer Science and Instructional Technology, Library Media Science, Visual Arts, Performing Arts, Physical Education and Wellness

Current

The District collaborates closely with educators to design lessons, assessments, and learning environments grounded in the principles of Universal Design for Learning (UDL), ensuring accessibility for all students. This comprehensive framework focuses on setting rigorous goals for all students and designing learning experiences with flexible means for learners to achieve these goals. Educators plan in ways that reduce students' barriers to engaging in learning, recognizing and comprehending knowledge, and demonstrating their understanding and skills.

The existing infrastructure at Neary School, however, limits the flexibility of teaching methods due to its traditional design, which does not accommodate modern educational models emphasizing hands-on projects, group work, and student-driven learning choices.

Proposed

The District will continue to support educators in using the UDL framework to provide inclusive and engaging learning experiences that help students develop into expert learners who exercise agency and increase independence over time. In pursuit of full accessibility, classrooms should be designed with voice amplification systems to support all learners.

In addition, the District is continuing to support the adoption of new high-quality instructional materials in ELA, a multi-year implementation process that involves ongoing professional learning, and preparing to adopt new instructional materials in mathematics in 2025. In addition, the District is planning to update instructional methods in the area of science to align with the state frameworks and a national focus on phenomenon-based science inquiry. The design implications of these curriculum and instruction foci are detailed by discipline below.

Mathematics:

Current

Elementary mathematics education emphasizes providing students with enriching experiences in grade-level math, connecting content standards to mathematical practices. The District's approach to elementary math instruction, delivered by grade-level teachers in general education classrooms for 75 minutes daily, is designed to be inviting and engaging. Students are actively encouraged to engage in mathematical discourse with both their teachers and peers, fostering collaboration, problem-solving skills, and mutual learning. Teachers cultivate an environment that nurtures student confidence and independence, enabling them to become adept problem-solvers who can work collaboratively. Educators work with students as a whole class, in small groups and provide opportunities for individual work time. On a daily basis, students interact with a supplemental, adaptive technology on a Chromebook that supports their individual journey to develop conceptual understanding and procedural fluency with math concepts while engaging in productive struggle with challenging puzzles. It is currently challenging to accommodate the different configurations called for by the District's math program in the Neary classrooms.

Proposed

The requirements of an elementary mathematics classroom are diverse, with a wide array of activities occurring throughout the day, week, and month. An adaptable space that provides flexibility for mathematics learning is essential. This includes a large gathering area where students can congregate without desks or chairs to engage in classroom routines like counting exercises, number talks, and strategy sharing. Ideally, this area should be situated near a screen for projecting student work, problems to consider, videos, or other visuals to facilitate mathematical discussions.

There should also be ample space for teachers to work with small groups of students, while other groups engage in activities throughout the room. These groups may utilize manipulatives and vertical whiteboards for problem-solving. Technology should be readily available for explaining concepts, practicing skills, or displaying student work. The classroom space should also support independent work which might involve students working at individual work stations, collaborating at tables, on rugs or floor spaces, standing at counters or working in the learning commons with peers or another educator, such as a math specialist or an educational support professional (ESP) supporting intervention or extension of learning. Some students will choose a distraction-free space in the classroom or a small group room to support their ability to access the learning with a math specialist, a special educator, or an ESP.

English Language Arts/Literacy

Current

Elementary educators use the comprehensive Great Minds' *Wit & Wisdom* core curriculum to deliver ELA instruction. This curriculum provides a robust framework for teaching literacy skills and engaging students in meaningful reading, writing, and oral language experiences.

To ensure a strong foundation in literacy, teachers integrate various instructional approaches and resources. Foundational skills development is supported by programs such as *Project Read Phonics*, *Haggerty Phonemic Awareness*, and *Phonics and Spelling Through Phoneme-Grapheme Mapping*. These resources offer systematic and explicit instruction to help students master essential phonics and spelling concepts.

In the delivery of literacy instruction, teachers employ a diverse range of strategies to cater to the needs of all learners. Whole-class instruction allows for the exploration of complex texts and the introduction of new concepts, fostering shared experiences and discussions among students. Small group activities provide opportunities for targeted instruction and differentiated support, allowing educators to address individual learning needs more effectively. Additionally, independent work time encourages students to apply their skills and creativity in reading and writing tasks, promoting autonomy and self-expression.

Teachers may lead whole-class lessons with students seated at desks and chairs, providing structured guidance and direct instruction. Alternatively, teachers may facilitate small group discussions or activities with students gathered on the floor in circles or groups, promoting collaboration and peer interaction. This flexible approach to classroom organization enables educators to adapt their teaching methods to suit the specific objectives of each lesson and the learning preferences of their students.

Overall, the implementation of the *Wit & Wisdom* curriculum alongside targeted foundational skills instruction creates a rich and engaging learning environment for students, fostering their development as proficient readers, writers, and communicators.

Proposed

The District will continue to support educators in implementing the *Wit & Wisdom* curriculum as well as the foundational skills programs currently in use. The District will also seek to create more interdisciplinary lessons where literacy themes overlap with science and social studies topics.

Literacy instruction requires a classroom that is designed to foster a productive learning environment, where teachers serve as facilitators and students develop the essential skills needed for success in secondary school and ultimately the workplace. In addition to traditional classroom spaces, small breakout rooms adjacent to general education classrooms will support differentiation of learning with support from reading specialists, special educators and ESPs. This type of targeted instruction or peer collaboration will also happen in the learning commons and may draw students from multiple general education classrooms.

Flexibility within the classroom layout is paramount to enhance student productivity and foster collaboration and communication. Key design elements include:

- A literacy-rich environment characterized by a diverse array of books spanning various levels and genres. Bookshelves should be accessible at an age-appropriate height, creating an inviting atmosphere conducive to reading.
- Ample wall space for displaying anchor charts, comfortable seating arrangements, abundant natural light, and inviting baskets filled with high-quality literature.
- Provision of audiobooks and headphones to accommodate diverse learning preferences and abilities.
- Access to books in multiple languages to reflect the cultural diversity of the classroom, ensuring that all students feel represented in the reading materials.
- Inclusion of titles that showcase diverse cultures and neurodiversity, allowing children to see themselves reflected in the stories they read.
- Dedicated space for dramatic interpretations of literature and drama, featuring a stage, microphone, recording technology, and seating for an audience. Dramatization of literature may take place in the classroom or in the learning commons for larger audiences or cross-class groups.
- An adaptable classroom layout that can be easily reconfigured to accommodate different learning activities and group dynamics, facilitating personalized and collaborative learning experiences.

The classroom will incorporate diverse seating options to promote collaboration when students work in small groups or pairs. This includes high tables, low tables, round and square tables, as well as flexible seating choices such as large pillows, couches, bean bags, stools, and tables.

Other essential features encompass a designated space for mini-lessons, read-aloud, and group discussions, complete with a rug and comfortable seating. A small teacher work area with a kidney-shaped table serves multiple purposes for collaborating with students and having supplies readily available. Additionally, reading, writing, and general materials are stored in an easily accessible area, along with access to technology to support instruction and research purposes.

Social Studies

Current

The social studies curriculum is designed to encompass civic knowledge, dispositions, and skills, reflecting the diverse range of disciplinary skills. The curriculum is aligned with Content Standards and Literacy Standards for history and social science, and emphasizes seven practices essential for inquiry and research. The District curriculum strives to empower students to navigate democracy's potential and challenges effectively. Moreover, it prepares them to engage in societies with demographic and cultural diversity. Teachers have developed interdisciplinary units that integrate literacy and social studies standards. Students are developing their reading, writing, listening and speaking, research skills while learning history content. Students are also often engaged with primary sources which may include texts, art, and photographs. When students are working in small groups on projects you will often see some students in the hallways working on the floor or at makeshift work stations.

In addition, teachers currently seek opportunities to integrate Digital Literacy and Computer Science Standards into their science curriculum units.

Proposed

Central to the new design is the provisioning of spaces that are rich with information, imagery, and artifacts relevant to social studies concepts. This approach aims to immerse students in environments where learning materials deepen their understanding and connection to the subject matter. This will be accomplished both in the classroom and in the media center.

The ideal classroom layout emphasizes flexibility and adaptability, incorporating a variety of work spaces and seating arrangements to facilitate student collaboration. High tables, low tables, round, and square tables are considered essential to accommodate diverse learning and teaching styles, promoting active engagement and interaction among students.

A dedicated area within the classroom will serve as a resource hub, allowing students easy access to materials essential for exploration and learning. The strategic use of wall space for displaying timelines, maps, and charts is highlighted as a method to integrate social studies into daily classroom dialogues, fostering cross-curricular connections. Bookshelves, thoughtfully placed at student-friendly heights, will house a broad range of resources, from historical documents to multimedia, catering to varied reading levels and interests.

Furthermore, the integration of technology is essential to the history curriculum. Accessible technology will not only support instruction and enhance digital literacy but also open doors for students to engage in virtual explorations, craft their timelines, and pursue social studies-related interests in innovative ways.

Teachers will continue to provide opportunities for interdisciplinary study and project based learning. This will continue to include opportunities for the inclusion of Digital Literacy and Computer Science Standards in the social studies lessons. At times this involves robots and other computing devices that are shared across classrooms and use of the learning commons will be a key option to support this. Options to break out into small group rooms between general education classrooms or working in the learning commons where flexible furniture and appropriate technology will support effective learning. The learning commons and breakout rooms will also allow teachers to flexible group students across general education classrooms.

In summary, The Public Schools of Southborough's vision for social studies classrooms marries traditional learning tools with modern technology and flexible design principles.

Science, Technology, and Engineering

Current

Elementary teachers foster engagement in science and technology/engineering (STE) education among their students using Carolina Science curriculum *Engineering is Elementary* (EIE) units developed by the Boston Museum of Science. These units provide STE curriculum that encompasses hands-on activities, investigations, and design challenges, which ignite students' curiosity and cultivate their analytical skills for scientific inquiry. They actively promote student involvement in learning, aiming to instill a growth mindset that empowers students to take ownership of their learning and excel in STE subjects.

In their teaching, elementary teachers prioritize relevance, ensuring that STE education is meaningful and applicable to students' lives. They emphasize the practical application of knowledge and skills to real-world situations, equipping students with the analytical thinking and problem-solving abilities necessary for success in today's world. Additionally, they strive to support high levels of achievement for all students, including females, racially and ethnically diverse populations and those with varied learning needs, to create an inclusive learning environment. In addition, teachers currently seek opportunities to integrate Digital Literacy and Computer Science (DLCS) standards into their science curriculum units.

Through purposeful integration of science and engineering practices with core concepts, elementary teachers ensure that students develop increasingly sophisticated skills and are equipped to apply scientific reasoning effectively across various contexts and situations, laying a strong foundation for their future success.

Currently, general education teachers make do with a typical general education classroom as the space where students conduct science and engineering experiments. The instructional technology specialist teaches specific DLCS skills in the general education classroom and brings materials with her for each lesson, moving around the building. In addition, the instructional technology specialist and library media specialist teach DLCS enriched lessons in the library which is not currently properly provisioned for these high-tech activities.

Proposed

Space Summary	Current	Design Alt 1 (4-5)	Design Alt 2 (3-5)	Design Alt 3 (2-5)
Science Technology and Engineering (STE) Learning Lab	0	0	0	0

The new design would provide adequate space to facilitate experiments and inquiry work within the learning commons. .
In addition, teachers will continue to integrate Digital Literacy and Computer Science (DLCS) Standards in many disciplines which may involve robots and other computing devices that are shared across classrooms. This could take place in the classrooms, media center, and the learning commons and might involve co-teaching with the instructional technology specialist who has specialized skills in this area.. In addition, the instructional technology specialists and the library media specialist each teach some of the DLCS standards and technology skills during designated times in the schedule and would do this in the media center, Learning Commons, or general education classrooms.
Key design components for the learning commons to be used to spuport STE experiences include:

- Provision of water in multiple locations, with at least one deep/work sink to facilitate cleaning and activities such as density investigations.
- The safe availability of electricity is crucial for activities involving digital technology.
- Inclusion of large, deep cabinetry units to store STE investigations and large-scale models, along with ample counter space for project setups.
- Furniture featuring adjustable height tables on wheels and stools promoting core strength, facilitating multiple student group configurations.
- Easy access to outdoor environments and open-air meeting spaces, fostering connections with nature and real-world learning experiences.

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The learning commons in learning neighborhoods will provide many of the same design features listed below to ensure STE-related learning activities can happen anywhere including classrooms, within extended learning spaces, and in the Learnig Commons.
The District plans to integrate numerous "green building" features into the improved facility to enhance efficiency and sustainability, intending to label and identify these features as real-world applications of science, technology, and engineering for student understanding.

World Languages

Current

The Public Schools of Southborough provides students in kindergarten and grade one with Spanish classes twice a week for 30 minutes each. The Spanish program provides students the opportunity to learn about others' cultures and develop proficiency in a language other than English at a developmentally critical time. Currently, there is not a dedicated classroom and the educator teaches within each teacher's classroom. This limits the teacher's ability to create a language-rich environment for the students. Spanish classes will be added to second and third grade in 2024-2025 at 60 - 90 minutes per week and to fourth and fifth grade in 2025-2026 for 90 minutes per week.

Proposed

Space Summary	Current	Design Alt 1 (4-5)	Design Alt 2 (3-5)	Design Alt 3 (2-5)
World Language Classroom	0	1	2	2

The new design will include a dedicated world language classroom to improve language skills through a language-rich environment that supports small group and whole group lessons as well as individual work space. The language classroom will support students learning and improving their proficiency in Spanish language and have augmented acoustics. The language classroom will have technology, books, and a variety of Spanish language resources that engage students in interactive activities, enhancing their Spanish listening, speaking, reading, and writing skills. The language classroom will be an adaptable classroom layout that can be easily reconfigured to accommodate different learning activities and dynamic group activities including art projects, singing, and dancing to learn about world cultures.

Digital Literacy, Computer Science and Instructional Technology

Current

The Public Schools of Southborough is committed to a 21st century education that is enriched by technology across disciplines. The District has a one-to-one device program that provides all students access to a Chromebook and teachers rely heavily on projection systems, document cameras and augmented acoustics in all disciplines. The Instructional Technology Specialist (ITS) assists teachers in infusing DLCS standards into lessons across disciplines.

In addition, the ITS teaches students directly in collaboration with the library media specialist and by pushing into general education classrooms because there is not a dedicated location for this instruction.

Proposed

The vision for a future Neary Elementary School assumes seamless integration of technology throughout the building. The goal is for educators and students to be able to move throughout the building and use projection systems, wifi systems and other technology systems with ease.

Further details about DLCS and technology instruction are detailed in other subjects especially the science, technology and engineering section and the Library Media Sciences section of the academic program descriptions.

Library Media Sciences

Current:

The library at Neary is a pivotal component of students' education. Students visit the library at least twice per week for a curriculum that includes traditional library standards, DLCS standards and a commitment to teaching inquiry skills. The Neary Elementary School has a traditional library which is inadequate in several respects. The space has insufficient lighting and airflow and was not designed for the infusion of digital literacy and computer science in the library curriculum. The library media specialist and the instructional technology specialist often collaborate in this space. In addition, the library is often used for meetings but does not have sufficient seating or an appropriate set-up to comfortably and effectively accommodate staff meetings. Professional development is occasionally held in the library but it is only appropriate for small group professional learning due to the configuration of the space and the limited projection system available despite having significant square footage in the library.

Proposed:

In the digital age, where information is ubiquitous and learning extends beyond traditional classroom walls, the Media Center's role within the educational landscape of The Public Schools of Southborough is pivotal. This evolution reflects the District's broader educational vision, where information literacy becomes a cornerstone, equipping students not just with the ability to gather information but also to critically assess and utilize it effectively across various domains. This approach aligns with the District's commitment to wellness and the holistic development of students, integrating digital citizenship, media literacy, and a love for lifelong learning.

The District's vision for the new school's Media Center transcends traditional boundaries, aspiring to be a dynamic hub that supports the Digital Literacy and Computer Science (DLCS) Standards alongside the AASL/MSLA frameworks. It aims to cultivate an environment where exploratory learning, critical digital literacy, and media literacy skills are not just encouraged but are integral to the student experience. The Media Center will be a hub of creativity and innovation, offering a vast, flexible, and area designed for multifunctional use. The space will also celebrate literature, fostering a lifelong love of reading through engaging read-aloud

sessions and literature-based lessons connected to the ELA, Social Studies, and Science Massachusetts State Frameworks.
To meet the needs of a diverse student population and reflect society's rich cultural diversity, the Media Center must:

- Provide a welcoming common area with access to digital devices and flexible seating, allowing students to explore, research, communicate, and collaborate effectively.
- Feature a collection of materials that mirrors a diverse society, supporting inclusive learning experiences.
- Accommodate flexible learning spaces for individual and group instruction.
- Technology will be seamlessly infused, with mobile devices distributed throughout the building to foster a community where information access, collaboration, and independent work are supported.

This envisioned Media Center will be a cornerstone for academic and personal growth.

Visual Arts Programs

Space Summary	Current	Design Alt 1 (4-5)	Design Alt 2 (3-5)	Design Alt 3 (2-5)
Art	1	1	1	1

Current

At the elementary level, students are engaged in exploring their creativity in visual arts across a diverse range of projects. These projects span various media, including drawing, painting, sculpture, ceramics, textiles, digital art, and interdisciplinary endeavors that weave together elements of STE, humanities, and performing arts. The curriculum prioritizes the development of specific artistic skills while placing a strong emphasis on cultivating lifelong learning skills such as creative problem-solving, observation, teamwork, and exploratory play. The current art room at Neary is a general education classroom that has been converted to an art room and therefore lacks storage and sufficient work space.

Proposed

To realize this educational vision, the visual arts classroom must be a dynamic space that could be used for different teaching methodologies and artistic media. Essential features of this classroom include:

- A spacious, open area with a rug for whole-class discussions and activities.
- Sizable tables with stools to support both collaborative and solo artistic endeavors.
- A suite of equipment including a whiteboard, ceiling-mounted projector, document camera, projection screen, bulletin boards, drying racks, and readily available laptops and tablets.

- Ample storage to keep art materials and student projects organized, including an art workroom with storage and a kiln.
-
- Equipped with technology resources to support inquiry and the engineering design process.
- Spaces that facilitate an integration of visual and performing arts throughout the curriculum, the school should feature a dedicated, versatile space—distinct from the cafeteria or gymnasium—for showcasing visual arts, hosting intimate performances, and presenting student projects.

Performing Arts Programs

	Current	**Design Alt 1 (4-5)**	**Design Alt 2 (3-5)**	**Design Alt 3 (2-5)**
Performing Arts (Music)	2	2 (Includes larger performance area)	3	3

Current

Music education is offered to all students, with classes that enrich the traditional ensemble experiences of chorus, band, and orchestra. The music curriculum offers opportunities for ensemble singing, instrument playing, physical movement, dramatic expression, music reading and writing, analytical listening, and composition.

Students engage in general music education classes once per week. In addition, students in grade three participate in weekly small group instrumental lessons. In grades four and five, many students participate in ensembles, including band, orchestra, and chorus, with instruction encompassing both large-group and small-group instrumental lessons. The band experiences include Blues Band, Beginners Band, and 5th Grade Band as well as full band rehearsals. Between band, orchestra and chorus, there is currently a music ensemble practicing every day either before or after school at Neary. This comprehensive approach not only nurtures musical skills but also enriches the students' cultural and emotional development.

Current levels of participation in music beyond general music class		
Music Activity	**Third grade (currently at Woodward)**	**Fourth and fifth grade (currently at Neary)**
Chorus		72
Instrumental lessons	67 students	38 small groups for band

		23 small groups for orchestra
Band (rehearse in various configurations)		145
Orchestra (rehearse both grades together)		65

The current music rooms at Neary have significant limitations and are in constant use throughout the school days as well as before and after school. One of the music rooms is not ADA accessible due to stairs at the entrance. In addition, there is insufficient storage and therefore musical instruments are often in hallways or the edges of general education classrooms during the school day. There is no performance area so all community music events are hosted at Trottier Middle School.

Proposed
The design would include spaces that are tailor-made for music education, featuring:

- A spacious, adaptable area that is carpeted, with ceilings higher than standard to facilitate a range of activities, including classroom learning, music practice, choral singing, performances for parents and the community, and instrumental instruction. Such a space benefits from extensive acoustic treatments to enhance sound quality and ensure a versatile environment for various musical pursuits.
- Incorporating acoustical enhancements is crucial for protecting students' hearing and enhancing the effectiveness of curriculum delivery. These features are key to creating a conducive learning environment that prioritizes student safety and educational quality.
- A designated space for instrument storage.

Wellness - Physical Education And Health

	Current	Design Alt 1 (4-5)	Design Alt 2 (3-5)	Design Alt 3 (2-5)
Physical Education (Gymnasium)	2	1	1	1
Adaptive PE/PT	0	1	1	1
Health Classroom	0	0	0	0

Current

The Public Schools of Southborough prioritize wellness, reflecting this commitment through the District's values. The Wellness Curriculum encompasses health, physical education, social emotional learning, and overall personal wellness, aiming to cultivate physical competencies and enhance fitness among students. The Public Schools of Southborough integrates health education across classroom teaching, nursing, counseling, and physical education. Collaboratively, educators and health professionals develop activities that promote physical, social and emotional health and well-being.

Physical education is a staple of the curriculum for all students from kindergarten through eighth grade. Students in grades K-5 enjoy a 45-minute session twice per week. Physical education takes place in versatile settings, including gymnasiums and outdoor areas such as fields and blacktops.

The school's playground includes play structures, a blacktop area with play lines, and fields. Recess is a dynamic outdoor time for students, utilizing fields, swings, blacktop areas, playgrounds, and nature play spaces. It's also a time for relaxation and nature observation, underscoring the District's holistic approach to wellness and outdoor learning.

Proposed
In the future design, spaces support all aspects of the Wellness Curriculum. To support physical education, the gymnasium will offer a safe environment for both students and spectators. To embody the district's dedication to wellness, the gymnasium's design should integrate specific features tailored to accommodate a wide range of activities.

- Adjustable Basketball Backboards: To cater to various age groups and skill levels, promoting inclusivity and physical development.
- Volleyball Standards: Either wall-mounted or equipped with floor sleeves to facilitate easy setup and versatility for volleyball games and practice.
- Outdoor Fitness Circuit/Stations: Encouraging holistic wellness and physical fitness through a variety of engaging outdoor activities.
- Projection system and appropriate technology to support school assemblies, professional learning and community events in the gymnasium.
- Storage for physical education materials and equipment.
- Separate storage for extended day program equipment and materials.
- Dedicated Room for Physical Therapy and Adaptive PE and Yoga: A tranquil, soundproof space for adaptive PE exercises, yoga and relaxation activities, supporting mental and physical well-being adjacent to the gymnasium.
- Dedicated space for Occupational Therapy in close proximity to the gymnasium and the Physical Therapy/adaptive PE space.

Given the gymnasium's role as a hub for after-school and weekend events, the design must include robust security measures and the ability to access this part of the building without having access to the rest of the building. These measures will manage access to the gymnasium and associated facilities, like restrooms, ensuring these areas are secure while still accessible during designated times outside of regular school hours. This thoughtful approach to design will ensure that the gymnasium is a versatile, welcoming, and safe space for the entire school and community.

ACADEMIC SUPPORT PROGRAMMING

Current

The English Language Development (ELD) teacher provides support in the general education classroom and in the “temporary” modular classroom at Neary Elementary School depending on the student’s English proficiency level. Students in the early stages of learning English require Tier 1 language instruction outside the general education classroom for a prescribed number of hours according to the language acquisition regulations. The location of the current ELD classroom is isolated as compared to the general education classrooms and does not contribute to a feeling of inclusivity.

The reading specialist who provides general education support to students in literacy instruction is currently using a general education classroom that also serves as a make-shift science laboratory and is at the farthest end of the building away from general education classrooms. The reading specialist often works with students in hallways when administering assessments or providing intervention supports in order to remain in closer proximity to the general education classrooms.

Proposed

	Current	**Design Alt 1 (4-5)**	**Design Alt 2 (3-5)**	**Design Alt 3 (2-5)**
English Language Development (ELD) Space	0	1	2	2
Reading Specialist Office	0	1	2	2
Math Specialist Office	0	1	2	2

In the proposed design for Neary Elementary School, an instructional suite would be strategically located in close proximity to the learning neighborhoods to provide general education academic supports to students through push-in instruction or through use of the small group rooms situated in the learning neighborhoods. In addition, the instructional suite would be adjacent to the teacher collaboration space since these specially trained educators often meet with grade level teams to support data analysis and curriculum and instructional planning.

English Language Development
With students who are English Language Learners (ELLs) making up 31% of the student body in The Public Schools of Southborough, the provision of designated classroom spaces for small group instruction in the instructional suite will be crucial for delivering an inclusive, effective, explicit, systematic, and sustained systematic English Language Development (ELD) curriculum. This instructional space would be in constant use throughout the school day based on current and projected enrollment, not only by the English Language Development (ELD) teachers, but also potentially by ELL tutors providing targeted small group lessons. ELD teachers would also provide language instruction in small group rooms in learning neighborhoods and in the general education classrooms when appropriate for the students' needs. Additionally, students who are ELLs benefit from extended learning opportunities during the summer and this space would be pivotal for this offering as well.

Reading Specialist
Reading specialists will continue to provide targeted general education support to students and professional learning guidance to educators. A reading specialist office that can also serve as a small group learning space will support this educator and reading tutors in supporting students who often need a distraction-free environment and frequent progress monitoring assessments. In addition, this space will serve as a place for professional collaboration and data analysis with small groups of educators. The reading specialists meet frequently with grade-level colleagues to support their implementation of the Tier 1 and Tier 2 instruction and also collaboratively analyze data so that they can maintain a dynamic approach to the multi-tiered supports.

Mathematics Specialist
The District plans to expand support for students and educators in the area of mathematics by hiring a mathematics specialist in 2025-2026 when the District adopts new high-quality instructional materials. The math specialist will support small groups of students with intervention or extension in the general education classroom, in small breakout rooms, in the math specialist's office. In addition, the math specialist will meet with colleagues to provide professional learning guidance and instructional coaching. This support will be especially important as the District takes on the implementation of new high-quality instructional materials. Again, proximity of the instructional suite to learning neighborhoods will be important to support an inclusive culture and the proximity to the teacher collaboration space will support professional learning goals.

STUDENT SUPPORT SERVICES PROGRAMMING

Current

Special Education services within The Public Schools of Southborough are designed to meet the individualized academic, social, and emotional needs of students who require specially designed instruction or related services to effectively access the educational curriculum. These services are delivered through a collaborative effort between special education and general education teachers, employing evidence-based instructional strategies.

Currently, 17% of the student body requires an Individual Education Program (IEP). The array of special education services are delivered in the least restrictive environment which ranges from full inclusion to substantially separate classrooms, demonstrating a flexible and responsive approach to each student's needs.

At the elementary level, the District embraces various teaching models-including whole group instruction, small group instruction, and one-on-one teaching to support student needs. The curriculum is delivered through specialized programs, pull-out services, and inclusion services, all designed to provide both academic and social-emotional support tailored to student needs.

Currently, some students are in need of the Communication, Access, Socialization, Transition, Learning, and Emotional Regulation (CASTLE) Program. The CASTLE Program provides intensive, specialized instruction throughout the school day to assist students with unique and significant learning challenges. This program is designed to meet the individual needs of each student, utilizing the principles and procedures of Applied Behavior Analysis (ABA) to guide its instructional strategies. Whether within the inclusivity of the general education classroom or through more focused settings for small group or one-on-one instruction, the program emphasizes the use of ABA principles and systematic teaching to enable students to generalize their skills across various settings. **At this time, Neary students in the CASTLE program are placed in a CASTLE classroom in a Northborough elementary school.** Families perceive this to be a challenge because Southborough students are not placed with their Southborough peers in these situations.`

Additionally, Southborough elementary students in need of the Therapeutic Learning Program (TLP), which is a specialized academic and therapeutic classroom, tailored for students with emotional, behavioral and social disabilities **are placed in a Northborough elementary school,** apart from their Southborough peers. This comprehensive program offers personalized instruction aimed at addressing the unique learning profiles of each student, coupled with continuous therapeutic support throughout the school day. Key to the TLP's philosophy is the integration of students into inclusive classroom settings whenever possible, providing them with the supports necessary to engage with the curriculum alongside their peers.

The expertise within the special education department is supported by an array of specialists, including speech-language pathologists, school psychologists, occupational and physical therapists, board certified behavior analysts, behavior specialists, adaptive physical education teachers, and team chairpersons.

Many of these professionals support the specific Social Emotional Learning (SEL) needs of students. General education teachers use the Second Step curriculum and the Collaborative for Academic Social Emotional Learning (CASEL) framework to guide students' learning in this area. Educators support students in developing SEL competencies through morning meetings, class lessons and integration of topics into all disciplines. The school psychologist, behavior analyst, and behavior specialist support the needs of students on individualized education plans and general education students.

Currently at Neary, the physical spaces allocated for Special Education faculty and related service staff present challenges. Many educators are assigned to shared instructional areas that are hindering the delivery of high-quality, consistent instruction aligned with the District's vision. In addition, special education providers often struggle to secure private spaces for assessments or for confidential parent meetings. The spatial limitations not only affects the quality of instruction but also poses significant accessibility challenges for students with physical disabilities, impacting their ability to participate fully in the school community. Issues such as restricted bathroom access, the inaccessibility of certain rooms like the music room, and limited outdoor play spaces underscore the urgent need for infrastructure enhancements to ensure all students can benefit equally from the educational opportunities provided by The Public Schools of Southborough.

Addressing these infrastructural and spatial challenges is critical for upholding the District's commitment to providing an inclusive, supportive, and accessible learning environment for all students, particularly those requiring specialized education services.

Proposed

	Current	**Design Alt 1 (4-5)**	**Design Alt 2 (3-5)**	**Design Alt 3 (2-5)**
CASTLE classroom	0	1	1	1
Therapeutic Learning Program (TLP) Classroom	0	1	1	1
Learning Centers	1	2	3	4
Calming Room	2	2	2	2
Testing Room	0	0	0	0
Small Group Meeting Room	*0*	*0*	*0*	*0*

The Future Design Needs for the Special Education Program emphasize a strategic integration of special education learning environments within the broader educational framework, ensuring seamless communication and collaboration between special education staff and their general education counterparts. Integration would support even greater levels of inclusivity. The design would include specialized spaces in each learning neighborhood tailored to the unique needs of special education students. Key to this approach is the creation of a small group room between and adjoining to paired academic classrooms to facilitate small group instruction in a manner that minimizes travel and disruption, thereby optimizing the educational experience for these students. Another key feature is the placement of learning centers and substantially separate classrooms within learning neighborhoods. Furthermore, the design calls for the establishment of calming/sensory spaces that would be adjacent to specialized programs, CASTLE and TLP. These spaces are essential for providing a tranquil environment for students needing sensory regulation.

The sensory design of all learning spaces is important. Attention to detail in the selection of views, control of sightlines, and the minimization of potentially disruptive auditory and olfactory stimuli are crucial considerations. These measures aim to create an environment that supports the sensory needs of students, avoiding overstimulation or understimulation. The mechanical and lighting systems are to be meticulously planned to reduce visual distractions, regulate airflow, and minimize ambient noise, incorporating full-spectrum, dimmable lighting solutions to create a visually comfortable space that avoids sensory overload.

The new design would include office space for the school psychologist, certified behavior analyst, behavior specialist, speech and language pathologist, occupational and physical therapists, and the special education team chair. The design would also include a special education conference room with the space to host up to 15 adults. The conference area will support the functional needs of IEP meetings and special education team collaborations, ensuring that the infrastructure fully supports the department's operational and strategic needs.

This design framework supports a comprehensive approach to creating an inclusive and supportive learning environment for special education students, affirming the district's commitment to fostering academic excellence and personal growth for all students.

The organization and color scheme of the rooms are to be carefully considered to reduce visual clutter and create a serene, engaging learning environment. Proximity and accessibility to other programmatic areas are also critical to ensure ease of access for students and to support optimal acoustic conditions within these special education spaces.

CASTLE Program

Additionally, the design would include a classroom space for a CASTLE Program so that Southborough CASTLE students remain with their peers in town. Central to the CASTLE Program is the creation of a personalized curriculum for every student, utilizing the advanced, web-based Autism Curriculum Encyclopedia (ACE) curriculum. This curriculum addresses a comprehensive range of developmental areas, including functional communication, daily living activities, academic skills, use of Augmentative and Assistive Communication (AAC) devices, vocational training, communication strategies, and social-pragmatic skills. The program champions a collaborative team approach to service delivery, comprising a lead special education teacher, educational support professionals, and specialists in speech and language therapy, physical therapy, and occupational therapy. Enhanced by the support of a Board

Certified Behavior Analyst (BCBA), Assistive Technology Specialist, AAC consultant, and School Psychologist, the program ensures a holistic educational experience.

In terms of infrastructure, the CASTLE Program necessitates specific design features to support its educational model effectively:

- A versatile classroom that can be divided into two distinct areas for grade-specific teaching and to allow for adaptive instructional group sizes as required.
- Proximity to single-stall restrooms to accommodate privacy and ease of access for students.
- An adjoining calming space for students to de-escalate when necessary, allowing for a smoother transition back into the classroom environment.
- Dynamic workspaces that support one-on-one and small group instruction, enabling personalized learning experiences.
- Multi-sensory work areas are designed to engage students through a variety of stimuli, fostering an inclusive learning environment for all.
- Adaptive use of wall space for educational tools like word walls and visual cues, enhancing memory and learning through accessible whiteboards and other aids.
- Incorporation of the same technological resources found in general education classrooms ensures that students in the CASTLE Program have access to cutting-edge educational tools.
- Through these dedicated spaces and resources, the CASTLE Program aspires to provide a nurturing, effective, and inclusive educational setting that meets the diverse needs of its students, setting the stage for their success both within the school environment and beyond.

The CASTLE classroom would be on the edge of another learning neighborhood with a calming room adjacent that could be accessed, not only by CASTLE students but also by students from other classes in the learning neighborhood. This location would facilitate inclusion when appropriate and support a quieter environment at other times.

The Therapeutic Learning Program (TLP)

The new design would have space for the Therapeutic Learning Program (TLP). The physical environment of the TLP would be designed to be conducive to both learning and emotional support. It encompasses a tranquil space conducive to academic pursuits, areas for students to take breaks and engage in self-regulation strategies. The design specifications for the TLP's special education facilities emphasize several key features:

- Accessibility to physical activity spaces, such as a gym, to allow for movement breaks.
- Close proximity to learning neighborhoods to facilitate integration and a sense of belonging.
- An adjoining calming space for students to de-escalate when necessary, allowing for a smoother transition back into the classroom environment.

- Consideration of acoustics to reduce noise disturbances from adjacent areas, creating a quieter, more focused learning environment.
- Close proximity to counseling services in the social-emotional learning suite to ensure students have immediate access to emotional and behavioral support.
- A dedicated sensory room within the TLP, accessible directly from the program area, provides a safe and supportive space for sensory regulation.

The design would foster an inclusive, supportive environment that meets the comprehensive needs of students within the TLP, facilitating their academic achievement and emotional development in a setting that respects and responds to their individual challenges. The TLP classroom would be on the edge of a learning neighborhood with a calming room adjacent that could be accessed, not only by TLP students but also by students from other classes in the learning neighborhood. This location would facilitate inclusion when appropriate and support a quieter environment at other times.

This design framework supports a comprehensive approach to creating an inclusive and supportive learning environment for special education students, affirming the district's commitment to fostering academic excellence and personal growth for all students.

TEACHER PLANNING, COLLABORATION AND PROFESSIONAL DEVELOPMENT

Current

Professional collaboration stands as a cornerstone of the educational philosophy in The Public Schools of Southborough. The schedule is built to support grade-level teams having shared preparation time each week. Despite this commitment to collaborative planning, the District lacks designated teacher planning spaces. Teachers often resort to meeting within their own classrooms, seated at student desks, contingent upon space availability, which is far from ideal.

The District's professional development program is designed to foster growth for educators at every career stage and embedded into their professional experience so that it is sustained and relevant to their daily practice. Elementary teachers weekly convene by grade level and periodically participate in workshops aimed at enhancing teaching efficacy, curriculum implementation and student learning outcomes.

Faculty meetings and district-wide professional development sessions are currently held in less-than-ideal locations such as the building's library, classrooms, or cafeteria. These settings often suffer from issues like overcrowding, uncomfortable temperatures, and insufficient technological resources for presentations, detracting from the quality of these important gatherings.

Proposed

	Current	Design Alt 1 (4-5)	Design Alt 2 (3-5)	Design Alt 3 (2-5)

Staff Lunch Room and Teacher Preparation	1	1	1	1
Teacher Collaboration Room	0	2	2	2

In order to foster collaboration among educator teams, the District will provide flexible professional learning spaces for varying size groups. These spaces will empower educators to collaboratively design lessons, units, projects, and investigations. Additionally, they will support ongoing examination of student learning data and the ability to provide timely feedback and support for students. The ongoing analysis of data is a cornerstone of the multi-tiered systems of support that reading specialists, math specialists and SEL professionals guide. These collaboration rooms will also serve as venues for professional development workshops.

These teacher collaboration spaces would be strategically positioned near each learning neighborhood and near the instructional suite to facilitate easy access. By placing these rooms just outside of learning neighborhoods, it may be possible to have a removable wall between teacher collaboration rooms making them adaptable to host larger professional development sessions or staff meetings. It is important that teacher collaboration rooms are distinct from staff lunchrooms which also support teacher preparation such as photocopying, lamination and other tasks. This distinction ensures that teacher collaboration rooms are used exclusively for professional collaboration and not for breaks or social gatherings. The teacher preparation room would also include workstations where educational support professionals and itinerant employees can complete tasks given that they do not have dedicated classrooms or offices.

Future teacher collaboration rooms should include:

- Smaller, Collaborative Spaces: Areas where grade-level teams can gather for focused planning sessions, ensuring privacy and promoting efficiency in curriculum development and teaching strategy discussions.

- Larger, Open Areas: Spacious venues equipped for whole-faculty professional development activities, designed to accommodate larger groups comfortably. The larger area may be achieved by joining smaller spaces together.

- Comfort and Accessibility: Meeting spaces should offer a comfortable environment, equipped with adequate heating, cooling, and lighting to facilitate year-round use without discomfort.

- Technological Integration: Equipping these areas with the latest in presentation technology, including high-quality projectors, sound systems, and internet connectivity to support a wide range of professional development activities.

By prioritizing the creation of these dedicated spaces, The Public Schools of Southborough can further enhance their commitment to professional excellence, fostering an environment where educators are equipped, encouraged, and empowered to grow professionally, for the benefit of students.

LUNCH PROGRAMS

Current

Meals for Neary School students are prepared off-site at the P. Brent Trottier Middle School kitchen, due to Neary's lack of facilities for food preparation and cooking. After preparation, these meals are transported to Neary School, where they are served to approximately 125 students per lunch period in a communal dining area. This setup sees large groups of students moving in and out of the cafeteria space, a bustling hub of activity during meal times.

The District is committed to promoting health and wellness through nutrition, prioritizing the provision of healthy, locally sourced food options. In line with this commitment, the District actively seeks to include locally grown produce in its meal offerings, taking advantage of vegetables harvested from school gardens when possible. There's a vision to further engage students in this initiative by establishing a garden on the grounds of the new school, fostering a hands-on learning experience that connects students directly with the source of their food.

Currently, lunch periods at the District's elementary schools are limited to 20-25 minutes. The cafeteria is a large open space and can be over-stimulating for some students. There are no alternative spaces designed for dining.

Proposed

The new design would include a variety of seating options for students, including smaller breakout spaces to support sensory-sensitive options for students. Furthermore, the new site would include the introduction of on-site kitchen facilities. This would enable the preparation and safe storage of meals within the school, allowing for a wider range of healthy options on the menu. In addition, the new kitchen would provide ample space and design to support traffic flow and strategic service areas organized for efficiency. A new kitchen would also support the District's vision of integrating educational programs focused on health, nutrition, and agriculture directly into the students' learning environment.

HEALTH OFFICE

Current

At the Neary School, the health and wellness of students and staff are under the care of a Commonwealth of Massachusetts and Department of Elementary and Secondary Education licensed RN School Nurse, whose responsibilities extend beyond the traditional confines of medication administration and minor health assessments. The Health Office is a critical hub for evaluating and triaging health concerns, liaising with families and healthcare providers, managing health records, conducting screenings for various physical parameters, and addressing the emotional well-being of the school community. Furthermore, the school nurse plays a crucial role in collaborating with district nursing staff on health education, grant writing, and leading emergency response training for staff.

However, the current Health Office space is notably inadequate for the breadth of services required. In the current space, there is no waiting area or provision for isolating contagious individuals. The sole lavatory, doubling as a changing area and staff restroom, cannot meet the diverse needs of the school population, from toilet training to health-related toileting supervision. The absence of a dedicated handwashing sink outside this lavatory further complicates hygiene practices. Additionally, storage space is severely limited, impacting the secure storage of medications and medical equipment. The lack of a private area for confidential conversations with parents or consultations with staff is another significant shortfall.

Proposed

In envisioning a new design for Neary's Health Office, the goal is to create a space that adequately supports the complex health and wellness landscape of the school community. This includes a larger, more versatile area that can accommodate multiple resting spaces, a dedicated waiting area, and isolation zones for contagious students. Essential facility improvements must include lavatories to serve diverse needs effectively, additional sinks for handwashing outside the lavatories, and expanded secure storage for medications and medical supplies. A private consultation area is also critical, ensuring confidentiality and support for sensitive discussions. This enhanced design will align the physical environment of the Health Office with the expansive role of the school nurse, ensuring optimal health and wellness support for the entire school population

SOUTHBOROUGH EXTENDED SCHOOL CARE

Current:

The district-run Southborough Extended Day (SEDP) Program is designed to serve the needs of the District's students and families before and after school hours. There are dedicated staff for this program that work separately but in concert with school staff. However, although students are enrolled in the program after the end of the school day staff arrives earlier, so a dedicated space is needed to accommodate SEDP staff. The chart below depicts well the existing numbers of students supported by the SEDP, as well as the demand for spots in the program both before and after school:

Current SEDP Families Accessing SEDP

Finn (K-1)	**Woodward (2-3)**	**Neary (4,5)**
60 Families	75 Families	35 Families

Proposed

An alternative office space for SEDP has been identified in a different school building.

TRANSPORTATION POLICIES

Current

In The Public Schools of Southborough, transportation is provided at no cost for ALL students in grades K-8. Combining schools or adjusting grade configurations would not increase bus traffic at the schools, but would reduce the bus traffic on the main roads and in the surrounding areas.

Currently, the District operates a fleet that includes 14 full-size buses and one half-size bus, catering to the transportation needs of both regular and Special Education students. As of now, 212 (K-5) students do not qualify (residing within a mile of their respective school) for daily bus transportation provided by the District, however, it is the long-standing practice of the District that all students are offered school bus transportation regardless of their residence's distance from school.

Given that the elementary schools do not serve exclusively neighborhood zones and specialized programs are not uniformly distributed across all schools, the District employs a sophisticated transfer bus system. This system facilitates the movement of students between the three elementary schools for both morning arrivals and afternoon departures. Bus routes are designed to accommodate students attending any of the three schools, utilizing the transfer system. Transportation is organized in two tiers: middle and high school students are transported first, followed by the elementary students, optimizing the efficiency of school commutes.

Proposed

The proposal to consolidate schools would improve the efficiency and complexity of the bus system. By reducing the locations that need to be supported, we will gain valuable AM and PM minutes to reduce the overall commute time. The consolidation would also pool vehicles so that they could support multiple functions and won't be displaced to the extent they are in the current configuration.

The new school's parking facilities will be designed to meet the daily needs of the school and accommodate community events outside school hours. This planning includes:

- Ensuring safe bus access routes that do not conflict with areas designated for student drop-offs and pickups.
- Maintaining secure and controlled zones for deliveries.
- Designing recess and recreational spaces away from traffic, safeguarding the well-being of students during outdoor activities.
- Optimizing traffic flow to avoid confluence at the same locations during peak drop-off/pick-up times as well as special events.

- Reduce bus route lengths for students and reduce overall school related traffic.

FUNCTIONAL & SPATIAL RELATIONSHIPS

The school's design vision is centered around creating an adaptable environment that reflects the community's values, prioritizes the well-being of its members, and fosters student learning. The aim is for the entire building to maintain a sense of physical unity, with thoughtful consideration given to the internal and external flow, ensuring that the spaces within are conducive to both movement and connection. Student achievements will be proudly displayed throughout, making the celebration of learning a visible and integral part of the school's atmosphere.

The design will include careful choices regarding design aesthetics, natural light, finishes, and furniture, all tailored to create a welcoming and appropriate environment for the students.

The Media Center will be adjacent to the art room to support inquiry across disciplines. The school’s layout will thoughtfully separate academic areas from spaces designated for community use, an aspect critical for maintaining security and functionality.

Classroom organization will be strategically designed in learning neighborhoods to promote collaboration, with classrooms and specialized education areas distributed throughout the building to support integrated and inclusive education. Small group rooms between general education classrooms will allow for special education academic support and peer to peer collaboration to happen in quiet settings but close to the general education classroom. Furthermore, the learning commons, directly outside of and visible from grade-level classrooms, will also facilitate shared educational initiatives, allowing for flexible grouping of students and targeted instructional experiences. This space might also accommodate multiple classes to gather for presentations, performances, or community meetings.

Specialty classrooms, including those for art, world language, music, and media will be purposefully located to support interdisciplinary learning. By placing the art room adjacent to the media center, students will engage in inquiry that bridges these spaces and is supported by multiple educators. In addition, the instructional support suite and teacher collaboration spaces will be strategically located at the edges of learning neighborhoods to support targeted academic support for students as well as embedded and sustained professional learning. The locations of components of the special education program will allow for inclusion and seamless integration, while parts of the program will be situated in a special education suite that allows for confidentiality and distraction-free assessments and support when needed. This layout is intended to enhance cross-disciplinary collaboration and ensure all students have equal access to the rich array of educational resources and opportunities the school offers.

The design would incorporate gathering spaces for various groups within the community. While grade levels or cross-grade level groups might gather in the learning commons of a learning neighborhood, a larger contingent of the school could gather in the auditorium, which will also serve as a music learning space. For whole school or larger community events, the gymnasium will serve as a communal space.

The design would embody the community's overarching objectives and priorities and adhere to the District's core design principles, outlined as follows:

- Purposeful Outdoor Environments: Dedicated spaces outdoors for academic pursuits, social-emotional development, and recreation in a safe and secure manner
- Promoting Unity Across Grade Levels: A focus on fostering connections and a sense of unity within and across different grades.
- Adaptable Learning Environments: Ensuring spaces are versatile enough to accommodate the diverse needs of every learner.
- Forward-Thinking Design: Creating spaces and adopting practices that not only address current educational requirements but are also adaptable to future needs.
- Community and Culture at the Forefront: Envisioning the project as a means to protect, connect, and cultivate the school's community and cultural heritage.
- Foundational Emphasis on Elementary Education: Recognizing elementary education as crucial for laying the groundwork for academic achievement and social-emotional well-being.
- A Model of Sustainability: Championing a school facility that serves as a dynamic educational resource, promoting sustainability and environmental stewardship.
- A Model of Safety and Security: Providing flexibility while maintaining safety and security protocols will be part of the design.

SECURITY & VISUAL ACCESS REQUIREMENTS

Current

The Public Schools of Southborough prioritizes the safety and security of all students and staff, aiming to enhance public safety for all community members who interact with or utilize school facilities. This commitment extends to minimizing risks to individuals and preventing damage or loss to district property. The school has established a comprehensive approach to building security, underscored by the following key elements:

- Structured Safety and Security Governance: The district has implemented clear administrative guidelines and policies dedicated to supervising safety and security initiatives across all schools and works closely with the Town's Police and Fire Departments safety officials to coordinate.
- Continuous Security Assessments: The district undertakes ongoing evaluations to scrutinize existing security measures, identify any shortcomings, assess the requisite level of security, and propose enhancements.
- Integrated Security Management: A multi-faceted approach to security is employed, incorporating diverse communication channels, detailed policies and protocols, physical

security measures, staff training, and well-defined response strategies. The buildings are locked throughout the school day, and staff use key access cards to enter the building. This approach fosters collaboration among administrators, staff, parents, and students.
- Comprehensive Background Checks: All school personnel, including faculty, staff, volunteers, contractors, and vendors present on school grounds, undergo CORI checks, SORI checks, and FBI Fingerprinting checks to ensure the safety of the school environment. Additionally, staff members are mandated to wear identification badges visibly during school hours.
- Regular Safety Drills: The school routinely conducts fire alarm and active intruder drills to guarantee that faculty and staff are proficient in accounting for all students swiftly and effectively.
- Staff Preparedness Training: Staff members receive ongoing training to adeptly enact the Emergency Response Plan, ensuring readiness in case of emergencies.
- Cultivating a Vigilant Community: The school community, including students, faculty, and staff, is educated and encouraged to remain vigilant and report any suspicious or concerning activities or behaviors.

This comprehensive approach speaks to The Public Schools of Southborough's commitment to creating and maintaining a secure educational environment where learning and growth can flourish unimpeded by concerns for personal safety or property protection.
Proposed

The future design of the school's security system aims to strike a balance between fostering a welcoming atmosphere for students, families, and the broader community and integrating a comprehensive suite of advanced security measures. These features, while not exhaustive, are crucial for ensuring a protected learning environment:

- Enhanced Entrance and Lobby Security: Implement a secure, single-entry door system for each school or program, equipped with a door-release mechanism, intercom, video surveillance, and a sophisticated visitor management system. All additional exterior doors should be locked at the commencement of the school day, with exit-only functionality and surveillance.
- Dedicated Access Points for Operational Needs: Ensure separate and safe access routes for kitchen operations, facilities management, and shipping/receiving, distinct from the main entrance, to alleviate congestion and enhance security.
- Clear and Informative Signage: Install signage to guide visitors, contractors, and vendors directly to the administration area for secure entry processing. Identification markers on doors and windows, along with evacuation maps in all occupied rooms, will enhance navigation and safety.
- Defined School Perimeter: The school's boundaries should be distinctly marked from public areas, with landscaping designed to maintain unobstructed views of the school’s exterior for surveillance purposes.
- Strategically Planned Vehicular Access: Design vehicular access that incorporates safety measures such as bollards, no-parking zones, and specified drop-off points,

ensuring a clear separation between general traffic and buses. Safe routes should be established for pedestrians and cyclists, with unambiguous access for emergency and public safety vehicles.

- Access Control Systems: Adopt best practices in access control technologies for entrances to the building, classrooms, and other critical areas to manage entry efficiently.
- Optimal Exterior Lighting: Install adequate lighting around walkways, entrances, and parking areas, focusing on reducing spill-over lighting into neighboring areas and maximizing energy efficiency.
- Coordinated Video Surveillance: Establish a video surveillance system with clear protocols for operation and maintenance in collaboration with local law enforcement agencies.
- Segmented spaces for community use (i.e., gymnasium)

By incorporating these strategic security enhancements in the design, the school not only ensures the safety of its inhabitants but also maintains an inviting environment conducive to learning and community engagement.

C: Proposed Security Narrative

Schematic Design Security Narrative

Southborough Neary School

CONFIDENTIAL

Provided by:

Pamela Perini Consulting, LLC

Pamela Perini, PSP

Report Date: February 25, 2025

Introduction

Pamela Perini Consulting, LLC (herein referred to as PPC) is an independent security consulting firm located in Waltham, MA, and Providence, RI. PPC provides a number of security consulting services that include risk, vulnerability and security assessments; security master planning; security program assessment, development, evaluation and creation; security plans/drawings and specifications for construction, constructability assessments; peer reviews; service and maintenance contract assessments, creation and bid; and overall security programs, planning, implementation and oversight. PPC and its principal, Pamela Perini holds a number of security credentials that are necessary for multiple security consulting functions.

Pamela Perini, PSP

Principal Security Consultant and Owner

DATE: 01/2025

Credentials, Certifications, Training, etc.

1. Certified Physical Security Professional (PSP), ASIS International **
2. Certified Crime Prevention Through Environmental Design (CPTED), Facilities Management International
3. PREPaRE WS1: Crisis Prevention & Preparedness: Comprehensive School Safety Planning, Northeast Homeland Security Regional Advisory Council/NASP (National Association of School Psychologists)
4. SANS Isaca/Audit Serve; IT Auditing for Disaster Recovery & Business Continuity Planning
5. OSHA10 Construction, OSHA Training Institute
6. Certification Commonwealth of Massachusetts MCPPO Program, Cyber Threats to Local Government
7. Rhode Island School Safety Committee, Annual School Safety & Security Conference 2019
8. Infrastructure Protection (Master Certification), Texas A&M University Engineering Extension, National Emergency Response and Recovery Center
9. AMTRAK Passenger Train Emergency Response Certification

FEMA Certifications

1.	FEMA AWR-136	Essentials of Community Cybersecurity
2.	FEMA AWR-175	Information Security for Everyone
3.	FEMA AWR-375	Risk Management for After School Activities & Interscholastic Athletics
4.	FEMA ISC-100	Introduction to Incident Command
5.	FEMA IS-120.c	Introduction to Exercises
6.	FEMA IS-700	National Incident Management System (NIMS)
7.	FEMA IS-906	Workplace Security Awareness

8. FEMA IS-907	Active Shooter
9. FEMA MGT-384	Community Preparedness for Cyber Incidents
10. FEMA AWR-213	Critical Infrastructure Security & Resilience
11. FEMA MGT-310	Jurisdictional Threat & Hazard Identification and Risk Assessment
12. FEMA MGT-414	Advanced Critical Infrastructure Protection
13. FEMA MGT-315	Critical Asset Risk Management
14. FEMA AWR-383	Cybersecurity Risk Awareness for Officials and Senior Management

*** The Physical Security Professional (PSP) ASIS credential is subject to The Department of Homeland Security's Safety Act. The SAFETY Act Designation gives ASIS board-certified professionals and their customer's immediate protection from lawsuits involving ASIS certification and the ASIS certification process that arise out of an act of terrorism. Not only does it limit the types of liability claims that can be brought against a certificant, but it also entitles the certificant to immediate dismissal of those specific types of claims.*

PPC has been engaged by Arrowstreet Architects as their security consultant for the Southborough Neary School (MSBA) Project in Southborough, Massachusetts. PPC has developed this Schematic Design security narrative, to identify the systems, functions and operations associated with the school's security program that are to be assessed and potentially included in the project, or to conclude that the systems are not functioning, not sufficient or worthy of their consideration moving forward from a certified security professional opinion.

Security Narrative

This document is provided as a **CONFIDENTIAL** informational outline for the design considerations of the Electronic Security Systems and function for the new Southborough Neary School project. The school is being independently assessed for the security needs of students, teachers, faculty, staff and visitors of the existing building during normal school hours and after-school hours, during after-school programs and during non-Southborough School programs such as athletic tournaments, recitals and shows that may have out-of-school and out-of-town participants and visitors. This view and standpoint will assist in ensuring that the school's security posture will meet the needs of all who enter the school grounds and building.

Creating a safe and secure environment that promotes and supports 21st Century learning is the goal of all PreK-12 school construction projects. School safety and security protects students, teachers, faculty, staff, administration and visitors, and must be addressed from the whole facility concept and feasibility through to the facility use, during both school hours and non- school/after-school hours. Cybersecurity is an additional contributing factor, and ensuring the critical infrastructure and supporting information security is protecting the information being shared by the systems is critically important. Additionally, protecting the privacy of children, students, teachers, faculty, staff and visitors is paramount. The school is a learning environment.

The school's perimeter, the site, the building, the interior design and the function of the building systems and critical infrastructure are all taken into consideration when addressing safety, security and the school's security program. First responder access and incident response is paramount in addressing the security program of any school. Given the current climate, safety and security are of primary importance to every PK-12 construction school project, and a necessary part of all school security programming. Pamela Perini Consulting and Arrowstreet have had preliminary discussions regarding the exterior/perimeter Security, Site Security and the building perimeter. Interior configurations were also addressed from a high level. CPTED concepts and principals will be applied throughout the project ensuring interior and exterior security, safety and protection.

FEMA states that school districts must: prevent, protect, mitigate against, respond to and recover from incidents that may be disruptive to our PK-12 schools and their building/facility occupants. All of these components will be addressed in the development of an overall School Security Program. This process and subsequent program include the owner to review of processes and policies, while the design team will be providing electronic measures that complement these processes and policies to protect the school from human-caused, technological, and natural disaster threats, hazards, risks and incidents.

All security programs need processes, policies, people, technology and training to support the Electronic Security System measures that are in use and that will be installed. This use is most important to those stakeholders responsible for the response to incidents; the First Responders. By assessing and applying various security concepts, we are able to review the existing systems and functions, as this review will lead us to understanding the gaps and needs of the Southborough Neary School.

Pamela Perini Consulting identified the following systems with the walk-through Keith Lavoie, further discussions will be had with the district regarding the proprietary nature of the systems and their district-wide use:

Access Control System:

- Avigilon Cloud with M52 Mercury Board on-premise components.

Video Management System:

- Avigilon Alta Cloud with on premise Server components.

CAT6A Cable Color

- Purple

Video Intercom:

- Avigilon

PoE Switches:

- HP Aruba 2930M switches are being utilized for PoE (these switches were in place at the existing conditions walk through and we will verify make and model of District switches with the IT Department.).

Southborough also has an Extended Day Program, Summer Programs and Closed Days Programs so the building is used past school hours. The controlled entrance to all of these programs will be discussed in the subsequent design phases.

In part and in whole, there were Security Program considerations with the installed equipment and systems at the Southborough Neary School. The Security Program in any PK-12 School, is a combination of People, Technology, Policies and Operations, all working together to mitigate risks, and provide a safe and effective community and learning environment for the students, faculty, staff, administration and visitors.

The Stakeholders will participate in the development of a whole Security Program, to ensure the district is prepared with Incident Response Plans for high impact outcome incidents.

Physical Entry and Access Control

By utilizing a single main door approach for entrance and exit, there is less opportunity for entrance of persons who do not belong in the school. An accounting of person(s) in the school is clear when limiting access to a single portal. By limiting the secondary/supplemental door/portal use and requiring main door/portal use, this will increase the opportunity for observation and controlled access, and enhance the security and safety for students, faculty, staff, administration and visitors into the school.

The primary/main entrance(s) shall be open when the main flow of students is coming into the building in the morning and exiting the school at the end of the day. The main entrance door(s) will have a single location for the Access Control Keypad Reader and the Video Intercom Door station. This will allow for the front office administration to have direct communication with visitors and visual confirmation before allowing entrance into the school. Also on these doors will be card readers to allow those who have credentials, an access control card, to enter the building directly. It is always recommended that credentialed staff be trained on piggy-backing and how to avoid it. Piggy-backing is when an uncredentialed visitor “piggy-backs” on the prior persons access control presentation and enters the building. Policies should also be written around piggy-backing.

All perimeter doors shall remain locked at all times with controlled access and shall incorporate door prop indicators programmed into the Access Control and Intrusion Detection Systems. All Access control doors will have electrified locking hardware (DIV8 provided by locking hardware specifier) to enable the locking and unlocking functions, and specialty functions such as lock down.

All Access Control Doors will have a camera view on the secure side of the door viewing and recording individuals entering the school building. High-definition IP Dome video cameras are utilized to enhance the ability to identify entrants into the school through visual verification.

There will be a Secure Vestibule at the main entrance to the school. The outer layer (exterior side) of the Secure Vestibule will be controlled through Electronic Access Control with electrified locking hardware. Teachers, administration, employees and staff that have the appropriate and active credential/access control card or fob, may enter the building with ease. These people are also recorded by the Access Control System as “in the building”, which enables the administration to run a muster report if needed during an emergency or an incident. A muster report would be important and key to a facilities occupant list in the event of an emergency. The Access Control System Administrator (IT function) would be able to run a report of building occupants based on active access control card use.

The outer layer (exterior side) of the secure vestibule is also the location where a video intercom door station is located. Again, the doors are controlled by access control independently, but all visitors will require visual verifications at the outer layer of the secure vestibule via the video intercom station (and windows). The School Administrator shall communicate with the person (s) requesting entrance to the school and the purpose for which they will be entering. The Administrator will either allow or disallow the person into the second layer in the secure vestibule. This is the middle layer.

The middle layer is the final layer before entrance to the school. This is the actual secure vestibule. This layer has an additional secured Access Control stop gap measure, before there is entrance to the school by credentialed teachers, administration, employees and staff. Person who are credentialed are allowed to freely enter the school unless there is a special incident condition or occurrence.

The middle layer also provides a communication window for a parent or guardian that may be dropping of documentation, papers or lunches for a student or for the school administration. There will typically be a sliding window in the secure vestibule middle layer for ease of transferring small items to the school office. Larger items will have to be hand delivered through the dedicated school office door that leads into administration specifically. This stops parents and others from direct access to the school that is not needed.

It is always recommended that school entrance process be reviewed and tested, and that there is contiguous training. The school will develop the processes and policies surrounding the Secure Vestibule for the Security Program. Emergency Response Plans are required by law with an annual review.

Lighting of site

All site lighting is specified under DIVISION 26, and will be developed with the School Security coordinating. Additionally, should site or parking cameras be required, it is recommended to install the cameras on light poles where possible. It is more cost effective.

Typical Lockset Hardware

All locking hardware that is integral to the Access Control System and Intrusion Detection System will be coordinated with Division 8, Division 26 and Division 28. Sidelights will be discussed further at additional design meetings. The coordination for Division 08 specifier, will include electrification (power and lock power supply) at the doors as needed and indicated on the drawings, door position switches (door contacts) as needed and indicated, request to exit (REX) devices and data cable as needed and indicated.

Other potential locking hardware may include:

Corridor to Classroom Doors

- Mortise Lock Function:
    - Intruder Function - Outside/Corridor side of door has a key, lever that can be left locked or unlocked; inside/classroom side of door provides egress at all times and has a key to lock/unlock the outside lever, this side of the lock also has an indicator to show the status of the outside level whether locked or unlocked.

Classroom to Classroom Doors

- Classroom to Classroom Communicating Doors
    - If this door is for second means of egress, then Passage function is recommended, if not then Intruder Function is recommended.

Teacher / Administration Space Corridor Doors

- Mortise Lock Function:
    - Office Function – Outside/Corridor side of door has a key, lever can be left locked or unlocked; inside /classroom side of door provides egress at all times and has a thumb turn which can lock/unlock outside lever.

Typical Office

- Same as above Office Function.

Library and Innovation Space Doors

- Mortise Lock Function:
    - Intruder Function - Outside/Corridor side of door has a key, lever that can be left locked or unlocked; inside/classroom side of door provides egress at all times and has a key to lock/unlock the outside lever, this side of the lock also has an indicator to show the status of the outside level whether locked or unlocked.

Non-typical lockets will be discussed with owner in Design Development and Construction Documents Phase of design.

Integrated Electronic Security Systems

Electronic Security Systems (ESS) typically consists of the Access Control System (ACS), Video Management System (VMS), Intrusion Detection System (IDS) and Video Intercom Systems (IS). These systems, and system components work together in an integrated manner to detect, deter, delay, respond to, and/or investigate incidents. Allowing investigators or school administrators to access records or video images is an essential forensic investigative tool. The presence of a VMS has been proven to deter criminal activity, while IDS and ACS systems allow school administrators to control access of personnel into the school. Alarms from the IDS, and video signals from the VMS transmitted to the responding authorities significantly enhances emergency response and situational awareness during and after school hours. A discussion regarding the current state of the School Districts and the City's Municipal live feeds for Video and Alarming will be scheduled with the school representatives (responsible for assigning ownership), the Police Department (responsible for response) and the IT Department (responsible for communications).

Deployment of the Electronic Security Systems is risk based and will focus on detecting a Security breach, deterring and slowing down an active assailant, responding to an incident, and investigating serious incidents that could negatively impact people, property and information. The Electronic Security System tools will allow first responders to have eyes in the school when they are most needed. Incidents that have low probability but high consequences may be ended with less loss with the use of electronic security systems.

The Electronic Security System components will be on the emergency generator (backup power) circuitry. At a minimum, all main components, Servers, Switches and the like, will be equipped with an appropriately sized UPS (Uninterrupted Power Supply) that provides a minimum of three (3) hours of backup power in the case of a power outage, and emergency power failure. Again, if available, the systems should be tied into emergency power (i.e. generator) to ensure systems remain functional in the event normal power is lost for longer than 3-hours. Access Control Panels specifically are able to buffer information that allows for use during a power failure.

- **Access Control System**

  An Access Control System (ACS) provides a number of benefits for school safety and security. Keypad Card readers provide a management tool to designate who can go where and when, and at the same time provide an audit trail of activity. A well-designed system will integrate with other security platforms such as video management and intrusion detection to provide forensic information that is valuable to school administrators, emergency responders and investigators. Future conversations will include discussions regarding proprietary systems, and any programming to be utilized to mirror other Schools in the District.

  We will have conversations with the Architect and the Owner regarding Lock Down, Shelter in Place, and the important role the Access Control System has. Access Control Systems provide the means for Compartmentalization. The ACS will have schedules and be configured to generate alarms for such conditions as a door forced or held open doors.

  The ACS will have the capability to be put into a “lockdown state” or “Shelter in Place” state which automatically locks all selected card reader doors and restrict access to credentialed and authorized emergency responders, and credentialed and authorized personnel. Discussions regarding programming will be extensive to find the best approach given the knowledge of how the Emergency Responses Teams currently function. This conversation will include coordination with the Mass Notification System consultant.

  The ACS shall have the capability of integrating with the building paging system for lockdown notifications, and will generate other school triggers like the colored beacon(s) on the exterior of the school for a visual que that a live incident if occurring.

  The Division 28 Specifications developed during the design process will further define the integration requirements. All ACS doors shall be equipped with a keypad card reader (in some SPED instances Districts provide for card reader in/out), door contact, request-to-exit device, and electronic locking door hardware. Often the DIV08 vendor will carry the REX device in their lockset, and any special power supplies. This will be coordinated.

All perimeter access control doors shall be locked at all times outside of scheduled drop-off and pick-up times and shall have the capability to be unlocked through programming during authorized or scheduled events. All perimeter, non-access control doors that are to be used for egress only shall be equipped with a door contact/position switch and REX motion sensor. This will allow free egress without causing an alarm. All other exterior non-entry/exit doors shall be key-lockable with mechanical door hardware, unless identified for access control.

Card readers will be strategically located within entry level floors to restrict access from the general public to designated areas. Card readers will also be installed on rooms that contain critical infrastructure or assets, such as MDFs, IDFs, IT closets, Records or rooms with Chrome Book carts. Groups of doors may be programmed in any configuration required, and this will be covered in additional Security Meetings. Elevator Card Readers will also be discussed.

The district should keep in mind that not only are card readers used as access devices, but they are also a great auditing tool should information about a particular location be needed for forensics.

- **Video Management System**

  All School Video Management Systems provide video viewing for onsite situational awareness, video recording for forensic needs should there be an incident like a teacher's car is damaged in a parking lot or school location, or a Chromebook goes missing, and incident response viewing when there is an active assailant Security incident or threat occurring live anywhere on school grounds. The Video Management System and the location of cameras is critical to School Security and Incident Response.

  The Video Management System (VMS) will provide high-resolution high-definition viewing, recording and storage of onsite Video Data. The Video Management System will provide a user-friendly Graphical User Interface (GUI) via client software from both within the school and remotely as authorized. All cameras shall be digital IP based, with a minimum resolution of 2MP/1080p WDR with all having IR illumination and WDR.

  Interior and Exterior cameras will be installed and positioned to capture activity at all roadway's paths, (underground and surface) parking lots and structures, entrance and exit doors and to view internal spaces, including main corridors, corridor intersections, stairwells and bathroom doors. Large open spaces such as the Gym or the Cafeteria will also be covered. Cameras will provide both real-time situational awareness and forensic information and evidence. Camera positioning may provide a deterrence factor, but more importantly, the positioning is critical to capturing activity and identifying individuals. A discussion of site cameras will be added to the agenda of the next Security Meeting, and the use of non-common camera types.

  Cameras will be positioned to view all perimeter locations of the building, visitors entering the school through doors that are remotely unlocked (i.e., intercom door release buttons) as well as common hallways, all exterior locations, stairwells, cafeteria, library, gymnasium, designated parking areas, all thoroughfares, and in all locations necessary to provide continuous coverage for the whole building, perimeter and site. After hours functions and viewing will be treated as important as during school hour's function and viewing.

All interior will be dome cameras, and shall be mounted at a minimum eight to ten feet from the finished floor/grade to avoid damage and shall be accessible from a ladder. Exterior cameras are typically ten to twelve feet, depending on the item they are mounted to; building versus light pole. All gym cameras will be vandal proof dome cameras should an ambitious young athlete hit a camera in error, the camera dome will absorb the impact.

- **Intrusion Detection System**

  The Intrusion Detection System (IDS) shall be integrated with the ACS. It will be fully functional and monitored on a 24x7 basis by a dedicated third-party monitoring company or central station. A discussion regarding third-party monitoring versus direct connect to the Police Department will occur at a future meeting. Either instance will require phoneline equipment for signal transmission communications capabilities. The phoneline will be coordinated with Division 26/27. The IDS will be provided with both an ethernet connection and an analog phone line as redundancy as needed to speak with the Police Departments receiver.

  Motion detectors will be installed to detect unwanted intruders at schedule times in specific locations. The system will alert the off-site monitoring station or Police Station of activity within the building (e.g., primary corridors) when the system is armed. The last staff member to leave will be required to arm the IDS system and the first-in required to disarm the system. If the district chooses, a card reader may be installed in the primary/main entrance vestibule that permits authorized personnel to arm/disarm the IDS. This is often performed by Janitorial Services as they are often the first personnel in the building and sometimes the last to leave. This will be discussed at the next Security Meeting.

  The School District will need to think about the various afterhours scenarios and activities of the school, in order to allow for the proper programming of the Intrusion Detection System. Zones or Areas of the School need to be partitioned to allow for areas to be used after hours without the Alarm System being triggered. An example of a Zone would be the Gym as a separate Zone. This zone information is important when determining the capacity of the specified Intrusion Detection Panel.

  We will have discussions with the district regarding motion detector locations. On entry levels, typically motion sensors arel be placed in perimeter rooms with windows/glazing and in all hallways as necessary. Motion sensors will also be placed sporadically in all hallways to identify the location of the breach, and the travel path of an adversary. In addition to access control doors, door contacts should be installed on all perimeter doors, including overhead doors and loading dock doors, on the entry levels to ensure the system is activated in the event of an unauthorized entry. The IDS shall have the capability to be partitioned to allow administrators to shunt the alarm in certain areas of the school while leaving other areas covered by the IDS. The exact location of the partitions will be specified in programming.

Duress buttons will be installed in the main Administrative Offices, and locations requested by the school. The next Security Meeting will include discussions of additional locations for panic devices or buttons as deemed necessary. These duress devices are typically connected to both the IDS and ACS systems.

- **Video Intercom System**

  The Video Intercom System (IC) will allow staff to monitor, vet and limit people requesting access to the school, and to only allow those individuals who are authorized to enter the school. Office personnel or Kitchen Staff (deliveries) can speak with and view/verify anyone at the door prior to releasing the door latch remotely through the master unit door release button. The VIS door station will be located at the main exterior vestibule entrance for visitors and at any delivery/receiving/kitchen entrance locations.

  The VIS for the main entrance will include a master or sub-master unit in the Administrative Office, Principal's Office and Assistant Principal's Office(s). The IC door station for the receiving/kitchen/delivery entrance(s) should have the master or sub-master unit in an open area that is accessible to cafeteria/kitchen/staff to ensure no delay in hearing or responding to a request for access.

- **Additional System Components**

  The head-end or brains for the systems shall be located in secure MDF/IDF closets. These servers for the systems shall receive/process data and information from the field devices via critical system infrastructure that will be connected via secure VLAN and switches. The switches shall be PoE+ and shall meet all FEMA cybersecurity standards and requirements, and have appropriate numbers of SPFs as required.

  The Video Server Hardware will also provide for a minimum of 45 Days of high-definition Video Storage for the Video Management System. All switches will have Power-over-ethernet capability.

  These closets or rooms shall contain the 4-post locked and secured racks, servers, software and programming, database information, schedules, active directory feeds, switches, power supplies and various other components that will be the basis of function for the systems.

  The Administration will be provided client workstations, with all required software and programming, to view and control the Electronic Security Systems internally. Remote access with Graphical User Interfaces will also be provided with software for approved and budgeted locations.

Lockdown, Shelter-in-place or Emergency Conditions

All interior doors, especially classrooms, cafeteria, gymnasium and library, will be capable of being locked from the inside. Locking doors from inside the room should be accomplished via a thumb-turn (Classroom Security Function) and should not require the use of a key. All door hardware shall be in compliance with NFPA, and not restrict the ability students or faculty to exit the building if needed.

During a Lockdown, the Access Control System is capable of locking all electrified locking hardware, and limiting access to designated emergency response personnel and administrative staff. Additionally, groups of doors could be added to a lockdown sequence (an example would be an unstable person who is in the secure vestibule, and the command would disable all Vestibule Card Readers. This way no one could enter the vestibule.)

Emergency Conditions Status Indicators

We have additional visual queuing on the exterior building to alert students, faculty, staff or visitors of an ongoing emergency within the school building. The exterior beacons (amber or blue) will be located strategically to ensure visitors or staff entering the building will see there is an ongoing incident. This beacon will be a silent visual que advising people not to enter the building as it is unsafe to do so.

It is recommended that the School District send accompanying communications to the Community stating the use and intent of the visual beacons. Without the knowledge of their use and intent, they are ineffective.

Public Address System

The Public Address System will be under other sections of the specification (not in Division 280000 scope) and will alert all areas of the school site including both interior and exterior spaces using the Public Address System. Individuals located on school grounds, but not inside the school, may need to be notified of an event in progress such as a fire alarm or other non-fire related emergency. Each classroom will have the capability to make a school-wide notification. The Electrical Engineer typically will include a module for the Fire System that provides for Public Address through the Fire System speakers.

This will be done through modules that are available through most manufacturers so that a secondary communication system is not needed for emergency announces

Mass Notification System

A Mass Notification System (not in Division 280000 scope) will have the ability to provide real-time information and instructions to all students, staff and visitors. The purpose of the Mass Notification is to protect students, faculty, staff and visitors by indicating the existence of an emergency situation and instructing people of the appropriate actions to take. The Mass Notification System should have the ability to generate messages from both on and off-site locations. Additionally, the Mass Notification System should have the ability to send out incident based or pre-defined messages.

The School Security Program

All effective K-12 School Security Programs are developed with a well-balanced combination of Electronic Security Systems and training of Administration, Faculty, Staff, and Students, along with procedures and policies that support the Technology or Systems. Preparedness of the stakeholders is critical, and an unbalanced reliance on systems or people, is not effective. Although not included in this narrative or the project, Pamela Perini Consulting highly recommends a stakeholder preparedness review be conducted to assess the capability of the school's personnel to protect against and respond to an incident. A review of the procedures, policies and enforcement will also yield a favorable increase in Security by identifying potential gaps. Ongoing Training of the buildings occupants is germane to any effective Security Program and especially in this new school.

###

D: Preliminary Traffic Analysis

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

PRINCIPALS
Robert J. Michaud, P.E.
Daniel J. Mills, P.E., PTOE

MEMORANDUM

DATE: May 17, 2024

TO: Katy Lillich, AIA
Arrowstreet
10 Post Office Square, Suite 700N
Boston MA 02109

FROM: Robert J. Michaud, P.E. – Managing Principal
Daniel A. Dumais, P.E. – Senior Project Manager

RE: **Proposed Margaret A. Neary School Expansion Project – Existing Conditions**
53 Parkerville Rd, Southborough, MA

MDM Transportation Consultants, Inc. (MDM) has prepared this initial traffic memorandum for the existing Margaret Neary Elementary School located at 53 Parkerville Road in Southborough, Massachusetts. The location of the Site relative to the adjacent roadway network is shown in **Figure 1.** This memorandum quantifies existing school operations based on field observations, traffic data collection and analysis of weekday peak school traffic activity and summarizes existing off-street parking within the school's parking field.

Existing Conditions

For the 2023/2024 school year Margaret Neary Elementary School had an existing enrollment of 260± students in grades 4 and 5 and 50± staff. The existing school layout and parking areas are shown in **Figure 2**. The existing school operations are as follows:

- ☐ *School Operations.* The general hours of operation for the school are 8:45 AM to 3:00 PM Monday through Friday. The morning drop-off period generally begins at 8:25 AM and the students are dismissed at 3:00 PM for afternoon pick-up.

- ☐ *Drop-Off Period*. The drop-off period generally occurs from 7:45 AM to 8:45 AM. Parent/guardian vehicles associated with drop-off activity generally occurred along the sidewalk in the designated drop-off area that is marked along the western portion of the parking field near the main entranceway. The parent/guardian vehicles then exited the school via the main driveway. The maximum queue observed in the live parent drop-off line was approximately 7 vehicles during the morning drop-off period.

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Figure 1

Site Location

Date: May 2024
Dwg No. 1334 TA.dwg

Figure 2

Existing Site Layout

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Date: May 2024
Dwg No. 1334 TA.dwg

School bus activity associated with drop-off activity was observed to enter the main driveway, loop around the back of the building, and drop-off students near the basketball courts. The school buses then exit the school out the bus loop entrance driveway. Pedestrian and bicycle counts indicate a portion of the student population walk or bike to school with a bicycle rack located near the main entranceway.

- ☐ *Pick-Up Period.* The pick-up period generally occurs from 2:45 PM to 3:45 PM on typical school days. Parent/guardian vehicles associated with drop-off activity were observed to occur via parking within the main parking field. The parents would generally walk to the sidewalk near the main entranceway for dismissal of students from staff. The maximum observed vehicles parked associated with parent pickup was approximately 60 vehicles during the afternoon pick-up period

  School bus activity associated with drop-off activity was observed to enter the bus loop driveway wait for students to load and then exit the bus loop driveway. The school buses were observed to begin to exit the school around 3:08 PM. The maximum number of queued buses was observed at 5 buses which occurred prior to the 3:08 bus departure. Pedestrian and bicycle counts indicate a portion of the student population walk or bike to school with a bicycle rack located near the main entranceway.

- ☐ *Staff Levels.* Staff includes approximately 50± total staff members which includes administrative staff and teachers. The school also uses a number of support staff, part time staff, and occasional volunteers.

- ☐ *School Bus/ Van Activity.* Approximately 13 school buses and 1 van service the school during the weekday morning drop-off period and afternoon pick-up periods. The van was observed to utilize a handicap access in the front of the school. During the morning drop-off period and afternoon pick-up period up to 6 full size buses were observed on the property at the same time.

- ☐ *After School Programs.* The school operates an after school program after the regular dismissal time of 3:00 PM. Observations indicate a parking demand of approximately 17 vehicle associated with the peak parent/guardian pick-up activity from the after school program which occurred between 4:15 PM and 4:45 PM.

BASELINE TRAFFIC CHARACTERISTICS

An overview of existing (Baseline) traffic volume characteristics for the existing school operations for the existing Margaret Neary Elementary School is provided below.

Baseline Traffic Data

Traffic volume data was collected in March 2024 during the weekday morning period (7:00 AM - 9:00 AM) and weekday afternoon period (2:45 PM to 6:00 PM) periods to coincide with peak traffic activity of the school. The resulting Baseline weekday morning drop-off period and weekday afternoon pick-up period traffic volumes for the study intersections are depicted in **Figure 3**. Turning movement counts which include passenger vehicles, school buses, heavy vehicles, pedestrians, and bicycles are provided in the **Attachments**.

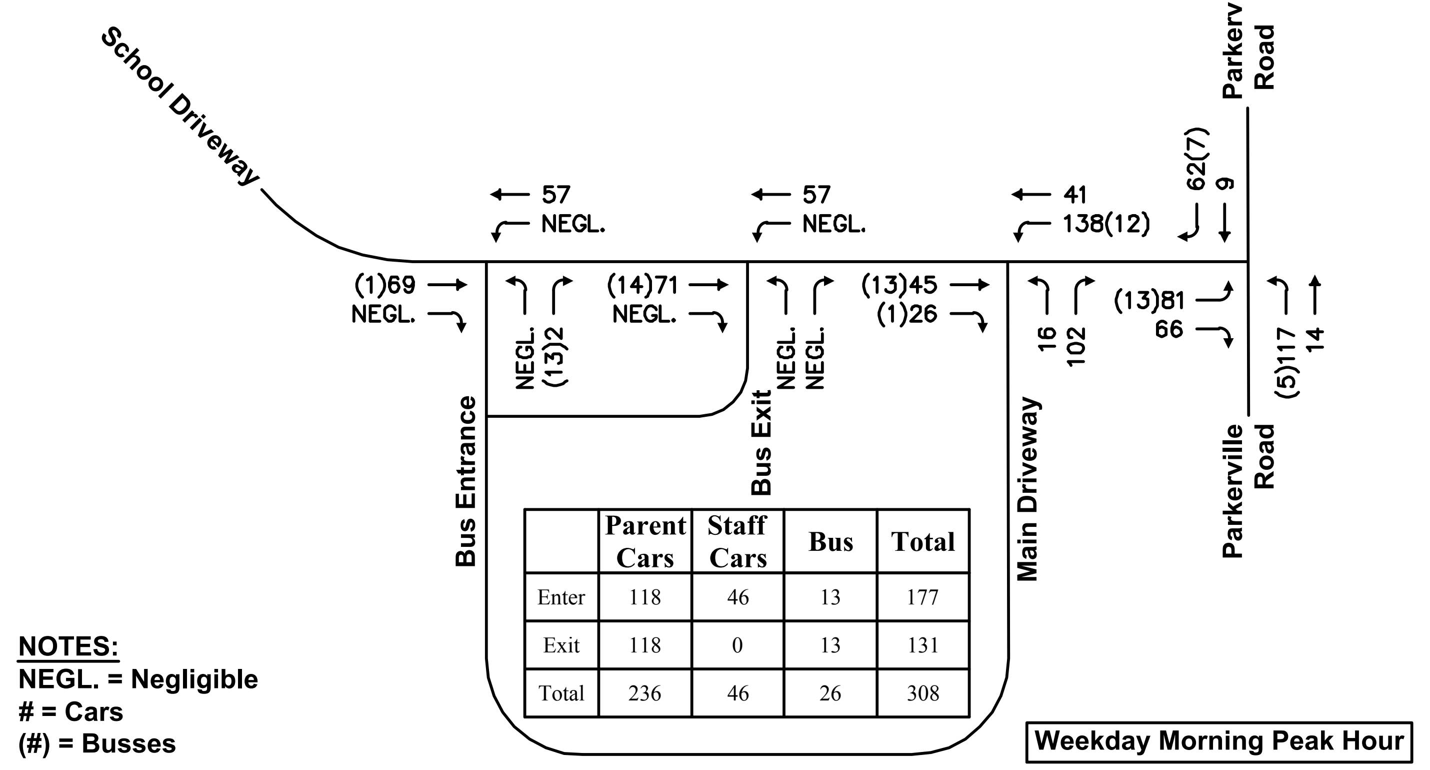
Existing Trip Generation – Margaret Neary Elementary School

Existing site trips generated by the Neary Elementary School were observed during critical school activity periods including the weekday morning drop-off period and weekday afternoon pick-up period on Wednesday March 13, 2024 between 7:45 AM – 8:45 AM and 2:45 PM – 3:45 PM. A detailed trip generation summary for the Site, based on the existing student enrollment of 260± students and approximately 50± staff at the school, including a breakdown of vehicular trips and school bus/van activity is presented in **Table 1** and described below.

TABLE 1
OBSERVED NEARY SCHOOL TRIP-GENERATION

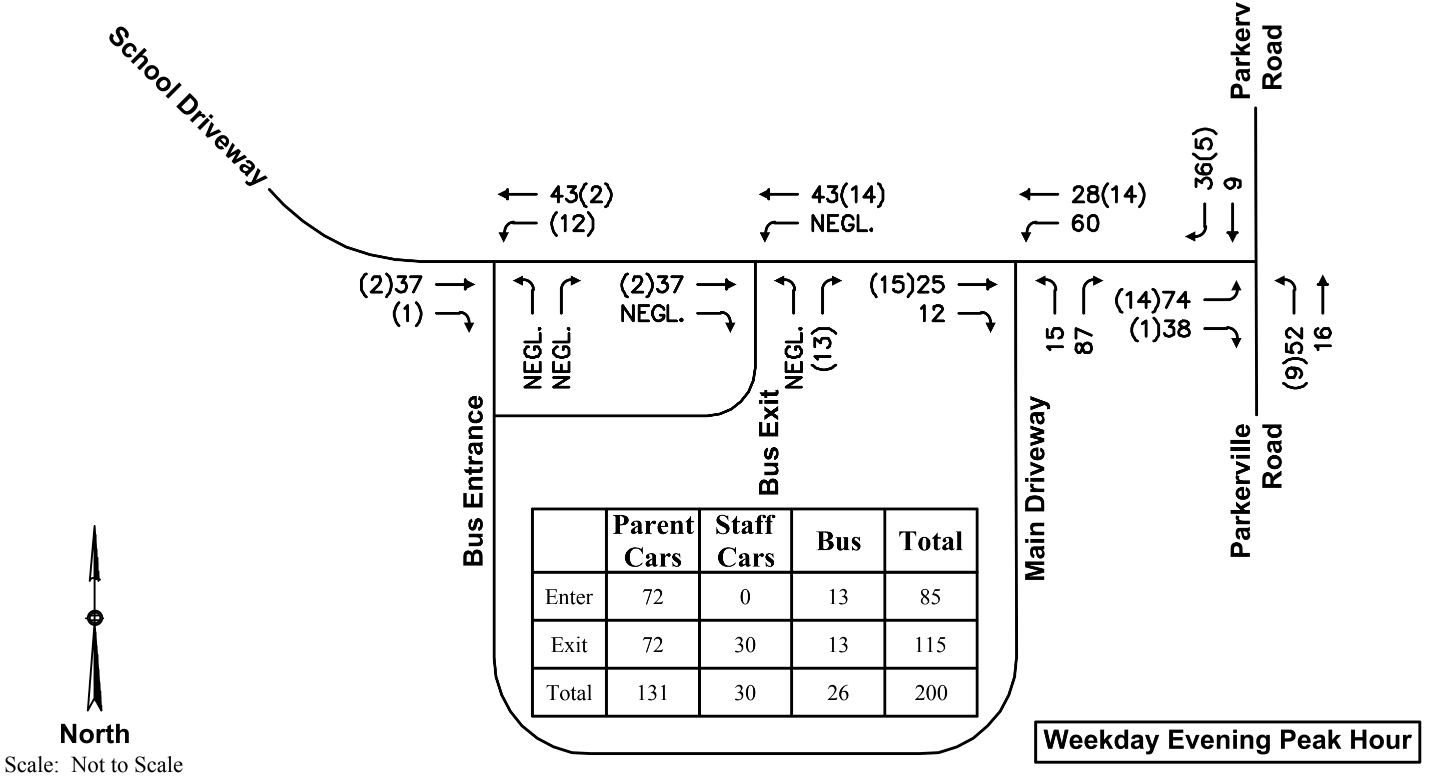
Period	Student/Parent Auto	Staff/ Auto	School Bus	Total
Weekday Morning Drop-Off Period (7:45-8:45 AM):				
Enter	117	46	13	**177**
Exit	117	0	13	**131**
Total	234	46	26	**308**
Weekday Afternoon Pick-Up Period (2:45-3:45 PM):				
Enter	72	0	13	**85**
Exit	72	30	13	**115**
Total	144	30	26	**200**

[1] Peak hour trips based on empirical trip generation data provided by the Neary Elementary School and observations on Wednesday, March 13, 2024.



	Parent Cars	Staff Cars	Bus	Total
Enter	118	46	13	177
Exit	118	0	13	131
Total	236	46	26	308

NOTES:
NEGL. = Negligible
 # = Cars
(#) = Busses



	Parent Cars	Staff Cars	Bus	Total
Enter	72	0	13	85
Exit	72	30	13	115
Total	131	30	26	200

Scale: Not to Scale

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Figure 3

2024 Baseline Conditions
Weekday Peak Hour Volumes

Date: May 2024
Dwg No. 1334 TA.dwg

As presented in **Table 1**,

- *Weekday Morning Drop-Off Period.* Trip generation during the critical weekday morning drop-off peak hour was 308 vehicle-trips (177 entering and 131 exiting), including 118 parent/guardian drop-off vehicles, 13 school buses and 46 staff vehicles. Parent/guardian vehicles associated with drop-off activity generally occurred along the sidewalk in the designated drop-off area that is marked along the western portion of the parking field near the main entranceway. The parent/guardian vehicles then exited the school via the main driveway. The maximum queue observed in the live parent drop-off line was approximately 7 during the morning drop-off period and the maximum number of concurrent buses on site was less than 5 full size buses.

- *Weekday Afternoon Pick-up Period.* Trip generation during the weekday afternoon peak hour was 200 vehicle-trips (85 entering and 115 exiting), including 72 parent/guardian pick-up vehicles, 13 school buses, and 30 staff vehicles. Parent/guardian vehicles associated with drop-off activity were observed to occur via parking within the main parking field. The parents would generally walk to the sidewalk near the main entranceway for dismissal of students from staff. The maximum observed vehicles parked associated with parent pickup was approximately 60 vehicles during the afternoon pick-up period and the maximum number of concurrent buses within the bus loop was 6 full size buses.

PARKING DEMAND

Existing peak parking demands at the Site were reviewed based on a parking survey conducted on Wednesday, March 13, 2024 On-site parking for the school currently includes 188± spaces. The parking activity associated with the Neary School between 7:00 AM and 6:00 PM is shown in **Figure 4** with detailed parking observations are included in the **Attachments**. The parking data indicates the following characteristics:

- *Before School.* Off-street peak parking demands for the Neary School were observed to gradually increase from negligible parked vehicles at 7:00 AM to approximately 60 vehicles at 8:30 AM.

- *Core School Day Period.* During the core school hours (8:45 AM and 2:30 PM) up to 70± parked vehicles were observed within the lot. At 12:00 noon the parking within the lot drops slightly from 70 vehicles to closer to 55 vehicles prior to the dismissal period with parents beginning to arrive around 2:30 PM.

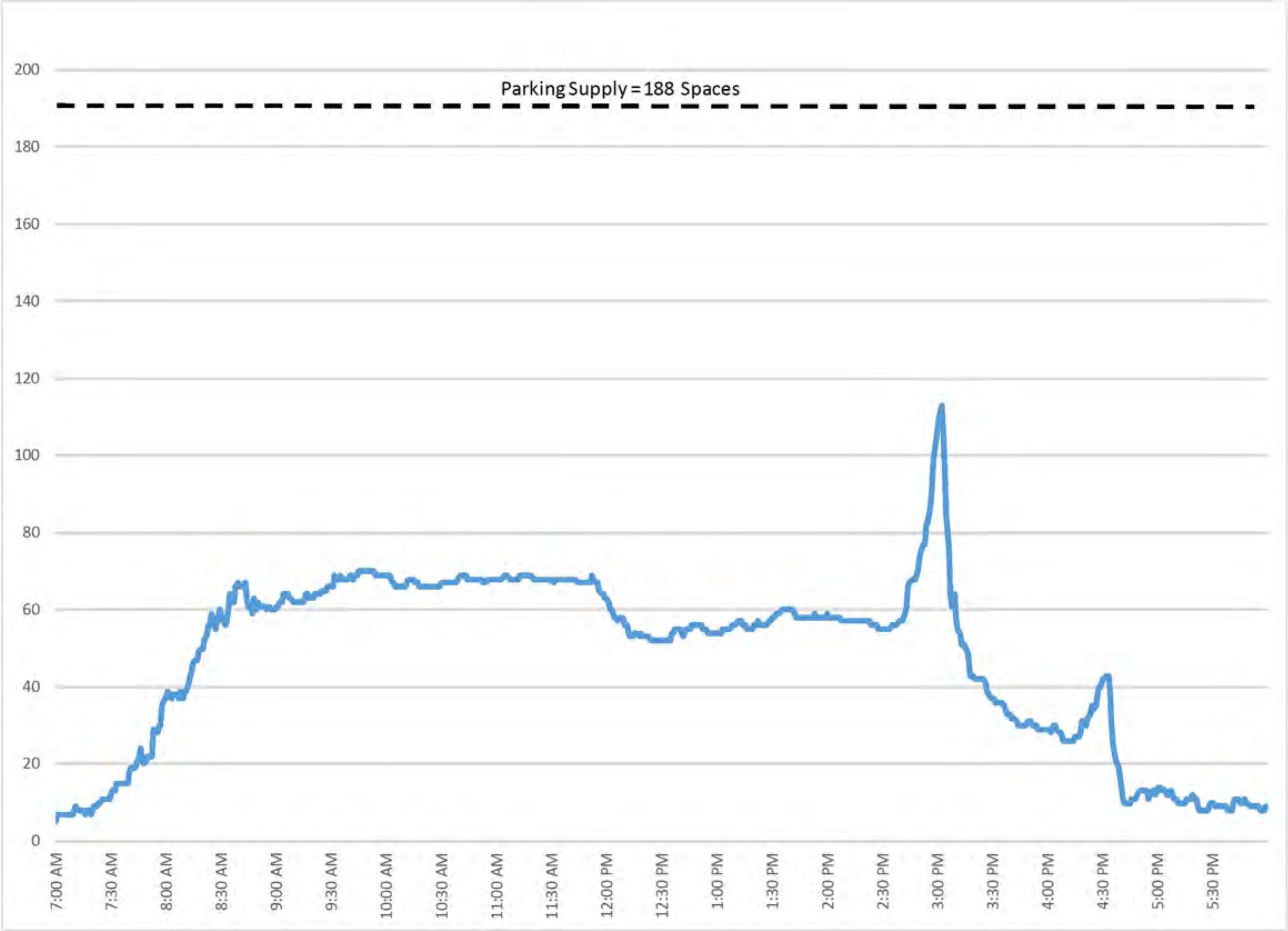

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Figure 4

Observed Neary School Parking Activity
Wednesday, March 13, 2024

Date: May 2024
Dwg No. 1334 TA.dwg

- ☐ *Pick-Up Period.* Off-street peak parking demands for the Neary School were observed to gradually increase from 55 vehicles at 2:30 PM until 113 vehicles at dismissal at 3:00 PM. The resulting maximum parent/guardian demand was observed at approximately 60 vehicles.

- ☐ *After School Care.* The after school program was observed to result in a parking demand of approximately 17 vehicle associated with the peak parent/guardian pick-up activity between 4:15 PM and 4:45 PM.

CONCLUSIONS

Review and evaluation of existing Neary School operations indicate that the existing school operations are currently accommodated on-site with no reliance on the adjacent roadway. The parent/guardian activity to be managed on-site include approximately 117 parent vehicles during the weekday morning drop-off period and approximately 72 parent vehicles during the afternoon pick-up period. The resulting observed queues include 7 parent vehicles during the drop-off period and 60 parent vehicles during the pick-up period. The peak parking activity at the site was observed at 70± parked vehicles were observed within the lot during the core school operating hours and 113± parked vehicles during the critical weekday afternoon pick-up period. The school currently provides approximately 188 marked spaces within its on-site parking lot which adequately accommodates the school activity.

ATTACHMENTS

- ☐ Traffic Volume Data
- ☐ Parking Data

☐ Traffic Volume Data

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28 Lord Road, Suite 280
Marlborough, MA

N/S: Neary Driveway
E/W: Bus Entrance Driveway
Southborough, MA

File Name : 1339 Neary Dwy at Bus Entrance AM
Site Code : 1339
Start Date : 3/13/2024
Page No : 1

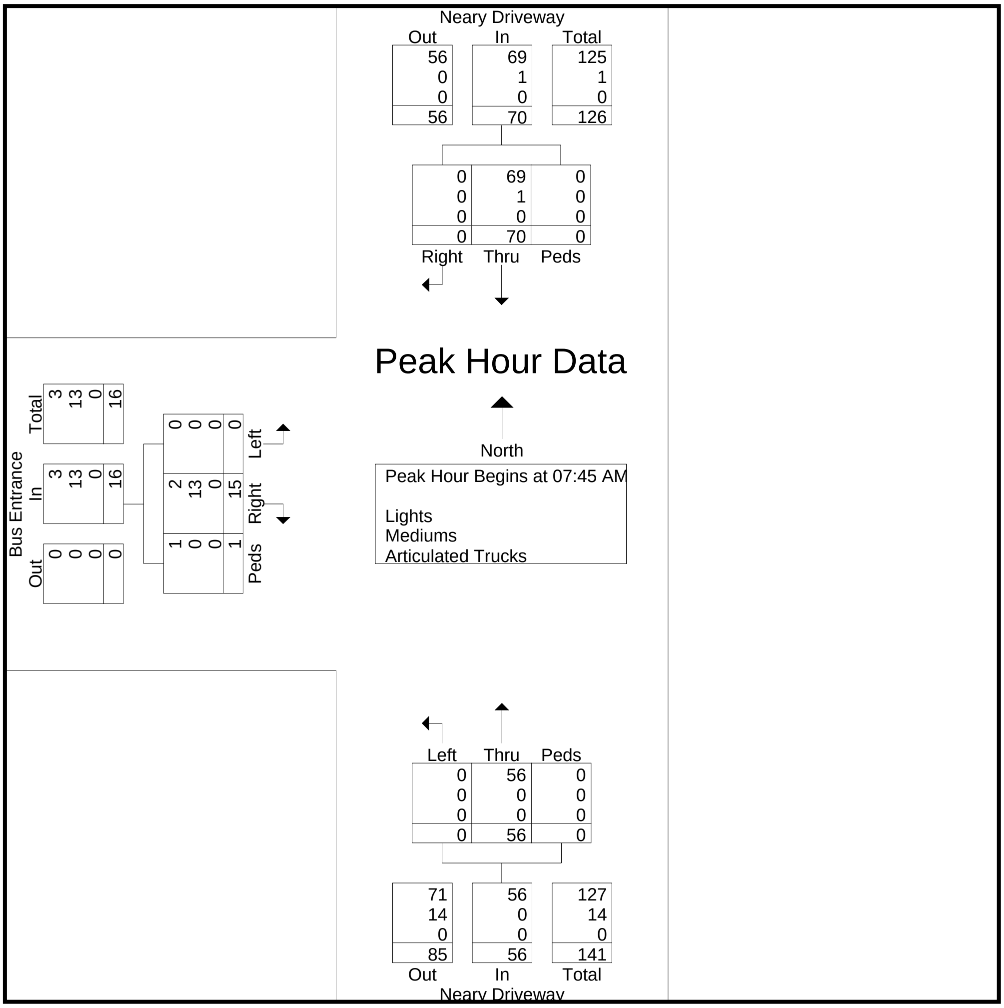
Groups Printed- Lights - Mediums - Articulated Trucks

	Neary Driveway From North				Neary Driveway From South				Bus Entrance From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
07:45 AM	0	47	0	47	41	0	0	41	0	0	1	1	89
Total	0	47	0	47	41	0	0	41	0	0	1	1	89
08:00 AM	0	7	0	7	5	0	0	5	0	0	0	0	12
08:15 AM	0	7	0	7	3	0	0	3	2	0	0	2	12
08:30 AM	0	9	0	9	7	0	0	7	13	0	0	13	29
Grand Total	0	70	0	70	56	0	0	56	15	0	1	16	142
Apprch %	0	100	0		100	0	0		93.8	0	6.2		
Total %	0	49.3	0	49.3	39.4	0	0	39.4	10.6	0	0.7	11.3	
Lights	0	69	0	69	56	0	0	56	2	0	1	3	128
% Lights	0	98.6	0	98.6	100	0	0	100	13.3	0	100	18.8	90.1
Mediums	0	1	0	1	0	0	0	0	13	0	0	13	14
% Mediums	0	1.4	0	1.4	0	0	0	0	86.7	0	0	81.2	9.9
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0

N/S: Neary Driveway
E/W: Bus Entrance Driveway
Southborough, MA

File Name : 1339 Neary Dwy at Bus Entrance AM
Site Code : 1339
Start Date : 3/13/2024
Page No : 2

	Neary Driveway From North				Neary Driveway From South				Bus Entrance From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 08:30 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	**47**	0	**47**	**41**	0	0	**41**	0	0	**1**	1	**89**
08:00 AM	0	7	0	7	5	0	0	5	0	0	0	0	12
08:15 AM	0	7	0	7	3	0	0	3	2	0	0	2	12
08:30 AM	0	9	0	9	7	0	0	7	**13**	0	0	**13**	29
Total Volume	0	70	0	70	56	0	0	56	15	0	1	16	142
% App. Total	0	100	0		100	0	0		93.8	0	6.2		
PHF	.000	.372	.000	.372	.341	.000	.000	.341	.288	.000	.250	.308	.399
Lights	0	69	0	69	56	0	0	56	2	0	1	3	128
% Lights	0	98.6	0	98.6	100	0	0	100	13.3	0	100	18.8	90.1
Mediums	0	1	0	1	0	0	0	0	13	0	0	13	14
% Mediums	0	1.4	0	1.4	0	0	0	0	86.7	0	0	81.3	9.9
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0



N/S: Neary Driveway
E/W: Bus Entrance Driveway
Southborough, MA

File Name : 1339 Neary Dwy at Bus Entrance PM
Site Code : 1339
Start Date : 3/13/2024
Page No : 1

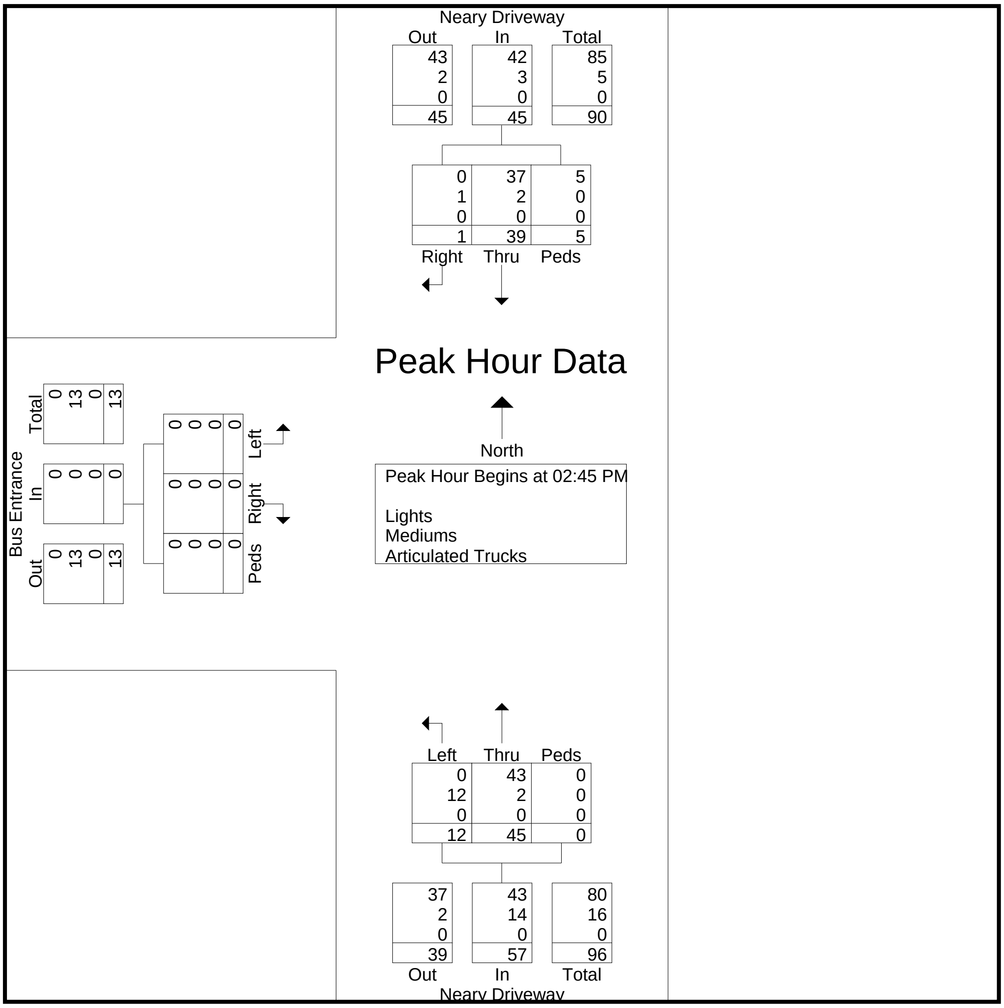
Groups Printed- Lights - Mediums - Articulated Trucks

	Neary Driveway From North				Neary Driveway From South				Bus Entrance From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
02:45 PM	1	10	0	11	2	4	0	6	0	0	0	0	17
Total	1	10	0	11	2	4	0	6	0	0	0	0	17
03:00 PM	0	6	0	6	23	2	0	25	0	0	0	0	31
03:15 PM	0	1	0	1	13	6	0	19	0	0	0	0	20
03:30 PM	0	22	5	27	7	0	0	7	0	0	0	0	34
Grand Total	1	39	5	45	45	12	0	57	0	0	0	0	102
Apprch %	2.2	86.7	11.1		78.9	21.1	0		0	0	0		
Total %	1	38.2	4.9	44.1	44.1	11.8	0	55.9	0	0	0	0	
Lights	0	37	5	42	43	0	0	43	0	0	0	0	85
% Lights	0	94.9	100	93.3	95.6	0	0	75.4	0	0	0	0	83.3
Mediums	1	2	0	3	2	12	0	14	0	0	0	0	17
% Mediums	100	5.1	0	6.7	4.4	100	0	24.6	0	0	0	0	16.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0

N/S: Neary Driveway
E/W: Bus Entrance Driveway
Southborough, MA

File Name : 1339 Neary Dwy at Bus Entrance PM
Site Code : 1339
Start Date : 3/13/2024
Page No : 2

	Neary Driveway From North				Neary Driveway From South				Bus Entrance From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:45 PM to 03:30 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:45 PM													
02:45 PM	**1**	10	0	11	2	4	0	6	0	0	0	0	17
03:00 PM	0	6	0	6	**23**	2	0	**25**	0	0	0	0	31
03:15 PM	0	1	0	1	13	**6**	0	19	0	0	0	0	20
03:30 PM	0	**22**	**5**	**27**	7	0	0	7	0	0	0	0	**34**
Total Volume	1	39	5	45	45	12	0	57	0	0	0	0	102
% App. Total	2.2	86.7	11.1		78.9	21.1	0		0	0	0		
PHF	.250	.443	.250	.417	.489	.500	.000	.570	.000	.000	.000	.000	.750
Lights	0	37	5	42	43	0	0	43	0	0	0	0	85
% Lights	0	94.9	100	93.3	95.6	0	0	75.4	0	0	0	0	83.3
Mediums	1	2	0	3	2	12	0	14	0	0	0	0	17
% Mediums	100	5.1	0	6.7	4.4	100	0	24.6	0	0	0	0	16.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0



MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

28 Lord Road, Suite 280
Marlborough, MA

E/W: Neary Driveway
NB: Neary Bus Loop
Southborough, MA

File Name : 1339_Neary_Dr_at_Bus_Loop_03-13-2024
Site Code : 1339
Start Date : 3/13/2024
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Road

	Neary Driveway From East				Neary Bus Loop From South				Neary Driveway From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
07:00 AM	11	0	0	11	0	0	0	0	0	12	0	12	23
07:15 AM	20	0	0	20	0	0	0	0	0	6	0	6	26
07:30 AM	42	0	0	42	0	0	0	0	0	31	0	31	73
07:45 AM	41	0	0	41	0	0	1	1	0	47	0	47	89
Total	114	0	0	114	0	0	1	1	0	96	0	96	211
08:00 AM	5	0	0	5	0	0	0	0	0	7	0	7	12
08:15 AM	3	0	0	3	0	0	0	0	0	9	0	9	12
08:30 AM	7	0	0	7	0	0	0	0	0	22	0	22	29
08:45 AM	2	1	0	3	1	0	0	1	0	3	0	3	7
Total	17	1	0	18	1	0	0	1	0	41	0	41	60
11:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
11:15 AM	2	0	0	2	0	0	0	0	0	1	0	1	3
11:45 AM	2	0	0	2	0	0	2	2	0	2	0	2	6
Total	4	0	0	4	0	0	2	2	0	4	0	4	10
12:00 PM	2	0	0	2	0	0	1	1	0	0	0	0	3
12:15 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
12:30 PM	0	0	0	0	0	0	0	0	0	2	0	2	2
12:45 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
Total	4	0	0	4	0	0	1	1	0	3	0	3	8
02:45 PM	8	0	0	8	0	0	0	0	0	10	0	10	18
Total	8	0	0	8	0	0	0	0	0	10	0	10	18
03:00 PM	23	2	0	25	7	0	0	7	0	6	0	6	38
03:15 PM	13	6	0	19	6	0	0	6	0	1	0	1	26
03:30 PM	7	0	0	7	0	0	5	5	0	22	0	22	34
03:45 PM	2	0	0	2	0	0	0	0	0	3	0	3	5
Total	45	8	0	53	13	0	5	18	0	32	0	32	103
04:00 PM	4	0	0	4	0	0	1	1	0	1	0	1	6
04:15 PM	0	0	0	0	0	0	4	4	0	3	0	3	7
04:30 PM	5	0	0	5	0	0	3	3	0	2	0	2	10
04:45 PM	1	2	0	3	1	0	1	2	0	1	0	1	6
Total	10	2	0	12	1	0	9	10	0	7	0	7	29
05:00 PM	3	1	0	4	1	0	1	2	0	1	0	1	7
05:15 PM	1	0	0	1	1	0	3	4	0	5	1	6	11
05:30 PM	1	0	0	1	0	0	0	0	0	1	0	1	2
05:45 PM	0	1	0	1	2	0	2	4	0	2	0	2	7
Total	5	2	0	7	4	0	6	10	0	9	1	10	27
Grand Total	207	13	0	220	19	0	24	43	0	202	1	203	466
Apprch %	94.1	5.9	0		44.2	0	55.8		0	99.5	0.5		
Total %	44.4	2.8	0	47.2	4.1	0	5.2	9.2	0	43.3	0.2	43.6	
Lights	190	4	0	194	5	0	24	29	0	182	1	183	406
% Lights	91.8	30.8	0	88.2	26.3	0	100	67.4	0	90.1	100	90.1	87.1
Mediums	14	8	0	22	13	0	0	13	0	17	0	17	52
% Mediums	6.8	61.5	0	10	68.4	0	0	30.2	0	8.4	0	8.4	11.2

E/W: Neary Driveway
NB: Neary Bus Loop
Southborough, MA

File Name : 1339_Neary_Dr_at_Bus_Loop_03-13-2024
Site Code : 1339
Start Date : 3/13/2024
Page No : 2

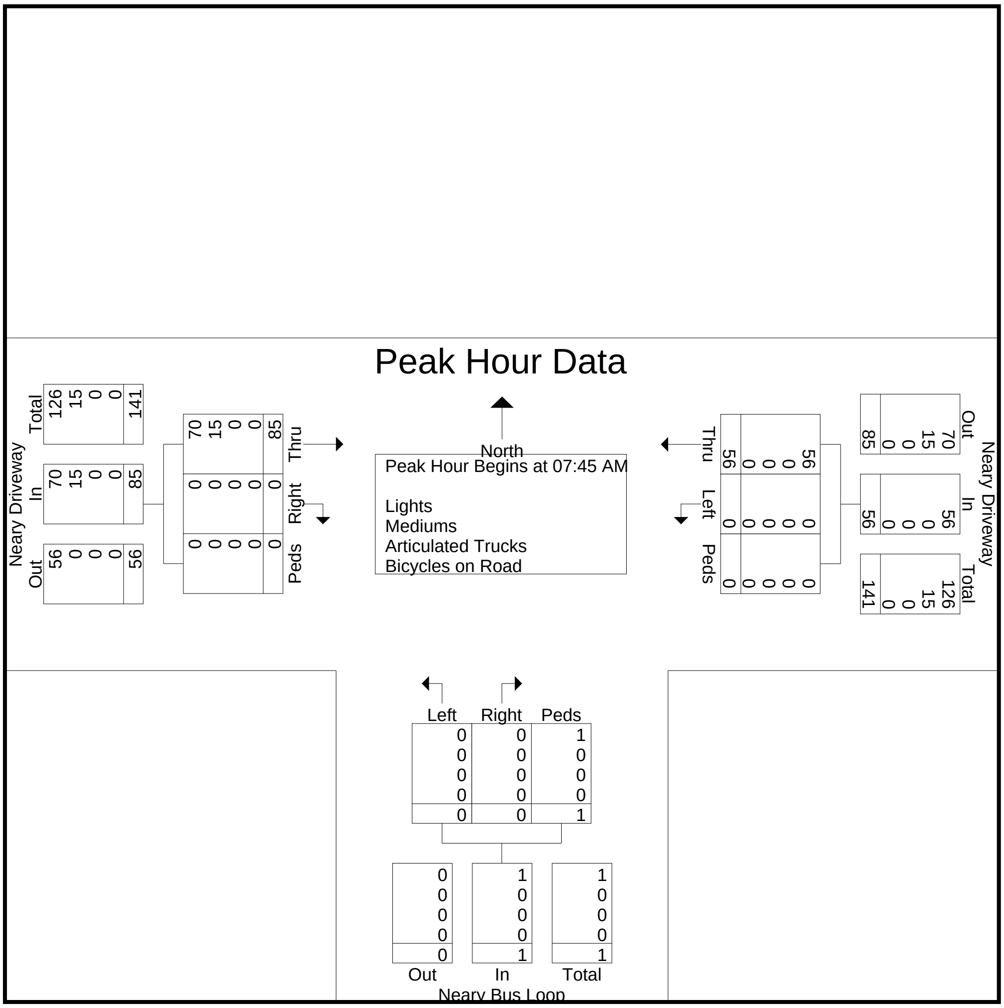
Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Road

	Neary Driveway From East				Neary Bus Loop From South				Neary Driveway From West				
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	3	1	0	4	1	0	0	1	0	3	0	3	8
% Bicycles on Road	1.4	7.7	0	1.8	5.3	0	0	2.3	0	1.5	0	1.5	1.7

E/W: Neary Driveway
NB: Neary Bus Loop
Southborough, MA

File Name : 1339_Neary_Dr_at_Bus_Loop_03-13-2024
Site Code : 1339
Start Date : 3/13/2024
Page No : 3

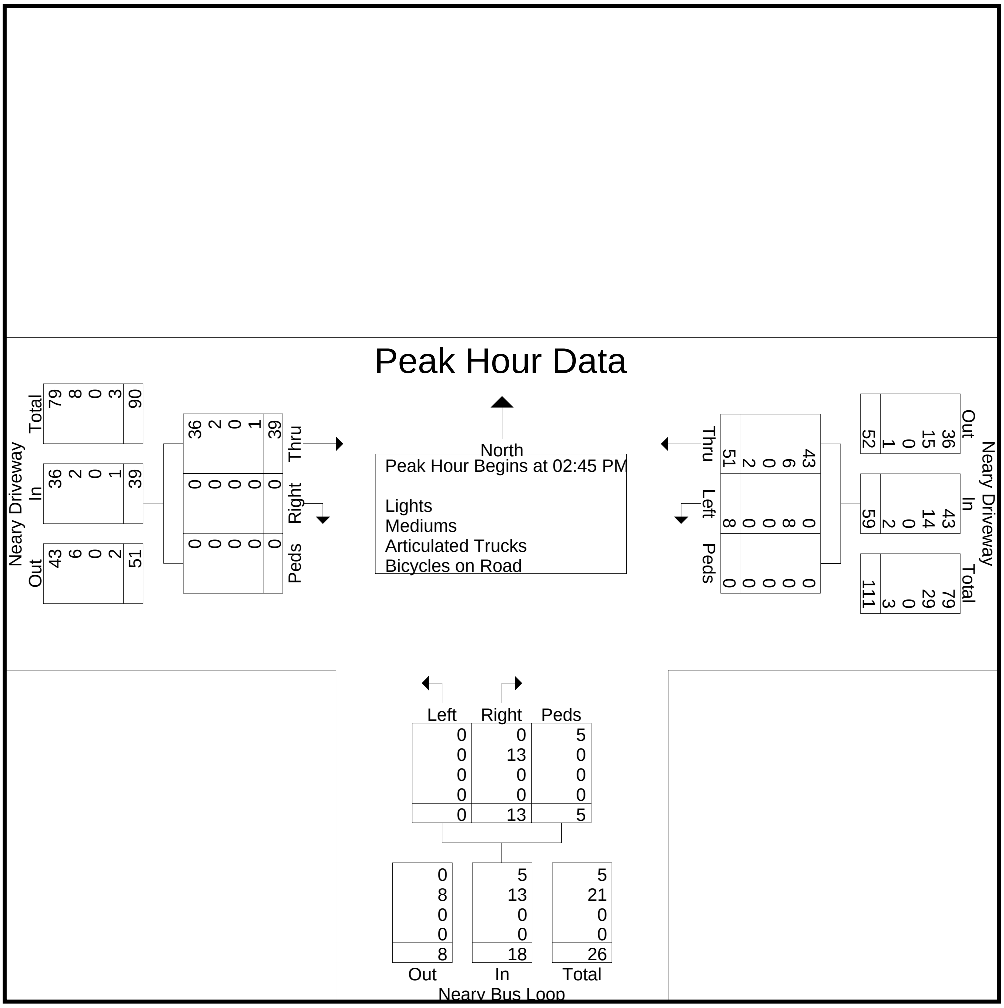
	Neary Driveway From East				Neary Bus Loop From South				Neary Driveway From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:45 AM to 09:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	**41**	0	0	**41**			**1**	**1**		**47**	0	**47**	**89**
08:00 AM	**5**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**7**	**12**
08:15 AM	**3**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**9**	**12**
08:30 AM	**7**	**0**	**0**	**7**	**0**	**0**	**0**	**0**	**0**	**22**	**0**	**22**	**29**
Total Volume	**56**	**0**	**0**	**56**	**0**	**0**	**1**	**1**	**0**	**85**	**0**	**85**	**142**
% App. Total	**100**	**0**	**0**		**0**	**0**	**100**		**0**	**100**	**0**		
PHF	**.341**	**.000**	**.000**	**.341**	**.000**	**.000**	**.250**	**.250**	**.000**	**.452**	**.000**	**.452**	**.399**
Lights	**56**	**0**	**0**	**56**	**0**	**0**	**1**	**1**	**0**	**70**	**0**	**70**	**127**
% Lights	**100**	**0**	**0**	**100**	**0**	**0**	**100**	**100**	**0**	**82.4**	**0**	**82.4**	**89.4**
Mediums	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**15**	**15**
% Mediums	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**17.6**	**0**	**17.6**	**10.6**
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0



E/W: Neary Driveway
NB: Neary Bus Loop
Southborough, MA

File Name : 1339_Neary_Dr_at_Bus_Loop_03-13-2024
Site Code : 1339
Start Date : 3/13/2024
Page No : 5

	Neary Driveway From East				Neary Bus Loop From South				Neary Driveway From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:45 PM													
02:45 PM	8	0	0	8	0	0	0	0	0	10	0	10	18
03:00 PM	**23**	2	0	**25**	**7**	0	0	**7**					**38**
03:15 PM	13	**6**	0	19	6	0	0	6	0	1	0	1	26
03:30 PM	7	0	0	7	0	0	**5**	5	0	**22**	0	**22**	34
Total Volume	51	8	0	59	13	0	5	18	0	39	0	39	116
% App. Total	86.4	13.6	0		72.2	0	27.8		0	100	0		
PHF	.554	.333	.000	.590	.464	.000	.250	.643	.000	.443	.000	.443	.763
Lights	43	0	0	43	0	0	5	5	0	36	0	36	84
% Lights	84.3	0	0	72.9	0	0	100	27.8	0	92.3	0	92.3	72.4
Mediums	6	8	0	14	13	0	0	13	0	2	0	2	29
% Mediums	11.8	100	0	23.7	100	0	0	72.2	0	5.1	0	5.1	25.0
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	2	0	0	2	0	0	0	0	0	1	0	1	3
% Bicycles on Road	3.9	0	0	3.4	0	0	0	0	0	2.6	0	2.6	2.6



E/W: Neary Driveway
NB: Neary Parking Lot
Southborough, MA

File Name : 1339_Neary_Dr_at_School_Lot 245
Site Code : 1339
Start Date : 3/13/2023

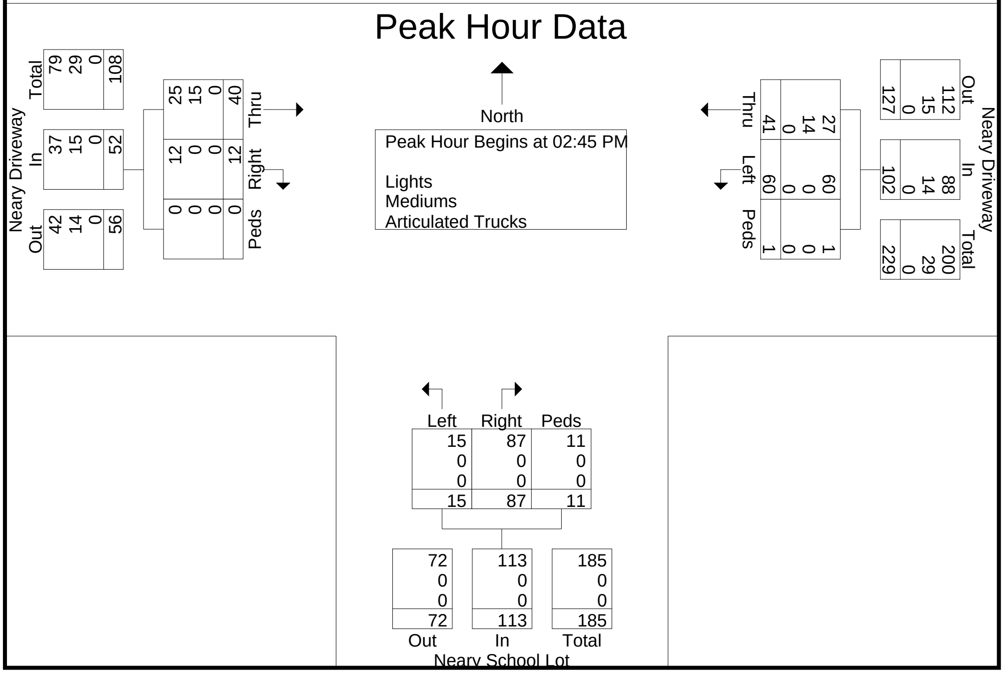
Groups Printed- Lights - Mediums - Articulated Trucks

	Neary Driveway From East				Neary School Lot From South				Neary Driveway From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
02:45 PM	6	38	1	45	2	0	0	2	10	0	0	10	57
Total	6	38	1	45	2	0	0	2	10	0	0	10	57
03:00 PM	10	21	0	31	63	14	6	83	1	12	0	13	127
03:15 PM	18	1	0	19	15	1	0	16	1	6	0	7	42
03:30 PM	7	0	0	7	7	0	5	12	0	22	0	22	41
03:45 PM	1	1	0	2	2	0	0	2	0	3	0	3	7
Total	36	23	0	59	87	15	11	113	2	43	0	45	217
04:00 PM	1	3	0	4	2	3	1	6	0	1	0	1	11
04:15 PM	0	14	0	14	4	0	3	7	3	0	2	5	26
04:30 PM	1	6	0	7	33	4	3	40	1	1	0	2	49
04:45 PM	3	5	0	8	3	1	2	6	1	1	0	2	16
Total	5	28	0	33	42	8	9	59	5	3	2	10	102
05:00 PM	3	6	0	9	8	0	1	9	0	2	0	2	20
05:15 PM	0	2	1	3	3	1	5	9	1	2	2	5	17
05:30 PM	1	2	0	3	2	0	1	3	1	0	0	1	7
05:45 PM	0	4	0	4	6	1	0	7	1	3	0	4	15
Total	4	14	1	19	19	2	7	28	3	7	2	12	59
Grand Total	51	103	2	156	150	25	27	202	20	53	4	77	435
Apprch %	32.7	66	1.3		74.3	12.4	13.4		26	68.8	5.2		
Total %	11.7	23.7	0.5	35.9	34.5	5.7	6.2	46.4	4.6	12.2	0.9	17.7	
Lights	37	103	2	142	150	25	27	202	20	38	4	62	406
% Lights	72.5	100	100	91	100	100	100	100	100	71.7	100	80.5	93.3
Mediums	14	0	0	14	0	0	0	0	0	15	0	15	29
% Mediums	27.5	0	0	9	0	0	0	0	0	28.3	0	19.5	6.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0

E/W: Neary Driveway
NB: Neary Parking Lot
Southborough, MA

File Name : 1339_Neary_Dr_at_School_Lot 245
Site Code : 1339
Start Date : 3/13/2023
Page No : 2

	Neary Driveway From East				Neary School Lot From South				Neary Driveway From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:45 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:45 PM													
02:45 PM	6	**38**	**1**	**45**	2	0	0	2	**10**	0	0	10	57
03:00 PM	10	21	0	31	**63**	**14**	**6**	**83**	1	12	0	13	**127**
03:15 PM	**18**	1	0	19	15	1	0	16	1	6	0	7	42
03:30 PM	7	0	0	7	7	0	5	12	0	**22**	0	**22**	41
Total Volume	41	60	1	102	87	15	11	113	12	40	0	52	267
% App. Total	40.2	58.8	1		77	13.3	9.7		23.1	76.9	0		
PHF	.569	.395	.250	.567	.345	.268	.458	.340	.300	.455	.000	.591	.526
Lights	27	60	1	88	87	15	11	113	12	25	0	37	238
% Lights	65.9	100	100	86.3	100	100	100	100	100	62.5	0	71.2	89.1
Mediums	14	0	0	14	0	0	0	0	0	15	0	15	29
% Mediums	34.1	0	0	13.7	0	0	0	0	0	37.5	0	28.8	10.9
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0



MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA, 01752

E/W: Neary Driveway
NB: Neary Parking Lot
Southborough, MA

File Name : 1339_Neary_Dr_at_School_Lot_03-13-2024
Site Code : 1339
Start Date : 3/13/2024

Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Road

	Neary Driveway From East				Neary School Lot From South				Neary Driveway From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
07:00 AM	11	5	0	16	2	0	0	2	0	12	0	12	30
07:15 AM	19	6	0	25	2	1	0	3	0	6	0	6	34
07:30 AM	43	13	0	56	7	1	1	9	4	27	0	31	96
07:45 AM	38	36	0	74	24	4	0	28	9	38	0	47	149
Total	111	60	0	171	35	6	1	42	13	83	0	96	309
08:00 AM	2	34	0	36	28	3	0	31	4	3	0	7	74
08:15 AM	3	28	0	31	11	3	0	14	7	2	0	9	54
08:30 AM	1	52	0	53	39	6	0	45	7	14	0	21	119
08:45 AM	2	9	0	11	12	2	2	16	2	2	2	6	33
Total	8	123	0	131	90	14	2	106	20	21	2	43	280
11:00 AM	0	4	0	4	3	0	0	3	0	2	0	2	9
11:15 AM	2	0	0	2	1	0	0	1	0	0	0	0	3
11:30 AM	0	1	0	1	2	0	0	2	0	0	0	0	3
11:45 AM	1	2	0	3	5	2	0	7	2	0	0	2	12
Total	3	7	0	10	11	2	0	13	2	2	0	4	27
12:00 PM	1	1	0	2	10	1	1	12	0	0	0	0	14
12:15 PM	0	2	0	2	1	2	0	3	0	1	0	1	6
12:30 PM	1	3	0	4	2	0	0	2	2	0	0	2	8
12:45 PM	1	1	0	2	2	0	0	2	0	0	0	0	4
Total	3	7	0	10	15	3	1	19	2	1	0	3	32
03:00 PM	10	21	0	31	63	14	6	83	1	12	0	13	127
03:15 PM	18	1	0	19	15	1	0	16	1	6	0	7	42
03:30 PM	7	0	0	7	7	0	5	12	0	22	0	22	41
03:45 PM	2	1	0	3	2	0	0	2	0	3	0	3	8
Total	37	23	0	60	87	15	11	113	2	43	0	45	218
04:00 PM	1	3	0	4	2	3	1	6	0	1	0	1	11
04:15 PM	0	14	0	14	4	0	3	7	3	0	2	5	26
04:30 PM	1	6	0	7	33	4	3	40	1	1	0	2	49
04:45 PM	4	5	0	9	3	1	2	6	1	1	0	2	17
Total	6	28	0	34	42	8	9	59	5	3	2	10	103
05:00 PM	3	6	0	9	8	0	1	9	0	2	0	2	20
05:15 PM	0	2	1	3	3	1	5	9	1	5	2	8	20
05:30 PM	1	2	0	3	2	0	1	3	1	0	0	1	7
05:45 PM	0	4	0	4	6	1	0	7	1	3	0	4	15
Total	4	14	1	19	19	2	7	28	3	10	2	15	62
Grand Total	172	262	1	435	299	50	31	380	47	163	6	216	1031
Apprch %	39.5	60.2	0.2		78.7	13.2	8.2		21.8	75.5	2.8		
Total %	16.7	25.4	0.1	42.2	29	4.8	3	36.9	4.6	15.8	0.6	21	
Lights	148	249	1	398	298	50	31	379	46	132	6	184	961
% Lights	86	95	100	91.5	99.7	100	100	99.7	97.9	81	100	85.2	93.2
Mediums	18	13	0	31	1	0	0	1	1	28	0	29	61
% Mediums	10.5	5	0	7.1	0.3	0	0	0.3	2.1	17.2	0	13.4	5.9
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	6	0	0	6	0	0	0	0	0	3	0	3	9
% Bicycles on Road	3.5	0	0	1.4	0	0	0	0	0	1.8	0	1.4	0.9

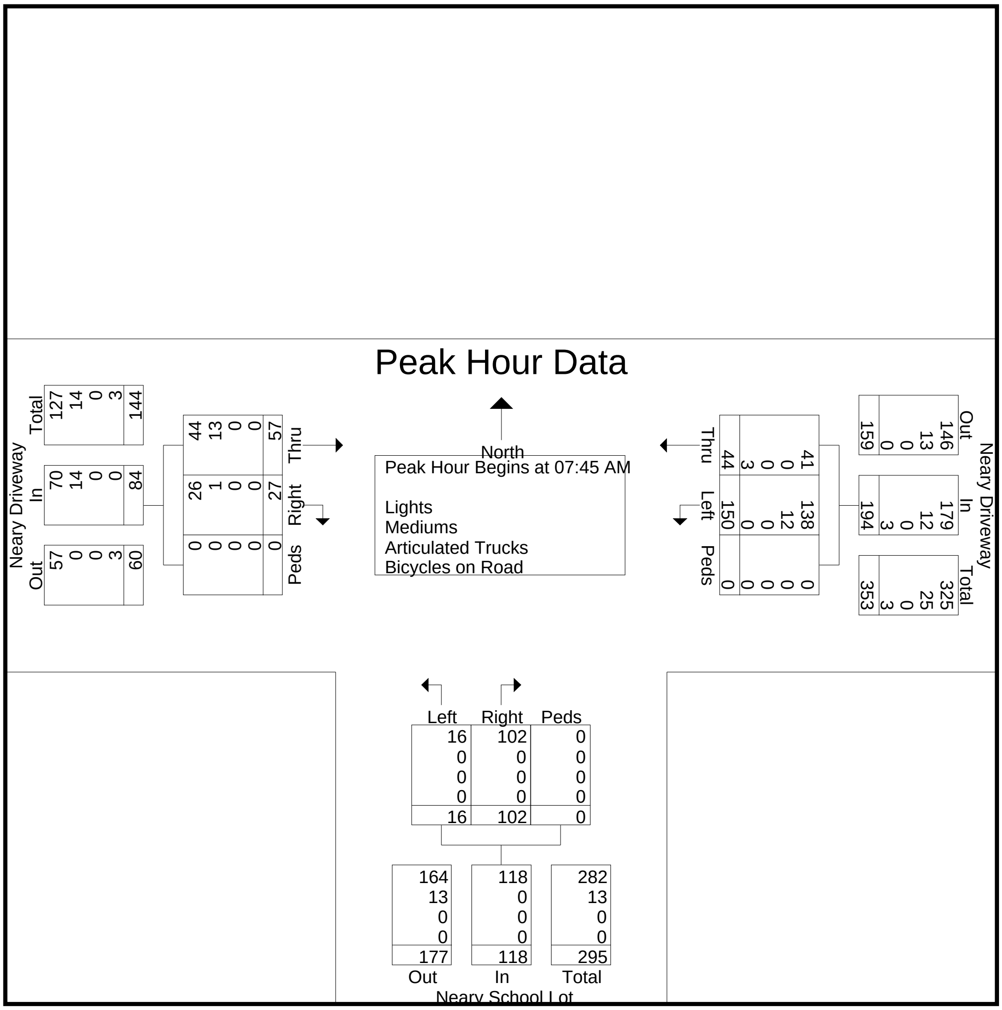
MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA, 01752

E/W: Neary Driveway
NB: Neary Parking Lot
Southborough, MA

File Name : 1339_Neary_Dr_at_School_Lot_03-13-2024
Site Code : 1339
Start Date : 3/13/2024
Page No : 3

	Neary Driveway From East				Neary School Lot From South				Neary Driveway From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	**38**	36	0	**74**	24	4	0	28	**9**	**38**	0	**47**	**149**
08:00 AM	2	34	0	36	28	3	0	31	4	3	0	7	74
08:15 AM	3	28	0	31	11	3	0	14	7	2	0	9	54
08:30 AM	1	**52**	0	53	**39**	**6**	0	**45**	7	14	0	21	119
Total Volume	44	150	0	194	102	16	0	118	27	57	0	84	396
% App. Total	22.7	77.3	0		86.4	13.6	0		32.1	67.9	0		
PHF	.289	.721	.000	.655	.654	.667	.000	.656	.750	.375	.000	.447	.664
Lights	41	138	0	179	102	16	0	118	26	44	0	70	367
% Lights	93.2	92.0	0	92.3	100	100	0	100	96.3	77.2	0	83.3	92.7
Mediums	0	12	0	12	0	0	0	0	1	13	0	14	26
% Mediums	0	8.0	0	6.2	0	0	0	0	3.7	22.8	0	16.7	6.6
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	3	0	0	3	0	0	0	0	0	0	0	0	3
% Bicycles on Road	6.8	0	0	1.5	0	0	0	0	0	0	0	0	0.8



MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

28 Lord Road, Suite 280
Marlborough, MA

N/S: Parkerville Road
EB: Neary Driveway

File Name : 1339_Parkerville_at_Neary_03-13-2024
Site Code : 1339
Start Date : 3/13/2024
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Road

	Parkerville Road From North				Parkerville Road From South				Neary Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
07:00 AM	2	0	0	2	2	14	0	16	6	8	0	14	32
07:15 AM	5	3	0	8	4	19	0	23	2	5	0	7	38
07:30 AM	5	1	0	6	3	48	0	51	16	11	0	27	84
07:45 AM	14	2	0	16	9	52	0	61	33	30	0	63	140
Total	26	6	0	32	18	133	0	151	57	54	0	111	294
08:00 AM	21	5	0	26	2	21	0	23	16	20	0	36	85
08:15 AM	11	1	0	12	1	16	0	17	1	11	0	12	41
08:30 AM	23	1	0	24	2	28	0	30	14	30	1	45	99
08:45 AM	4	3	0	7	4	10	0	14	8	14	0	22	43
Total	59	10	0	69	9	75	0	84	39	75	1	115	268
11:00 AM	2	3	0	5	0	2	0	2	1	3	0	4	11
11:15 AM	2	2	0	4	3	0	0	3	0	2	0	2	9
11:30 AM	0	1	0	1	2	1	0	3	1	0	0	1	5
11:45 AM	3	0	0	3	2	2	0	4	1	3	0	4	11
Total	7	6	0	13	7	5	0	12	3	8	0	11	36
12:00 PM	1	6	0	7	7	1	0	8	4	8	0	12	27
12:15 PM	1	1	0	2	3	1	0	4	3	0	0	3	9
12:30 PM	3	2	0	5	2	1	3	6	2	1	1	4	15
12:45 PM	1	1	0	2	8	1	0	9	0	2	0	2	13
Total	6	10	0	16	20	4	3	27	9	11	1	21	64
02:45 PM	17	2	0	19	5	24	0	29	3	0	0	3	51
Total	17	2	0	19	5	24	0	29	3	0	0	3	51
03:00 PM	15	2	0	17	5	20	3	28	16	55	0	71	116
03:15 PM	8	4	0	12	2	11	0	13	7	15	0	22	47
03:30 PM	2	1	0	3	4	4	4	12	12	15	1	28	43
03:45 PM	2	6	0	8	3	0	0	3	3	6	0	9	20
Total	27	13	0	40	14	35	7	56	38	91	1	130	226
04:00 PM	2	4	0	6	6	3	2	11	1	2	0	3	20
04:15 PM	12	6	0	18	6	4	3	13	3	2	0	5	36
04:30 PM	1	3	0	4	9	5	1	15	9	26	0	35	54
04:45 PM	4	5	0	9	4	5	1	10	0	1	0	1	20
Total	19	18	0	37	25	17	7	49	13	31	0	44	130
05:00 PM	4	2	0	6	10	7	0	17	2	10	0	12	35
05:15 PM	1	4	0	5	2	1	1	4	0	5	0	5	14
05:30 PM	1	2	0	3	6	3	2	11	1	1	1	3	17
05:45 PM	3	5	0	8	6	1	0	7	3	5	2	10	25
Total	9	13	0	22	24	12	3	39	6	21	3	30	91
Grand Total	170	78	0	248	122	305	20	447	168	291	6	465	1160
Apprch %	68.5	31.5	0		27.3	68.2	4.5		36.1	62.6	1.3		
Total %	14.7	6.7	0	21.4	10.5	26.3	1.7	38.5	14.5	25.1	0.5	40.1	
Lights	151	70	0	221	120	282	20	422	167	263	6	436	1079
% Lights	88.8	89.7	0	89.1	98.4	92.5	100	94.4	99.4	90.4	100	93.8	93
Mediums	13	6	0	19	1	22	0	23	1	28	0	29	71
% Mediums	7.6	7.7	0	7.7	0.8	7.2	0	5.1	0.6	9.6	0	6.2	6.1

N/S: Parkerville Road
EB: Neary Driveway

File Name : 1339_Parkerville_at_Neary_03-13-2024
Site Code : 1339
Start Date : 3/13/2024

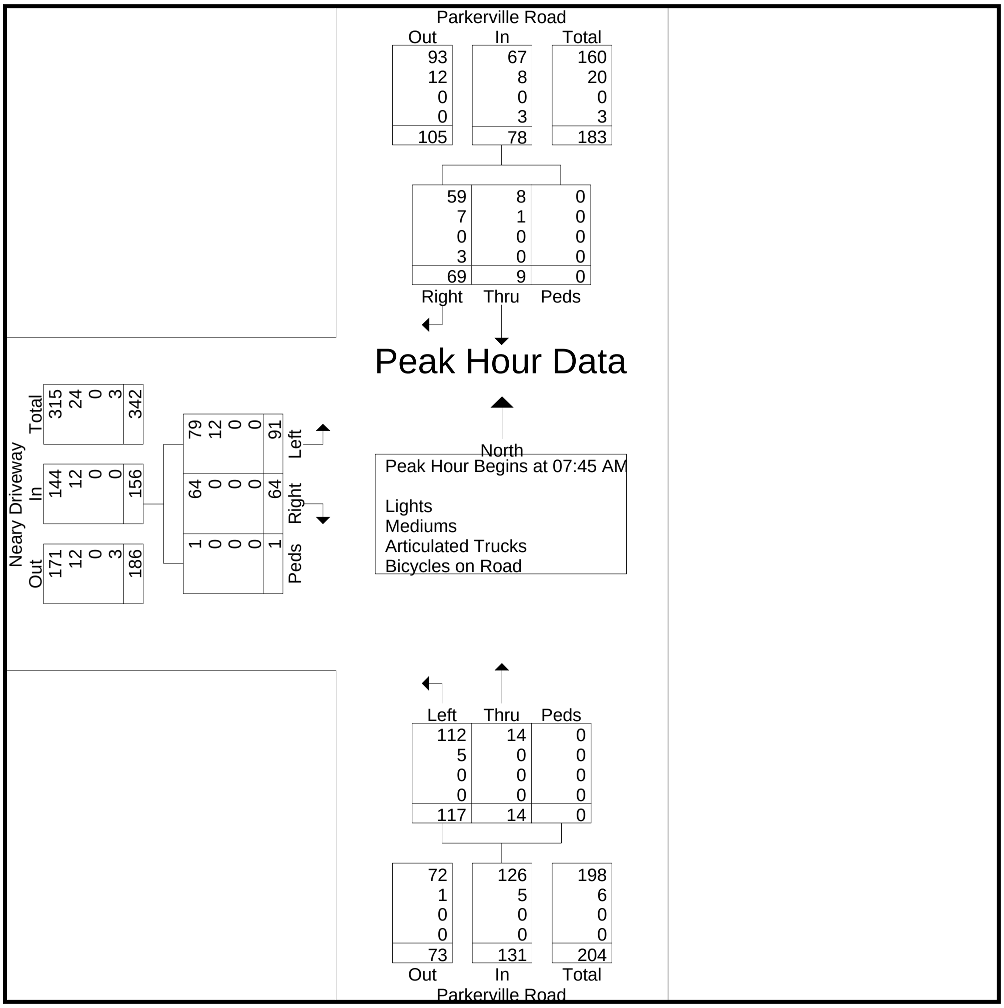
Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Road

	Parkerville Road From North				Parkerville Road From South				Neary Driveway From West				
	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	6	2	0	8	1	1	0	2	0	0	0	0	10
% Bicycles on Road	3.5	2.6	0	3.2	0.8	0.3	0	0.4	0	0	0	0	0.9

N/S: Parkerville Road
EB: Neary Driveway

File Name : 1339_Parkerville_at_Neary_03-13-2024
Site Code : 1339
Start Date : 3/13/2024
Page No : 3

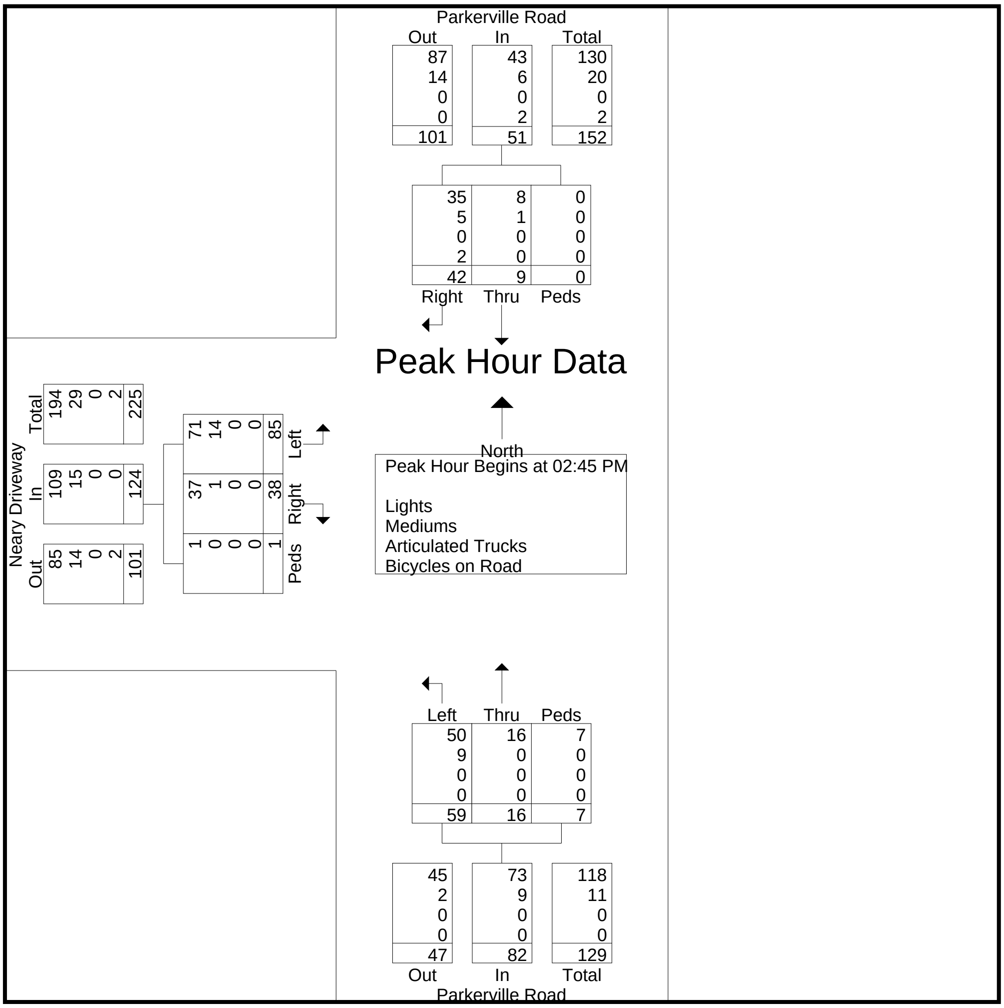
	Parkerville Road From North				Parkerville Road From South				Neary Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	14	2	0	16	**9**	**52**	0	**61**	**33**	**30**	0	**63**	**140**
08:00 AM	**21**	**5**	0	**26**	**2**	**21**	**0**	**23**	**16**	**20**	**0**	**36**	**85**
08:15 AM	**11**	**1**	**0**	**12**	**1**	**16**	**0**	**17**	**1**	**11**	**0**	**12**	**41**
08:30 AM	**23**	1	0	24	2	28	0	30	14	30	**1**	45	99
Total Volume	69	9	0	78	14	117	0	131	64	91	1	156	365
% App. Total	88.5	11.5	0		10.7	89.3	0		41	58.3	0.6		
PHF	.750	.450	.000	.750	.389	.563	.000	.537	.485	.758	.250	.619	.652
Lights	59	8	0	67	14	112	0	126	64	79	1	144	337
% Lights	85.5	88.9	0	85.9	100	95.7	0	96.2	100	86.8	100	92.3	92.3
Mediums	7	1	0	8	0	5	0	5	0	12	0	12	25
% Mediums	10.1	11.1	0	10.3	0	4.3	0	3.8	0	13.2	0	7.7	6.8
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	3	0	0	3	0	0	0	0	0	0	0	0	3
% Bicycles on Road	4.3	0	0	3.8	0	0	0	0	0	0	0	0	0.8



N/S: Parkerville Road
EB: Neary Driveway

File Name : 1339_Parkerville_at_Neary_03-13-2024
Site Code : 1339
Start Date : 3/13/2024
Page No : 5

	Parkerville Road From North				Parkerville Road From South				Neary Driveway From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:45 PM													
02:45 PM	**17**	2	0	**19**	**5**	**24**	0	**29**					
03:00 PM	**15**	**2**	**0**	**17**	**5**	**20**	**3**	**28**	**16**	**55**	0	**71**	**116**
03:15 PM	**8**	**4**	0	12	2	11	0	13	7	15	0	22	47
03:30 PM	2	1	0	3	4	4	**4**	12	12	15	**1**	28	43
Total Volume	42	9	0	51	16	59	7	82	38	85	1	124	257
% App. Total	82.4	17.6	0		19.5	72	8.5		30.6	68.5	0.8		
PHF	.618	.563	.000	.671	.800	.615	.438	.707	.594	.386	.250	.437	.554
Lights	35	8	0	43	16	50	7	73	37	71	1	109	225
% Lights	83.3	88.9	0	84.3	100	84.7	100	89.0	97.4	83.5	100	87.9	87.5
Mediums	5	1	0	6	0	9	0	9	1	14	0	15	30
% Mediums	11.9	11.1	0	11.8	0	15.3	0	11.0	2.6	16.5	0	12.1	11.7
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road	2	0	0	2	0	0	0	0	0	0	0	0	2
% Bicycles on Road	4.8	0	0	3.9	0	0	0	0	0	0	0	0	0.8



☐ Parking Data

Study Name 1339 Neary Lot Parking
Start Date 03/13/2024
Start Time 7:00 AM
Site Code 1339

Channel	Direction	Direction	Peak Parking
Direction	Entering	Exiting	Demand
7:00 AM	5	2	9
7:15 AM	6	3	11
7:30 AM	17	8	20
7:45 AM	45	28	37
8:00 AM	38	31	44
8:15 AM	30	14	60
8:30 AM	48	45	67
8:45 AM	10	13	63
9:00 AM	4	2	64
9:15 AM	5	1	66
9:30 AM	7	4	69
9:45 AM	1	1	70
10:00 AM	3	4	69
10:15 AM	0	2	68
10:30 AM	4	2	69
10:45 AM	1	1	68
11:00 AM	4	3	69
11:15 AM	0	1	69
11:30 AM	1	2	68
11:45 AM	4	8	69
12:00 PM	1	11	63
12:15 PM	2	3	54
12:30 PM	5	2	55
12:45 PM	1	2	56
1:00 PM	4	2	57
1:15 PM	3	2	57
1:30 PM	4	3	60
1:45 PM	1	1	59
2:00 PM	1	2	59
2:15 PM	0	2	57
2:30 PM	11	0	66
2:45 PM	41	3	104
3:00 PM	21	74	113
3:15 PM	2	16	51
3:30 PM	0	7	37
3:45 PM	1	2	31
4:00 PM	2	5	30
4:15 PM	18	4	40
4:30 PM	7	37	43
4:45 PM	6	4	13
5:00 PM	6	8	14
5:15 PM	4	4	12
5:30 PM	3	2	11
5:45 PM	5	7	11

E: Code Report & Analysis

CODE RED
CONSULTANTS

Fire Protection/Life Safety
Code Report
Schematic Design

Project:
Neary Elementary School
53 Parkerville Road
Southborough, MA 01772

2/19/2025

Prepared for:
Arrowstreet
10 Post Office Square
Suite 700N

Prepared by:
Matthew Nicastro
Matthew Nicastro

Reviewed by:
Kevin N. Lynch, P.E.

Table of Contents

1. Introduction

Arrowstreet has retained Code Red Consultants to provide fire protection, life safety, and accessibility code consulting services for the Neary Elementary School project in Southborough, MA. The existing Neary Elementary School is 1-story in height and was originally constructed in 1968, with two smaller modular classroom additions constructed after the original building.

The scope of work for the project includes the construction of a two-story classroom building on the same site as the existing elementary school, which will be demolished. The proposed building contains classrooms, a cafeteria, a media center, and a gymnasium. The following figure includes a layout of the proposed First Floor of the building.

FIGURE 1: LEVEL 1

This report addresses the key features of these codes and standards. The primary intent of this document is to (1) summarize our understanding of the major fire protection and life safety approach for the proposed work, (2) demonstrate building, fire and life safety code compliance to the Authorities Having Jurisdiction, and (3) serve as a record document for the building owner.

2. Applicable Codes

The major codes to which the project is being designed are identified below. Codes of record generally vest with the date of building permit application for a project, with the exception of the Plumbing Code, Electrical Code, and Elevator Code which vest with their respective installation permit applications.

Building	780 CMR – Massachusetts State Building Code 10th Edition, which is an amended version of the 2021 International Building Code (IBC).
Fire	527 CMR 1.00 - Massachusetts Comprehensive Fire Safety Code, which is an amended version of the 2021 Edition of NFPA 1, Uniform Fire Code
Accessibility	521 CMR – Massachusetts Architectural Access Board (MAAB) Rules and Regulations 2010 ADA Standards for Accessible Design
Electrical	527 CMR 12.00 - Massachusetts Electrical Code, which is an amended version of the 2023 Edition of NFPA 70, National Electrical Code
Mechanical	2021 International Mechanical Code (IMC) as amended by 780 CMR 28.00.
Plumbing	248 CMR 10.00 – Uniform State Plumbing Code, Updated 12/08/2023
Energy	225 CMR 23.00, Massachusetts Commercial Stretch Energy Code
Elevator	524 CMR – Massachusetts Board of Elevator Regulations, which is an amended version of the 2013 ANSI A17.1, Safety Code for Elevators and Escalators
Other	National Fire Protection Association (NFPA) Standards, as referenced by the above codes, including the following: - 2021 NFPA 10: *Standard for Portable Fire Extinguishers* - 2019 NFPA 13: *Standard for the Installation of Sprinkler Systems* - 2019 NFPA 72: *National Fire Alarm and Signaling Code*

3. Fire Protection / Life Safety Code Analysis

The following details the overall code compliance approach for the new building.

3.1 Use and Occupancy Classifications

3.1.1 Primary Occupancies

The proposed building serves as an elementary school with classrooms and assembly spaces to be used by students during normal hours. Additionally, assembly spaces in the building are proposed to be used after hours for occupants other than students. Therefore, the proposed building contains the following primary occupancies (780 CMR 302.1):

TABLE 1: PRIMARY OCCUPANCY CLASSIFICATIONS

Description	780 CMR Classification
Cafeteria (off-hours use)	Group A-2, Assembly
Gymnasium (off-hours use)	Group A-3, Assembly
Classrooms, Associated Assembly & Administrative Spaces	Group E, Educational

The building is designed as a separated, mixed occupancy building to support the height and area approach (780 CMR 508.4). However, no fire resistance rated separations are required between the primary occupancies (Groups A and E) per 780 CMR Table 508.4.

3.1.2 Accessory Occupancies

Accessory occupancies are limited to less than 10% of the floor area of the story in which they are located (780 CMR 508.2.3). No separation is required between accessory occupancies and the primary unless required by other sections of this report (780 CMR 508.2.4).

3.2 Building Height, Area, and Construction Type

3.2.1 Building Height and Area

The proposed building is two stories in height with a maximum footprint of approximately 58,800 square feet and an aggregate area of approximately 110,800 gross square feet.

The following table outlines the height and area limitations for Type IIA buildings containing Group E and Group A occupancies that are sprinklered throughout. A frontage increase of 100% is also applied in accordance with 780 CMR 506.3 based on the proposed site.

TABLE 2: ALLOWABLE BUILDING HEIGHT AND AREA (TYPE IIA)

Use Group	Number of Stories Permitted	Maximum Building Height (ft)	Maximum Footprint Area (sf)
Group A-2 / A-3	4	85	58,125
Group E	4	85	99,375

The sum of the ratios on Level 1 is not permitted to exceed 1. The following table outlines compliance based on the areas of the proposed occupancies on the floor. The area of Level 2 complies as a non-separated mixed occupancy space.

TABLE 3: SUM OF THE RATIOS CALCULATION – LEVEL 1

Use Group	Allowable Area (sf)	Actual Area (sf)	Ratio
Use Group A	58,125	14,000	0.24
Use Group E	99,375	44,800	0.45
		Total:	0.69 < 1

3.2.1 Construction Classification

The building is proposed to be constructed with noncombustible materials throughout. Based on the area of the proposed building, Type IIA protected, noncombustible construction is minimally required.

Interior building elements are permitted to be of any noncombustible material permitted by 780 CMR.

3.2.2 Fire Resistance Rating of Building Elements

Table 4 indicates the minimum fire-resistance ratings required for Type IIA construction (780 CMR 601).

TABLE 4: FIRE-RESISTANCE RATING OF BUILDING ELEMENTS – TYPE IIA

Building Element	Fire Resistance Rating
Primary structural frame	1 Hour
Exterior bearing walls	1 Hour
Interior bearing walls	1 Hour
Nonbearing exterior walls	See Section 3.3
Floor construction and secondary members	1 Hour
Roof construction and secondary members	1 Hour

Fire rated shafts, fire barriers, and horizontal assemblies are required to be supported by structure affording the required fire-resistance rating of the supported element (780 CMR 707.5.1).

3.3 Exterior Walls

3.3.1 Nonbearing Exterior Walls

The rating and opening limitations for nonbearing exterior walls are based on the fire separation distance for each wall. Fire separation distance is defined as the distance measured from the building face to the closest interior lot line, the centerline of a street, alley, or public way, or to an imaginary lot line between two buildings (780 CMR 202). The distance is required to be measured at right angles from the face of the wall.

The following table indicates the fire-resistance ratings and unprotected opening limitations for nonbearing exterior walls based on fire separation distance (780 CMR 705.5 & 705.8):

TABLE 5: EXTERIOR WALL RATINGS AND OPENINGS BASED ON FIRE SEPARATION DISTANCE

Fire Separation Distance (ft.)	Fire-Resistance Rating	Allowable area
0 ≤ X < 3	1 Hour	Not Permitted
3 ≤ X < 5	1 Hour	15%
5 ≤ X < 10	1 Hour	25%
10 ≤ X < 15	1 Hour	45%
15 ≤ X < 20	1 Hour	75%
X ≥ 20	0 Hours	No Limit

At least 20 feet of fire separation distance is provided around the perimeter of the proposed new building, allowing nonrated exterior walls with unlimited openings.

3.3.2 Exit Stair Exposure

Where nonrated walls or unprotected openings enclose the exterior of exit stairways/ exit passageways and the walls are exposed to other parts of the building at an angle of less than 180 degrees, the building exterior walls and openings within 10 feet horizontally of a nonrated wall or unprotected opening are required to have a fire-resistance rating of not less than 1-hour with 45-minute opening protection. The construction is required to extend vertically from the ground to a point 10 feet above the topmost landing of the stairway or the roof line, whichever is lower (780 CMR 1023.7).

3.4 Interior Walls and Partitions

3.4.1 Fire/Smoke Resistive Assemblies

Table 6 identifies the interior walls and partitions which are required to be composed of fire/smoke resistive assemblies.

TABLE 6: FIRE RESISTANCE RATING REQUIREMENTS

Type of Assembly	Construction	Code Reference
Group A and Group E occupancy separation	No fire rating required between occupancies	780 CMR Table 508.4
Corridors serving all occupancies	No fire rating required	780 CMR 1020.2
Dry transformer room > 112.5 kVA	1-hour fire barrier	NFPA 70, 450.21(B)
Furnace room where any equipment is > 400,000 BTU per hour input	Wall capable of resisting the passage of smoke [1]	780 CMR 509.4.2
Boiler room where the largest piece of equipment is > 15 psi and 10 hp	Wall capable of resisting the passage of smoke [1]	780 CMR 509.4.2
Elevator Machine Room / Controls Room	1-hour fire barrier [2]	780 CMR 3005.4
Shafts connecting 3 stories or less	1-hour fire barrier	780 CMR 713.4

1. Wall is required to extend from the top of the foundation or floor assembly below to the underside of a fire-resistance rated floor/roof assembly or to the underside of the floor or roof sheathing, deck, or slab above.
2. Elevator machine rooms are not required to be enclosed with fire resistance rated construction where they do not abut or have openings into the hoistway.

3.4.2 Identification

Where there is an accessible concealed floor, floor-ceiling or attic space - fire walls, fire partitions, fire barriers, smoke barriers and smoke partitions, or any other wall required to have protected openings or penetrations are permanently identified with signs/stenciling within the concealed space. Identification is required to:

- Be located within 15 feet of the end of each wall and at intervals not exceeding 30 feet measured horizontally along the wall or partition.
- Include lettering not less than 3 inches in height with a minimum 3/8-inch stroke in a contrasting color incorporating the suggested wording "FIRE AND/OR SMOKE BARRIER – PROTECT ALL OPENINGS".

3.4.3 Doors and Opening Protectives

Doors, fire shutters, and their corresponding components are required to have fire-resistance ratings and meet the required testing standards as specified in the following table. All doors and fire shutters required to be fire-resistance-rated are required to be designed, installed, and labeled in accordance with NFPA 80 (780 CMR 716.1):

TABLE 7: DOOR AND FIRE SHUTTER REQUIREMENTS

Wall Type	Required Wall Rating	Minimum Fire Door Rating	Performance Criteria [1]	Code Reference
Fire barriers enclosing 1-hour shafts	1-hour	1-hour	NFPA 252 or UL 10C/ NFPA 252 or UL 10B	780 CMR 716.1
Other fire barriers	1 hour	3/4 hour		
Wall capable of resisting the passage of smoke	No rating	No rating	No air transfer openings, max 3/4" undercut [2]	780 CMR 509.4.2

1. All doors are self- or automatic closing and provided with an active latch bolt that will secure the door when it is closed (780 CMR 716.2.6.1).
2. Unless protected by smoke damper.

3.4.4 Penetrations

Penetration of fire-resistance-rated walls and horizontal assemblies that are not protected with dampers or a shaft are required to comply with this section. Ducts and air transfer openings that are protected by dampers are required to comply with Section 3.4.5 of this Report.

Through and membrane penetrations of fire-resistance-rated walls and fire-resistance-rated horizontal assemblies are required to be protected by an approved penetration firestop system installed as tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water (780 CMR 714.4 & 714.5). Penetrations of fire-resistance-rated walls are required to have an F rating of not less than the required fire-resistance rating of the wall penetrated (780 CMR 714.4.1). Penetrations of fire-resistance rated horizontal assemblies are required to have an F rating/T rating of not less than 1 hour but not less than the required rating of the floor penetrated (780 CMR 714.5.1.2).

3.4.5 Ducts and Air Transfer Openings

Fire and smoke dampers are required where ducts and air transfer openings penetrate walls as specified in 780 CMR. Where dampers are installed, they are required to be listed and bear the label of an approved testing agency (780 CMR 717.3.1). Fire dampers are required to be tested in accordance with UL 555 and smoke dampers are required to be tested in accordance with UL 555S. Combination fire/smoke dampers are required to comply with both test standards.

Fire dampers in the proposed building are required to be rated for 1.5 hours (780 CMR 717.3.2.1). Smoke damper leakage ratings are required to be Class I or II. Elevated temperature ratings are not permitted to be less than 250°F (780 CMR 717.3.2.2). Combination fire/smoke dampers are require to comply with both rating requirements (780 CMR 717.3.2.3). Refer to 780 CMR 717.3.3 for required damper actuation methods.

Fire, smoke, and fire/smoke dampers are required to be provided with an approved means of access that permits inspection and maintenance of the damper and its operating parts (780 CMR 717.4). Access points are required to have permanent labels with letters that are not less than ½ inch in height that reads “FIRE/SMOKE DAMPER, SMOKE DAMPER, or FIRE DAMPER”.

3.5 Vertical Openings

The proposed building contains two enclosed exit stairs and one elevator shaft. A floor opening containing two open exit access stairways is located at the main entrance to the building.

3.5.1 Unenclosed Vertical Openings

The proposed open stair connecting Levels 1 and 2 is permitted to be classified as a two story opening. Two story openings are required to comply with 780 CMR 712.1.9, which requires that the opening:

- Does not connect more than two stories.
- Does not penetrate a horizontal assembly that separates fire areas or smoke barrier separating smoke compartments.
- Is not concealed within the construction of a wall or a floor/ceiling assembly.
- Is separated from floor openings and air transfer openings serving other floors by construction conforming to required shaft enclosures.

Exit access stairways that serve or atmospherically communicate between only two adjacent stories are permitted to be unenclosed, provided that such interconnected stories are not open to other stories (780 CMR 1019.3 (Exception 1)).

3.5.2 Shaft Enclosures

Shaft enclosures are required to be fire-resistance rated in accordance with Table 6. Shafts that do not extend to the bottom of the building are required to comply with one of the following (780 CMR 713.11):

- Be enclosed at the lowest level with construction of the same fire-resistance rating as the lowest floor through which the shaft passes, but not less than the rating required for the shaft enclosure.
- Terminate in a room have a use related to the purpose of the shaft. The room is required to be separated from the remainder of the building by a fire-resistance rating at least equal to the protection required for the shaft enclosure.
- Be protected by fire dampers installed at the lowest floor level within the shaft enclosure.

A shaft enclosure that does not extend to the underside of the roof sheathing, deck or slab is required to be enclosed at the top with construction of the same fire-resistance rating as the topmost floor penetrated by the shaft, but not less than the fire-resistance rating required for the shaft enclosure (780 CMR 713.12).

3.6 Interior Finishes

3.6.1 Wall and Ceiling Finishes

All interior wall and ceiling finish ratings are required to be classified in accordance with ASTM E 84 or UL 723 (780 CMR 803.1.2). The flame spread and smoke-developed indexes are not permitted to be greater than that specified in the following table based on the occupancy classifications and location (780 CMR 803.13).

TABLE 8: INTERIOR WALL & CEILING FINISH REQUIREMENTS [1]

Occupancy Classification	Exit Enclosures	Corridors, Exit Access Stairways/Ramps	Rooms and Enclosed Spaces
A-2 & A-3	B	B	C
E	B	C	C

1. Interior finishes are grouped in the following classes: Class A – flame spread index 0-25, Class B – flame spread index 26-75, Class C – flame spread index 76-200. All classes are required to have a smoke-developed index that does not exceed 450.

3.6.2 Interior Floor Finish

In all areas, interior floor covering materials are required to comply with the requirements of the DOC FF-1 “pill test” (CPSC 16 CFR Part 1630) (780 CMR 804.4.1). Floor finishes and coverings of a traditional type, such as wood, vinyl, linoleum or terrazzo, and resilient floor covering materials that are not comprised of fibers are not subject to compliance with the “pill test” (780 CMR 804.1 Exception).

3.6.3 Upholstered Furniture

527 CMR 1.00 requires that new upholstered furniture be resistant to smoldering ignition as evaluated by one of the following methods (527 CMR 12.6.2.1):

- NFPA 260 testing (requirements for Class I)
- NFPA 261 testing (char length not exceeding 1-1/2 inches)
- California Technical Bulletin (TB) 117-2013, *Requirements, Test Procedure and Apparatus for Testing the Smolder Resistance of Materials Used in Upholstered Furniture*

3.7 Fire Protection Systems

3.7.1 Automatic Sprinkler Systems

The proposed building is required to be provided with an automatic sprinkler system installed in accordance with NFPA 13, since the Group A fire area exceeds 5,000 square feet, and the Group E fire area exceeds 12,000 square feet (780 CMR 903.2).

3.7.2 Standpipe Systems

The proposed building is required to be provided with a Class I standpipe in accordance with NFPA 14 if the floor of Level 2 is located more than 30 feet above the lowest level of fire department access (780 CMR 905.2 & 905.5.3.1 Exception 1).

3.7.3 Fire Department Connections

Fire department connections are required to be provided for the building in locations approved by the fire department. The location and access of the fire department connection is required to be approved by the fire chief (780 CMR 912.2).

A clear working space free of all obstructions of 36 inches in width, by 36 inches in depth, by 78 inches in height is required in front of the fire department connections (780 CMR 912.4.2).

3.7.4 Fire Extinguishers

Portable fire extinguishers are required in all occupancies within the building and are required to be selected and installed in accordance with this section and NFPA 10 (780 CMR 906.1). Fire extinguishers are required to be installed in the following locations (780 CMR 906.1):

- Within 30 feet of commercial cooking equipment.
- In areas where flammable or combustible liquids are stored, used, or dispensed.
- Special hazard areas, including laboratories, computer rooms and generator rooms, where required by the fire official.

The maximum travel distance to an extinguisher for Class A fire hazards (ordinary combustibles) does not exceed 75 feet. The maximum travel distance to an extinguisher for Class B fire hazards (flammable and combustible liquids) does not exceed 50 feet (780 CMR 906.3).

3.8 Emergency Systems

3.8.1 Fire Alarm and Detection Systems

The building is required to be provided with a fire alarm system throughout consisting of an automatic smoke detection system and an emergency voice/alarm communication system in accordance with 780 CMR 907.5.2.2, since the proposed Group E occupant load of the building exceeds 100 (780 CMR 907.2.3).

The fire alarm and detection system serving the building is required to activate the occupant notification system by manual initiation, automatic detection, and sprinkler extinguishment operation in accordance with NFPA 72.

3.8.2 Emergency Responder Radio Coverage

Emergency responder radio coverage is required for the building in accordance with 780 CMR Section 918 unless the fire code official determines the radio coverage system is not needed or where approved by the building official and the fire official to be a wired communication system in accordance with section 907.2.13.2 instead.

3.8.3 Standby/Emergency Power Systems

Standby and emergency power systems are required to be installed in accordance with 780 CMR, 527 CMR 12.00, NFPA 110, and NFPA 111.

A standby power system is required to be provided for the following building features (780 CMR 2702.2):

- Emergency responder radio coverage systems.
- Emergency voice/alarm communication systems.

An emergency power system is required to be provided for the following building features (780 CMR 2702.2):

- Exit signage in accordance with 780 CMR Section 1013.
- Means of egress illumination in accordance with 780 CMR Section 1008.3.
- Automatic fire detection systems.
- Fire alarm systems.

3.9 <u>Means of Egress</u>

Means of egress throughout the building are required to comply with 780 CMR Chapter 10.

3.9.1 Occupant Load

The number of occupants is required to be calculated at the rate of one occupant per unit of area as prescribed in Table 8 (780 CMR 1004.5). The occupant load is permitted to be increased from the calculated occupant load established for the given use where all other requirements of 780 CMR are met (780 CMR 1004.5.1).

TABLE 9: OCCUPANT LOAD FACTORS

Function of Space	Occupant Load Factor (occ/ft²)
Bench / Bleachers	18″ per occupant
Assembly (Tables & Chairs)	15 net
Classrooms	20 net
Labs / Vocational Spaces / Reading Rooms	50 net
Locker Rooms / Fitness Rooms	50 gross
Business / Office	150 gross
Kitchen	200 gross
Support/MEP	300 gross

3.9.2 Egress Width Factors

The required egress capacity for the means of egress components is based on the following capacity factors (780 CMR 1005.3.1 Exception 1 & 1005.3.2 Exception 1), since the proposed building is fully sprinkler protected, and the fire alarm system includes emergency voice/alarm communication capabilities.

TABLE 10: EGRESS WIDTH FACTORS

Stairways (inches of width per person)	All Other Components (inches of width per person)
0.2	0.15

The following table outlines the proposed egress capacities on each level, based on preliminary calculations.

TABLE 11: PRELIMINARY EGRESS CAPACITY CALCULATIONS

Level	Egress Capacity
Level 1	2,640
Level 2	1,200

3.9.3 Number of Exits

The number of exits required from every story is not permitted to be less than that specified in Table 12 (780 CMR 1006.3.3).

TABLE 12: MINIMUM NUMBER OF EXITS REQUIRED

Occupant Load	Number of Exits Required
1 – 500	2
501 – 1,000	3
> 1,000	4

Level 1 is provided with multiple exits directly to the exterior of the building. Level 2 is served by two enclosed exit stairs, which discharge directly to the exterior of the building, and two exit access stairs to Level 1.

3.9.4 Number of Exits from Spaces

Two exits or exit access doorways are also required to be provided from any space where the occupant load or common path of travel distances in the following table are exceeded (780 CMR 1006.2.1):

TABLE 13: SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY

Occupancy	Maximum Occupant Load	Maximum Common Path of Travel Distance
A-2, A-3, E	49	75 feet

The following should also be considered:

- Where a room contains switchgear and control panels exceeding 6 feet in width, an exit is required to be provided at each end of the equipment unless (1) the location permits a continuous and unobstructed way of exit travel, or (2) where the depth of the working space is twice that required by NFPA 70 Table 110.34(A) (NFPA 70, 110.33(A)(1)).
- Where equipment rated 800 A or more that contains overcurrent devices, switching devices, or control devices is installed in a room and there are personnel doors intended for entrance to and egress from the working space less than 25 feet from the nearest edge of the working space, the doors are required to swing in the direction of egress and equipped with listed panic hardware (NFPA 70, 110.26(C)(3)).
- Two exit access doorways are required in boiler, incinerator, and furnace rooms where the area is over 500 square feet and any fuel-fired equipment exceeds 400,000 British thermal unit input capacity (780 CMR 1006.2.2.1).

Where two exits or exit access doorways are required from any new portion of the exit access as outlined above, the exit doors or exit access doorways are required to be placed a distance apart equal to not less than 1/3 of the length of the maximum overall diagonal dimension of the building or area served (780 CMR 1007.1.1 Exception 2).

3.9.5 Exit Discharge

Exits are required to discharge directly to the exterior, except where permitted otherwise per 780 CMR 1028.2. Both enclosed exit stairs serving Level 2 discharge directly to the exterior at Level 1.

3.9.6 Accessible Means of Egress

Accessible means of egress are required to be provided in accordance with 780 CMR 1009.

Accessible means of egress are required to be provided from all accessible spaces within each structure. Where more than one means of egress is required from any accessible space, the space is required to be serviced by not less than two accessible means of egress (780 CMR 1009.1).

A two-way communication system is required to be provided at the elevator landing in accordance with 780 CMR 1009.8 on each accessible floor that is one or more story above or below the story of exit discharge (780 CMR 1009.8).

3.9.7 Exit Access Travel Distances

Means of egress are required to be arranged in accordance with the maximum values specified in Table 14 (780 CMR 1006.2.1, 1017.2, 1020.5).

TABLE 14: MEANS OF EGRESS EXIT ARRANGEMENT

Occupancy	Maximum Exit Access Travel Distance	Maximum Common Path of Egress Travel	Maximum Dead End Corridor Length [1]
A-2 & A-3	250 feet	75 feet	20 feet
E	250 feet	75 feet	50 feet

1. Dead end corridors are not limited in length where the length of the dead-end corridor is less than 2.5 times the width.

3.9.8 Corridors

The width of corridors are not permitted to be less than that specified in the table below, or less than that required for the occupant load served based on the egress factors in Table 10 of this report (780 CMR 1020.3).

TABLE 15: CORRIDOR WIDTHS

Occupancy	Minimum Width
Access to and utilization of MEP equipment	24 inches
With a required occupancy capacity < 50 people	36 inches
Serving Group E Occupancies > 99 people	72 inches
Any areas not listed above	44 inches

3.9.9 Doors

Doors are required to comply with 780 CMR Section 1010. Major requirements include:

- Width: Doors are required to be a minimum of 32 inches in clear width (780 CMR 1010.1.1).
- Landings: Level landings are required to be provided on each side of the door (780 CMR 1010.1.4 & 1010.1.5).
- Panic Hardware: Doors that serve more than 49 assembly occupants are required to have panic hardware if the doors latch or lock (780 CMR 1010.2.9). Panic hardware is required to be provided along the entire path of travel, including the exit discharge.
- Door Swing: Egress doors are required to be of the pivoted or side-swinging type and are required to swing in the direction of egress travel where serving an occupant load of 50 or more persons (780 CMR 1010.1.2).
- Locking: Except as specifically permitted by 780 CMR Section 1010.2, doors are required to be readily operable in the direction of egress travel.
- Doors in Series: Space between two doors in series is required to be a minimum of 48 inches plus the width of the door swinging into the space. Doors in series are required to swing either in the same direction or away from the space between the doors (780 CMR 1010.1.7).

3.9.10 Means of Egress Locking

Doors within the building are proposed to be equipped with locks to limit access to portions of the school. Additionally, security grilles are proposed to limit access to classrooms after hours. Except as specifically permitted by 780 CMR Section 1010.2 as outlined below, doors are required to be readily operable in the direction of egress travel. Options for locked doors include the following:

- Stairway doors used for discharge are permitted to be locked or prevent access on the side opposite egress travel (780 CMR 1010.2.7).
- Egress doors from classrooms, offices, and other occupied rooms with locking arrangements designed to keep intruders from entering are required to meet the requirements of 780 CMR 1010.2.8:
    - The door is required to be capable of being unlocked from outside the room with a key or other approved means.
    - The door is required to be openable from within the room in accordance with 780 CMR 1010.2.
    - Modifications to listed panic hardware, fire door hardware, or closers are not permitted.
    - Modifications to fire door assemblies are required to be in accordance with NFPA 80.
- Sensor release of electrically locked egress doors are permitted where all of the following conditions are met (780 CMR 1010.2.12):
    - The sensor is installed on the egress side, arranged to detect an occupant approaching the doors, which release the locking mechanism by a signal from or lock of power to the sensor.
    - Loss of power to the lock or locking system is required to automatically unlock the doors.
    - The doors are required to be arranged to unlock from a manual unlocking device located 40″ to 48″ vertically above the floor and within 5′ of the secured doors. Ready access must be provided to the manual unlocking device and the device must be clearly identified by a sign that reads "PUSH TO EXIT." When operated, the manual unlocking device must result in direct interruption of power to the lock, independent of other electronics, and the doors must remain unlocked for 30 seconds.
    - Activation of the building fire alarm system, automatic sprinkler system, or fire detection system is required to automatically unlock the doors. The doors are required to remain unlocked until the fire alarm system has been reset.
    - The locking mechanism is required to be listed in accordance with UL 294.
- Electromagnetically locked egress doors are permitted where all of the following conditions are met (780 CMR 1010.2.11):
    - The hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.
    - The hardware is capable of being operated with one hand.
    - Operation of the hardware directly interrupts the power to the electromagnetic lock and unlocks the door immediately.
    - Loss of power to the locking system automatically unlocks the door.

  - Where panic or fire exit hardware is required, operation of the panic or fire exit hardware also releases the electromagnetic lock.
  - The locking mechanical is listed in accordance with UL 294.

3.9.11 Stairways

Stairs are required to have sufficient width to accommodate the calculated occupant load using the factors in Table 10 of this Report but are not permitted to be less than 44 inches wide (780 CMR 1011.2).

Stair riser heights are required to be 7″ maximum and 4″ minimum, and stair tread depths are required to be 11″ minimum (780 CMR 1011.5.2).

3.9.12 Guards

Guards are required to be provided where open-sided walking surfaces are located more than 30 inches measured vertically to the floor or grade below at any point within 36 inches horizontally to the edge of the open side (780 CMR 1015.2).

3.9.13 Main Exit

Every building, room, or space used for assembly purposes with an occupant load of greater than 300 is required to be provided with a main entrance/exit (780 CMR 1030.2). The main exit is required to be of a width that accommodates one half of the total occupant load, but such capacity must not be less than the total required capacity of all means of egress leading to the exit. In assembly occupancies where there is no well-defined main entrance/exit, exits are permitted to be distributed around the perimeter of the building, provided that the total exit width furnishes not less than 100 percent of the width needed to accommodate the permitted occupant load.

3.9.14 Evacuation Maps

A suitably designed evacuation map placard, approved by the building official, is required to be provided on all floors of the building.

A minimum of one evacuation map is required per floor, with an additional map provided in all rooms used as a place of assembly. Said placard is required to be securely fastened to the building in a readily visible place, showing exiting paths from the floor (780 CMR 111.5.2).

3.9.15 Exit Signage

Exit and exit access doors are required to be marked by an approved exit sign readily visible from any direction of egress travel (780 CMR 1013.1). The path of egress travel to exits and within exits is required to be marked by readily visible exit signs to clearly indicate the direction of egress travel where the exit or path of travel is not immediately visible. Exit signs within corridors and exit passageways are required to be placed such that no point is more than 100 feet or the listed viewing distance for the sign, whichever is less, from the nearest visible exit sign. Exit signs are not required in the following locations:

- In rooms or areas that require only one exit or exit access.
- Main exterior exit doors that are obviously and clearly identifiable as exits where approved by the building official.

3.9.16 Egress Illumination

The means of egress, including the exit discharge, is required to be illuminated at all times the building served by the means of egress is occupied (780 CMR 1008.1). Generally, the illumination level is not permitted to be less than 1 foot-candle at the walking surface. Stairways are required to be illuminated at a minimum of 10 foot-candles when stair is in use (780 CMR 1008.2).

In the event of power supply failure, an emergency electrical system is required to automatically illuminate all of the following areas (780 CMR 1008.3):

- Aisles and unenclosed egress stairways in rooms and spaces that require two or more means of egress.
- Corridors, interior exit stairways, and exit passageways.
- Interior exit access stairways and ramps
- Exterior egress components at other than the level of exit discharge until exit discharge is accomplished.
- Exterior landings for exit discharge doorways.

The emergency power system is required to provide power for a duration of not less than 90 minutes and is required to consist of storage batteries, unit equipment, or an on-site generator (780 CMR 1008.3.4). The initial illumination is required to be an average of 1 foot-candle and a minimum at any point of 0.1 foot-candle measured along the path of egress at the floor level. Illumination levels are permitted to decline to 0.6 foot-candle average and a minimum of 0.06 foot-candle at the end of the emergency lighting time duration (780 CMR 1008.3.5).

3.10 Fire Department Access

Fire department access roads are required at the property and the design of the access roads are required to comply with the following:

- Have an unobstructed width of not less than 20 feet and a vertical clearance of not less than 13 feet 6 inches (527 CMR 1.00, 18.2.3.5.1.1).
- Have a minimum inside turning radius of at least 25 feet unless otherwise required by the fire official (527 CMR 1.00, 18.2.3.5.3.1)
- Any portion of an exterior wall of the first story of the building is not more than 250 feet from the access road via an approved route around the building, based on the building being fully sprinkler protection in accordance with NFPA 13 (527 CMR 1.00, 18.2.3.2.2.1).
- Extend to within 50 feet of at least one exterior door that can be opened from the outside and provided access to the interior of the building (527 CMR 1.00, 18.2.3.2.1).
- Have a gradient that does not exceed 10% (527 CMR 1.00, 18.2.3.5.6.1).
- Dead-ends in excess of 150 feet in length are provided with approved provisions for the fire apparatus to turn around (527 CMR 1.00, 18.2.3.5.4).

- Be capable of supporting the imposed loads of fire apparatus and provided with an all-weather driving surface (527 CMR 1.00, 18.2.2.1.1).
- When connecting to roadways, the curb cut is required to extend at least 2 feet beyond each edge of the fire lane (527 CMR 1.00, 18.2.3.5.3.3).
- Angle of approach and department for access roads are not permitted to exceed 1-foot drop within 20 feet or limits established by the AHJ based on employed apparatus (527 CMR 1.00, 18.2.3.5.6.2).
- When connecting to roadways, the curb cut is required to extend at least 2 feet beyond each edge of the fire lane (527 CMR 1.00, 18.2.3.5.3.3).
- Angle of approach and department for access roads are not permitted to exceed 1-foot drop within 20 feet or limits established by the AHJ based on employed apparatus (527 CMR 1.00, 18.2.3.5.6.2).

3.11 Accessibility

The new building is required to be designed in accordance with 521 CMR and the requirements of the 2010 Americans with Disabilities Act Accessibility Guidelines (ADA).

3.12 Plumbing Fixtures

248 CMR 10.00, *Uniform State Plumbing Code*, regulates the minimum number of plumbing fixtures. The requirements set forth in 248 CMR 10.10(15) Table 1 apply to plumbing system installation, alteration, or extension projects where a plumbing permit is required.

The program load for students is required to be determined by the seating capacity. The staff program load is based on the maximum number of staff on duty at any given time (248 CMR 10.10(15)(c)(12)). The program load of the assembly spaces are required to be determined based on the maximum number of seats in the space plus the maximum number of employees on duty at any one time (248 CMR 10.10(15)(c)(10)). The following table outlines the required plumbing fixture factors for occupancies in the building.

TABLE 16: PLUMBING FIXTURE FACTORS [1]

Use Group	**Toilets**		**Urinals**	**Lavatories Each Sex [2]**	
	Female	**Male**		**Female**	**Male**
K-12 Students	≤100: 1 per 25 >100: add 1 per 50	≤100: 1 per 25 >100: add 1 per 50	50% max. substitution	1 per 25	
K-12 Staff	1 per 20	1 per 25	33% max. substitution	1 per 20	
Meeting Hall/ Gymnasium	≤200: 1 per 25 201 – 500: 1 per 50 >500: add 1 per 100	≤200: 1 per 50 201 – 500: 1 per 100 >500: add 1 per 100	50% max. substitution	1 per 50	

1. Additionally, one drinking water station is required for each set of restrooms, and one mop sink is required at each Floor.
2. The lavatory factors applicable under the prior code are permitted to be used with a variance, which the plumbing board staff will approve without a formal hearing (Special Delegation of Authority to Expedite Variance for the Reduction in Required Lavatories, Adopted June 18, 2024).

The following tables detail the plumbing fixture calculations during normal school hours, and for events outside of normal operation hours based on nonsimultaneous use of the assembly spaces.

TABLE 17: PLUMBING FXITURE CALCULATIONS NORMAL HOURS

Classification	**Number of Occupants**	**Water Closets**		**Lavatories [1]**		**Drinking Water Stations**	**Mop Sink**
		Female	**Male**	**Female**	**Male**		
K-12 Students	610	8.10	8.10	5.08	5.08	1 per Each Set of Restrooms	1 per Floor
Total Required Fixtures		**9**	**9**	**6**	**6**	**5**	**2**
Total Provided Fixtures		**13**	**11**	**12**	**12**	**5**	**3**
K-12 Staff	100	2.50	2.00	2.50	2.50	N/A	1 per Floor
Total Required Fixtures		**2**	**2**	**2**	**2**	**0**	**2**
Total Provided Fixtures		**3**	**3**	**3**	**3**	**5**	**3**

1. The calculations for student lavatories are based on the lavatory factors applicable to Elementary School Students (1 per 60 occupants) under the prior plumbing code. Since the new lavatory factors require a total of 13 male and female student lavatories, the application of the old factors is necessary to demonstrate compliance. A variance request will be required for approval.

TABLE 18: PLUMBING FXITURE CALCULATIONS AFTER HOURS

Classification	**Number of Occupants**	**Water Closets**		**Lavatories**		**Drinking Water Stations**	**Mop Sink**
		Female	**Male**	**Female**	**Male**		
Meeting Hall/ Gymnasium (Gymnasium)	580	9.80	4.90	5.80	5.80	1 per Each Set of Restrooms	1 per Floor
Total Required Fixtures		**10**	**5**	**6**	**6**	**2**	**1**
Total Provided Fixtures		**12**	**12**	**8**	**8**	**3**	**1**
Meeting Hall (Cafetorium)	462	8.62	4.31	4.62	4.62	1 per Each Set of Restrooms	1 per Floor
Total Required Fixtures		**9**	**5**	**5**	**5**	**2**	**1**
Total Provided Fixtures		**12**	**12**	**8**	**8**	**3**	**1**

F: Geotechnical Report

LGCI
Lahlaf Geotechnical Consulting, Inc.

September 14, 2024

Ms. Katy Lillich, AIA, LEED AP, MCPPO
Arrowstreet
10 Post Office Square
Suite 700N
Boston, MA 02109
Phone: (617) 623-5555
Direct: (617) 666-7019
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Re: **Preliminary Geotechnical Report**
Proposed Neary Elementary School
Southborough, Massachusetts
LGCI Project No. 2404

Dear Ms. Lillich:

Lahlaf Geotechnical Consulting, Inc. (LGCI) has completed an additional preliminary geotechnical study for the proposed Neary Elementary School in Southborough, Massachusetts. We are submitting our preliminary geotechnical report electronically.

The soil samples from our explorations are currently stored at LGCI for further analysis, if requested. Unless notified otherwise, we will dispose of the soil samples after three (3) months.

Thank you for choosing LGCI as your geotechnical engineer.

Very truly yours,

Lahlaf Geotechnical Consulting, Inc.

Abdelmadjid M. Lahlaf, Ph.D., P.E.
Principal Engineer

LGCI
Lahlaf Geotechnical Consulting, Inc.

PRELIMINARY GEOTECHNICAL REPORT
PROPOSED NEARY ELEMENTARY SCHOOL
SOUTHBOROUGH, MASSACHUSETTS

LGCI Project No. 2404
September 14, 2024

Prepared for:

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PRELIMINARY GEOTECHNICAL REPORT
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September 14, 2024

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No. 39814

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1. PROJECT INFORMATION

1.1 Project Authorization

This geotechnical report presents the results of the preliminary subsurface explorations, and a geotechnical evaluation performed by Lahlaf Geotechnical Consulting, Inc. (LGCI) for the proposed Neary Elementary School in Southborough, Massachusetts. We performed our preliminary services in two (2) phases:

Our initial preliminary phase services were performed in general accordance with our proposal No. 23154-Rev. 2 dated December 27, 2023, revised on February 9, 2024. Ms. Katy Lillich of Arrowstreet authorized our services by signing our proposal on February 16, 2024.

Our additional preliminary phase services were performed in general accordance with our proposal No. 24078 dated July 22, 2024. Ms. Katy Lillich of Arrowstreet authorized our additional preliminary phase services by signing our proposal on July 30, 2024.

1.2 Purpose and Scope of Services

The purpose of our preliminary geotechnical services was to perform preliminary subsurface explorations at the site for the proposed Neary Elementary School, and to provide foundation design and construction recommendations. LGCI performed the following services:

- Coordinated our exploration locations with Arrowstreet.

- Marked the exploration locations at the site and notified Dig Safe Systems Inc. (Dig Safe) and the Town of Southborough for utility clearance.

- Engaged a drilling subcontractor for two (2) days to advance eight (8) soil borings at the site, including four (4) soil borings as part of our initial preliminary phase services, and four (4) soil borings as part of our additional preliminary phase services.

- Provided an LGCI geotechnical field representative at the site to coordinate and observe the borings, describe the soil samples, and prepare field logs.

- Submitted six (6) soil samples collected from the borings for laboratory testing, including four (4) soil samples as part of our initial preliminary phase services, and two (2) soil samples as part of our additional preliminary phase services.

- Prepared this preliminary geotechnical report containing the results of our preliminary subsurface explorations and our preliminary recommendations for foundation design and construction.

Following our previous preliminary explorations, LGCI prepared a preliminary geotechnical report dated May 1, 2024. The present report includes the results of our previous report and supersedes it.

Our scope does not include preparing specifications, reviewing contract documents, attending meetings, or providing construction services. LGCI would be pleased to perform these services when needed. Recommendations for stormwater management, erosion control, pavement design, site specific seismic and liquefaction analyses, pile analysis and design, slope stability analyses, FEMA 100-year flood elevation, historic uses of site, contaminated soil and groundwater treatment and disposal requirements and techniques, and cost or quantity estimates are not included in our scope of work.

LGCI's scope of services does not include an environmental assessment for the presence or absence of wetlands or analytical testing for hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site, or mold in the soil or in any structure at the site. Any statements regarding odors, colors, or unusual or suspicious items or conditions are strictly for the information of the client.

1.3 Site Description

Our understanding of the site is based on our field observations, our discussions with Arrowstreet, and on the following drawings:

- Drawings TP-1 to TP-5 titled: "Topographic Plan, Neary Elementary School, Southborough, MA (Worcester County)," (Existing Conditions Plan) prepared by Beals and Thomas, dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on September 3, 2024.

The site is located at 53 Parkerville Road in Southborough, Massachusetts as shown in Figure 1. The site is bordered by wooded land and private properties on the southern side, by Clifford Street and private properties on the western side, by wooded land and the existing Trottier Middle School on the northern side, and by Parkerville Road and private properties on its eastern side. The site is currently occupied by the existing school building, paved parking lots, athletic fields, including a baseball field, a soccer field, a practice field, tennis courts, and grass and landscaped areas. We understand that an existing leach field is present at the site. Based on the information provided to us by Arrowstreet, we understand that there may be a capped landfill within a portion of the site. We understand that the northern portion of the site is located within a flood zone.

Based on the Existing Conditions Plan, we understand that the existing grades at the site range between El. 262 feet near the northern portion of the site and El. 290 feet near the southern portion of the site. The existing grades vary across the site as describes below:

- Flood zone located to the north of the existing school – The elevations range between El. 262 feet near the northeastern corner of the site and El. 280 feet near the northwestern corner of the site.

- The existing tennis court – The elevations range between El. 271 feet and El. 272 feet.
- The existing baseball field north of the existing school – The elevations range between El. 270 feet and El. 273 feet.
- The existing soccer field east of the existing school – The elevations range between El. 268 feet and El. 269 feet.
- The existing parking lot east of the existing school – The elevations range between El. 267 feet and El. 272 feet.
- The existing parking lot located to the west of the existing school – The elevations range between El. 270 feet and El. 273 feet. The grades around the existing school range between El. 270 feet and El. 274 feet.

1.4 Project Description

Our understanding of the proposed construction is based on our conversations with Arrowstreet and on the following document:

- Drawing titled: "Building Footprint, Neary Elementary School, 53 Parkerville Rd., Southborough, MA 01772," (Building Layout) prepared by Arrowstreet, dated April 23, 2024, and provided to LGCI by Arrowstreet via e-mail on September 3, 2024.

We understand that the City of Southborough has engaged Arrowstreet to design the new Neary Elementary School. Based on the Building Layout, we understand that the proposed construction will consist of an irregular-shaped building located mostly within the footprint of the existing school building. We understand that the project is in the preliminary phases and the footprint, number of stories, finished floor elevation (FFE) of the proposed building, and the proposed exterior grades have not been established at the time of this preliminary geotechnical report. We understand that the existing building will be demolished to allow for the construction of the proposed building.

1.5 Elevation Datum

We understand that the elevations provided in the Existing Conditions Plan are referenced with respect to the North American Vertical Datum of 1988 (NAVD88). Elevations are in feet.

2. SITE AND SUBSURFACE CONDITIONS

2.1 Surficial Geology

LGCI reviewed a surficial geologic map titled: "Surficial Materials Map of the Marlborough Quadrangle, Massachusetts," prepared by Stone, J.R., and Stone, B.D., Scientific Investigation Map 3402, Quadrangle 92 – Marlborough, 2018.

The surficial geologic map of the site indicates that the natural soils in the general vicinity of the site consist of coarse deposits and swamp deposits.

The coarse deposits consist of Sand Deposits, Sand and Gravel Deposits, and Gravel Deposits as described below.

Sand Deposits – The sand deposits are comprised mostly of fine to coarse sand. Coarser layers may contain up to 25 percent gravel. Finer layers may contain very fine sand, silt, and clay.

Sand and Gravel Deposits – The sand and gravel deposits occur as a mixture of gravel and sand within individual layers and as alternating layers of sand and gravel. The sand and gravel layers range between 25 to 50 percent gravel and 50 to 75 percent sand.

Gravel Deposits – The gravel deposits are comprised of at least 50 percent gravel, cobbles, and boulders. Sand occurs within gravel beds and as separate layers within the gravel.

The swamp deposits are described as organic muck and peat that contain minor amounts of sand, silt, and clay, are stratified and are poorly sorted, and occur in swamps and freshwater marshes, in kettle depressions, or in poorly drained areas.

The Surficial Geologic Map is shown in Figure 2.

2.2 LGCI's Explorations

2.2.1 General

LGCI coordinated our exploration locations with Arrowstreet and marked the exploration locations in the field. LGCI notified Dig Safe and the Town of Southborough for utility clearance prior to starting our explorations at the site.

Unless notified otherwise, we will dispose of the soil samples obtained during our explorations after three (3) months.

2.2.2 LGCI's Soil Borings

As part of our initial preliminary explorations, LGCI engaged Soil X Corp. (Soil X) of Leominster, Massachusetts to advance four (4) soil borings (B-1 to B-4) at the site on April

15, 2024. The borings were advanced with a Diedrich D-70 Turbo ATV drill rig using 4-¼-inch inner-diameter hollow stem augers. The borings extended to depths ranging between 15.0 and 21.3 feet beneath the ground surface. Upon completion, the boreholes were backfilled with the drill cuttings.

As part of our additional preliminary explorations, LGCI engaged Soil X to advance an additional four (4) soil borings (B-101 to B-104) at the site on August 22, 2024. The borings were advanced with a Diedrich D-70 Turbo ATV drill rig using 4-¼-inch inner-diameter hollow stem augers. The borings extended to depths ranging between 19.3 and 20.8 feet beneath the ground surface. Upon completion, the boreholes were backfilled with the drill cuttings, sand, gravel, and concrete (as noted in the boring logs). The ground surface was restored with cold patch asphalt in paved areas.

Soil X performed Standard Penetration Tests (SPT) and obtained split spoon samples with an automatic hammer at typical depth intervals of 2 feet or 5 feet as noted on the boring logs in general accordance with ASTM D-1586.

An LGCI geotechnical field representative observed and logged the borings in the field.

2.2.3 Exploration Logs and Locations

The boring locations are shown in Figure 3. Appendix A contains LGCI's boring logs and Table 1 includes a summary of LGCI's borings.

2.3 Subsurface Conditions

The subsurface description in this report is based on a limited number of borings and is intended to highlight the major soil strata encountered during our explorations. The subsurface conditions are known only at the actual boring locations. Variations may occur and should be expected between boring locations. The boring logs represent conditions that we observed at the time of our explorations and were edited, as appropriate, based on the results of the laboratory test data and inspection of the soil samples in the laboratory. The strata boundaries shown in our boring logs are based on our interpretations and the actual transitions may be gradual. Graphic soil symbols are for illustration only.

The soil strata encountered in LGCI's borings were as follows, starting at the ground surface.

Topsoil – A layer of surficial organic topsoil was encountered at the ground surface in all borings, except in borings B-101 and B-102. The thickness of the topsoil ranged between 0.8 and 2.0 feet.

Asphalt – A layer of surficial asphalt was encountered at the ground surface in borings B-101 and B-102. The thickness of the asphalt ranged between 0.5 and 0.8 feet.

<u>Subsoil</u> – A layer of subsoil was encountered beneath the topsoil in boring B-4. The subsoil extended to a depth of 2 feet beneath the ground surface. The sample in this layer was described as poorly graded sand with silt. The fines content in the subsoil ranged between 10 and 15 percent, and the gravel content ranged between 10 and 15 percent.

The SPT N-value in this layer was 16 blows per foot (bpf), indicating medium dense material. Please note that the high SPT N-values recorded in the subsoil may be due to obstructions such as cobbles and boulders present in the subsoil and may not represent the true density of the subsoil.

<u>Fill</u> – A layer of fill was encountered beneath the topsoil and asphalt in all borings except in borings B-3 and B-4. The fill extended to depths ranging between 3.0 and 10.5 feet beneath the ground surface. The samples in this layer were mostly described as silty sand, poorly graded sand, and well graded sand. One (1) sample was described as buried organic soil, one (1) sample was described as poorly graded gravel, and one (1) sample was described as well graded gravel. The fines content in the fill ranged between 0 and 40 percent, and the gravel content ranged between 0 and 30 percent. When described as gravel, the sand content in the fill ranged between 30 and 35 percent. The fill contained traces of organic soil, wood, roots, and asphalt. One (1) sample in the fill contained traces of weathered rock.

The SPT N-values in this layer ranged between 3 blows per foot (bpf) and refusal, with most values lower than 30 bpf, indicating mostly loose to medium dense material. Please note that the high SPT N-values recorded in the fill may be due to obstructions such as cobbles and boulders present in the fill and may not represent the true density of the fill.

<u>Swamp Deposit</u> – A layer of swamp deposit was encountered beneath the fill in boring B-101. The swamp deposit extended to a depth of 11 feet beneath the ground surface. The samples in this layer were described as a silty sand. The fines content in the subsoil ranged between 30 and 55 percent, and the gravel content was approximately 0 percent. This layer contained traces of wood and organic soil.

The SPT N-values in this layer were 13 and 18 bpf, indicating medium dense material. Please note that the high SPT N-values recorded in the swamp deposit may be due to obstructions such as cobbles and boulders present in the swamp deposit and may not represent the true density of the swamp deposit.

<u>Sand and Gravel</u> – A layer of sand and gravel was encountered beneath the layer of topsoil, fill, subsoil, and swamp deposits in all borings. The sand and gravel extended to the termination depths in all the borings, except boring B-104, where the sand and gravel layer extended to a depth of 19 feet beneath the ground surface. The samples in this layer were described mostly as silty sand. Five (5) samples were described as poorly graded sand, five (5) samples were described as well graded sand, and one (1) sample was described as silty gravel. The fines content in this layer ranged between 5 and 40 percent, and the gravel content ranged between 0 and 40 percent. When described as a gravel, the sand content ranged between 25 and 30 percent. The sand and gravel contained traces of weathered rock.

The SPT N-values in this layer ranged between 9 bpf and refusal, with most values higher than 30 bpf, indicating mostly dense to very dense material. Please note that the high SPT N-values in the sand and gravel may be due to obstructions such as cobbles and boulders in the sand and gravel and may not represent the true density of the sand and gravel.

Weathered Rock – A layer of weathered was encountered within and beneath the sand and gravel layer in borings B-102 and B-104, respectively. The weathered rock was encountered in boring B-102 between depths of 9 and 16 feet beneath the ground surface, and it extended to the termination depth of boring B-104. The samples in this layer were described as silty sand. The fines content in this layer ranged between 20 and 25 percent, and the gravel content ranged between 20 and 35 percent.

The SPT N-values in this layer ranged between 9 bpf and refusal with most values greater than 15 bpf, indicating medium dense to very dense material. Please note that the high SPT N-values in the weathered rock may be due to obstructions such as cobbles and boulders in the weathered rock and may not represent the true density of the weathered rock.

2.4 Groundwater

Groundwater was encountered in all borings in the initial preliminary explorations on April 15, 2024, at depths ranging between 2.0 feet and 10.0 feet beneath the ground surface; and groundwater was encountered in all borings in the additional preliminary explorations on August 22, 2024, at depths ranging between 0.0 feet and 16.0 feet beneath the ground surface as shown in Table 1 and in the boring logs.

The groundwater information reported herein is based on observations made during or shortly after the completion of drilling. In addition, groundwater was Therefore, the reported groundwater levels may not represent the actual groundwater conditions, as additional time may be required for the groundwater levels to stabilize. The groundwater information presented in this report only represents the conditions encountered at the time and location of the explorations. Seasonal fluctuation should be anticipated.

2.5 Laboratory Test Data

LGCI submitted six (6) soil samples collected from the borings for grain-size analysis. The results of the grain-size analyses are provided in the test data sheets included in Appendix B and are summarized in the table below:

Grain-Size Analysis Test Results

Boring No.	Sample No.	Stratum	Sample Depth (ft.)	Percent Gravel	Percent Sand	Percent Fines
B-1	S2	Fill	2 - 4	19.8	43.2	37.0
B-2	S3	Fill	4 – 6	20.9	48.8	30.3
B-3	S2 Bot. 13”	Native Soil	2 – 4	37.6	54.0	8.4
B-4	S2	Native Soil	2 – 4	34.5	50.3	15.2
B-102	S2	Native Soil	3 – 5	37.9	53.7	8.4
B-104	S2	Fill	2 – 4	15.9	78	6.1

3. EVALUATION AND RECOMMENDATIONS

3.1 General

Based on our understanding of the proposed construction, our observation of our borings, and the results of our laboratory testing, there are a few issues that we would like to highlight for consideration and discussion.

3.1.1 Surficial asphalt, Topsoil, Subsoil, Existing Fill, and Swamp Deposits

- Asphalt, surficial topsoil, subsoil, existing fill, and swamp deposits were encountered in the borings. These materials are not suitable to support foundations.

- The topsoil should be removed from within the entire construction area, including the proposed building footprint and the paved areas.

- The subsoil and swamp deposits should be entirely removed from within the proposed building footprint. Furthermore, the existing fill was observed to be variable in composition and density. In addition, the existing fill contained traces of organic soil, wood, roots, and asphalt. Existing fill that was not placed with strict moisture, density, and gradation control presents risk of unpredictable settlement that may result in poor performance of floor slabs and foundations. Due to these risks, the existing fill should be entirely removed from within the proposed building footprint and replaced with Structural Fill. We anticipate that the removal will extend up to depths of about 11 feet. The removal may extend to greater depths at locations not explored by LGCI. Laterally, the removal should extend beyond the proposed building footprint a distance equal to the distance between the bottom of the proposed footings and the top of the natural sand and gravel, or 5 feet, whichever is greater.

- LGCI considered the alternative option of improving the existing fill and swamp deposits with aggregate piers (APs) or rigid inclusions (RIs). However, this option would not be viable where the existing fill is shallower than 6 feet. We recommend preparing the current documents assuming the “remove and replace” option. LGCI will further evaluate the ground improvement option by means of APs or RIs after additional explorations are performed at the site. The remainder of the report was prepared assuming the “remove and replace” option.

- The subgrade of footings should be prepared in accordance with the recommendations in Section 4.1.

- Within paved areas, the existing fill and subsoil should be removed to the top of the natural sand and gravel or to a depth of 18 inches beneath the bottom of the proposed pavement, whichever occurs first. Where organic soil is exposed, the organic soil should be removed. The existing fill and subsoil deeper than 18 inches beneath the bottom of the proposed pavement can remain in place provided these materials are firm and unyielding following proofrolling as described in Section 4.1.

- If the swamp deposits are encountered at shallow depths, they should be improved following the recommendation above after removing the top 24 inches beneath the bottom of the proposed pavement.

3.1.2 Shallow Footings and Slabs-on-Grade

Based on the results of the borings, the subsurface conditions are suitable to support shallow spread and continuous footings bearing on Structural Fill placed directly on top of the sand and gravel layer after entirely removing the topsoil, subsoil, the existing fill, and the swamp deposits. The proposed slabs may be designed as slabs-on-grade. Our recommendation for net allowable bearing capacity in the sand and gravel is presented in Section 3.2.1. Our recommendations for slabs-on-grade are presented in Section 3.3. Our recommendations for lateral pressures for the proposed basement walls and other retaining walls, if any, are presented in Section 3.5. Section 4.1 provides recommendations for preparation of subgrades.

3.1.3 Additional Explorations

We recommend performing additional explorations at the site. We recommend performing soil borings and test pits. We also recommend installing at least two (2) groundwater observation wells at the site. LGCI will provide a proposal for the additional services after the proposed building layout, size, and locations are established.

3.2 Foundation Recommendations

3.2.1 Footing Design

- We recommend entirely removing the surficial topsoil, the subsoil, the existing fill, and swamp deposits from within the proposed building footprint as described in Section 3.1.1.

- We recommend supporting the proposed building on spread footings bearing on Structural Fill placed directly on the natural sand and gravel.

- We recommend designing the proposed footings using a net allowable bearing pressure of 5 kips per square foot (ksf). We recommend that the footings bear on a minimum of 12 inches of Structural Fill placed directly on top of the natural sand and gravel or on weathered rock. The Structural Fill should extend at least 1 foot laterally beyond the limits of the footings.

- Footing subgrades should be prepared in accordance with the recommendations in Section 4.1.

- Foundations should be designed in accordance with The Commonwealth of Massachusetts State Building Code 780 CMR, Ninth Edition (MSBC 9th Edition).

- Exterior footings and footings in unheated areas should be placed at a minimum depth of 4 feet below the final exterior grade to provide adequate frost protection. Interior footings in heated areas may be designed and constructed at a minimum depth of 2 feet below finished floor grades.

- Wall footings should be designed and constructed with continuous, longitudinal steel reinforcement for greater bending strength to span across small areas of loose or soft soils that may go undetected during construction.

- A representative of LGCI should be engaged to observe that the subgrade has been prepared in accordance with our recommendations.

3.2.2 Settlement Estimates

Based on our experience with similar soils and designs using a net allowable bearing pressure of 5 ksf, we anticipate that the total settlement will be approximately 1 inch, and that the differential settlement of the footings will be 3/4 inch or less over a distance of 25 feet. We believe that total and differential settlements of this magnitude are tolerable for a similar structure. However, the tolerance of the proposed structure to the predicted total and differential settlements should be assessed by the structural engineer.

3.3 Concrete Slab Considerations

3.3.1 Slabs-on-Grade

- Floor slabs should be constructed as a slabs-on-grade bearing on a minimum of 12 inches of Structural Fill placed directly on top of the sand and gravel. The subgrade of the slabs should be prepared as described in Section 4.1.

- To reduce the potential for dampness in the proposed floor slab, the project architect may consider placing a vapor barrier beneath the floor slab. The vapor barrier should be protected from puncture during the placement of the proposed slab reinforcement.

- For the design of the floor slab bearing on the materials described above, we recommend using a modulus of subgrade reaction, k_{s1}, of 100 tons per cubic foot (tcf). Please note that the values of k_{s1} are for a 1 x 1 square foot area. These values should be adjusted for larger areas using the following expression:

$$\text{Modulus of Subgrade Reaction } (k_s) = k_{s1} * \left(\frac{B+1}{2B}\right)^2$$

where:

k_s = Coefficient of vertical subgrade reaction for loaded area;
k_{s1} = Coefficient of vertical subgrade reaction for a 1 x 1 square foot area; and
B = Width of area loaded, in feet.

Please note that cracking of slabs-on-grade can occur as a result of heaving or compression of the underlying soil, but also as a result of concrete curing stresses. To reduce the potential for cracking, the precautions listed below should be closely followed during the construction of all slabs-on-grade:

- Construction joints should be provided between the floor slab and the walls and columns in accordance with the American Concrete Institute (ACI) requirements, or other applicable code.

- The backfill in interior utility trenches should be properly compacted.

- In order for the movement of exterior slabs not to be transmitted to foundations or superstructures, exterior slabs, such as approach slabs and sidewalks, should be isolated from the superstructure.

3.3.2 Under-slab Drains and Waterproofing

The finished floor elevation (FFE) of the proposed ground floor was not provided to us. LGCI will make a recommendation about the need for an under-slab drainage system after additional explorations are performed, and the groundwater observation wells monitored; and after the proposed FFE is established.

3.4 Seismic Design

Based on the SPT N-values from the borings, we estimate that the seismic criteria for the site are as follows:

- Site Class: D
- Spectral Response Acceleration at short period (Ss): 0.191g
- Spectral Response Acceleration at 1 sec. (S_1): 0.067g
- Site Coefficient Fa (Table 1613.5.3(1)): 1.6
- Site Coefficient Fv (Table 1613.5.3(2): 2.4
- Adjusted spectral response S_{MS}: 0.306g
- Adjusted spectral response S_{M1}: 0.161g

Based on the SPT data from the borings, the site soils are not susceptible to liquefaction.

3.5 Lateral Pressures for Wall Design

3.5.1 Lateral Earth Pressures

Lateral earth pressures for the design of below-grade walls, and site retaining walls, if any, are provided below.

Coefficient of Active Earth Pressure, K_A:	0.31
Coefficient of At-Rest Earth Pressure, K_o:	0.47
Coefficient of Passive Earth Pressure, K_p:	3.25
Total Unit Weight γ:	125 pcf

Note: The values in the table are based on a friction angle for the backfill of 32 degrees and neglecting friction between the backfill and the wall. The design active and passive coefficients are based on horizontal surfaces (non-sloping backfill) on both the active and passive sides, and on a vertical wall face.

- Exterior walls of below-ground spaces and other retaining walls braced at the top to restrain movement/rotation, should be designed using the “at-rest” pressure coefficient.

- We recommend placing free-draining material within the 3 feet immediately behind retaining walls.

- We recommend providing weep holes at the bottom of site retaining walls, including temporary SOE systems, to promote drainage where possible. Alternatively, a pipe should be placed at the base of the wall to collect the water. Groundwater collected by the wall drains should be discharged into a lower area if gravity flow is possible.

- Passive earth pressures should only be used at the toe of the wall where special measures or provisions are taken to prevent the disturbance or future removal of the soil on the passive side of the wall, or in areas where the wall design includes a key. In any case, the passive pressures should be neglected in the top 4 feet.

- Where a permanent vertical uniform load will be applied to the active side immediately adjacent to the wall, a horizontal surcharge load equal to half of the uniform vertical load should be applied over the height of the wall. At a minimum, a temporary lateral construction surcharge load of 100 pounds per square foot (psf) should be applied uniformly over the height of the wall.

- We recommend using an ultimate friction factor of 0.5 between the weathered rock and the bottom of the wall. Below-grade walls should be designed for minimum factors of safety of 1.5 for sliding and 2.0 for overturning.

3.5.2 Seismic Pressures

In accordance with the Massachusetts State Building Code, 9th Edition (MSBC 9th Edition), Section 1610, a lateral earthquake force equal to $0.100*(S_s)*(F_a)*\gamma*H^2$ should be included in the design of the walls (for horizontal backfill), where S_s is the maximum considered earthquake spectral response acceleration (defined in Section 3.4), F_a is the site coefficient (defined in Section 3.4), γ is the total unit weight of the soil backfill, and H is the height of the wall.

The earthquake force should be distributed as an inverted triangle over the height of the wall. In accordance with MSBC 9th Edition, Section 1610.2, a load factor of 1.43 should be applied to the earthquake force for wall strength design.

Temporary surcharges should not be included when designing for earthquake loads. Surcharge loads applied for extended periods of time should be included in the total static lateral soil pressure, and their earthquake lateral force should be computed and added to the force determined above.

3.5.3 Perimeter Drains

- We recommend that free-draining material be placed within 3 feet of the exterior of walls of below-ground spaces, if any. To reduce the potential for dampness in below-ground spaces, proposed below-ground walls should be damp-proofed.

- We recommend that drains be provided behind the exterior of walls of below-ground spaces. The drains should consist of 4-inch perforated PVC pipes installed with the slots facing down. Perimeter drains should be installed at the bottom of the wall in 18 inches of crushed stone wrapped in a geotextile for separation and filtration.

- To the extent possible, groundwater collected by the wall drains should be discharged in a lower area if gravity flow is possible. In any case, the groundwater collected by the wall drains should be discharged in accordance with municipal, state, and other applicable standards.

3.6 Parking Lots, Driveways, and Sidewalks

3.6.1 General

The subsurface conditions encountered at the site are generally suitable to support the proposed driveways, parking lots, and sidewalks after preparation of the subgrade as described in Section 4.1.

- We recommend entirely removing the topsoil from within the footprint of the proposed driveways and parking lots.

- The existing fill, subsoil, and swamp deposits should be improved in accordance with the recommendations in Section 4.1.

- Cobbles and boulders should be removed to at least 18 inches below the bottom of the pavement.

3.6.2 Sidewalks

- Sidewalks should be placed on a minimum of 12 inches of Structural Fill with less than 5 percent fines.

- To reduce the potential for heave caused by surface water penetrating under the sidewalk, the joints between sidewalk concrete sections should be sealed with a waterproof compound. The sidewalks should be sloped away from the building or other vertical surfaces to promote flow of water. To the extent possible, roof leaders should not discharge onto sidewalk surfaces.

3.6.3 Pavement Sections

A typical, minimum, standard-duty pavement section that could be used for parking areas is as follows:

1.5" Asphalt "Top Course"
2.0" Asphalt "Base Course"
8" Processed Gravel for Sub-Base (MassDOT M1.03.1)

A typical, minimum, heavy-duty pavement section that could be used for areas of heavy truck traffic is as follows:

2.0" Asphalt "Top Course"
2.5" Asphalt "Base Course"
12" Processed Gravel for Sub-Base (MassDOT M1.03.1)

The pavement sections shown above represent minimum thicknesses representative of typical local construction practices for similar use. Periodic maintenance should be anticipated.

Pavement material types and construction procedures should conform to specifications of the "Standard Specifications for Highways and Bridges," prepared by the Commonwealth of Massachusetts Department of Transportation dated 2023.

Areas to receive relatively highly concentrated, sustained loads such as dumpsters, loading areas, and storage bins are typically installed over a rigid pavement section to distribute concentrated loads and reduce the possibility of high stress concentrations on the subgrade.

Typical rigid pavement sections consist of 6 inches of concrete placed over a minimum of 12 inches of subbase material.

3.7 Underground Utilities

Boulders at the bottom of utility trenches should be removed to at least 12 inches below the pipe invert and the resulting excavation should be backfilled with suitable backfill. Utilities should be placed on suitable bedding material in accordance with the manufacturer's recommendations. "Cushion" material should be placed, by hand, above the utility pipe in maximum 6-inch lifts. The lift should be compacted by hand to avoid damage to the utility. Where the bedding/cushion material consists of crushed stone, it should be wrapped in a geotextile fabric.

Compaction of fill in utility trenches should be in accordance with our recommendations in Section 4.3. To reduce the potential for damage to utilities, placement and compaction of fill immediately above the utilities should be performed in accordance with the manufacturer's recommendations.

4. CONSTRUCTION CONSIDERATIONS

4.1 Subgrade Preparation

- Asphalt, topsoil, organic materials, existing fill, buried organic soil, buried subsoil, swamp deposits, abandoned utilities, buried foundations, and other below-ground structures should be entirely removed from within the footprints of the proposed buildings and site structures, including site retaining walls, and exterior stairs, if any, before the start of foundation work.

- Tree stumps, root balls, and roots larger than ½ inch in diameter should be removed and the cavities filled with suitable material and compacted per Section 4.3 of this report.

- Cobbles and boulders should be removed at least 6 inches from beneath footings and 18 inches beneath the bottom of slabs and paved areas. The resulting excavations should be backfilled with compacted Structural Fill under the building and with Ordinary Fill under the subbase of paved areas.

- The bottom of the excavation resulting from the removal of the existing fill and subsoil, or natural soil should be compacted with a dynamic vibratory compactor imparting a minimum of 40 kips of force to the subgrade.

- The base of the footing excavations in granular soil should be compacted with a dynamic vibratory compactor weighing at least 200 pounds and imparting a minimum of 4 kips of force to the subgrade.

- After the surficial existing fill and subsoil are removed to a depth of 18 inches and the swamp deposits, if any are removed to a depth of 24 inches beneath the bottom of the proposed pavement and within walkways in accordance with the recommendations in Section 3.1, the exposed existing fill and subsoil deeper than 18 inches and the swamp deposits deeper than 24 inches beneath the bottom of the proposed pavement should be improved by compacting the exposed surface with at least six (6) passes of a vibratory roller compactor imparting a dynamic effort of at least 40 kips. Where soft zones of soil are observed, the soft soil should be removed, and the grade should be restored using Ordinary Fill to the bottom of the proposed subbase layer. If pumping of the existing fill deeper than 18 inches beneath the bottom of the proposed pavement is observed, the soft and/or pumping material should be removed and replaced.

- Fill placed within the footprint of the proposed buildings should meet the gradation and compaction requirements of Structural Fill, shown in Section 4.3.1.

- Fill placed under the subbase of paved areas should meet the gradation and compaction requirements of Ordinary Fill, shown in Section 4.3.2.

- Fill placed in the top 12 inches beneath sidewalks should consist of Structural Fill with less than 5 percent fines.

- Loose or soft soils identified during the compaction of the footing or floor slab subgrades should be excavated to a suitable bearing stratum, as determined by the representative of LGCI. Grades should be restored by backfilling with Structural Fill or crushed stone.

- When crushed stone is required in the drawings or is used for the convenience of the contractor, it should be wrapped in a geotextile fabric for separation except where introduction of the geotextile fabric promotes sliding. A geotextile fabric should not be placed between the bottoms of the footings and the crushed stone.

- An LGCI representative should observe the exposed subgrades prior to fill and concrete placement to verify that the exposed bearing materials are suitable for the design soil bearing pressure. If soft or loose pockets are encountered in the footing excavations, the soft or loose materials should be removed and the bottom of the footing should be placed at a lower elevation on firm soil, or the resulting excavation should be backfilled with Structural Fill, or crushed stone wrapped in a filter fabric.

4.2 Subgrade Protection

The onsite fill and natural soils are frost susceptible. If construction takes place during freezing weather, special measures should be taken to prevent the subgrade from freezing. Such measures should include the use of heat blankets or excavating the final 6 inches of soil just before pouring the concrete. Footings should be backfilled as soon as possible after footing construction. Soil used as backfill should be free of frozen material, as should the ground on which it is placed. Filling operations should be halted during freezing weather.

Materials with high fines contents are typically difficult to handle when wet, as they are sensitive to moisture content variations. Subgrade support capacities may deteriorate when such soils become wet and/or disturbed. The contractor should keep exposed subgrades properly drained and free of ponded water. Subgrades should be protected from machine and foot traffic to reduce disturbance.

4.3 Fill Materials

Structural Fill and Ordinary Fill should consist of inert, hard, durable sand and gravel free from organic matter, clay, surface coatings, and deleterious materials, and should conform to the gradation requirements shown below.

4.3.1 Structural Fill

The Structural Fill should have a plasticity index of less than 6 and should meet the gradation requirements shown below. Structural Fill should be compacted in maximum 9-inch loose lifts to at least 95 percent of the Modified Proctor maximum dry density (ASTM

D1557), with moisture contents within ±2 percentage points of the optimum moisture content.

Sieve Size Percent	Passing by Weight
3 inches	100
1 ½ inch	80-100
½ inch	50-100
No. 4	30-85
No. 20	15-60
No. 60	5-35
No. 200*	0-10

* 0 – 5 for the top 12 inches under sidewalks, exterior slabs, pads, and walkways

4.3.2 Ordinary Fill

Ordinary Fill should have a plasticity index of less than 6 and should meet the gradation requirements shown below. Ordinary Fill should be compacted in maximum 9-inch loose lifts to at least 95 percent of the Modified Proctor maximum dry density (ASTM D1557), with moisture contents within ±2 percentage points of the optimum moisture content.

Sieve Size Percent	Passing by Weight
6 inches	100
1 inch	50-100
No. 4	20-100
No. 20	10-70
No. 60	5-45
No. 200	0-20

4.4 Reuse of Onsite Materials

Based on our field observations and the results of the grain-size analyses, most of the onsite fill is too silty and does not meet the gradation requirements for Ordinary Fill or Structural Fill. The existing fill can be used in landscaped areas. The natural sand and gravel may be used as Ordinary Fill.

The contractor should avoid mixing the reusable soils with fine-grained and/or organic soils. The soils to be reused should be excavated and stockpiled separately for compliance testing. Soils with 20 percent or greater fines contents are generally very sensitive to moisture content variations and are susceptible to frost. Such soils are very difficult to compact at moisture contents that are much higher or much lower than the optimum moisture content determined from the laboratory compaction test. Therefore, strict moisture control should be implemented during the compaction of onsite soils with fines contents of 20 percent or greater. The contractor should be prepared to remove and replace such soils if pumping occurs.

Suitable imported material and amended/improved onsite materials should be stockpiled separately from unimproved onsite soils.

Materials to be used as fill should first be tested for compliance with the applicable gradation specifications.

4.5 Groundwater Control Procedures

Based on the groundwater levels measured in our borings, we anticipate that groundwater control procedures will be needed during construction. We anticipate that filtered deep sump pumps and sump pumps installed in a series of pits located at least 3 feet below the bottom of planned excavations may be sufficient to handle groundwater and surface runoff that may enter the excavation during wet weather. The contractor should be prepared to use multiple sump pumps to maintain a dry excavation during the removal of the existing fill.

The contractor should be permitted to employ whatever commonly accepted means and practices are necessary to maintain the groundwater level below the bottom of the excavation and to maintain a dry excavation during wet weather. Groundwater levels should be maintained at a minimum of 1 foot below the bottom of the excavations during construction. The placement of reinforcing steel or concrete in standing water should not be permitted.

To reduce the potential for sinkholes developing over sump pump pits after the sump pumps are removed, the crushed stone placed in the sump pump pits should be wrapped in a geotextile fabric. Alternatively, the crushed stone should be entirely removed after the sump pump is no longer in use, and the sump pump pit should be restored with suitable backfill.

4.6 Temporary Excavations

All excavations to receive human traffic should be constructed in accordance with OSHA guidelines.

The site soils should generally be considered Type “C” and should have a maximum allowable slope of 1.5 Horizontal to 1 Vertical (1.5H:1V) for excavations less than 20 feet deep. Deeper excavations, if needed, should have shoring designed by a professional engineer.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain the stability of the excavation sides and bottom.

5. RECOMMENDATIONS FOR FUTURE WORK

We recommend engaging LGCI to perform the following services:

- Perform additional explorations at the site and update our geotechnical report.

- Prepare Earth Moving Specifications and review the geotechnical aspect of contract drawings.

- Review contractor submittals and Request for Information (RFIs);

- Provide a field representative during construction to observe the removal of the unsuitable soil, and to observe the subgrade of footings and slabs.

6. REPORT LIMITATIONS

Our analyses and recommendations are based on project information provided to us at the time of this report. If changes to the type, size, and location of the proposed structures or to the site grading are made, the recommendations contained in this report shall not be considered valid unless the changes are reviewed, and the conclusions and recommendations modified in writing by LGCI. LGCI cannot accept responsibility for designs based on our recommendations unless we are engaged to review the final plans and specifications to determine whether any changes in the project affect the validity of our recommendations, and whether our recommendations have been properly implemented in the design.

It is not part of our scope to perform a more detailed site history; therefore, we have not explored for or researched the locations of buried utilities or other structures in the area of the proposed construction. Our scope did not include environmental services or services related to moisture, mold, or other biological contaminants in or around the site.

The recommendations in this report are based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from anticipated conditions are encountered, it may be necessary to revise the recommendations in this report. We cannot accept responsibility for designs based on recommendations in this report unless we are engaged to 1) make site visits during construction to check that the subsurface conditions exposed during construction are in general conformance with our design assumptions and 2) ascertain that, in general, the work is being performed in compliance with the contract documents.

Our report has been prepared in accordance with generally accepted engineering practices and in accordance with the terms and conditions set forth in our agreement. No other warranty, expressed or implied, is made. This report has been prepared for the exclusive use of Arrowstreet for the Proposed Neary Elementary School in Southborough, Massachusetts as conceived at this time.

7. REFERENCES

In addition to the references included in the text of the report, we used the following references:

American Society of Civil Engineers, “Minimum Design Loads and Associated Criteria for Buildings and Other Structures,” ASCE/SEI 7-16, 2017.

The Commonwealth of Massachusetts (2017), “The Massachusetts State Building Code, Ninth (9th) Edition.”

The Department of Labor, Occupational Safety and Health Administration (1989), “Occupational Safety and Health Standards - Excavations; Final Rule,” 20 CFR Part 1926, Subpart P.

USGS Southborough, MA topographic map from http://mapserver.mytopo.com.

Table 1 - Summary of LGCI's Borings
Proposed Neary Elementary School
Southborough, MA
LGCI Project No. 2404

Boring No.	Ground Surface Elevation (ft.)[1]	Groundwater[2] Depth / El. (ft.)	Bottom of Topsoil / **Asphalt** Depth / El. (ft.)	Bottom of Fill / **Subsoil** Depth / El. (ft.)	Bottom of Swamp Deposits Depth / El. (ft.)	Bottom of Sand and Gravel Depth / El. (ft.)	Bottom of Weathered Rock Depth / El. (ft.)	Bottom of Boring Depth / El. (ft.)
Preliminary Phase Explorations								
B-1	275.0	4.2 / **270.8**	1.0 / **274.0**	6.0 / **269.0**	- / -	21.3 [3]/ **253.7**	- / -	21.3 / **253.7**
B-2	274.0	2.9 / **271.1**	1.0 / **273.0**	6.2 / **267.8**	- / -	15.0 [4]/ **259.0**	- / -	15.0 / **259.0**
B-3	277.0	2.0 / **275.0**	1.2 / **275.8**	- / -	- / -	17.0 [3]/ **260.0**	- / -	17.0 / **260.0**
B-4	276.0	3.1 / **272.9**	0.8 / **275.2**	**2.0** / **274.0**	- / -	19.0 [3]/ **257.0**	- / -	19.0 / **257.0**
Additional Preliminary Phase Explorations								
B-101	270.0	7.0 / **263.0**	**0.5** / **269.5**	7.0 / **263.0**	11.0 / **259.0**	20.8 [3]/ **249.2**	- / -	20.8 / **249.2**
B-102	272.0	5.0 / **267.0**	**0.8** / **271.2**	3.0 / **269.0**	- / -	19.4 [3,5]/ **252.6**	- / -	19.4 / **252.6**
B-103	273.0	4.0 / **269.0**	2.0 / **271.0**	6.0 / **267.0**	- / -	19.3 [3]/ **253.7**	- / -	19.3 / **253.7**
B-104	272.0	0.0 / **272.0**	0.8 / **271.2**	10.5 / **261.5**	- / -	19.0 / **253.0**	19.4 [6]/ **252.6**	19.4 / **252.6**

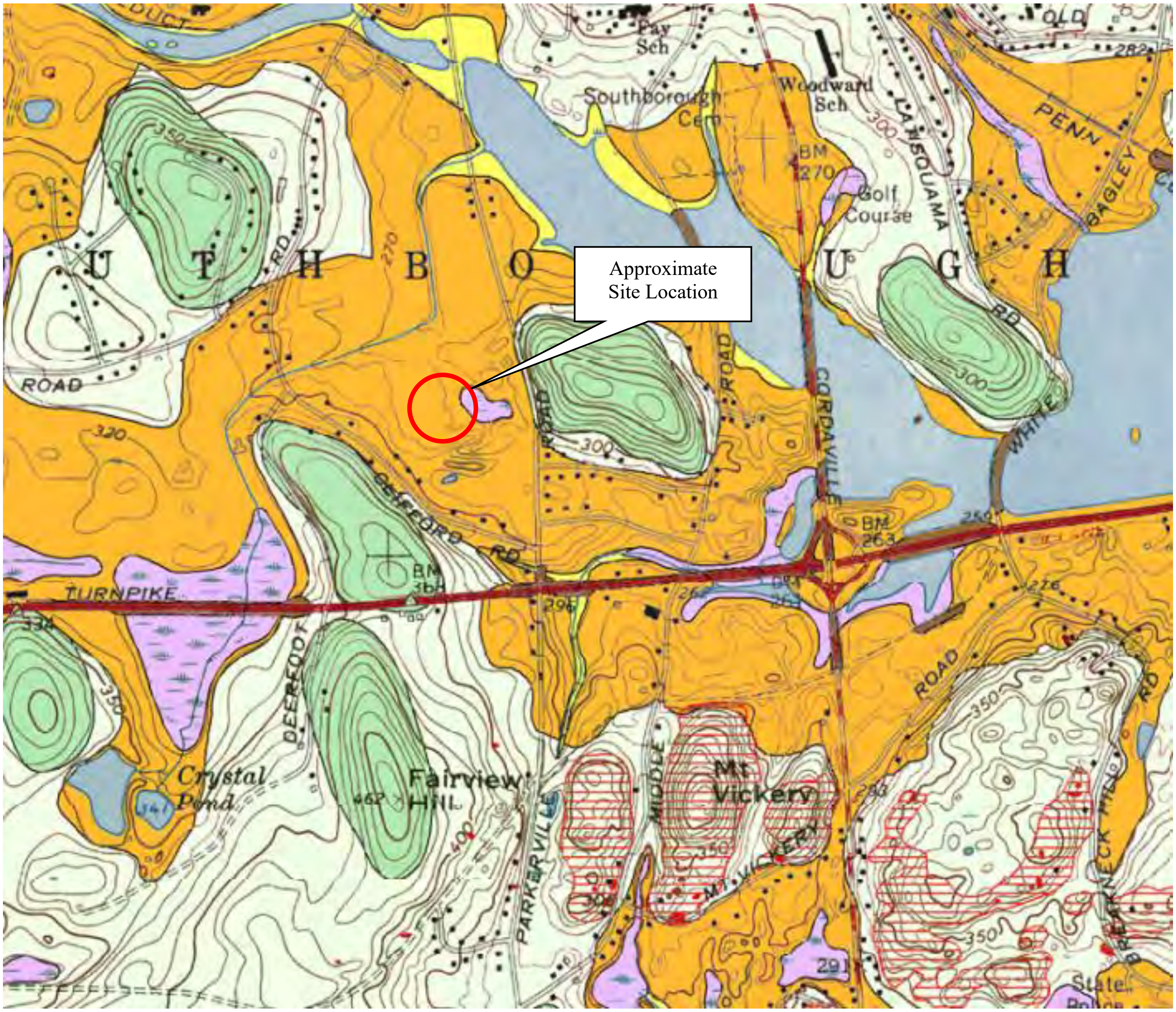
1. The ground surface elevation was interpolated to the nearest foot from drawings TP-4 and TP-5 (Sheets 4 and 5 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepetmber 3, 2024.
2. Groundwater was measured during drilling, at the end of drilling, after drilling, or based on sample moisture whichever is shallower.
3. Boring terminated in the sand and gravel layer.
4. Boring terminated on refusal in the sand and gravel layer.
5. A layer of weathered rock was encountered in boring B-102, between depths of 9 and 16 feet beneath the ground surface.
6. Boring terminated in the weathered rock layer.
7. "-" means groundwater or layer was not encountered.

Note: Figure based on USA Topo Maps of Southborough, MA *ngmdb.usgs.gov/topoview/viewer*

Client:	Project:	
Arrowstreet	Proposed Neary Elementary School	Figure 1 – Site Location Map

LGCI
Lahlaf Geotechnical Consulting, Inc.

Project Location:	LGCI Project No.:	Date:
Southborough, MA	2404	Sept. 2024



N

🟧 **Coarse deposits** consist of *gravel deposits*, *sand and gravel deposits*, and *sand deposits*, not differentiated in this report. *Gravel deposits* are composed of at least 50 percent gravel-size clasts; cobbles and boulders predominate; minor amounts of sand occur within gravel beds, and sand comprises a few separate layers. Gravel layers generally are poorly sorted, and bedding commonly is distorted and faulted due to postdepositional collapse related to melting of ice. *Sand and gravel deposits* occur as mixtures of gravel and sand within individual layers and as layers of sand alternating with layers of gravel. Sand and gravel layers generally range between 25 and 50 percent gravel particles and between 50 and 75 percent sand particles. Layers are well sorted to poorly sorted; bedding may be distorted and faulted due to postdepositional collapse. *Sand deposits* are composed mainly of very coarse to fine sand, commonly in well-sorted layers. Coarser layers may contain up to 25 percent gravel particles, generally granules and pebbles; finer layers may contain some very fine sand, silt, and clay

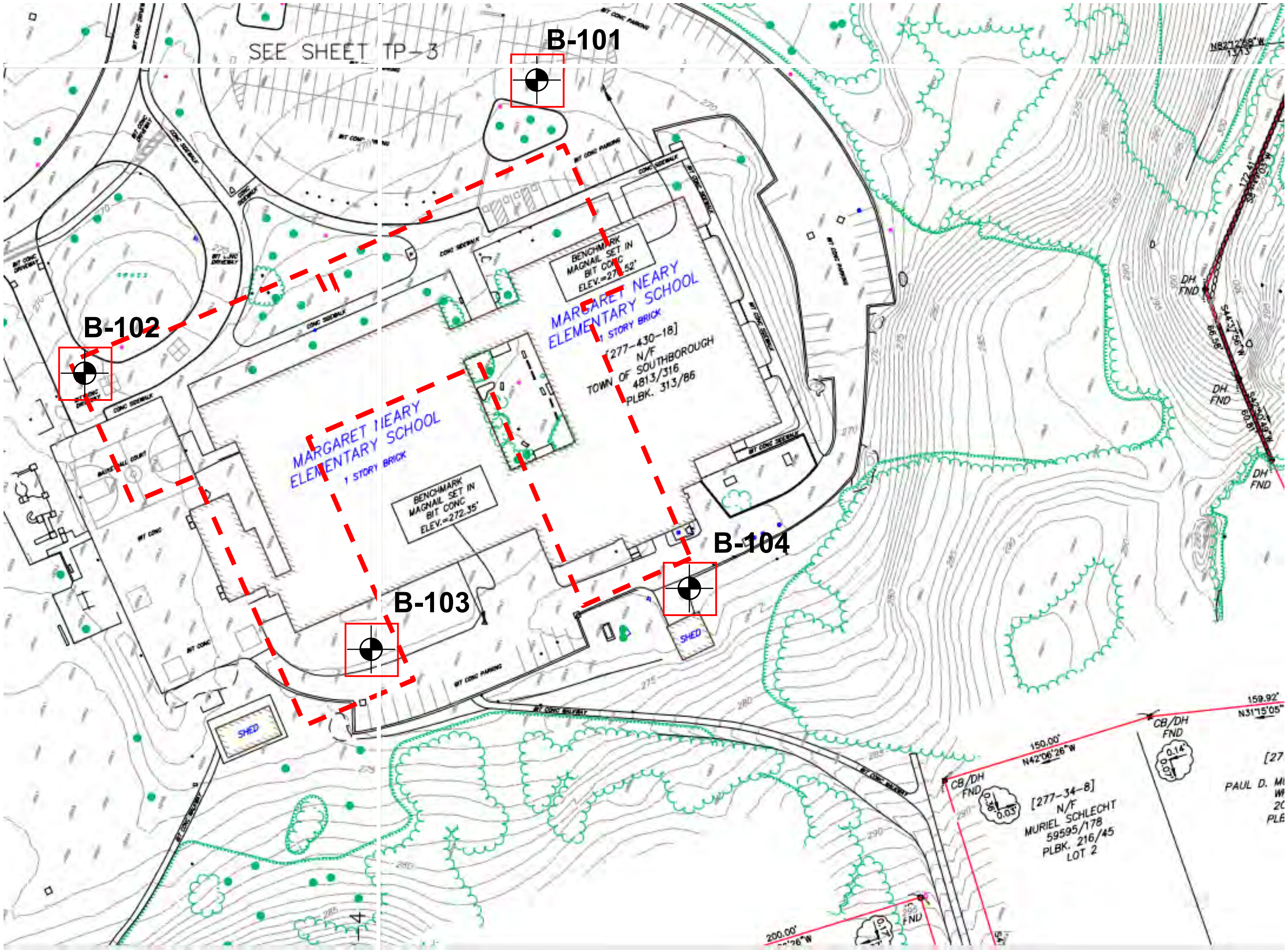
🟪 **Swamp deposits**—Organic muck and peat that contain minor amounts of sand, silt, and clay, are stratified and poorly sorted, and occur in swamps and freshwater marshes, in kettle depressions, or in poorly drained areas. Unit is shown only where deposits are estimated to be at least 3 ft thick; most deposits are less than 10 ft thick. Swamp deposits overlie glacial deposits or bedrock. They locally overlie glacial till even where they occur within thin glacial meltwater deposits

Note: Figure based on map titled: “Surficial Materials Map of the Marlborough Quadrangle, Massachusetts,” prepared by Stone J.R. and Stone, B.D., Scientific Investigation Map 3402 , Quadrangle 92 – Marlborough, 2018.

Client: Arrowstreet	Project: Proposed Neary Elementary School	Figure 2 – Surficial Geologic Map	
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Southborough, MA	LGCI Project No.: 2404	Date: Sept. 2024

Legend

⊕ Approximate location of borings advanced by Soil X Corporation of Leominster, MA on August 22, 2024, and observed by Lahlaf Geotechnical Consulting, Inc. (LGCI).



0 40 80 120

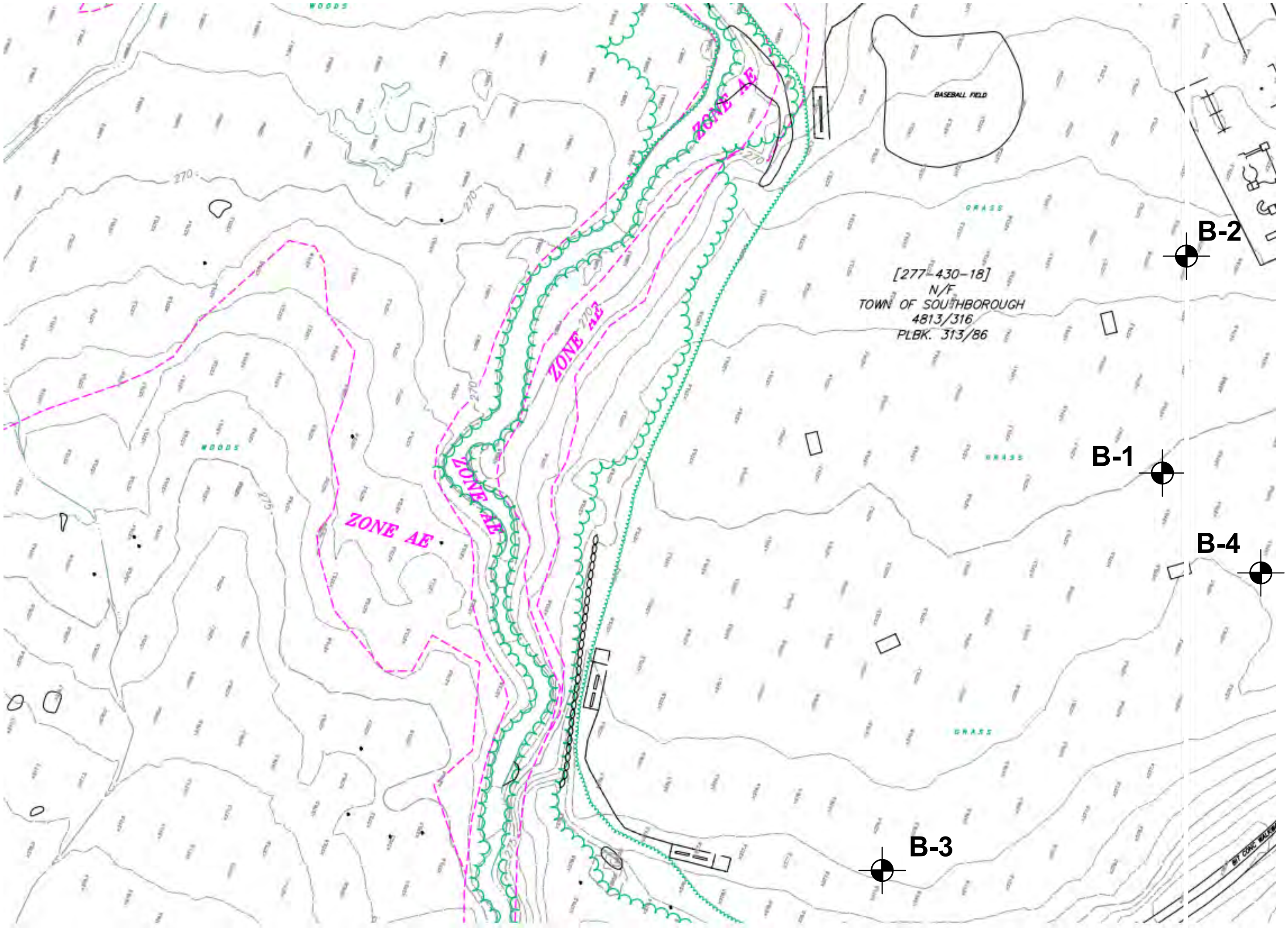
Approximate Scale (ft.)

Note:
Figure based on drawing TP-5 (Sheet 5 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on September 3, 2024.

Client:	Project:		
Arrowstreet	Proposed Neary Elementary School	Figure 3A – Boring Location Plan	
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Southborough, MA	LGCI Project No.: 2404	Date: Sept. 2024

Legend

⊕ Approximate location of borings advanced by Soil X Corporation of Leominster, MA on April 15, 2024, and observed by Lahlaf Geotechnical Consulting, Inc. (LGCI).



Approximate Scale (ft.)

Note:
Figure based on drawing TP-4 (Sheet 4 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on September 3, 2024.

Client:
Arrowstreet

Project:
Proposed Neary Elementary School

Figure 3B – Boring Location Plan

LGCI
Lahlaf Geotechnical Consulting, Inc.

Project Location:
Southborough, MA

LGCI Project No.:
2404

Date:
Sept. 2024

Appendix A – LGCI’s Boring Logs

Lahlaf Geotechnical Consulting, Inc.
100 Chelmsford Rd.
North Billerica, MA 01862
Telephone: 9783305912
Fax: 9783305056

BORING LOG

B-1

PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 4/15/24 **DATE COMPLETED:** 4/15/24
BORING LOCATION: Near center of site
COORDINATES: NA
SURFACE El.: 275 ft. (see note 1) **TOTAL DEPTH:** 21.3 ft.
WEATHER: 40's / Sunny
GROUNDWATER LEVELS:
▽ **DURING DRILLING:** 10.0 ft. / El. 265.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 4.2 ft. / El. 270.8 ft.
▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: SG **CHECKED BY:** AS

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0 2	S1	3-3-31-39 (34)	24/17		Topsoil	1.0 274.0	S1 - Top 12": Topsoil Bot. 5": Poorly Graded Gravel with Sand (GP), fine to coarse, subangular, ~30% fine to coarse sand, ~5% fines, brown and white, moist
		2 4	S2	34-35-56-39 (91)	24/16		Fill		S2 - Silty SAND with Gravel (SM), fine to coarse, 35-40% fines, ~20% fine subangular gravel, brown grey, moist
5	270.0	4 6	S3	26-24-21-12 (45)	24/15			6.0 269.0	▼ S3 - Similar to S2
		6 6.7	S4	19-81/2" (81/2")	8/8	1 2	Sand and Gravel		S4 - Silty SAND with Gravel (SM), fine to medium, 15-20% fines, 15-20% fine subrounded gravel, brown grey, moist REMARK 1: SS bouncing on possible boulder at depth of 6.7 feet. REMARK 2: HSA grinding on possible boulder from depths between 6.7 and 8 feet.
10	265.0	8 10	S5	13-15-21-19 (36)	24/8				S5 - Similar to S4
		10 11.3	S6	13-19-95/3" (114/9")	15/15				▽ S6 - Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 20-25% fine to coarse subangular gravel, brown grey, wet
15	260.0					3			REMARK 3: HSA grinding on possible boulder from depths between 11.5 and 15 feet.
		15 17	S7	17-28-14-13 (42)	24/17				S7 - Silty SAND with Gravel (SM), fine to coarse, 15-20% fines, 20-25% fine to coarse subangular gravel, brown grey, wet
20	255.0	20 21.3	S8	19-85-60/3" (145/9")	15/15			21.3	S8 - Similar to S7
25	250.0								Bottom of borehole at 21.3 feet. Backfilled borehole with drill cuttings.

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-4 (Sheet 4 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

LGCI
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BORING LOG

B-2

PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 4/15/24 **DATE COMPLETED:** 4/15/24
BORING LOCATION: Near eastern side of site
COORDINATES: NA
SURFACE El.: 274 ft. (see note 1) **TOTAL DEPTH:** 15.01 ft.
WEATHER: 50's / Sunny
GROUNDWATER LEVELS:
▽ **DURING DRILLING:** 4.0 ft. / El. 270.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 2.9 ft. / El. 271.1 ft.
▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: SG **CHECKED BY:** AS

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0	S1	2-6-13-18 (19)	24/20		Topsoil	1.0 273.0	S1 - Top 12": Topsoil Bot. 8": Well Graded GRAVEL with Silt and Sand (GW-GM), fine to coarse, subangular, ~5% fines, 30-35% fine to coarse sand, grey and white, moist
		2	S2	20-20-22-80/3" (42)	21/13		Fill		▼ S2 - Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 15-20% fine to coarse subangular gravel, grey, moist
5	270.0	3.8 4	S3	10-10-9-7 (19)	24/12			6.1 267.9	▽ S3 - Silty SAND with Gravel (SM), fine to coarse, ~30% fines, ~20% fine subangular gravel, grey, wet
		6	S4	8-17-28-27 (45)	24/17		Sand and Gravel		S4 - Top 1": Buried Organic Soil Bot. 16": Silty SAND with Gravel (SM), fine to coarse, ~30% fines, ~20% fine subangular gravel, trace of weathered rock, grey, wet
10	265.0	8				1			REMARK 1: HSA grinding on possible boulder at depth of 9 feet.
		10	S5	17-20-20-31 (40)	24/12				S5 - Poorly Graded SAND with Silt and Gravel (SP-SM), fine to coarse, 10-15% fines, 20-25% fine to coarse subrounded gravel, brown, wet
15	260.0	12				2		15.0	REMARK 2: HSA grinding on possible boulder/cobbles at depths between 12 and 15 feet.
		15	S6	100/0"	0/0				S6 - No Recovery Bottom of borehole at 15.0 feet. Backfilled borehole with drill cuttings.
20	255.0								
25	250.0								

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-4 (Sheet 4 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

LGCI
Lahlaf Geotechnical Consulting, Inc.

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Telephone: 9783305912
Fax: 9783305056

BORING LOG

B-3
PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 4/15/24 **DATE COMPLETED:** 4/15/24
BORING LOCATION: Near weastern side of site
COORDINATES: NA
SURFACE El.: 277 ft. (see note 1) **TOTAL DEPTH:** 17 ft.
WEATHER: 50's / Sunny
GROUNDWATER LEVELS:
▽ **DURING DRILLING:** 2.0 ft. / El. 275.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 2.5 ft. / El. 274.5 ft.
▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: SG **CHECKED BY:** AS

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0-2	S1	1-2-7-12 (9)	24/19		Topsoil	1.2	S1 - Top 14": Topsoil
	275.0						Sand and Gravel	275.8	Bot. 5": Poorly Graded SAND with Silt (SP-SM), fine to medium, 5-10% fines, 0-5% ▽ fine gravel, grey with orange stripes, moist
		2-4	S2	28-26-33-31 (59)	24/17				▼ S2 - Top 4": Similar to S1, Bot. 5" Bot. 13": Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 35-40% mostly fine subangular gravel, brown grey, wet
5		4-6	S3	15-20-21-13 (41)	24/16				S3 - Top 7": Similar to S2, Bot. 13" Bot. 9": Silty SAND with Gravel (SM), fine to medium, 15-20% fines, 15-20% fine to coarse subrounded to subangular gravel, brown, wet
	270.0	6-8	S4	15-13-18-19 (31)	24/4				S4 - Similar to S3, Bot. 9", fine to coarse
10	265.0	10-12	S5	25-31-61-50 (92)	24/14				S5 - Silty GRAVEL with Sand (GM), fine to coarse, angular, 15-20% fines, 25-30% fine to coarse sand, grey, wet
15	260.0	15-17	S6	20-25-26-25 (51)	24/12			17.0	S6 - Silty SAND with Gravel (SM), fine to medium, 15-20% fines, 15-20% fine to coarse subangular gravel, grey, wet
									Bottom of borehole at 17.0 feet. Backfilled borehole with drill cuttings.
20	255.0								
25									

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-4 (Sheet 4 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

LGCI
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BORING LOG

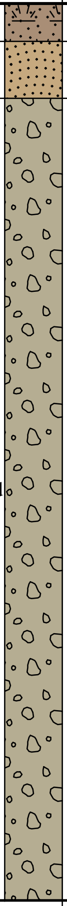
B-4

PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 4/15/24 **DATE COMPLETED:** 4/15/24
BORING LOCATION: Near southern center of site
COORDINATES: NA
SURFACE El.: 276 ft. (see note 1) **TOTAL DEPTH:** 19 ft.
WEATHER: 50's / Sunny
GROUNDWATER LEVELS:
▽ **DURING DRILLING:** 4.0 ft. / El. 272.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 3.1 ft. / El. 272.9 ft.
▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: SG **CHECKED BY:** AS



Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
	275.0	0	S1	1-4-12-10 (16)	24/17		Topsoil	0.8 275.2	S1 - Top 10": Topsoil
							Subsoil	2.0 274.0	Bot. 7": Poorly Graded SAND with Silt and Gravel (SP-SM), fine to medium, 10-15% fines, 10-15% fine subrounded gravel, light brown, moist
		2	S2	11-14-15-17 (29)	24/13		Sand and Gravel	▼	S2 - Silty SAND (SM), fine to coarse, ~15% fines, ~35% fine to coarse subrounded gravel, brown, moist
5	270.0	4	S3	14-13-9-8 (22)	24/9			▽	S3 - Silty SAND (SM), fine to medium, 20-25% fines, 5-10% fine subrounded gravel, trace of weathered rock, brown grey, wet
		6	S4	8-7-8-12 (15)	24/8				S4 - Similar to S3
		8				1			REMARK 1: HSA grinding on possibe boulder/cobbles at depth of 8 feet.
10	265.0	10	S5	9-9-6-7 (15)	24/12				S5 - Silty SAND with Gravel (SM), fine to coarse, ~15% fines, 15-20% fine to coarse gravel, trace of weathered rock, brown grey, wet
		12							
15	260.0	15	S6	6-6-6-5 (12)	24/7				S6 - Silty SAND (SM), fine to medium, trace of coarse, 35-40% fines, 5-10% fine to coarse subrounded gravel, grey, wet
		17	S7	7-13-17-26 (30)	24/14			19.0	S7 - Poorly Graded SAND with Silt and Gravel (SP-SM), fine to medium, ~10% fines, 15-20% fine to coarse subangular gravel, trace of weathered rock, grey with red, wet
20	255.0	19							Bottom of borehole at 19.0 feet. Backfilled borehole with drill cuttings.
25									

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-4 (Sheet 4 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

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BORING LOG

B-101

PAGE 1 OF 1

CLIENT: Arrowstreet

PROJECT NAME: Proposed Neary Elementary School

LGCI PROJECT NUMBER: 2404

PROJECT LOCATION: Southborough, MA

DATE STARTED: 8/22/24 **DATE COMPLETED:** 8/22/24

BORING LOCATION: NE of existing school

COORDINATES: NA

SURFACE El.: 270 ft. (see note 1) **TOTAL DEPTH:** 20.8 ft.

WEATHER: 70's / Sunny

GROUNDWATER LEVELS:

▽ **DURING DRILLING:** 7.0 ft. / El. 263.0 ft. Based on sample moisture

▼ **AT END OF DRILLING:** 7.0 ft. / El. 263.0 ft.

▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.

DRILLING FOREMAN: Edwin Fajardo

DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)

DRILL RIG TYPE/MODEL: Diedrich D-70 turbo

HAMMER TYPE: Automatic

HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.

SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.

CORE BARREL SIZE: NA

LOGGED BY: BH **CHECKED BY:** JKW

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
							Asphalt	0.5 269.5	
		1 - 3	S1	15-21-25-24 (46)	24/13		Fill		S1 - Poorly Graded SAND (SP), fine to medium, trace coarse, 0-5% fines, 25-30% fine to coarse subangular gravel, trace of asphalt, dark brown, moist
		3 - 5	S2	21-22-22-16 (44)	24/12				S2 - Poorly Graded SAND with Silt (SP-SM), fine to medium, trace coarse, 10-15% fines, 25-30% fine to coarse subangular gravel, trace of asphalt, dark brown, moist
5	265.0								
		5 - 7	S3	18-18-11-11 (29)	24/11				S3 - Similar to S2
								7.0 ▼ 263.0	
		7 - 9	S4	7-6-7-9 (13)	24/15		Swamp Deposits		S4 - Silty SAND (SM), fine, 30-35% fines, trace of wood, trace of organic odor, trace of organic soil, grey to dark brown, wet
		9 - 11	S5	6-8-10-8 (18)	24/19				S5 - Similar to S4, dark grey
10	260.0								
						1		11.0 259.0	REMARK 1: HSA chattering between depths of 11 to 19 feet beneath the ground surface.
		11 - 13	S6	4-6-12-14 (18)	24/19		Sand and Gravel		S6 - Poorly Graded SAND with Silt (SP-SM), fine to coarse, 10-15% fines, dark grey, wet
		13 - 15	S7	13-12-11-10 (23)	24/16				S7 - Silty SAND (SM), fine to coarse, ~20% fines, 0-5% fine subangular gravel, dark grey, wet
15	255.0								
		15 - 17	S8	18-14-38-16 (52)	24/11				S8 - Silty SAND (SM), fine to medium, trace coarse, 20-25% fines, 35-40% fine to coarse subangular gravel, trace of weathered rock, grey, wet
		19 - 20.8	S9	40-48-18-93/4" (66)	22/11				S9 - Similar to S8, 30-35% fine to coarse subangular gravel
20	250.0								
								20.8	Bottom of borehole at 20.8 feet. Backfilled borehole with drill cuttings and 2 bags of gravel. Restored roadway with cold patch asphalt.
25	245.0								

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-5 (Sheet 5 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

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BORING LOG

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PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 8/22/24 **DATE COMPLETED:** 8/22/24
BORING LOCATION: North of existing school
COORDINATES: NA
SURFACE El.: 272 ft. (see note 1) **TOTAL DEPTH:** 19.4 ft.
WEATHER: 70's / Sunny
GROUNDWATER LEVELS:
▽ **DURING DRILLING:** 5.0 ft. / El. 267.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 8.6 ft. / El. 263.4 ft.
▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: BH **CHECKED BY:** JKW

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0 0.8	G1		10/10		Asphalt	0.8 271.2	G1 - Asphalt
	270.0	1 2.6	S1	14-16-68-45/1" (84)	19/12		Fill	3.0 269.0	S1 - Silty SAND with Gravel (SM), fine to coarse, 15-20% fines, 25-30% fine to coarse subangular gravel, dark brown, moist
		3 5	S2	15-21-32-31 (53)	24/14		Sand and Gravel		S2 - Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 35-40% fine subangular gravel, brown, moist
5	265.0	5 7	S3	19-18-16-16 (34)	24/16			▽	S3 - Well Graded SAND with Silt (SW-SM), fine to coarse, 10-15% fines, 5-10% fine to coarse subangular gravel, brown, wet
								▼ 9.0 263.0	
10	260.0	9 10.3	S4	24-63-43/4" (106/10")	16/9		Weathered Rock		S4 - Silty SAND with Gravel (SM), fine to coarse, 20-25% fines, 30-35% fine to coarse subangular gravel, trace of weathered rock, brown, wet
15	255.0	14 16	S5	27-29-30-24 (59)	24/14				S5 - Silty SAND with Gravel (SM), fine to coarse, 20-25% fines, 20-25% fine to coarse subangular gravel, trace of weathered rock, light brown to grey, wet
20	250.0	19 19.4	S6	101/5"	5/5			19.4	S6 - Silty SAND with Gravel (SM), fine to coarse, 15-20% fines, 15-20% fine to coarse subangular gravel, brown, wet Bottom of borehole at 19.4 feet. Backfilled borehole with drill cuttings, 1 bag of gravel, 1 bag of sand, and 1 bag of concrete. Restored roadway with cold patch asphalt.
25									

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-5 (Sheet 5 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

LGCI
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BORING LOG

B-103

PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 8/22/24 **DATE COMPLETED:** 8/22/24
BORING LOCATION: West of existing school
COORDINATES: NA
SURFACE El.: 273 ft. (see note 1) **TOTAL DEPTH:** 19.3 ft.
WEATHER: 70's / Sunny
GROUNDWATER LEVELS:
▽ **DURING DRILLING:** 4.0 ft. / El. 269.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 16.0 ft. / El. 257.0 ft.
▽ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: BH **CHECKED BY:** JKW

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0 2	S1	2-3-4-6 (7)	24/11		Topsoil		S1 - Topsoil
	270.0	2 4	S2	3-3-3-5 (6)	24/19		Fill	2.0 271.0	S2 - Silty SAND (SM), 30-35% fines, 0-5% fine subangular gravel, trace of wood, trace of organic soil, dark brown, moist
5		4 6	S3	3-4-11-13 (15)	24/19			▽	S3 - Top 10": Similar to S2, wet Bot. 9": Silty SAND (SM), mostly fine, 30-35% fines, grey, trace of wood, wet
	265.0	6 8	S4	17-15-16-15 (31)	24/10		Sand and Gravel	6.0 267.0	S4 - Silty SAND (SM), fine to coarse, 20-25% fines, 25-30% fine to coarse subangular gravel, brown, wet
10		9 11	S5	7-5-13-16 (18)	24/9				S5 - Silty SAND (SM), fine to medium, trace coarse, 15-20% fines, 0-5% fine subangular gravel, brown, wet
	260.0								
15		14 16	S6	5-9-11-13 (20)	24/11			▼	S6 - Silty SAND (SM), fine to medium, 30-35% fines, 0-5% fine subangular gravel, light brown, wet
	255.0								
		19 19.3	S7	101/3"	3/0			19.3	S7 - No Recovery Bottom of borehole at 19.3 feet. Backfilled borehole with drill cuttings and 2 bags of gravel.
20									
	250.0								
25									

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-5 (Sheet 5 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

LGCI
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Telephone: 9783305912
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BORING LOG

B-104

PAGE 1 OF 1

CLIENT: Arrowstreet
PROJECT NAME: Proposed Neary Elementary School
LGCI PROJECT NUMBER: 2404
PROJECT LOCATION: Southborough, MA

DATE STARTED: 8/22/24
DATE COMPLETED: 8/22/24
BORING LOCATION: SW of existing school
COORDINATES: NA
SURFACE El.: 272 ft. (see note 1)
TOTAL DEPTH: 19.4 ft.
WEATHER: 70's / Sunny
GROUNDWATER LEVELS:
∇ **DURING DRILLING:** 0.0 ft. / El. 272.0 ft. Based on sample moisture
▼ **AT END OF DRILLING:** 6.6 ft. / El. 265.4 ft.
▼ **OTHER:** -

DRILLING SUBCONTRACTOR: Soil X, Corp.
DRILLING FOREMAN: Edwin Fajardo
DRILLING METHOD: Hollow Stem Auger (4-1/4" I.D.)
DRILL RIG TYPE/MODEL: Diedrich D-70 turbo
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb.
HAMMER DROP: 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: BH
CHECKED BY: JKW

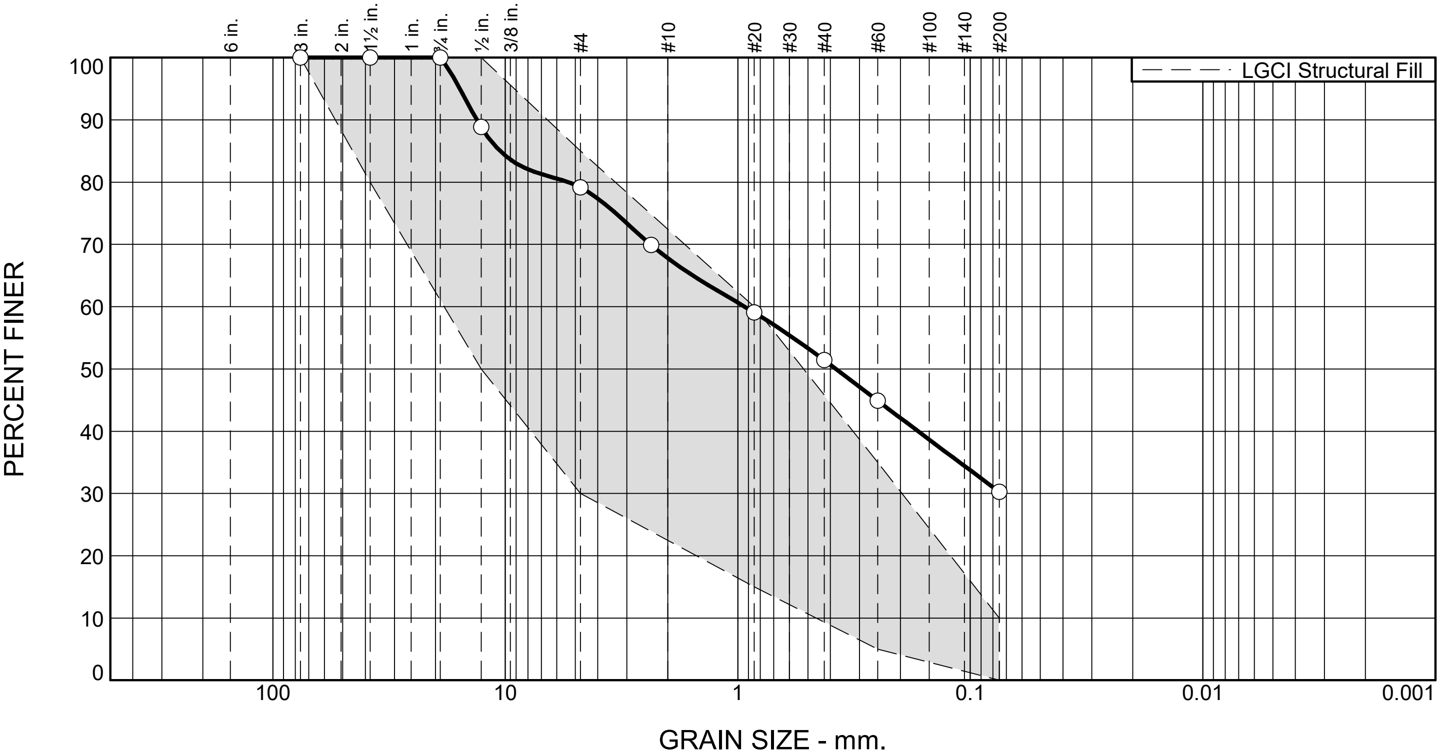
Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.) ∇	Material Description
	270.0	0–2	S1	3-3-2-0 (5)	24/13		Topsoil	0.8 271.2	S1 - Top 9": Topsoil Bot. 4": Well Graded SAND with Silt (SW-SM), fine to coarse, ~10% fines, 0-5% fine subangular gravel, brown, wet
		2–4	S2	1-2-4-6 (6)	24/8		Fill		S2 - Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 15-20% fine to coarse subangular gravel, brown, wet
5		4–6	S3	2-1-2-2 (3)	24/6				S3 - Silty SAND (SM), fine to coarse, 30-35% fines, 0-5% fine subangular gravel, trace of organic soil, trace of roots, dark brown to black, wet
	265.0	6–8	S4	1-2-2-2 (4)	24/7			▼	S4 - Similar to S3, 10-15% fine to coarse subangular gravel
10		8–10	S5	2-2-3-16 (5)	24/15				S5 - Silty SAND (SM), fine to coarse, 30-35% fines, ~5% fine subangular gravel, trace of roots, grey, wet
		10–10.5	S6	6-19/0" (19/0")	6/0	1		10.5 261.5	S6 - No Recovery REMARK 1: Split spoon bouncing observed at depth of 10.5 feet beneath the ground surface. Sampling terminated early to observe sample.
	260.0	10.5–12.5	S7	25-17-16-14 (33)	24/6		Sand and Gravel		S7 - Silty SAND with Gravel (SM), fine to coarse, 30-35% fines, 30-35% fine subangular gravel, grey, wet
15		14–16	S8	17-12-15-17 (27)	24/10				S8 - Similar to S7, 20-25% fines, brown to grey
	255.0								
20		19–19.4	S9	102/5"	5/4		Weathered Rock	19.0 253.0 19.4	S9 - Silty SAND (SM), fine to coarse, 20-25% fines, 25-30% fine to coarse subangular gravel, trace of weathered rock, brown, wet Bottom of borehole at 19.4 feet. Backfilled borehole with drill cuttings.
	250.0								
25									

GENERAL NOTES:

1. The ground surface elevation was interpolated to the nearest foot based on drawing TP-5 (Sheet 5 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA ," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on Sepember 3, 2024.

Appendix B – Laboratory Test Results

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	20.9	11.3	16.4	21.1	30.3	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	100.0		
0.5"	88.9	50.0 - 100.0	
#4	79.1	30.0 - 85.0	
#8	69.9		
#20	59.1	15.0 - 60.0	
#40	51.4		
#60	44.9	5.0 - 35.0	X
#200	30.3	0.0 - 10.0	X

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Silty SAND with Gravel (SM), fine to coarse, 30% fines, 20% fine gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}= 13.2571	D_{85}= 10.5117	D_{60}= 0.9340
D_{50}= 0.3778	D_{30}=	D_{15}=
D_{10}=	C_u=	C_c=

Remarks

Fill Material

Date Received: 4/15/24 **Date Tested:** 4/30/24

Tested By: SG

Checked By: SL

Location: B-2

Sample Number: S3 **Depth:** 4'-6'

Date Sampled: 4/15/24

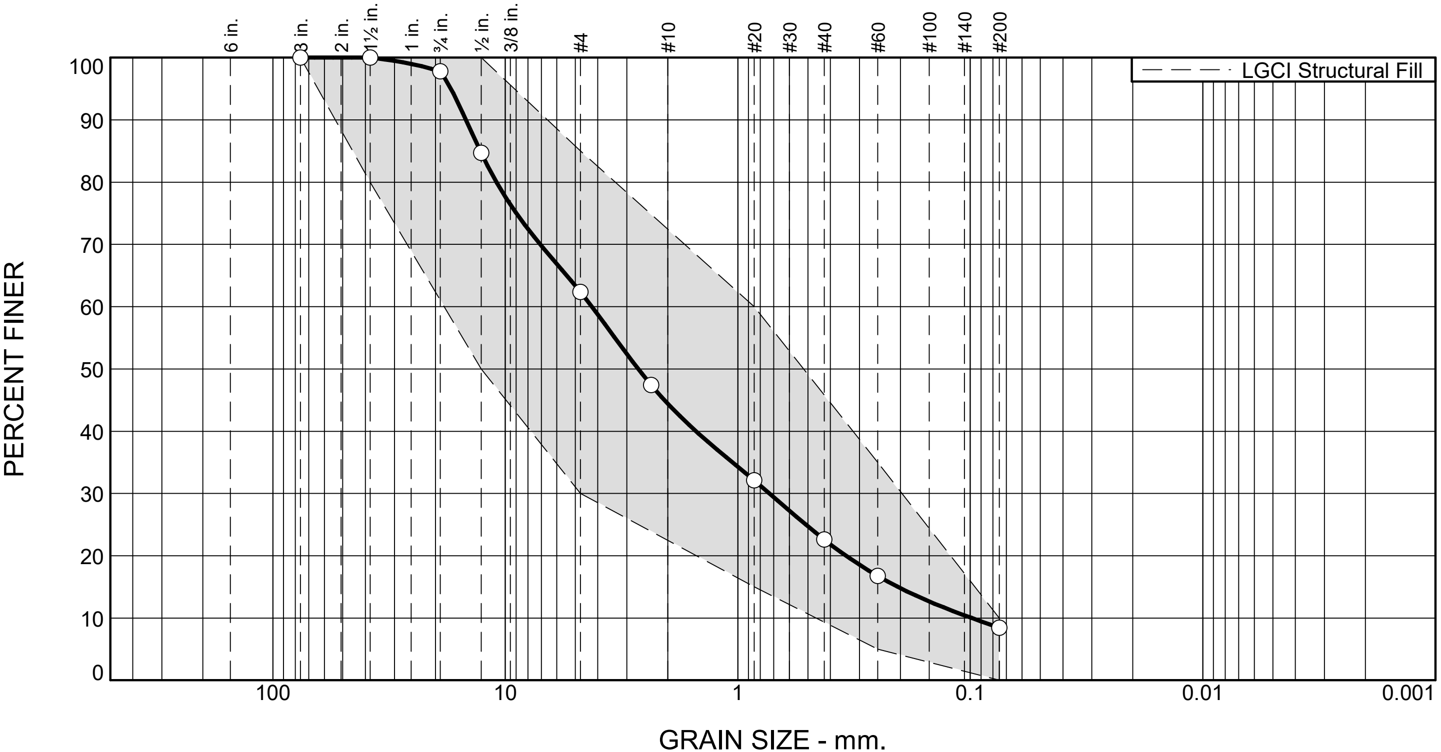
LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: Arrowstreet

Project: Proposed Neary Elementary School
Southborough, Massachusetts

Project No: 2404 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	2.2	35.4	18.0	21.8	14.2	8.4	

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	97.8		
0.5"	84.7	50.0 - 100.0	
#4	62.4	30.0 - 85.0	
#8	47.4		
#20	32.1	15.0 - 60.0	
#40	22.6		
#60	16.8	5.0 - 35.0	
#200	8.4	0.0 - 10.0	

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 35-40% mostly fine gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}=	14.7722	D_{85}=	12.8177	D_{60}=	4.2431
D_{50}=	2.6797	D_{30}=	0.7306	D_{15}=	0.2046
D_{10}=	0.0986	C_u=	43.05	C_c=	1.28

Remarks

Natural Soil Material

Date Received: 4/15/24 **Date Tested:** 4/30/24

Tested By: SG

Checked By: SL

Location: B-3

Sample Number: S2 Bot. 13" **Depth:** 2'-4'

Date Sampled: 4/15/24

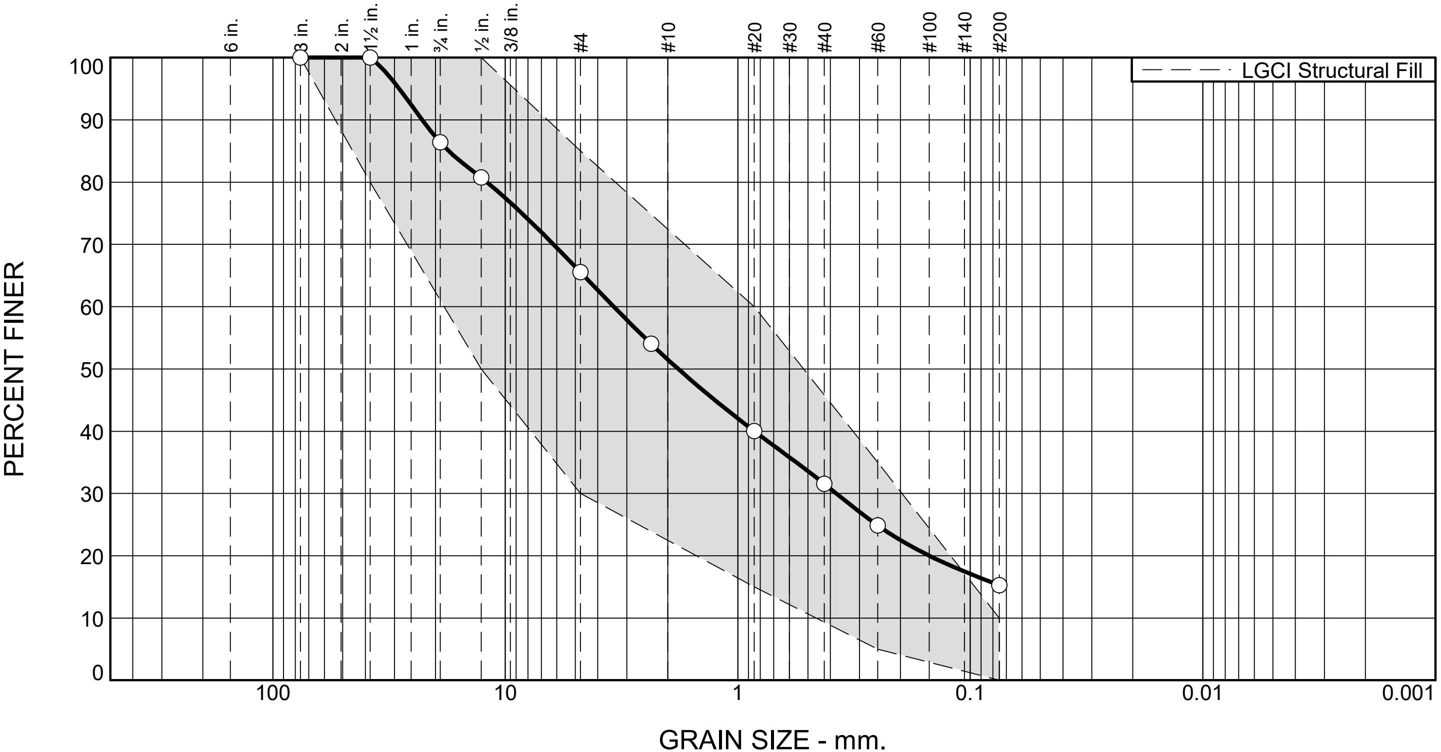
LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: Arrowstreet

Project: Proposed Neary Elementary School
Southborough, Massachusetts

Project No: 2404 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	13.6	20.9	14.0	19.9	16.4	15.2	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	86.4		
0.5"	80.7	50.0 - 100.0	
#4	65.5	30.0 - 85.0	
#8	54.0		
#20	40.0	15.0 - 60.0	
#40	31.6		
#60	24.9	5.0 - 35.0	
#200	15.2	0.0 - 10.0	X

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Silty SAND with Gravel (SM), fine to coarse, 15-20% fines, 30-35% fine to coarse gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}= 22.7705	D_{85}= 17.5075	D_{60}= 3.4161
D_{50}= 1.8018	D_{30}= 0.3765	D_{15}=
D_{10}=	C_u=	C_c=

Remarks

Natural Soil Material

Date Received: 4/15/24 **Date Tested:** 4/30/24

Tested By: SG

Checked By: SL

Location: B-4

Sample Number: S2 **Depth:** 2'-4'

Date Sampled: 4/15/24

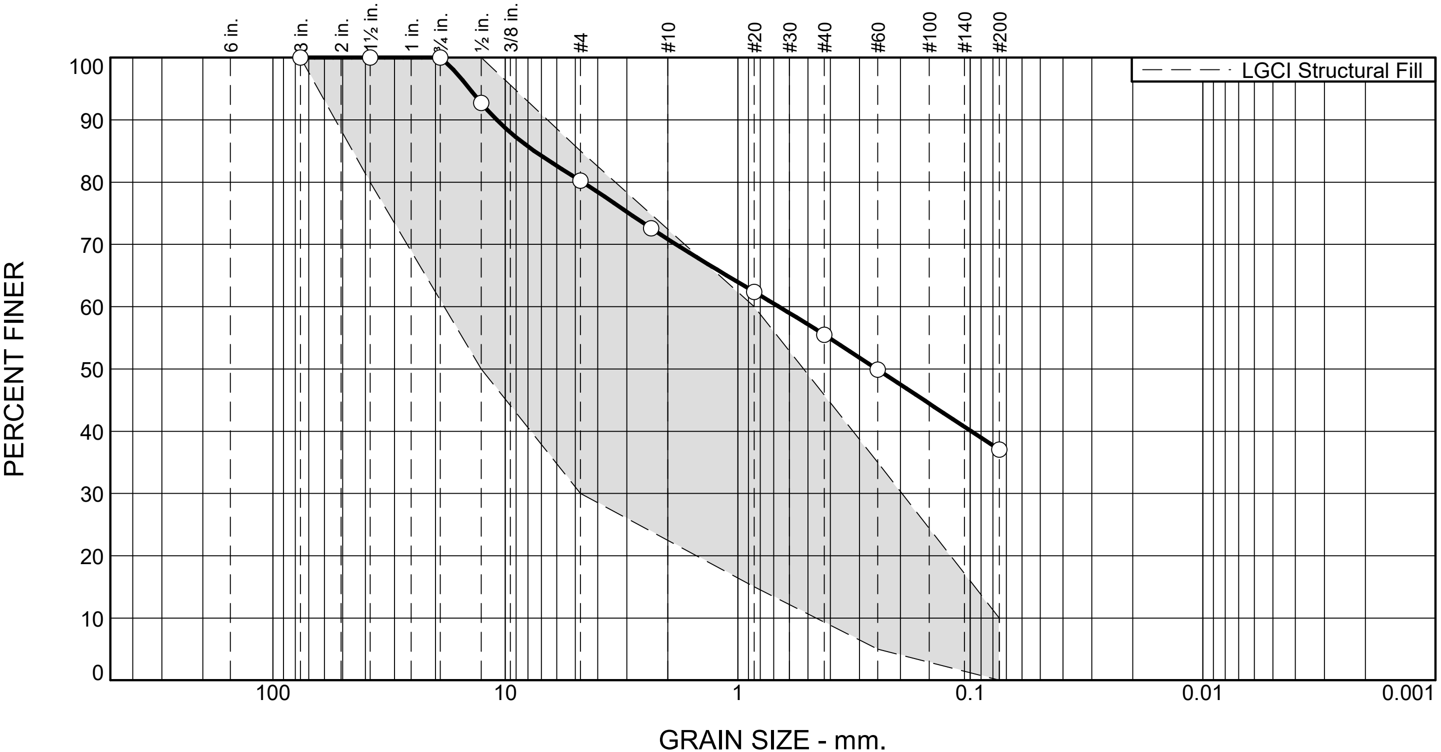
LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: Arrowstreet

Project: Proposed Neary Elementary School
Southborough, Massachusetts

Project No: 2404 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	19.8	9.3	15.4	18.5	37.0	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	100.0		
0.5"	92.7	50.0 - 100.0	
#4	80.2	30.0 - 85.0	
#8	72.6		
#20	62.4	15.0 - 60.0	X
#40	55.5		
#60	49.9	5.0 - 35.0	X
#200	37.0	0.0 - 10.0	X

* LGCI Structural Fill

Material Description

STM (D 2488) Classification: Silty SAND with Gravel (SM), fine to coarse, 35-40% fines, 15-20% fine gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}=	10.8651	D_{85}=	7.4884	D_{60}=	0.6656
D_{50}=	0.2525	D_{30}=		D_{15}=	
D_{10}=		C_u=		C_c=	

Remarks

Fill Material

Date Received: 4/15/24 **Date Tested:** 4/30/24

Tested By: SG

Checked By: SL

Location: B-5

Sample Number: S2 **Depth:** 2'-4'

Date Sampled: 4/15/24

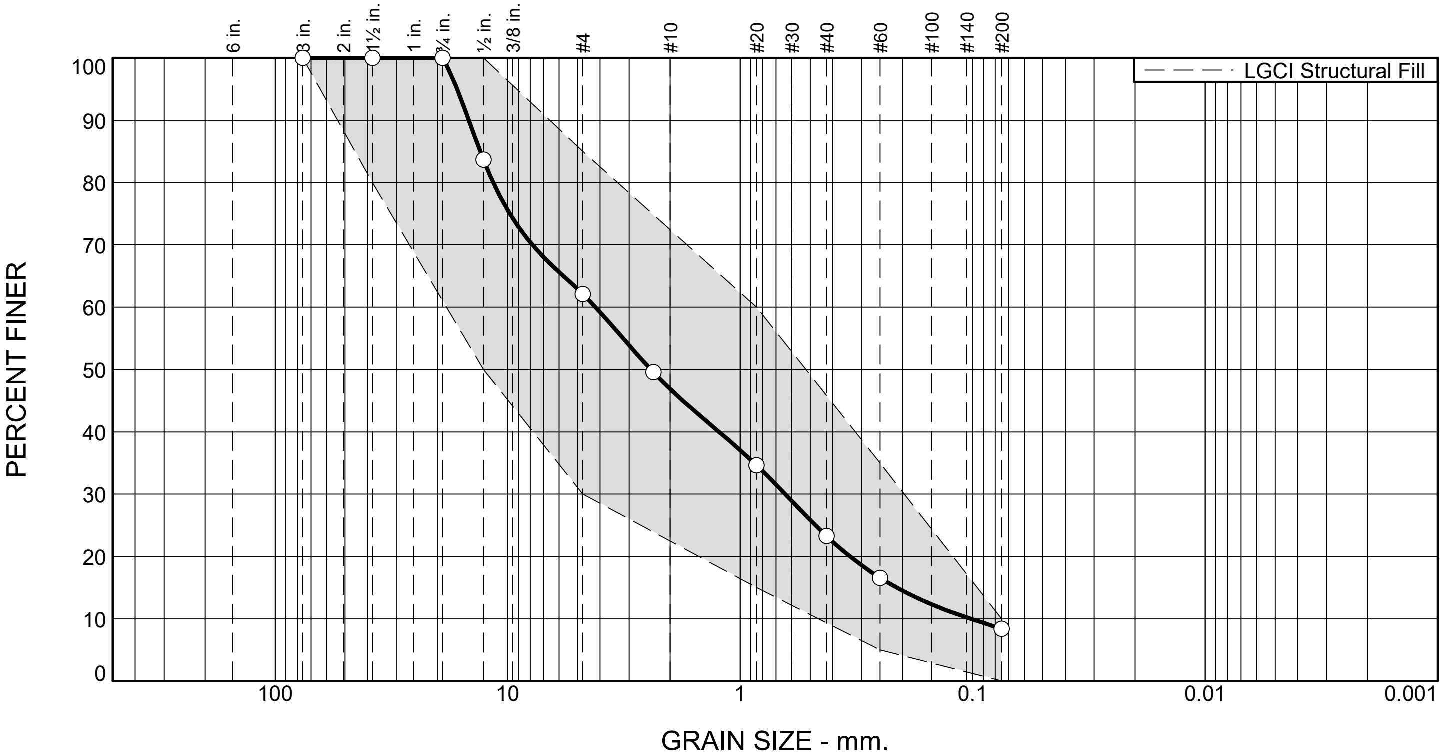
LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: Arrowstreet

Project: Proposed Neary Elementary School
Southborough, Massachusetts

Project No: 2404 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	37.9	15.2	23.6	14.9	8.4	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3	100.0	100.0	
1.5	100.0	80.0 - 100.0	
0.75	100.0		
0.5	83.7	50.0 - 100.0	
#4	62.1	30.0 - 85.0	
#8	49.6		
#20	34.6	15.0 - 60.0	
#40	23.3		
#60	16.6	5.0 - 35.0	
#200	8.4	0.0 - 10.0	

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 35-40% fine subangular gravel, brown

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}= 14.6883	D_{85}= 13.1130	D_{60}= 4.1852
D_{50}= 2.4207	D_{30}= 0.6406	D_{15}= 0.2122
D_{10}= 0.1022	C_u= 40.95	C_c= 0.96

Remarks

Natural sand and gravel sample.

Date Received: 8/22/24 **Date Tested:** 8/30/24

Tested By: JKW

Checked By: SG

Location: Boring B-102

Sample Number: S2 **Depth:** 3.0'-5.0'

Date Sampled: 8/22/24

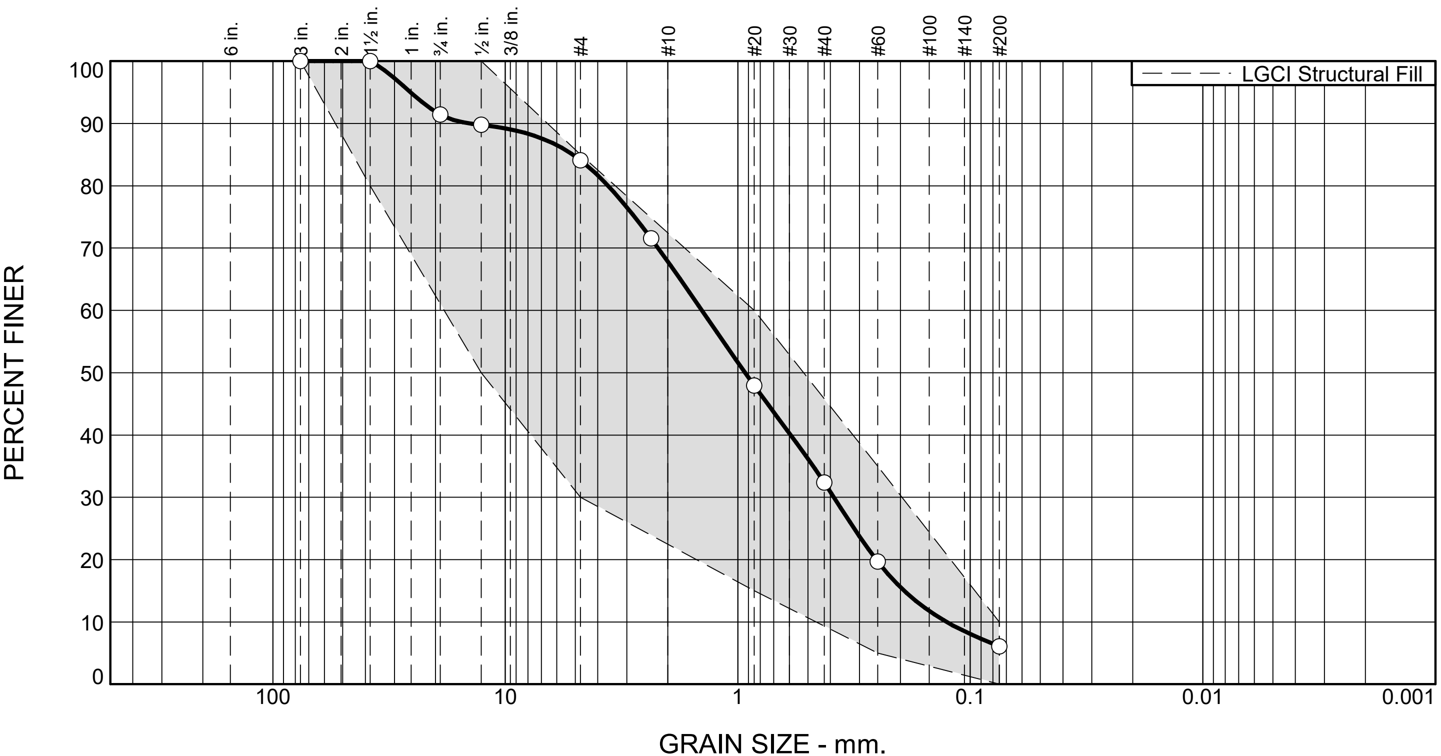
LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: Arrowstreet

Project: Proposed Neary Elementary School, Southborough, MA

Project No: 2404 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.6	7.3	16.2	35.5	26.3	6.1	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
0.75"	91.4		
0.5"	89.8	50.0 - 100.0	
#4	84.1	30.0 - 85.0	
#8	71.6		
#20	47.9	15.0 - 60.0	
#40	32.4		
#60	19.7	5.0 - 35.0	
#200	6.1	0.0 - 10.0	

* LGCI Structural Fill

Material Description

ASTM (D 2488) Classification: Well Graded SAND with Silt and Gravel (SW-SM), fine to coarse, 5-10% fines, 15-20% fine to coarse subangular gravel, brown

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= **AASHTO (M 145)=**

Coefficients

D_{90}= 14.1142	D_{85}= 5.1317	D_{60}= 1.4263
D_{50}= 0.9309	D_{30}= 0.3858	D_{15}= 0.1922
D_{10}= 0.1264	C_u= 11.28	C_c= 0.83

Remarks

Fill sample.

Date Received: 8/22/24 **Date Tested:** 8/30/24

Tested By: JKW

Checked By: SG

Location: Boring B-104

Sample Number: S2 **Depth:** 2.0'-4.0'

Date Sampled: 8/22/24

LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: Arrowstreet

Project: Proposed Neary Elementary School, Southborough, MA

Project No: 2404 **Figure**

G: Geo-environmental Analysis

PEER
CONSULTANTS, P.C.
Est. 1978

10 Mall Road, Suite 301 • Burlington, MA 01803
Phone: 781-238-8880 • Fax: 781-238-8884 • www.peercpc.com

Engineers • Scientists • Planners

May 3, 2024

Katy Lillich, AIA, LEED AP, MCPPO
Associate Principal
Arrowstreet
10 Post Office Square, Suite 700N
Boston MA 02109

Re: MARGARET A. NEARY ELEMENTARY SCHOOL
55 Parkerville Road, Southborough, MA 01772
Limited Subsurface Soil Investigation Memorandum

Dear Ms. Lillich:

PEER Consultants P.C. (PEER) completed an initial review of the environmental laboratory analytical results for the initial four (4) combined geotechnical/geo-environmental borings completed at Margaret A. Neary Elementary School on April 15, 2024. The weather on this date was sunny, and 44°F. PEER understands that Soil X was the drilling contractor on the project site, and utilized a Diedrich D70 Turbo Drill Rig, with hollow stem augers (and no drive and wash) to complete the borings. Soil X was represented by a driller, and driller's assistance. Lahlaf Geotechnical Consulting, Inc., the geotechnical contractor, was represented by Ms. Sharon Guan. PEER was represented by Mr. Dave Gorden, Board Certified Environmental Scientist and Certified Professional Soil Scientist.

During the limited subsurface soil investigation at the Margaret A. Neary Elementary School, PEER collected two (2) separate, composited soil samples from specific boring depths, to be analyzed for the following parameter: Volatile Organic Compounds (VOCs).

In addition, during the limited subsurface soil investigation, PEER collected four (4) separate, composited soil samples from specific boring depths, to be analyzed for the following parameters: Semivolatile Organic Compounds (SVOCs), Metals, Polychlorinated Biphenyls (PCBs), Total Petroleum Hydrocarbons (TPH) DRO, and TPH GRO, and for General Chemistry parameters such as Percent Solids, Conductivity, Corrosivity (pH), Flashpoint/Ignitability, Reactive Cyanide, and Reactive Sulfide.

Finally, during the limited subsurface soil investigation, PEER collected one (1) composited soil sample from specific boring depths, to be analyzed for the following parameters: Pesticides and Herbicides. PEER also collected one (1) composited soil sample from the specific boring depths, to be analyzed for the following parameters: Chloride, Fecal Coliforms, Nitrite as Nitrogen, Nitrate as Nitrogen, Phosphorus, Total as Phosphate.

PEER compared the laboratory analytical results to Massachusetts Department of Environmental Protection (MADEP) Policy # COMM-97-001, Reuse and Disposal of Contaminated Soil at Massachusetts Landfills, August 1997. PEER also compared the laboratory analytical results to 310 CMR 40.00, the Massachusetts Contingency Plan (MCP) reporting category RCS-1 and reporting category RCS-2. General chemistry laboratory results were separately compared with RCRA Characteristics under 40 CFR 261. Additional discussions pertaining to the comparison of results may be read below.

Due to the predominance of gravel and split spoon fractured gravel/till and/or other coarse material within the soil borings, and considering that in general, soil material beneath the top soil layer appeared similar to the boring termination depth, PEER collected samples based on the following depth intervals:

- **B2 Full** included soil from soil boring B2 at depths of 2-4', 4-6', 6-8', and 10-12'.
- **B3 Full** included soil from soil boring B3 at depths of 2-4', 4-6', 10-12', and 15-17'.
- **B4 Full** included soil from soil boring B4 at depths of 2-4', 4-6', 6-8', 10-12', 15-17', and 17-19'.
- **B5 Full** included soil from soil boring B5 at depths of 2-4', 4-6', 6-8', 8-10', 10-12', 15-17', and 20-22'.
- **B2-B5 0-2'** included soil from soil borings B2, B3, B4, and B5 from a depth of 0'-2'.
- **B2-B5 WT** included soil which was moist to wet, and was assumed to be from within the groundwater table from soil borings B2 (10-12'), B3 (10-12', 15-17'), B4 (10-12', 15-17'), and B5 (15-17', 20-22').

PEER estimated and documented a global positioning system (GPS) point for each boring based on an open source electronic application; therefore, the location of each soil boring, as estimated in the below Google Earth image is considered approximate only.

53 Parkerville Rd., Southborough, MA
(North is Up)

⁂

The following information provides a summary of the analytical results from soil samples collected by PEER on April 15, 2024. The samples were kept under chain of custody by PEER, and in a cooler with ice, until Phoenix Environmental Laboratories, Inc. (Phoenix), of Manchester, CT couriered the samples back to their office on April 16, 2024. PEER received the Analysis Report from Phoenix with the results on April 25, 2024.

VOCs

For Sample B2-B5 (0-2’) and Sample B2-B5 WT, there were no detections of individual VOCs. In addition, there were no exceedances of the MCP RCS-1 Criteria for an individual VOC, and there were no exceedances of the MCP RCS-2 Criteria for an individual VOC. Furthermore, there were no exceedances of Total VOCs for acceptance at a lined landfill, and there were no exceedances of Total VOCs for acceptance at an unlined landfill. VOCs were not detected. **Refer to Table 1A.**

SVOCs

For Sample B2 Full, Sample B3 Full, Sample B4 Full, and Sample B5 Full, there were no detections of individual SVOCs. In addition, there were no exceedances of the MCP RCS-1 Criteria for an individual SVOC, and there were no exceedances of the MCP RCS-2 Criteria for an individual SVOC. Furthermore, there were no exceedances of Total SVOCs for acceptance at a lined landfill, and there were no exceedances of Total SVOCs for acceptance at an unlined landfill. SVOCs were not detected. **Refer to Table 1B.**

Metals

For Sample B2 Full, Sample B3 Full, Sample B4 Full, and Sample B5 Full, there were neither exceedances of the MCP RCS-1 Criteria for individual Metals nor exceedances of the MCP RCS-2 Criteria for individual Metals. There were neither exceedances of Metals for acceptance at a lined landfill nor exceedances of Metals for acceptance at an unlined landfill. **Refer to Table 1C.**

PCBs

For Sample B2 Full, Sample B3 Full, Sample B4 Full, and Sample B5 Full, there were neither exceedances of the MCP RCS-1 Criteria for individual Aroclors nor exceedances of the MCP RCS-2 Criteria for individual Aroclors. There were neither exceedances of Total PCBs for acceptance at a lined landfill nor exceedances of Total PCBs for acceptance at an unlined landfill. PCBs were not detected. **Refer to Table 1D.**

TPHs

For Sample B2 Full, Sample B3 Full, Sample B4 Full, and Sample B5 Full, there were neither exceedances of the MCP RCS-1 Criteria for TPH DRO nor exceedances of the MCP RCS-2 Criteria for TPH DRO. There were neither exceedances of TPH DRO for acceptance at a lined landfill nor exceedances of TPH DRO for acceptance at an unlined landfill. Individual DRO were not detected. There are no comparison parameters for TPH GRO; however, TPH GRO was also not detected. **Refer to Table 1E.**

Pesticides

For Sample B2-B5 0-2’, there were neither exceedances of MCP RCS-1 criteria for individual pesticides nor exceedances of MCP RCS-2 criteria for individual pesticides. COMM-97-001 does not provide regulatory criteria for pesticides. **Refer to Table 1F.**

Herbicides

For Sample B2-B5 0-2’, there were neither exceedances of MCP RCS-1 criteria for individual herbicides nor exceedances of MCP RCS-2 criteria for individual herbicides. COMM-97-001 does not provide regulatory criteria for herbicides. **Refer to Table 1G.**

Miscellaneous/Biological

For Sample B2-B5 WT, there were no detections of chloride, fecal coliforms, and nitrite as nitrogen for the soil sample (B2-B5 WT) analyzed, where "WT" refers to within the groundwater table. The MCP and COMM-97-001 do not provide regulatory criteria for these parameters. PEER understands that the location of the potential septic system leach field was misrepresented to the Architect by Others, and that therefore this lack of the presence of a septic system leach field at the assumed location may be indicated in the laboratory results for these parameters.

In addition, Nitrate as Nitrogen was only detected at concentrations slightly above the laboratory reporting limit in soil Sample B2-B5 WT (0.93 mg/Kg). According to the Soil and Plant Nutrient Testing Laboratory at the UMass Extension (the Extension), in Amherst, MA, in general, a soil Nitrate Nitrogen concentration of 30 ppm (mg/Kg) or higher during the active growing season is sufficient for most plants. The Extension believes that interpretation of soil Nitrate Nitrogen levels below 30 ppm (mg/Kg) is somewhat nebulous because soil nitrogen is so dynamic. The Extension continues that when the concentration of soil Nitrate Nitrogen is less than 30 ppm (mg/Kg), additional fertilizer may or may not be needed. The soil borings which comprised B2-B5 WT are located in a grassed field northwest of the Margaret A. Neary Elementary School building. The presence of Nitrate Nitrogen may be due to applications of fertilizer to the grassed field; however, since the concentration at the sampled location is considered to be approximately 31 times lower than what the Extension may consider "sufficient for most plants", no additional discussion related to Nitrate Nitrogen as a contaminant appears warranted.

Furthermore, Total Phosphate was detected at Sample B2-B5 WT. According to an article from the Eleventh Annual on-Site Wastewater Treatment Conference Minimizing Impacts, Maximizing Resource Potential Soil Based Wastewater Treatment, titled "Soil Based Wastewater Treatment", by George W. Loomis, Soil Scientist, Dept. of Natural Resources Science, Director of the Cooperative Extension On-Site Wastewater Training Center at the University of Rhode Island (the "Article"), Phosphate is not a toxic compound, but it is the limiting nutrient in freshwater lakes and ponds responsible for eutrophication.

The Article continues that Phosphate anions are negatively charged ions capable of being strongly adsorbed to hydrous oxides of iron, aluminum, and manganese and carbonate surfaces on soil particles. It is also taken up by plant roots and incorporated into microbial cell material and organic matter. Most soils have the ability to adsorb phosphate loads from septic systems fairly well, so the concern is minimal. However, coarse textured soils with limited surface areas (due to low hydrous oxide or carbonate contents) can eventually reach their phosphate adsorptive capacity and not provide sufficient treatment to protect adjacent water bodies. Phosphate removals are also limited in saturated soils, and in situations where localized channel-type wastewater flow occurs.

PEER notes that concentration of total phosphate in soil within the groundwater table is approximately 26 times higher than the laboratory reporting limit. Whereas the Article indicates that "Phosphate removals are also limited in saturated soils," PEER notes that these soil sample locations were specifically collected at depths associated with saturated soils. Though the presence of total Phosphate occurs in the soil samples, with the understanding that the septic system leach field is not located in this grassed field, no additional discussion related to total Phosphate as a contaminant appears warranted. However, PEER recommends that a consideration of excavation dewatering activities, if needed, in these soil types near or associated with wetlands be further reviewed. **Refer to Table 1H.**

General Chemistry

For Sample B2 Full, Sample B3 Full, Sample B4 Full, and Sample B5 Full, there were neither exceedances of Conductivity for acceptance at a lined landfill nor exceedances of Conductivity for acceptance at an unlined landfill. There were no exceedances of RCRA Characteristics for flashpoint/ignitability. Flashpoint/ignitability passed. There were no exceedances of RCRA Characteristics for pH. There were no exceedances of RCRA Characteristics for reactivity. Reactivity was Negative. **Refer to Table 1I.**

Initial Recommendations

PEER recommends that additional pre-characterization sampling of the subsurface soil in borings and/or test pits be completed once the exact proposed building or utility excavations or other site infrastructure depths and locations are known.

In addition, as it relates to the potential need for dewatering activities (as detailed in the Lahlaf Geotechnical Consulting, Inc. Preliminary Geotechnical Report), PEER understands that Lahlaf Geotechnical Consulting, Inc. is anticipating “that groundwater control procedures will be needed during construction.” Should a construction 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 find directly included an excel spreadsheet (as a PDF) summarizing the results of the limited subsurface soil investigation at the Margaret A. Neary Elementary School, and including an Analysis Report by Phoenix Environmental Laboratories (dated April 25, 2024).

Please contact us directly at 781.238.8880, should you have any questions or require any clarification on this Limited Subsurface Soil Investigation Memorandum at the Margaret A. Neary Elementary School.

Sincerely,

PEER Consultants, P.C.

David Gorden, BCES
Senior Environmental Scientist

Table 1A - Volatile Organic Compounds

(Detected Analytes)

Margaret A. Neary Elementary School

53 Parkerville Road

Southborough, Massachusetts

Lab Sample Id						CQ52307		CQ52308		CQ52309		CQ52310		CQ52312		CQ52313	
Collection Date						4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024	
Client Id						B2 FULL		B3 FULL		B4 FULL		B5 FULL		B2-B5 0-2`		B2-B5 WT	
Matrix						Soil		Soil		Soil		Soil		Soil		Soil	
	Units	2020 MCP RCS-1	2020 MCP RCS-2	COMM-97-001 Lined Landfill	COMM-97-001 Unlined Landfill	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Volatiles By SW8260D																	
Total VOCs	ug/Kg	NL	NL	10,000	4,000	--		--		--		--		NS		NS	

-- = Analyte not detected in soil sample.
NS = VOCs were not sampled for in this sample.
NL = The MCP does not list a standard for this.
There were no detections of individual VOCs.
There were no exceedances of the MCP RCS-1 Criteria for an individual VOC.
There were no exceedances of the MCP RCS-2 Criteria for an individual VOC.
There were no exceedances of Total VOCs for acceptance at a lined landfill.
There were no exceedances of Total VOCs for acceptance at an unlined landfill.

Table 1B - Semivolatile Organic Compounds
(Detected Analytes)

Margaret A. Neary Elementary School
53 Parkerville Road
Southborough, Massachusetts

Lab Sample Id						CQ52307		CQ52308		CQ52309		CQ52310		CQ52312		CQ52313	
Collection Date						4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024	
Client Id						B2 FULL		B3 FULL		B4 FULL		B5 FULL		B2-B5 0-2`		B2-B5 WT	
Matrix		2020 MCP RCS-1	2020 MCP RCS-2	COMM-97-001 Lined Landfill	COMM-97-001 Unlined Landfill	Soil		Soil		Soil		Soil		Soil		Soil	
	Units					Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Semivolatiles By SW8270E																	
Total SVOCs	ug/Kg	NL	NL	100,000	100,000	--		--		--		--		NS		NS	

-- = Analyte not detected in soil sample.
NS = SVOCs were not sampled for in this sample.
NL = The MCP does not list a standard for this.
There were no detections of individual SVOCs.
There were no exceedances of the MCP RCS-1 Criteria for an individual SVOC.
There were no exceedances of the MCP RCS-2 Criteria for an individual SVOC.
There were no exceedances of Total SVOCs for acceptance at a lined landfill.
There were no exceedances of Total SVOCs for acceptance at an unlined landfill.

Table 1C - Metals

(Detected Analytes)

Margaret A. Neary Elementary School

53 Parkerville Road
Southborough, Massachusetts

Lab Sample Id						CQ52307		CQ52308		CQ52309		CQ52310		CQ52312		CQ52313	
Collection Date						4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024	
Client Id						B2 FULL		B3 FULL		B4 FULL		B5 FULL		B2-B5 0-2`		B2-B5 WT	
Matrix				COMM-97-001	COMM-97-001	Soil		Soil		Soil		Soil		Soil		Soil	
	Units	2020 MCP RCS-1	2020 MCP RCS-2	Lined Landfill	Unlined Landfill	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Metals, Total																	
Arsenic	mg/Kg	20	20	40	40	3.95	0.66	3.71	0.75	2.82	0.72	3.78	0.70	NS		NS	
Barium	mg/Kg	1,000	3,000	NL	NL	35.4	0.33	46.9	0.38	32.7	0.36	48.3	0.35	NS		NS	
Beryllium	mg/Kg	100	200	80	30	--		0.34	0.30	--		0.35	0.28	NS		NS	
Cadmium	mg/Kg	80	80	1,000	1,000	--		--		0.4	0.36	--		NS		NS	
Chromium	mg/Kg	100	200	NL	NL	12.1	0.33	17.9	0.38	13.1	0.36	13.8	0.35	NS		NS	
Lead	mg/Kg	200	600	2,000	1,000	3.6	0.33	3.77	0.38	3.42	0.36	3.64	0.35	NS		NS	
Nickel	mg/Kg	700	1,000	NL	NL	8.46	0.33	11	0.38	10.3	0.36	9.65	0.35	NS		NS	
Vanadium	mg/Kg	500	800	NL	NL	17.8	0.33	24.1	0.38	20.8	0.36	22.3	0.35	NS		NS	
Zinc	mg/Kg	1,000	3,000	NL	NL	22.1	0.7	26.9	0.8	23.4	0.7	27.3	0.7	NS		NS	

-- = Analyte not detected in soil sample.
NS = Metals were not sampled for in this sample.
NL = COMM-97-001 does not list a standard for this metal.
There were neither exceedances of the MCP RCS-1 Criteria for individual Metals nor exceedances of the MCP RCS-2 Criteria for individual Metals.
There were neither exceedances of Metals for acceptance at a lined landfill nor exceedances of Metals for acceptance at an unlined landfill.

Table 1D - Polychlorinated Biphenyls
(Detected Analytes)
Margaret A. Neary Elementary School
53 Parkerville Road
Southborough, Massachusetts

Lab Sample Id						CQ52307		CQ52308		CQ52309		CQ52310		CQ52312		CQ52313	
Collection Date						4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024	
Client Id						B2 FULL		B3 FULL		B4 FULL		B5 FULL		B2-B5 0-2`		B2-B5 WT	
Matrix						Soil		Soil		Soil		Soil		Soil		Soil	
	Units	2020 MCP RCS-1	2020 MCP RCS-2	COMM-97-001 Lined Landfill	COMM-97-001 Unlined Landfill	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
PCBs By SW8082A																	
Total PCBs		NL	NL	<2,000	<2,000	--		--		--		--		NS		NS	

-- = Analyte not detected in soil sample.
NS = PCBs were not sampled for in this sample.
NL = The MCP does not list a standard for this.
There were neither exceedances of the MCP RCS-1 Criteria for individual Aroclors nor exceedances of the MCP RCS-2 Criteria for individual Aroclors.
There were neither exceedances of Total PCBs for acceptance at a lined landfill nor exceedances of Total PCBs for acceptance at an unlined landfill.

Table 1E - Total Petroleum Hydrocarbons

(Detected Analytes)

Margaret A. Neary Elementary School

53 Parkerville Road
Southborough, Massachusetts

Lab Sample Id						CQ52307		CQ52308		CQ52309		CQ52310		CQ52312		CQ52313	
Collection Date						4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024	
Client Id						B2 FULL		B3 FULL		B4 FULL		B5 FULL		B2-B5 0-2`		B2-B5 WT	
Matrix		2020 MCP RCS-1	2020 MCP RCS-2	COMM-97-001 Lined Landfill	COMM-97-001 Unlined Landfill	Soil		Soil		Soil		Soil		Soil		Soil	
	Units					Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
TPH By SW8015D DRO																	
Total TPH	mg/kg	1,000	3,000	5,000	2,000	--		--		--		--		NS		NS	
Gasoline Range Hydrocarbons (C6-C10) By SW8015D GRO																	
GRO (C6-C10)	mg/Kg	NL	NL	NL	NL	--		--		--		--		NS		NS	

-- = Analyte not detected in soil sample.
NS = TPHs were not sampled for in this sample.
NL = The MCP and COMM-97-001 do not list a standard for this.
TPH DRO included Fuel Oil #2/Diesel Fuel, Fuel Oil #4, Fuel Oil #6, Kerosene, Motor Oil, Unidentified
GRO included gasoline range organics (C6-C10).
There were neither exceedances of the MCP RCS-1 Criteria for Total TPH DRO nor exceedances of the MCP RCS-2 Criteria for Total TPH DRO.
There were neither exceedances of TPH DRO for acceptance at a lined landfill nor exceedances of TPH DRO for acceptance at an unlined landfill.

Table 1F - Pesticides

(Detected Analytes)

Margaret A. Neary Elementary School

53 Parkerville Road
Southborough, Massachusetts

Lab Sample Id					CQ52307		CQ52308		CQ52309		CQ52310		CQ52312		CQ52313	
Collection Date					4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024	
Client Id					B2 FULL		B3 FULL		B4 FULL		B5 FULL		B2-B5 0-2`		B2-B5 WT	
Matrix					Soil		Soil		Soil		Soil		Soil		Soil	
Units	2020 MCP RCS-1	2020 MCP RCS-2	COMM-97-001 Lined Landfill	COMM-97-001 Unlined Landfill	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Pesticides By SW8081B																

There were no detections of Pesticides for the soil sample (B2-B5 0-2') analyzed.
There were neither exceedances of MCP RCS-1 criteria for individual pesticides nor exceedances of MCP RCS-2 criteria for individual pesticides.
COMM-97-001 does not provide regulatory criteria for pesticides.

Table 1G - Herbicides

(Detected Analytes)

Margaret A. Neary Elementary School

53 Parkerville Road
Southborough, Massachusetts

Lab Sample Id					CQ52307		CQ52308		CQ52309		CQ52310		CQ52312		CQ52313	
Collection Date					4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024	
Client Id					B2 FULL		B3 FULL		B4 FULL		B5 FULL		B2-B5 0-2`		B2-B5 WT	
Matrix	2020 MCP RCS-1	2020 MCP RCS-2	COMM-97-001 Lined Landfill	COMM-97-001 Unlined Landfill	Soil		Soil		Soil		Soil		Soil		Soil	
Units					Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Chlorinated Herbicides By SW8151A																

There were no detections of Herbicides for the soil sample (B2-B5 0-2') analyzed.
There were neither exceedances of MCP RCS-1 criteria for individual herbicides nor exceedances of MCP RCS-2 criteria for individual herbicides.
COMM-97-001 does not provide regulatory criteria for herbicides.

Table 1H - Miscellaneous / Biological
(Detected Analytes)
Margaret A. Neary Elementary School
53 Parkerville Road
Southborough, Massachusetts

Lab Sample Id						CQ52307		CQ52308		CQ52309		CQ52310		CQ52312		CQ52313	
Collection Date						4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024	
Client Id						B2 FULL		B3 FULL		B4 FULL		B5 FULL		B2-B5 0-2`		B2-B5 WT	
Matrix						Soil		Soil		Soil		Soil		Soil		Soil	
	Units	2020 MCP RCS-1	2020 MCP RCS-2	COMM-97-001 Lined Landfill	COMM-97-001 Unlined Landfill	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Miscellaneous/Biological																	
Chloride	mg/kg	NL	NL	NL	NL	NS		NS		NS		NS		NS		--	
Fecal Coliforms	cfu/g	NL	NL	NL	NL	NS		NS		NS		NS		NS		--	
Nitrite as N	mg/kg	NL	NL	NL	NL	NS		NS		NS		NS		NS		--	
Nitrate as N	mg/kg	NL	NL	NL	NL	NS		NS		NS		NS		NS		0.93	0.56
Phosphorus, Total as P	mg/Kg	NL	NL	NL	NL	NS		NS		NS		NS		NS		365	14

There were no detections of chloride, fecal coliforms, and nitrite as nitrogen for the soil sample (B2-B5 WT) analyzed, where "WT" refers to within the groundwater table.

-- = Analyte not detected in soil sample.

NL = The MCP and COMM-97-001 do not list a standard for this constituent.

NS = Constituent was not sampled for in this sample.

Table 1I - General Chemistry

(Detected Analytes)

Margaret A. Neary Elementary School

53 Parkerville Road
Southborough, Massachusetts

Lab Sample Id							CQ52307		CQ52308		CQ52309		CQ52310		CQ52312		CQ52313	
Collection Date							4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024		4/15/2024	
Client Id							B2 FULL		B3 FULL		B4 FULL		B5 FULL		B2-B5 0-2`		B2-B5 WT	
Matrix							Soil		Soil		Soil		Soil		Soil		Soil	
	Units	2020 MCP RCS-1	2020 MCP RCS-2	RCRA Characteristics 40 CFR 261	COMM-97-001 Lined Landfill	COMM-97-001 Unlined Landfill	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Miscellaneous/Inorganics																		
Percent Solid	%	NL	NL	NL	NL	NL	94		90		90		89		80		90	
Conductivity - Soil Matrix	umhos/cm	NL	NL	NL	8,000	4,000	24	5	20	5	23	5	25	5	NS		NS	
Corrosivity	Pos/Neg	NL	NL	NL	NL	NL	**Negative**		**Negative**		**Negative**		**Negative**					
Flash Point	Degree F	NL	NL	≤ 140	NL	NL	>200	200	>200	200	>200	200	>200	200	NS		NS	
Ignitability	degree F	NL	NL	≤ 140	NL	NL	**Passed**	140	**Passed**	140	**Passed**	140	**Passed**	140	NS		NS	
pH at 25C - Soil	pH Units	NL	NL	≤ 2 and ≥ 12.5	NL	NL	7.22	1.00	7.4	1.00	7.12	1.00	7.32	1.00	NS		NS	
Reactivity Cyanide	mg/Kg	NL	NL	40 CFR 261.23	NL	NL	< 5	5	< 5	5	< 5	5	< 5	5	NS		NS	
Reactivity Sulfide	mg/Kg	NL	NL	40 CFR 261.23	NL	NL	< 20	20	< 20	20	< 20	20	< 20	20	NS		NS	
Reactivity	Pos/Neg	NL	NL	40 CFR 261.23	NL	NL	**Negative**		**Negative**		**Negative**		**Negative**					

NL = The MCP and COMM-97-001 do not list a standard for this constituent.

NS = Constituent was not sampled for in this sample.

There were neither exceedances of Conductivity for acceptance at a lined landfill nor exceedances of Conductivity for acceptance at an unlined landfill.

There were no exceedances of RCRA Characteristics for flashpoint/ignitability. Flashpoint/ignitability passed.

There were no exceedances of RCRA Characteristics for pH.

There were no exceedances of RCRA Characteristics for reactivity. Reactivity was Negative.

PHOENIX
Environmental Laboratories, Inc.

Thursday, April 25, 2024

Attn: Mr Dave Gorden
PEER Consultants
10 Mall Road, Suite 301
Burlington, MA 01803

Project ID: M.A.N. SCHOOL
SDG ID: GCQ52307
Sample ID#s: CQ52307 - CQ52314

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B

NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

Sample Id Cross Reference

April 25, 2024

SDG I.D.: GCQ52307

Project ID: M.A.N. SCHOOL

Client Id	Lab Id	Matrix
B2 FULL	CQ52307	SOIL
B3 FULL	CQ52308	SOIL
B4 FULL	CQ52309	SOIL
B5 FULL	CQ52310	SOIL
TB041524 LL	CQ52311	SOIL
B2-B5 0-2`	CQ52312	SOIL
B2-B5 WT	CQ52313	SOIL
TB041524 HL	CQ52314	SOIL

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 25, 2024

FOR: Attn: Mr Dave Gorden
PEER Consultants
10 Mall Road, Suite 301
Burlington, MA 01803

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		04/15/24	14:37
Location Code:	PEER	Received by:	CP	04/16/24	14:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	8404				

Laboratory Data

SDG ID: GCQ52307
Phoenix ID: CQ52307

Project ID: M.A.N. SCHOOL
Client ID: B2 FULL

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.33	0.33	mg/Kg	1	04/17/24	TH	SW6010D
Arsenic	3.95	0.66	mg/Kg	1	04/17/24	TH	SW6010D
Barium	35.4	0.33	mg/Kg	1	04/17/24	TH	SW6010D
Beryllium	< 0.26	0.26	mg/Kg	1	04/17/24	TH	SW6010D
Cadmium	< 0.33	0.33	mg/Kg	1	04/17/24	TH	SW6010D
Chromium	12.1	0.33	mg/Kg	1	04/17/24	TH	SW6010D
Mercury	< 0.03	0.03	mg/Kg	2	04/17/24	ZT	SW7471B
Nickel	8.46	0.33	mg/Kg	1	04/17/24	TH	SW6010D
Lead	3.60	0.33	mg/Kg	1	04/17/24	PS	SW6010D
Antimony	< 3.3	3.3	mg/Kg	1	04/17/24	TH	SW6010D
Selenium	< 1.3	1.3	mg/Kg	1	04/17/24	TH	SW6010D
Thallium	< 3.0	3.0	mg/Kg	1	04/17/24	TH	SW6010D
Vanadium	17.8	0.33	mg/Kg	1	04/17/24	TH	SW6010D
Zinc	22.1	0.7	mg/Kg	1	04/17/24	TH	SW6010D
Percent Solid	94		%		04/16/24	CV	SW846-%Solid
Conductivity - Soil Matrix	24	5	umhos/cm	1	04/17/24	JY	SW9050A
Corrosivity	Negative		Pos/Neg	1	04/16/24	MW	SW846-Corr
Flash Point	>200	200	Degree F	1	04/19/24	G	SW1010B
Ignitability	Passed	140	degree F	1	04/19/24	G	SW846-Ignit
pH at 25C - Soil	7.22	1.00	pH Units	1	04/16/24 23:31	MW	SW846 9045D
Reactivity Cyanide	< 5	5	mg/Kg	1	04/19/24	EG/GD	SW846 7.3.3.1/90
Reactivity Sulfide	< 20	20	mg/Kg	1	04/22/24	EG/GD	SW846 CH7
Reactivity	Negative		Pos/Neg	1	04/22/24	EG/GD	SW846-React
Field Extraction	Completed				04/15/24		SW5035A
Mercury Digestion	Completed				04/17/24	MQ/HL	SW7471B
Extraction of ETPH	Completed				04/19/24	HL/H/U	SW3546
Soil Extraction for PCB	Completed				04/22/24	H/A	SW3546

Ver 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Soil Extraction for SVOA	Completed				04/19/24	C/A	SW3546
Total Metals Digest	Completed				04/16/24	J/AG	SW3050B

Gasoline Range Hydrocarbons (C6-C10)

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
GRO (C6-C10)	ND	5.1	mg/Kg	50	04/17/24	V	SW8015D GRO
QA/QC Surrogates							
% 2,5-Dibromotoluene (FID)	90		%	50	04/17/24	V	70 - 130 %

Polychlorinated Biphenyls

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1016	ND	70	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1221	ND	70	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1232	ND	70	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1242	ND	70	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1248	ND	70	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1254	ND	70	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1260	ND	70	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1262	ND	70	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1268	ND	70	ug/Kg	2	04/23/24	SC	SW8082A
QA/QC Surrogates							
% DCBP	91		%	2	04/23/24	SC	30 - 150 %
% DCBP (Confirmation)	90		%	2	04/23/24	SC	30 - 150 %
% TCMX	80		%	2	04/23/24	SC	30 - 150 %
% TCMX (Confirmation)	78		%	2	04/23/24	SC	30 - 150 %

TPH by GC (Extractable (C9-C36))

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Fuel Oil #2 / Diesel Fuel	ND	52	mg/kg	1	04/20/24	JRB	SW8015D DRO
Fuel Oil #4	ND	52	mg/kg	1	04/20/24	JRB	SW8015D DRO
Fuel Oil #6	ND	52	mg/kg	1	04/20/24	JRB	SW8015D DRO
Kerosene	ND	52	mg/kg	1	04/20/24	JRB	SW8015D DRO
Motor Oil	ND	52	mg/kg	1	04/20/24	JRB	SW8015D DRO
Total TPH	ND	52	mg/kg	1	04/20/24	JRB	SW8015D DRO
Unidentified	ND	52	mg/kg	1	04/20/24	JRB	SW8015D DRO
QA/QC Surrogates							
% COD (surr)	73		%	1	04/20/24	JRB	50 - 150 %
% Terphenyl (surr)	80		%	1	04/20/24	JRB	50 - 150 %

Volatiles

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,1,1,2-Tetrachloroethane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,1,1-Trichloroethane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	3.2	ug/Kg	1	04/16/24	JLI	SW8260D
1,1,2-Trichloroethane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,1-Dichloroethane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,1-Dichloroethene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,1-Dichloropropene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,2,3-Trichloropropane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,2-Dibromoethane	ND	0.53	ug/Kg	1	04/16/24	JLI	SW8260D

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,2-Dichlorobenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,2-Dichloroethane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,2-Dichloropropane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,3-Dichlorobenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,3-Dichloropropane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
1,4-Dichlorobenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
2,2-Dichloropropane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
2-Chlorotoluene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
2-Hexanone	ND	27	ug/Kg	1	04/16/24	JLI	SW8260D
2-Isopropyltoluene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
4-Chlorotoluene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
4-Methyl-2-pentanone	ND	27	ug/Kg	1	04/16/24	JLI	SW8260D
Acetone	ND	270	ug/Kg	1	04/16/24	JLI	SW8260D
Acrylonitrile	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Benzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Bromobenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Bromochloromethane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Bromodichloromethane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Bromoform	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Bromomethane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Carbon Disulfide	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Carbon tetrachloride	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Chlorobenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Chloroethane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Chloroform	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Chloromethane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
cis-1,2-Dichloroethene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
cis-1,3-Dichloropropene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Dibromochloromethane	ND	3.2	ug/Kg	1	04/16/24	JLI	SW8260D
Dibromomethane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Dichlorodifluoromethane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Ethylbenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Hexachlorobutadiene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Isopropylbenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
m&p-Xylene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Methyl Ethyl Ketone	ND	32	ug/Kg	1	04/16/24	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	11	ug/Kg	1	04/16/24	JLI	SW8260D
Methylene chloride	ND	11	ug/Kg	1	04/16/24	JLI	SW8260D
Naphthalene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
n-Butylbenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
n-Propylbenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
o-Xylene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
p-Isopropyltoluene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
sec-Butylbenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Styrene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
tert-Butylbenzene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Tetrachloroethene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Tetrahydrofuran (THF)	ND	11	ug/Kg	1	04/16/24	JLI	SW8260D

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Toluene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Total Xylenes	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
trans-1,2-Dichloroethene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
trans-1,3-Dichloropropene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	11	ug/Kg	1	04/16/24	JLI	SW8260D
Trichloroethene	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Trichlorofluoromethane	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
Trichlorotrifluoroethane	ND	11	ug/Kg	1	04/16/24	JLI	SW8260D
Vinyl chloride	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	100		%	1	04/16/24	JLI	70 - 130 %
% Bromofluorobenzene	95		%	1	04/16/24	JLI	70 - 130 %
% Dibromofluoromethane	94		%	1	04/16/24	JLI	70 - 130 %
% Toluene-d8	99		%	1	04/16/24	JLI	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	110	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
Diethyl ether	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
Di-isopropyl ether	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
Ethyl tert-butyl ether	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
tert-amyl methyl ether	ND	5.3	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
Semivolatiles							
1,1-Biphenyl	ND	50	ug/Kg	1	04/20/24	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
1,2,4-Trichlorobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
1,2-Dichlorobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
1,2-Diphenylhydrazine	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
1,3-Dichlorobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
1,4-Dichlorobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,4,5-Trichlorophenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,4,6-Trichlorophenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dichlorophenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dimethylphenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dinitrophenol	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dinitrotoluene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,6-Dinitrotoluene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2-Chloronaphthalene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2-Chlorophenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2-Methylnaphthalene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2-Methylphenol (o-cresol)	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2-Nitroaniline	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
2-Nitrophenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
3,3'-Dichlorobenzidine	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
3-Nitroaniline	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
4-Bromophenyl phenyl ether	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
4-Chloro-3-methylphenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E

Project ID: M.A.N. SCHOOL
Client ID: B2 FULL

Phoenix I.D.: CQ52307

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Chloroaniline	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
4-Nitroaniline	ND	560	ug/Kg	1	04/20/24	MR	SW8270E
4-Nitrophenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Acenaphthene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Acenaphthylene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Acetophenone	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Aniline	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
Anthracene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benz(a)anthracene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benzidine	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(a)pyrene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(b)fluoranthene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(ghi)perylene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(k)fluoranthene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benzoic acid	ND	700	ug/Kg	1	04/20/24	MR	SW8270E
Benzyl butyl phthalate	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Bis(2-chloroethyl)ether	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
Carbazole	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
Chrysene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Dibenz(a,h)anthracene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Dibenzofuran	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Diethyl phthalate	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Dimethylphthalate	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Di-n-butylphthalate	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
Di-n-octylphthalate	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Fluoranthene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Fluorene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Hexachlorobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Hexachlorobutadiene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Hexachlorocyclopentadiene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Hexachloroethane	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Indeno(1,2,3-cd)pyrene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Isophorone	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Naphthalene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Nitrobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
N-Nitrosodimethylamine	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
N-Nitrosodiphenylamine	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
Pentachloronitrobenzene	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
Pentachlorophenol	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
Phenanthrene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Phenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Pyrene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Pyridine	ND	350	ug/Kg	1	04/20/24	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	73		%	1	04/20/24	MR	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% 2-Fluorobiphenyl	64		%	1	04/20/24	MR	30 - 130 %
% 2-Fluorophenol	64		%	1	04/20/24	MR	30 - 130 %
% Nitrobenzene-d5	63		%	1	04/20/24	MR	30 - 130 %
% Phenol-d5	65		%	1	04/20/24	MR	30 - 130 %
% Terphenyl-d14	72		%	1	04/20/24	MR	30 - 130 %

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Corrosivity is based solely on the pH analysis performed above.

The GRO (C6-C10) is quantitated using an gasoline standard.

Ignitability is based solely on the results of the closed cup flashpoint analysis performed above. Passed is >140 degree F.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide. This method is no longer listed in the current version of SW-846.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Sulfide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller

Phyllis Shiller, Laboratory Director
April 25, 2024
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 25, 2024

FOR: Attn: Mr Dave Gorden
PEER Consultants
10 Mall Road, Suite 301
Burlington, MA 01803

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		04/15/24	11:39
Location Code:	PEER	Received by:	CP	04/16/24	14:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	8404				

Laboratory Data

SDG ID: GCQ52307
Phoenix ID: CQ52308

Project ID: M.A.N. SCHOOL
Client ID: B3 FULL

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.38	0.38	mg/Kg	1	04/17/24	TH	SW6010D
Arsenic	3.71	0.75	mg/Kg	1	04/17/24	TH	SW6010D
Barium	46.9	0.38	mg/Kg	1	04/17/24	TH	SW6010D
Beryllium	0.34	0.30	mg/Kg	1	04/17/24	TH	SW6010D
Cadmium	< 0.38	0.38	mg/Kg	1	04/17/24	TH	SW6010D
Chromium	17.9	0.38	mg/Kg	1	04/17/24	TH	SW6010D
Mercury	< 0.03	0.03	mg/Kg	2	04/17/24	ZT	SW7471B
Nickel	11.0	0.38	mg/Kg	1	04/17/24	TH	SW6010D
Lead	3.77	0.38	mg/Kg	1	04/17/24	PS	SW6010D
Antimony	< 3.8	3.8	mg/Kg	1	04/17/24	TH	SW6010D
Selenium	< 1.5	1.5	mg/Kg	1	04/17/24	TH	SW6010D
Thallium	< 3.4	3.4	mg/Kg	1	04/17/24	TH	SW6010D
Vanadium	24.1	0.38	mg/Kg	1	04/17/24	TH	SW6010D
Zinc	26.9	0.8	mg/Kg	1	04/17/24	TH	SW6010D
Percent Solid	90		%		04/16/24	CV	SW846-%Solid
Conductivity - Soil Matrix	20	5	umhos/cm	1	04/17/24	JY	SW9050A
Corrosivity	Negative		Pos/Neg	1	04/16/24	MW	SW846-Corr
Flash Point	>200	200	Degree F	1	04/19/24	G	SW1010B
Ignitability	Passed	140	degree F	1	04/19/24	G	SW846-Ignit
pH at 25C - Soil	7.40	1.00	pH Units	1	04/16/24 23:31	MW	SW846 9045D
Reactivity Cyanide	< 5	5	mg/Kg	1	04/19/24	EG/GD	SW846 7.3.3.1/90
Reactivity Sulfide	< 20	20	mg/Kg	1	04/22/24	EG/GD	SW846 CH7
Reactivity	Negative		Pos/Neg	1	04/22/24	EG/GD	SW846-React
Field Extraction	Completed				04/15/24		SW5035A
Mercury Digestion	Completed				04/17/24	MQ/HL	SW7471B
Extraction of ETPH	Completed				04/19/24	HL/H/U	SW3546
Soil Extraction for PCB	Completed				04/22/24	H/A	SW3546

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Soil Extraction for SVOA	Completed				04/19/24	C/A	SW3546
Total Metals Digest	Completed				04/16/24	J/AG	SW3050B

Gasoline Range Hydrocarbons (C6-C10)

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
GRO (C6-C10)	ND	5.0	mg/Kg	50	04/17/24	V	SW8015D GRO
QA/QC Surrogates							
% 2,5-Dibromotoluene (FID)	94		%	50	04/17/24	V	70 - 130 %

Polychlorinated Biphenyls

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
PCB-1016	ND	73	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1221	ND	73	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1232	ND	73	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1242	ND	73	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1248	ND	73	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1254	ND	73	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1260	ND	73	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1262	ND	73	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1268	ND	73	ug/Kg	2	04/23/24	SC	SW8082A
QA/QC Surrogates							
% DCBP	86		%	2	04/23/24	SC	30 - 150 %
% DCBP (Confirmation)	85		%	2	04/23/24	SC	30 - 150 %
% TCMX	79		%	2	04/23/24	SC	30 - 150 %
% TCMX (Confirmation)	76		%	2	04/23/24	SC	30 - 150 %

TPH by GC (Extractable (C9-C36))

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Fuel Oil #2 / Diesel Fuel	ND	55	mg/kg	1	04/20/24	JRB	SW8015D DRO
Fuel Oil #4	ND	55	mg/kg	1	04/20/24	JRB	SW8015D DRO
Fuel Oil #6	ND	55	mg/kg	1	04/20/24	JRB	SW8015D DRO
Kerosene	ND	55	mg/kg	1	04/20/24	JRB	SW8015D DRO
Motor Oil	ND	55	mg/kg	1	04/20/24	JRB	SW8015D DRO
Total TPH	ND	55	mg/kg	1	04/20/24	JRB	SW8015D DRO
Unidentified	ND	55	mg/kg	1	04/20/24	JRB	SW8015D DRO
QA/QC Surrogates							
% COD (surr)	66		%	1	04/20/24	JRB	50 - 150 %
% Terphenyl (surr)	73		%	1	04/20/24	JRB	50 - 150 %

Volatiles

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,1,1,2-Tetrachloroethane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,1,1-Trichloroethane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	2.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,1,2-Trichloroethane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,1-Dichloroethane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,1-Dichloroethene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,1-Dichloropropene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,2,3-Trichloropropane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,2-Dibromoethane	ND	0.49	ug/Kg	1	04/16/24	JLI	SW8260D

Project ID: M.A.N. SCHOOL
Client ID: B3 FULL

Phoenix I.D.: CQ52308

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,2-Dichlorobenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,2-Dichloroethane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,2-Dichloropropane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,3-Dichlorobenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,3-Dichloropropane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
1,4-Dichlorobenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
2,2-Dichloropropane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
2-Chlorotoluene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
2-Hexanone	ND	24	ug/Kg	1	04/16/24	JLI	SW8260D
2-Isopropyltoluene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
4-Chlorotoluene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
4-Methyl-2-pentanone	ND	24	ug/Kg	1	04/16/24	JLI	SW8260D
Acetone	ND	240	ug/Kg	1	04/16/24	JLI	SW8260D
Acrylonitrile	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Benzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Bromobenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Bromochloromethane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Bromodichloromethane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Bromoform	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Bromomethane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Carbon Disulfide	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Carbon tetrachloride	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Chlorobenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Chloroethane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Chloroform	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Chloromethane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
cis-1,2-Dichloroethene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
cis-1,3-Dichloropropene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Dibromochloromethane	ND	2.9	ug/Kg	1	04/16/24	JLI	SW8260D
Dibromomethane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Dichlorodifluoromethane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Ethylbenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Hexachlorobutadiene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Isopropylbenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
m&p-Xylene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Methyl Ethyl Ketone	ND	29	ug/Kg	1	04/16/24	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	9.8	ug/Kg	1	04/16/24	JLI	SW8260D
Methylene chloride	ND	9.8	ug/Kg	1	04/16/24	JLI	SW8260D
Naphthalene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
n-Butylbenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
n-Propylbenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
o-Xylene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
p-Isopropyltoluene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
sec-Butylbenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Styrene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
tert-Butylbenzene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Tetrachloroethene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Tetrahydrofuran (THF)	ND	9.8	ug/Kg	1	04/16/24	JLI	SW8260D

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Toluene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Total Xylenes	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
trans-1,2-Dichloroethene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
trans-1,3-Dichloropropene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	9.8	ug/Kg	1	04/16/24	JLI	SW8260D
Trichloroethene	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Trichlorofluoromethane	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
Trichlorotrifluoroethane	ND	9.8	ug/Kg	1	04/16/24	JLI	SW8260D
Vinyl chloride	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	100		%	1	04/16/24	JLI	70 - 130 %
% Bromofluorobenzene	96		%	1	04/16/24	JLI	70 - 130 %
% Dibromofluoromethane	92		%	1	04/16/24	JLI	70 - 130 %
% Toluene-d8	99		%	1	04/16/24	JLI	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	98	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
Diethyl ether	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
Di-isopropyl ether	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
Ethyl tert-butyl ether	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
tert-amyl methyl ether	ND	4.9	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
Semivolatiles							
1,1-Biphenyl	ND	50	ug/Kg	1	04/20/24	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
1,2,4-Trichlorobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
1,2-Dichlorobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
1,2-Diphenylhydrazine	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
1,3-Dichlorobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
1,4-Dichlorobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,4,5-Trichlorophenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,4,6-Trichlorophenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dichlorophenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dimethylphenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dinitrophenol	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dinitrotoluene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2,6-Dinitrotoluene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2-Chloronaphthalene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2-Chlorophenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2-Methylnaphthalene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2-Methylphenol (o-cresol)	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
2-Nitroaniline	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
2-Nitrophenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
3,3'-Dichlorobenzidine	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
3-Nitroaniline	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
4-Bromophenyl phenyl ether	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
4-Chloro-3-methylphenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Chloroaniline	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
4-Nitroaniline	ND	580	ug/Kg	1	04/20/24	MR	SW8270E
4-Nitrophenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Acenaphthene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Acenaphthylene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Acetophenone	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Aniline	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
Anthracene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benz(a)anthracene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benzidine	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(a)pyrene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(b)fluoranthene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(ghi)perylene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(k)fluoranthene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Benzoic acid	ND	720	ug/Kg	1	04/20/24	MR	SW8270E
Benzyl butyl phthalate	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Bis(2-chloroethyl)ether	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
Carbazole	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
Chrysene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Dibenz(a,h)anthracene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Dibenzofuran	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Diethyl phthalate	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Dimethylphthalate	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Di-n-butylphthalate	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
Di-n-octylphthalate	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Fluoranthene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Fluorene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Hexachlorobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Hexachlorobutadiene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Hexachlorocyclopentadiene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Hexachloroethane	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Indeno(1,2,3-cd)pyrene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Isophorone	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Naphthalene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Nitrobenzene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
N-Nitrosodimethylamine	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
N-Nitrosodiphenylamine	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
Pentachloronitrobenzene	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
Pentachlorophenol	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
Phenanthrene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Phenol	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Pyrene	ND	250	ug/Kg	1	04/20/24	MR	SW8270E
Pyridine	ND	360	ug/Kg	1	04/20/24	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	73		%	1	04/20/24	MR	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% 2-Fluorobiphenyl	65		%	1	04/20/24	MR	30 - 130 %
% 2-Fluorophenol	66		%	1	04/20/24	MR	30 - 130 %
% Nitrobenzene-d5	64		%	1	04/20/24	MR	30 - 130 %
% Phenol-d5	66		%	1	04/20/24	MR	30 - 130 %
% Terphenyl-d14	72		%	1	04/20/24	MR	30 - 130 %

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Corrosivity is based solely on the pH analysis performed above.

The GRO (C6-C10) is quantitated using an gasoline standard.

Ignitability is based solely on the results of the closed cup flashpoint analysis performed above. Passed is >140 degree F.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide. This method is no longer listed in the current version of SW-846.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Sulfide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller

Phyllis Shiller, Laboratory Director
April 25, 2024
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 25, 2024

FOR: Attn: Mr Dave Gorden
PEER Consultants
10 Mall Road, Suite 301
Burlington, MA 01803

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		04/15/24	13:16
Location Code:	PEER	Received by:	CP	04/16/24	14:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	8404				

Laboratory Data

SDG ID: GCQ52307
Phoenix ID: CQ52309

Project ID: M.A.N. SCHOOL
Client ID: B4 FULL

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.36	0.36	mg/Kg	1	04/17/24	PM	SW6010D
Arsenic	2.82	0.72	mg/Kg	1	04/17/24	PM	SW6010D
Barium	32.7	0.36	mg/Kg	1	04/17/24	PM	SW6010D
Beryllium	< 0.29	0.29	mg/Kg	1	04/17/24	PM	SW6010D
Cadmium	0.40	0.36	mg/Kg	1	04/17/24	PM	SW6010D
Chromium	13.1	0.36	mg/Kg	1	04/17/24	PM	SW6010D
Mercury	< 0.03	0.03	mg/Kg	2	04/17/24	ZT	SW7471B
Nickel	10.3	0.36	mg/Kg	1	04/17/24	PM	SW6010D
Lead	3.42	0.36	mg/Kg	1	04/17/24	PM	SW6010D
Antimony	< 3.6	3.6	mg/Kg	1	04/17/24	PM	SW6010D
Selenium	< 1.4	1.4	mg/Kg	1	04/17/24	PM	SW6010D
Thallium	< 3.2	3.2	mg/Kg	1	04/17/24	PM	SW6010D
Vanadium	20.8	0.36	mg/Kg	1	04/17/24	PM	SW6010D
Zinc	23.4	0.7	mg/Kg	1	04/17/24	PM	SW6010D
Percent Solid	90		%		04/16/24	CV	SW846-%Solid
Conductivity - Soil Matrix	23	5	umhos/cm	1	04/17/24	JY	SW9050A
Corrosivity	Negative		Pos/Neg	1	04/16/24	MW	SW846-Corr
Flash Point	>200	200	Degree F	1	04/19/24	G	SW1010B
Ignitability	Passed	140	degree F	1	04/19/24	G	SW846-Ignit
pH at 25C - Soil	7.12	1.00	pH Units	1	04/16/24 23:31	MW	SW846 9045D
Reactivity Cyanide	< 5	5	mg/Kg	1	04/19/24	EG/GD	SW846 7.3.3.1/90
Reactivity Sulfide	< 20	20	mg/Kg	1	04/22/24	EG/GD	SW846 CH7
Reactivity	Negative		Pos/Neg	1	04/22/24	EG/GD	SW846-React
Field Extraction	Completed				04/15/24		SW5035A
Mercury Digestion	Completed				04/17/24	MQ/HL	SW7471B
Extraction of ETPH	Completed				04/19/24	HL/H/U	SW3546
Soil Extraction for PCB	Completed				04/22/24	C/U	SW3546

Ver 1

Project ID: M.A.N. SCHOOL
Client ID: B4 FULL

Phoenix I.D.: CQ52309

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
Soil Extraction for SVOA	Completed				04/19/24	C/A	SW3546	
Total Metals Digest	Completed				04/16/24	J/AG	SW3050B	
Gasoline Range Hydrocarbons (C6-C10)								
GRO (C6-C10)	ND	4.8	mg/Kg	50	04/17/24	V	SW8015D GRO	
QA/QC Surrogates								
% 2,5-Dibromotoluene (FID)	92		%	50	04/17/24	V	70 - 130 %	
Polychlorinated Biphenyls								
PCB-1016	ND	72	ug/Kg	2	04/23/24	SC	SW8082A	
PCB-1221	ND	72	ug/Kg	2	04/23/24	SC	SW8082A	
PCB-1232	ND	72	ug/Kg	2	04/23/24	SC	SW8082A	
PCB-1242	ND	72	ug/Kg	2	04/23/24	SC	SW8082A	
PCB-1248	ND	72	ug/Kg	2	04/23/24	SC	SW8082A	
PCB-1254	ND	72	ug/Kg	2	04/23/24	SC	SW8082A	
PCB-1260	ND	72	ug/Kg	2	04/23/24	SC	SW8082A	
PCB-1262	ND	72	ug/Kg	2	04/23/24	SC	SW8082A	
PCB-1268	ND	72	ug/Kg	2	04/23/24	SC	SW8082A	
QA/QC Surrogates								
% DCBP	86		%	2	04/23/24	SC	30 - 150 %	
% DCBP (Confirmation)	77		%	2	04/23/24	SC	30 - 150 %	
% TCMX	77		%	2	04/23/24	SC	30 - 150 %	
% TCMX (Confirmation)	70		%	2	04/23/24	SC	30 - 150 %	
TPH by GC (Extractable (C9-C36))								
Fuel Oil #2 / Diesel Fuel	ND	54	mg/kg	1	04/20/24	JRB	SW8015D DRO	
Fuel Oil #4	ND	54	mg/kg	1	04/20/24	JRB	SW8015D DRO	
Fuel Oil #6	ND	54	mg/kg	1	04/20/24	JRB	SW8015D DRO	
Kerosene	ND	54	mg/kg	1	04/20/24	JRB	SW8015D DRO	
Motor Oil	ND	54	mg/kg	1	04/20/24	JRB	SW8015D DRO	
Total TPH	ND	54	mg/kg	1	04/20/24	JRB	SW8015D DRO	
Unidentified	ND	54	mg/kg	1	04/20/24	JRB	SW8015D DRO	
QA/QC Surrogates								
% COD (surr)	49		%	1	04/20/24	JRB	50 - 150 %	3
% Terphenyl (surr)	60		%	1	04/20/24	JRB	50 - 150 %	
Volatiles								
1,1,1,2-Tetrachloroethane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D	
1,1,1-Trichloroethane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D	
1,1,2,2-Tetrachloroethane	ND	2.5	ug/Kg	1	04/17/24	JLI	SW8260D	
1,1,2-Trichloroethane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D	
1,1-Dichloroethane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D	
1,1-Dichloroethene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D	
1,1-Dichloropropene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D	
1,2,3-Trichlorobenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D	
1,2,3-Trichloropropane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D	
1,2,4-Trichlorobenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D	
1,2,4-Trimethylbenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D	
1,2-Dibromo-3-chloropropane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D	
1,2-Dibromoethane	ND	0.42	ug/Kg	1	04/17/24	JLI	SW8260D	

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,2-Dichlorobenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
1,2-Dichloroethane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
1,2-Dichloropropane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
1,3-Dichlorobenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
1,3-Dichloropropane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
1,4-Dichlorobenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
2,2-Dichloropropane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
2-Chlorotoluene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
2-Hexanone	ND	21	ug/Kg	1	04/17/24	JLI	SW8260D
2-Isopropyltoluene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
4-Chlorotoluene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
4-Methyl-2-pentanone	ND	21	ug/Kg	1	04/17/24	JLI	SW8260D
Acetone	ND	210	ug/Kg	1	04/17/24	JLI	SW8260D
Acrylonitrile	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Benzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Bromobenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Bromochloromethane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Bromodichloromethane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Bromoform	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Bromomethane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Carbon Disulfide	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Carbon tetrachloride	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Chlorobenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Chloroethane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Chloroform	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Chloromethane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
cis-1,2-Dichloroethene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
cis-1,3-Dichloropropene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Dibromochloromethane	ND	2.5	ug/Kg	1	04/17/24	JLI	SW8260D
Dibromomethane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Dichlorodifluoromethane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Ethylbenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Hexachlorobutadiene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Isopropylbenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
m&p-Xylene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Methyl Ethyl Ketone	ND	25	ug/Kg	1	04/17/24	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	8.4	ug/Kg	1	04/17/24	JLI	SW8260D
Methylene chloride	ND	8.4	ug/Kg	1	04/17/24	JLI	SW8260D
Naphthalene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
n-Butylbenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
n-Propylbenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
o-Xylene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
p-Isopropyltoluene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
sec-Butylbenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Styrene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
tert-Butylbenzene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Tetrachloroethene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Tetrahydrofuran (THF)	ND	8.4	ug/Kg	1	04/17/24	JLI	SW8260D

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Toluene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Total Xylenes	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
trans-1,2-Dichloroethene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
trans-1,3-Dichloropropene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	8.4	ug/Kg	1	04/17/24	JLI	SW8260D
Trichloroethene	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Trichlorofluoromethane	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
Trichlorotrifluoroethane	ND	8.4	ug/Kg	1	04/17/24	JLI	SW8260D
Vinyl chloride	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	99		%	1	04/17/24	JLI	70 - 130 %
% Bromofluorobenzene	95		%	1	04/17/24	JLI	70 - 130 %
% Dibromofluoromethane	96		%	1	04/17/24	JLI	70 - 130 %
% Toluene-d8	100		%	1	04/17/24	JLI	70 - 130 %

Oxygenates & Dioxane

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,4-Dioxane	ND	84	ug/Kg	1	04/17/24	JLI	SW8260D (OXY)
Diethyl ether	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D (OXY)
Di-isopropyl ether	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D (OXY)
Ethyl tert-butyl ether	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D (OXY)
tert-amyl methyl ether	ND	4.2	ug/Kg	1	04/17/24	JLI	SW8260D (OXY)

Semivolatiles

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,1-Biphenyl	ND	50	ug/Kg	1	04/20/24	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
1,2,4-Trichlorobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
1,2-Dichlorobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
1,2-Diphenylhydrazine	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
1,3-Dichlorobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
1,4-Dichlorobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,4,5-Trichlorophenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,4,6-Trichlorophenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dichlorophenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dimethylphenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dinitrophenol	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dinitrotoluene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,6-Dinitrotoluene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2-Chloronaphthalene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2-Chlorophenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2-Methylnaphthalene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2-Methylphenol (o-cresol)	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2-Nitroaniline	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
2-Nitrophenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
3,3'-Dichlorobenzidine	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
3-Nitroaniline	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
4-Bromophenyl phenyl ether	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
4-Chloro-3-methylphenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Chloroaniline	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
4-Nitroaniline	ND	590	ug/Kg	1	04/20/24	MR	SW8270E
4-Nitrophenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Acenaphthene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Acenaphthylene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Acetophenone	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Aniline	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Anthracene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benz(a)anthracene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benzidine	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(a)pyrene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(b)fluoranthene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(ghi)perylene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(k)fluoranthene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benzoic acid	ND	730	ug/Kg	1	04/20/24	MR	SW8270E
Benzyl butyl phthalate	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Bis(2-chloroethyl)ether	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Carbazole	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Chrysene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Dibenz(a,h)anthracene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Dibenzofuran	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Diethyl phthalate	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Dimethylphthalate	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Di-n-butylphthalate	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Di-n-octylphthalate	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Fluoranthene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Fluorene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Hexachlorobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Hexachlorobutadiene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Hexachlorocyclopentadiene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Hexachloroethane	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Indeno(1,2,3-cd)pyrene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Isophorone	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Naphthalene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Nitrobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
N-Nitrosodimethylamine	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
N-Nitrosodiphenylamine	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Pentachloronitrobenzene	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Pentachlorophenol	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Phenanthrene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Phenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Pyrene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Pyridine	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	78		%	1	04/20/24	MR	30 - 130 %

Project ID: M.A.N. SCHOOL
Client ID: B4 FULL

Phoenix I.D.: CQ52309

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% 2-Fluorobiphenyl	67		%	1	04/20/24	MR	30 - 130 %
% 2-Fluorophenol	70		%	1	04/20/24	MR	30 - 130 %
% Nitrobenzene-d5	68		%	1	04/20/24	MR	30 - 130 %
% Phenol-d5	70		%	1	04/20/24	MR	30 - 130 %
% Terphenyl-d14	74		%	1	04/20/24	MR	30 - 130 %

3 = This parameter exceeds laboratory specified limits.
Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

The GRO (C6-C10) is quantitated using an gasoline standard.

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Corrosivity is based solely on the pH analysis performed above.

Ignitability is based solely on the results of the closed cup flashpoint analysis performed above. Passed is >140 degree F.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide. This method is no longer listed in the current version of SW-846.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Sulfide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller

Phyllis Shiller, Laboratory Director
April 25, 2024
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 25, 2024

FOR: Attn: Mr Dave Gorden
PEER Consultants
10 Mall Road, Suite 301
Burlington, MA 01803

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		04/15/24	9:42
Location Code:	PEER	Received by:	CP	04/16/24	14:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	8404				

Laboratory Data

SDG ID: GCQ52307
Phoenix ID: CQ52310

Project ID: M.A.N. SCHOOL
Client ID: B5 FULL

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.35	0.35	mg/Kg	1	04/18/24	CPP	SW6010D
Arsenic	3.78	0.70	mg/Kg	1	04/18/24	CPP	SW6010D
Barium	48.3	0.35	mg/Kg	1	04/18/24	CPP	SW6010D
Beryllium	0.35	0.28	mg/Kg	1	04/18/24	CPP	SW6010D
Cadmium	< 0.35	0.35	mg/Kg	1	04/18/24	CPP	SW6010D
Chromium	13.8	0.35	mg/Kg	1	04/18/24	CPP	SW6010D
Mercury	< 0.03	0.03	mg/Kg	2	04/17/24	ZT	SW7471B
Nickel	9.65	0.35	mg/Kg	1	04/18/24	CPP	SW6010D
Lead	3.64	0.35	mg/Kg	1	04/18/24	CPP	SW6010D
Antimony	< 3.5	3.5	mg/Kg	1	04/18/24	CPP	SW6010D
Selenium	< 1.4	1.4	mg/Kg	1	04/18/24	CPP	SW6010D
Thallium	< 3.2	3.2	mg/Kg	1	04/18/24	CPP	SW6010D
Vanadium	22.3	0.35	mg/Kg	1	04/18/24	CPP	SW6010D
Zinc	27.3	0.7	mg/Kg	1	04/18/24	CPP	SW6010D
Percent Solid	89		%		04/16/24	CV	SW846-%Solid
Conductivity - Soil Matrix	25	5	umhos/cm	1	04/17/24	JY	SW9050A
Corrosivity	Negative		Pos/Neg	1	04/16/24	MW	SW846-Corr
Flash Point	>200	200	Degree F	1	04/19/24	G	SW1010B
Ignitability	Passed	140	degree F	1	04/19/24	G	SW846-Ignit
pH at 25C - Soil	7.32	1.00	pH Units	1	04/16/24 23:31	MW	SW846 9045D
Reactivity Cyanide	< 5	5	mg/Kg	1	04/19/24	EG/GD	SW846 7.3.3.1/90
Reactivity Sulfide	< 20	20	mg/Kg	1	04/22/24	EG/GD	SW846 CH7
Reactivity	Negative		Pos/Neg	1	04/22/24	EG/GD	SW846-React
Field Extraction	Completed				04/15/24		SW5035A
Mercury Digestion	Completed				04/17/24	MQ/HL	SW7471B
Extraction of ETPH	Completed				04/19/24	HL/H/U	SW3546
Soil Extraction for PCB	Completed				04/22/24	C/U	SW3546

Ver 1

Project ID: M.A.N. SCHOOL
Client ID: B5 FULL

Phoenix I.D.: CQ52310

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Soil Extraction for SVOA	Completed				04/19/24	C/A	SW3546
Total Metals Digest	Completed				04/17/24	J/AG	SW3050B
Gasoline Range Hydrocarbons (C6-C10)							
GRO (C6-C10)	ND	5.6	mg/Kg	50	04/17/24	V	SW8015D GRO
QA/QC Surrogates							
% 2,5-Dibromotoluene (FID)	94		%	50	04/17/24	V	70 - 130 %
Polychlorinated Biphenyls							
PCB-1016	ND	74	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1221	ND	74	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1232	ND	74	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1242	ND	74	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1248	ND	74	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1254	ND	74	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1260	ND	74	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1262	ND	74	ug/Kg	2	04/23/24	SC	SW8082A
PCB-1268	ND	74	ug/Kg	2	04/23/24	SC	SW8082A
QA/QC Surrogates							
% DCBP	95		%	2	04/23/24	SC	30 - 150 %
% DCBP (Confirmation)	91		%	2	04/23/24	SC	30 - 150 %
% TCMX	83		%	2	04/23/24	SC	30 - 150 %
% TCMX (Confirmation)	80		%	2	04/23/24	SC	30 - 150 %
TPH by GC (Extractable (C9-C36))							
Fuel Oil #2 / Diesel Fuel	ND	56	mg/kg	1	04/20/24	JRB	SW8015D DRO
Fuel Oil #4	ND	56	mg/kg	1	04/20/24	JRB	SW8015D DRO
Fuel Oil #6	ND	56	mg/kg	1	04/20/24	JRB	SW8015D DRO
Kerosene	ND	56	mg/kg	1	04/20/24	JRB	SW8015D DRO
Motor Oil	ND	56	mg/kg	1	04/20/24	JRB	SW8015D DRO
Total TPH	ND	56	mg/kg	1	04/20/24	JRB	SW8015D DRO
Unidentified	ND	56	mg/kg	1	04/20/24	JRB	SW8015D DRO
QA/QC Surrogates							
% COD (surr)	67		%	1	04/20/24	JRB	50 - 150 %
% Terphenyl (surr)	81		%	1	04/20/24	JRB	50 - 150 %
Volatiles							
1,1,1,2-Tetrachloroethane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,1,1-Trichloroethane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	2.7	ug/Kg	1	04/17/24	JLI	SW8260D
1,1,2-Trichloroethane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,1-Dichloroethane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,1-Dichloroethene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,1-Dichloropropene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,2,3-Trichloropropane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,2-Dibromoethane	ND	0.45	ug/Kg	1	04/17/24	JLI	SW8260D

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,2-Dichlorobenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,2-Dichloroethane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,2-Dichloropropane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,3-Dichlorobenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,3-Dichloropropane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
1,4-Dichlorobenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
2,2-Dichloropropane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
2-Chlorotoluene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
2-Hexanone	ND	22	ug/Kg	1	04/17/24	JLI	SW8260D
2-Isopropyltoluene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
4-Chlorotoluene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
4-Methyl-2-pentanone	ND	22	ug/Kg	1	04/17/24	JLI	SW8260D
Acetone	ND	220	ug/Kg	1	04/17/24	JLI	SW8260D
Acrylonitrile	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Benzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Bromobenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Bromochloromethane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Bromodichloromethane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Bromoform	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Bromomethane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Carbon Disulfide	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Carbon tetrachloride	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Chlorobenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Chloroethane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Chloroform	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Chloromethane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
cis-1,2-Dichloroethene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
cis-1,3-Dichloropropene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Dibromochloromethane	ND	2.7	ug/Kg	1	04/17/24	JLI	SW8260D
Dibromomethane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Dichlorodifluoromethane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Ethylbenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Hexachlorobutadiene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Isopropylbenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
m&p-Xylene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Methyl Ethyl Ketone	ND	27	ug/Kg	1	04/17/24	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	9.0	ug/Kg	1	04/17/24	JLI	SW8260D
Methylene chloride	ND	9.0	ug/Kg	1	04/17/24	JLI	SW8260D
Naphthalene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
n-Butylbenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
n-Propylbenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
o-Xylene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
p-Isopropyltoluene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
sec-Butylbenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Styrene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
tert-Butylbenzene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Tetrachloroethene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Tetrahydrofuran (THF)	ND	9.0	ug/Kg	1	04/17/24	JLI	SW8260D

Project ID: M.A.N. SCHOOL
Client ID: B5 FULL

Phoenix I.D.: CQ52310

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Toluene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Total Xylenes	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
trans-1,2-Dichloroethene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
trans-1,3-Dichloropropene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	9.0	ug/Kg	1	04/17/24	JLI	SW8260D
Trichloroethene	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Trichlorofluoromethane	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
Trichlorotrifluoroethane	ND	9.0	ug/Kg	1	04/17/24	JLI	SW8260D
Vinyl chloride	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	99		%	1	04/17/24	JLI	70 - 130 %
% Bromofluorobenzene	96		%	1	04/17/24	JLI	70 - 130 %
% Dibromofluoromethane	95		%	1	04/17/24	JLI	70 - 130 %
% Toluene-d8	100		%	1	04/17/24	JLI	70 - 130 %

Oxygenates & Dioxane

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,4-Dioxane	ND	90	ug/Kg	1	04/17/24	JLI	SW8260D (OXY)
Diethyl ether	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D (OXY)
Di-isopropyl ether	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D (OXY)
Ethyl tert-butyl ether	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D (OXY)
tert-amyl methyl ether	ND	4.5	ug/Kg	1	04/17/24	JLI	SW8260D (OXY)

Semivolatiles

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
1,1-Biphenyl	ND	50	ug/Kg	1	04/20/24	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
1,2,4-Trichlorobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
1,2-Dichlorobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
1,2-Diphenylhydrazine	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
1,3-Dichlorobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
1,4-Dichlorobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,4,5-Trichlorophenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,4,6-Trichlorophenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dichlorophenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dimethylphenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dinitrophenol	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
2,4-Dinitrotoluene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2,6-Dinitrotoluene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2-Chloronaphthalene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2-Chlorophenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2-Methylnaphthalene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2-Methylphenol (o-cresol)	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
2-Nitroaniline	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
2-Nitrophenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
3,3'-Dichlorobenzidine	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
3-Nitroaniline	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
4-Bromophenyl phenyl ether	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
4-Chloro-3-methylphenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Chloroaniline	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
4-Nitroaniline	ND	590	ug/Kg	1	04/20/24	MR	SW8270E
4-Nitrophenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Acenaphthene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Acenaphthylene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Acetophenone	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Aniline	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Anthracene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benz(a)anthracene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benzidine	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(a)pyrene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(b)fluoranthene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(ghi)perylene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benzo(k)fluoranthene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Benzoic acid	ND	740	ug/Kg	1	04/20/24	MR	SW8270E
Benzyl butyl phthalate	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Bis(2-chloroethyl)ether	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Carbazole	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Chrysene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Dibenz(a,h)anthracene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Dibenzofuran	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Diethyl phthalate	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Dimethylphthalate	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Di-n-butylphthalate	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Di-n-octylphthalate	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Fluoranthene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Fluorene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Hexachlorobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Hexachlorobutadiene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Hexachlorocyclopentadiene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Hexachloroethane	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Indeno(1,2,3-cd)pyrene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Isophorone	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Naphthalene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Nitrobenzene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
N-Nitrosodimethylamine	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
N-Nitrosodiphenylamine	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Pentachloronitrobenzene	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Pentachlorophenol	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
Phenanthrene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Phenol	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Pyrene	ND	260	ug/Kg	1	04/20/24	MR	SW8270E
Pyridine	ND	370	ug/Kg	1	04/20/24	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	74		%	1	04/20/24	MR	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% 2-Fluorobiphenyl	67		%	1	04/20/24	MR	30 - 130 %
% 2-Fluorophenol	69		%	1	04/20/24	MR	30 - 130 %
% Nitrobenzene-d5	68		%	1	04/20/24	MR	30 - 130 %
% Phenol-d5	69		%	1	04/20/24	MR	30 - 130 %
% Terphenyl-d14	72		%	1	04/20/24	MR	30 - 130 %

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QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

The GRO (C6-C10) is quantitated using an gasoline standard.

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Corrosivity is based solely on the pH analysis performed above.

Ignitability is based solely on the results of the closed cup flashpoint analysis performed above. Passed is >140 degree F.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide. This method is no longer listed in the current version of SW-846.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Sulfide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director
April 25, 2024
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 25, 2024

FOR: Attn: Mr Dave Gorden
PEER Consultants
10 Mall Road, Suite 301
Burlington, MA 01803

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		04/10/24	
Location Code:	PEER	Received by:	CP	04/16/24	14:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	8404				

Laboratory Data

SDG ID: GCQ52307
Phoenix ID: CQ52311

Project ID: M.A.N. SCHOOL
Client ID: TB041524 LL

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Field Extraction	Completed				04/15/24		SW5035A
Volatiles							
1,1,1,2-Tetrachloroethane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,1,1-Trichloroethane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	3.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,1,2-Trichloroethane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,1-Dichloroethane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,1-Dichloroethene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,1-Dichloropropene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,2,3-Trichloropropane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,2-Dibromoethane	ND	0.50	ug/Kg	1	04/16/24	JLI	SW8260D
1,2-Dichlorobenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,2-Dichloroethane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,2-Dichloropropane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,3-Dichlorobenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,3-Dichloropropane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
1,4-Dichlorobenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
2,2-Dichloropropane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
2-Chlorotoluene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
2-Hexanone	ND	25	ug/Kg	1	04/16/24	JLI	SW8260D
2-Isopropyltoluene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Chlorotoluene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
4-Methyl-2-pentanone	ND	25	ug/Kg	1	04/16/24	JLI	SW8260D
Acetone	ND	250	ug/Kg	1	04/16/24	JLI	SW8260D
Acrylonitrile	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Benzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Bromobenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Bromochloromethane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Bromodichloromethane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Bromoform	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Bromomethane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Carbon Disulfide	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Carbon tetrachloride	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Chlorobenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Chloroethane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Chloroform	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Chloromethane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
cis-1,2-Dichloroethene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
cis-1,3-Dichloropropene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Dibromochloromethane	ND	3.0	ug/Kg	1	04/16/24	JLI	SW8260D
Dibromomethane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Dichlorodifluoromethane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Ethylbenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Hexachlorobutadiene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Isopropylbenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
m&p-Xylene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Methyl Ethyl Ketone	ND	30	ug/Kg	1	04/16/24	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	10	ug/Kg	1	04/16/24	JLI	SW8260D
Methylene chloride	ND	10	ug/Kg	1	04/16/24	JLI	SW8260D
Naphthalene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
n-Butylbenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
n-Propylbenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
o-Xylene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
p-Isopropyltoluene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
sec-Butylbenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Styrene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
tert-Butylbenzene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Tetrachloroethene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Tetrahydrofuran (THF)	ND	10	ug/Kg	1	04/16/24	JLI	SW8260D
Toluene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Total Xylenes	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
trans-1,2-Dichloroethene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
trans-1,3-Dichloropropene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	10	ug/Kg	1	04/16/24	JLI	SW8260D
Trichloroethene	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Trichlorofluoromethane	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
Trichlorotrifluoroethane	ND	10	ug/Kg	1	04/16/24	JLI	SW8260D
Vinyl chloride	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	98		%	1	04/16/24	JLI	70 - 130 %

Project ID: M.A.N. SCHOOL
Client ID: TB041524 LL

Phoenix I.D.: CQ52311

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Bromofluorobenzene	96		%	1	04/16/24	JLI	70 - 130 %
% Dibromofluoromethane	93		%	1	04/16/24	JLI	70 - 130 %
% Toluene-d8	100		%	1	04/16/24	JLI	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	100	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
Diethyl ether	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
Di-isopropyl ether	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
Ethyl tert-butyl ether	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)
tert-amyl methyl ether	ND	5.0	ug/Kg	1	04/16/24	JLI	SW8260D (OXY)

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

TRIP BLANK INCLUDED.

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
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Phyllis Shiller

Phyllis Shiller, Laboratory Director
April 25, 2024
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

Analysis Report

April 25, 2024

FOR: Attn: Mr Dave Gorden
PEER Consultants
10 Mall Road, Suite 301
Burlington, MA 01803

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		04/15/24	15:01
Location Code:	PEER	Received by:	CP	04/16/24	14:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	8404				

Laboratory Data

SDG ID: GCQ52307
Phoenix ID: CQ52312

Project ID: M.A.N. SCHOOL
Client ID: B2-B5 0-2`

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Percent Solid	80		%		04/16/24	CV	SW846-%Solid
Soil Extraction for Herbicide	Completed				04/19/24	P/D	SW3546
Soil Extraction for Pesticide	Completed				04/23/24	J/H/A	SW3546
Chlorinated Herbicides							
2,4,5-T	ND	31	ug/Kg	2	04/23/24	JRB	SW8151A
2,4,5-TP (Silvex)	ND	31	ug/Kg	2	04/23/24	JRB	SW8151A
2,4-D	ND	62	ug/Kg	2	04/23/24	JRB	SW8151A
2,4-DB	ND	310	ug/Kg	2	04/23/24	JRB	SW8151A
Dalapon	ND	31	ug/Kg	2	04/23/24	JRB	SW8151A
Dicamba	ND	31	ug/Kg	2	04/23/24	JRB	SW8151A
Dichloroprop	ND	47	ug/Kg	2	04/23/24	JRB	SW8151A
Dinoseb	ND	31	ug/Kg	2	04/23/24	JRB	SW8151A
MCPA	ND	9300	ug/Kg	2	04/23/24	JRB	SW8151A
MCPP	ND	9300	ug/Kg	2	04/23/24	JRB	SW8151A
QA/QC Surrogates							
% DCAA	73		%	2	04/23/24	JRB	30 - 150 %
% DCAA (Confirmation)	63		%	2	04/23/24	JRB	30 - 150 %
Pesticides							
4,4' -DDD	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
4,4' -DDE	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
4,4' -DDT	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
a-BHC	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
Alachlor	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
Aldrin	ND	4.1	ug/Kg	2	04/24/24	AW	SW8081B
b-BHC	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B

Project ID: M.A.N. SCHOOL
Client ID: B2-B5 0-2`

Phoenix I.D.: CQ52312

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Chlordane	ND	41	ug/Kg	2	04/24/24	AW	SW8081B
d-BHC	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
Dieldrin	ND	4.1	ug/Kg	2	04/24/24	AW	SW8081B
Endosulfan I	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
Endosulfan II	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
Endosulfan sulfate	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
Endrin	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
Endrin aldehyde	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
Endrin ketone	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
g-BHC	ND	1.6	ug/Kg	2	04/24/24	AW	SW8081B
Heptachlor	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
Heptachlor epoxide	ND	8.2	ug/Kg	2	04/24/24	AW	SW8081B
Hexachlorobenzene	ND	4.1	ug/Kg	2	04/24/24	AW	SW8081B
Methoxychlor	ND	41	ug/Kg	2	04/24/24	AW	SW8081B
Toxaphene	ND	160	ug/Kg	2	04/24/24	AW	SW8081B
QA/QC Surrogates							
% DCBP	67		%	2	04/24/24	AW	30 - 150 %
% DCBP (Confirmation)	68		%	2	04/24/24	AW	30 - 150 %
% TCMX	64		%	2	04/24/24	AW	30 - 150 %
% TCMX (Confirmation)	71		%	2	04/24/24	AW	30 - 150 %

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QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

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Phyllis Shiller

Phyllis Shiller, Laboratory Director
April 25, 2024
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

PHOENIX

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

April 25, 2024

FOR:
Attn: Mr Dave Gorden
PEER Consultants
10 Mall Road, Suite 301
Burlington, MA 01803

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		04/15/24	15:33
Location Code:	PEER	Received by:	CP	04/16/24	14:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	8404				

Laboratory Data

SDG ID: GCQ52307
Phoenix ID: CQ52313

Project ID: M.A.N. SCHOOL
Client ID: B2-B5 WT

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Fecal Coliforms	<10	10	cfu/g	10	04/16/24 16:45	MM/DN	SM9222D-15
Percent Solid	90		%		04/16/24	CV	SW846-%Solid
Chloride	< 56	56	mg/kg	10	04/16/24	BS/GD	SW9056A
Nitrite as N	< 0.11	0.11	mg/kg	10	04/16/24	BS/GD	SW9056A
Nitrate as N	0.93	0.56	mg/kg	10	04/16/24	BS/GD	SW9056A
Phosphorus, Total as P	365	14	mg/Kg	25	04/17/24	LG	SM4500PE-11

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level

Comments:

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller

Phyllis Shiller, Laboratory Director
April 25, 2024
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Ver 1

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Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		04/15/24	
Location Code:	PEER	Received by:	CP	04/16/24	14:45
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	8404				

Laboratory Data

SDG ID: GCQ52307
Phoenix ID: CQ52314

Project ID: M.A.N. SCHOOL
Client ID: TB041524 HL

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Field Extraction	Completed				04/15/24		SW5035A
Volatiles							
1,1,1,2-Tetrachloroethane	ND	100	ug/Kg	50	04/16/24	JLI	SW8260D
1,1,1-Trichloroethane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	50	ug/Kg	50	04/16/24	JLI	SW8260D
1,1,2-Trichloroethane	ND	100	ug/Kg	50	04/16/24	JLI	SW8260D
1,1-Dichloroethane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
1,1-Dichloroethene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
1,1-Dichloropropene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
1,2,3-Trichloropropane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
1,2-Dibromoethane	ND	100	ug/Kg	50	04/16/24	JLI	SW8260D
1,2-Dichlorobenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
1,2-Dichloroethane	ND	100	ug/Kg	50	04/16/24	JLI	SW8260D
1,2-Dichloropropane	ND	100	ug/Kg	50	04/16/24	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
1,3-Dichlorobenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
1,3-Dichloropropane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
1,4-Dichlorobenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
2,2-Dichloropropane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
2-Chlorotoluene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
2-Hexanone	ND	1300	ug/Kg	50	04/16/24	JLI	SW8260D
2-Isopropyltoluene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Chlorotoluene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
4-Methyl-2-pentanone	ND	400	ug/Kg	50	04/16/24	JLI	SW8260D
Acetone	ND	5000	ug/Kg	50	04/16/24	JLI	SW8260D
Acrylonitrile	ND	500	ug/Kg	50	04/16/24	JLI	SW8260D
Benzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Bromobenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Bromochloromethane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Bromodichloromethane	ND	100	ug/Kg	50	04/16/24	JLI	SW8260D
Bromoform	ND	100	ug/Kg	50	04/16/24	JLI	SW8260D
Bromomethane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Carbon Disulfide	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Carbon tetrachloride	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Chlorobenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Chloroethane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Chloroform	ND	200	ug/Kg	50	04/16/24	JLI	SW8260D
Chloromethane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
cis-1,2-Dichloroethene	ND	100	ug/Kg	50	04/16/24	JLI	SW8260D
cis-1,3-Dichloropropene	ND	25	ug/Kg	50	04/16/24	JLI	SW8260D
Dibromochloromethane	ND	50	ug/Kg	50	04/16/24	JLI	SW8260D
Dibromomethane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Dichlorodifluoromethane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Ethylbenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Hexachlorobutadiene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Isopropylbenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
m&p-Xylene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Methyl Ethyl Ketone	ND	3000	ug/Kg	50	04/16/24	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	100	ug/Kg	50	04/16/24	JLI	SW8260D
Methylene chloride	ND	100	ug/Kg	50	04/16/24	JLI	SW8260D
Naphthalene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
n-Butylbenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
n-Propylbenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
o-Xylene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
p-Isopropyltoluene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
sec-Butylbenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Styrene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
tert-Butylbenzene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Tetrachloroethene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Tetrahydrofuran (THF)	ND	500	ug/Kg	50	04/16/24	JLI	SW8260D
Toluene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Total Xylenes	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
trans-1,2-Dichloroethene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
trans-1,3-Dichloropropene	ND	25	ug/Kg	50	04/16/24	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	500	ug/Kg	50	04/16/24	JLI	SW8260D
Trichloroethene	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Trichlorofluoromethane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Trichlorotrifluoroethane	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
Vinyl chloride	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4 (50x)	101		%	50	04/16/24	JLI	70 - 130 %

Project ID: M.A.N. SCHOOL
Client ID: TB041524 HL

Phoenix I.D.: CQ52314

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Bromofluorobenzene (50x)	99		%	50	04/16/24	JLI	70 - 130 %
% Dibromofluoromethane (50x)	96		%	50	04/16/24	JLI	70 - 130 %
% Toluene-d8 (50x)	99		%	50	04/16/24	JLI	70 - 130 %
Oxygenates & Dioxane							
1,4-Dioxane	ND	800	ug/Kg	50	04/16/24	JLI	SW8260D (OXY)
Diethyl ether	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D (OXY)
Di-isopropyl ether	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D (OXY)
Ethyl tert-butyl ether	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D (OXY)
tert-amyl methyl ether	ND	250	ug/Kg	50	04/16/24	JLI	SW8260D (OXY)

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

TRIP BLANK INCLUDED.

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

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Phyllis Shiller

Phyllis Shiller, Laboratory Director
April 25, 2024
Reviewed and Released by: Greg Lawrence, Assistant Lab Director

QA/QC Report

April 25, 2024

QA/QC Data

SDG I.D.: GCQ52307

QA/QC Batch 727169 (mg/kg), QC Sample No: CQ51669 2X (CQ52307, CQ52308, CQ52309, CQ52310)

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Mercury - Soil	BRL	0.02	<0.03	<0.03	NC	94.7	92.5	2.4	106	89.5	16.9	75 - 125	20	

Comment:

Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%

QA/QC Batch 727091 (mg/kg), QC Sample No: CQ52191 (CQ52307, CQ52308)

ICP Metals - Soil

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Antimony	BRL	3.3	<40	<39	NC	86.4	96.7	11.3	92.6			75 - 125	35	
Arsenic	BRL	0.67	<8.0	<7.8	NC	78.6	88.3	11.6	91.8			75 - 125	35	
Barium	BRL	0.33	16.7	15.0	10.7	80.9	90.3	11.0	99.7			75 - 125	35	
Beryllium	BRL	0.27	<3.2	<3.1	NC	87.9	92.7	5.3	98.5			75 - 125	35	
Cadmium	BRL	0.33	<4.0	<3.9	NC	82.6	88.5	6.9	93.4			75 - 125	35	
Chromium	BRL	0.33	5.9	4.5	26.9	83.1	93.0	11.2	98.0			75 - 125	35	
Lead	BRL	0.33	2.08	<3.9	NC	77.1	87.0	12.1	94.4			75 - 125	35	
Nickel	BRL	0.33	4.4	<3.9	NC	82.3	90.5	9.5	95.2			75 - 125	35	
Selenium	BRL	1.3	<16	<16	NC	76.1	81.7	7.1	83.4			75 - 125	35	
Silver	BRL	0.33	<4.0	<3.9	NC	81.4	92.1	12.3	94.0			75 - 125	35	
Thallium	BRL	3.0	<36	<35	NC	91.0	96.2	5.6	95.7			75 - 125	35	
Vanadium	BRL	0.33	17.1	14.0	19.9	80.1	90.2	11.9	101			75 - 125	35	
Zinc	BRL	0.67	13.7	11.7	15.7	77.5	87.2	11.8	93.2			75 - 125	35	

Comment:

Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.

QA/QC Batch 727086 (mg/kg), QC Sample No: CQ52285 (CQ52309)

ICP Metals - Soil

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Antimony	BRL	3.3	<3.0	<3.5	NC	86.1	94.3	9.1	91.4			75 - 125	35	
Arsenic	BRL	0.67	<0.61	<0.70	NC	81.2	87.9	7.9	90.6			75 - 125	35	
Barium	BRL	0.33	13.8	34.2	85.0	84.8	84.9	0.1	114			75 - 125	35	r
Beryllium	BRL	0.27	<0.24	<0.28	NC	90.2	95.2	5.4	104			75 - 125	35	
Cadmium	BRL	0.33	<0.30	<0.35	NC	85.4	91.7	7.1	98.9			75 - 125	35	
Chromium	BRL	0.33	0.40	1.07	NC	85.6	93.0	8.3	100			75 - 125	35	
Lead	BRL	0.33	1.86	1.28	NC	82.2	90.5	9.6	97.7			75 - 125	35	
Nickel	BRL	0.33	0.57	1.09	NC	87.4	94.8	8.1	99.5			75 - 125	35	
Selenium	BRL	1.3	<1.2	<1.4	NC	89.7	77.9	14.1	75.3			75 - 125	35	
Silver	BRL	0.33	<0.30	<0.35	NC	89.7	99.0	9.9	99.6			75 - 125	35	
Thallium	BRL	3.0	<2.7	<3.1	NC	90.0	94.2	4.6	97.3			75 - 125	35	
Vanadium	BRL	0.33	3.0	6.2	69.6	81.9	90.0	9.4	99.5			75 - 125	35	r
Zinc	BRL	0.67	14.0	20.2	36.3	76.8	85.0	10.1	101			75 - 125	35	r

Comment:

Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.

QA/QC Batch 727249 (mg/kg), QC Sample No: CQ52310 (CQ52310)

ICP Metals - Soil

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Antimony	BRL	3.3	<3.5	<3.6	NC	90.1	93.4	3.6	92.4			75 - 125	35	

QA/QC Data

SDG I.D.: GCQ52307

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Arsenic	BRL	0.67	3.78	2.56	NC	86.3	83.8	2.9	95.6			75 - 125	35	
Barium	BRL	0.33	48.3	34.3	33.9	84.2	84.2	0.0	103			75 - 125	35	
Beryllium	BRL	0.27	0.35	<0.28	NC	90.5	90.3	0.2	100			75 - 125	35	
Cadmium	BRL	0.33	<0.35	<0.36	NC	85.6	84.7	1.1	99.7			75 - 125	35	
Chromium	BRL	0.33	13.8	27.7	67.0	87.9	89.0	1.2	101			75 - 125	35	r
Lead	BRL	0.33	3.64	2.90	22.6	83.4	81.1	2.8	99.9			75 - 125	35	
Nickel	BRL	0.33	9.65	6.63	37.1	87.5	87.6	0.1	99.8			75 - 125	35	r
Selenium	BRL	1.3	<1.4	<1.4	NC	83.5	80.6	3.5	86.7			75 - 125	35	
Silver	BRL	0.33	<0.35	<0.36	NC	90.0	88.5	1.7	101			75 - 125	35	
Thallium	BRL	3.0	<3.2	<3.2	NC	90.2	88.2	2.2	100			75 - 125	35	
Vanadium	BRL	0.33	22.3	14.4	43.1	84.9	84.9	0.0	102			75 - 125	35	r
Zinc	BRL	0.67	27.3	29.2	6.70	82.8	83.1	0.4	95.4			75 - 125	35	

Comment:

Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.

r = This parameter is outside laboratory RPD specified recovery limits.

QA/QC Report

April 25, 2024

QA/QC Data

SDG I.D.: GCQ52307

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 727649 (mg/Kg), QC Sample No: CQ51663 5X (CQ52307, CQ52308, CQ52309, CQ52310)													
Reactivity Cyanide	BRL	5	<5	<5.2	NC	97.0						80 - 120	20
Reactivity Sulfide	BRL	20	<20	<20	NC	90.8						80 - 120	20
Comment:													
Additional soil criteria LCS acceptance range is 80-120% MS acceptance range 75-125%.													
QA/QC Batch 727720 (Degree F), QC Sample No: CQ50166 (CQ52307, CQ52308, CQ52309, CQ52310)													
Flash Point			>200	>200	NC	101						75 - 125	30
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 727360 (umhos/cm), QC Sample No: CQ50787 (CQ52307, CQ52308, CQ52309, CQ52310)													
Conductivity - Soil Matrix	BRL	5	424	361	16.1							75 - 125	30
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 727237 (mg/Kg), QC Sample No: CQ51168 (CQ52313)													
Phosphorus, Total as P	BRL	0.50	8610	9200	6.60	93.5			NC			75 - 125	30
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 727151 (PH), QC Sample No: CQ51380 (CQ52307, CQ52308, CQ52309, CQ52310)													
pH			8.65	8.63	0.20	101						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 727218 (mg/L), QC Sample No: CQ52578 (CQ52313)													
Chloride	BRL	5.0	7.5	7.6	NC	96.2			100			90 - 110	20
Nitrate as Nitrogen	BRL	0.05	0.97	0.95	2.10	99.3			101			90 - 110	20
Nitrite as Nitrogen	BRL	0.004	<0.004	<0.004	NC	102			107			90 - 110	20

QA/QC Report

April 25, 2024

QA/QC Data

SDG I.D.: GCQ52307

QA/QC Batch 727693 (mg/Kg), QC Sample No: CQ52422 (CQ52307, CQ52308, CQ52309, CQ52310)

TPH by GC (Extractable Products) - Soil

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Ext. Petroleum H.C. (C9-C36)	ND	50	89	86	3.4	106	95	10.9	50 - 150	30	
% COD (surr)	85	%	130	51	87.3	127	60	71.7	50 - 150	30	r
% Terphenyl (surr)	88	%	105	101	3.9	107	127	17.1	50 - 150	30	

Comment:

The ETPH/DRO LCS has been normalized based on the alkane calibration.

QA/QC Batch 727496 (mg/Kg), QC Sample No: CQ52307 50X (CQ52307 (50X) , CQ52308 (50X) , CQ52309 (50X) , CQ52310 (50X))

Gasoline Range Hydrocarbons (C6C10) - Soil

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
GRO (C6-C10)	ND	5.0	95	95	0.0	94	94	0.0	70 - 130	30	
% 2,5-Dibromotoluene (FID)	90	%	81	89	9.4	86	84	2.4	70 - 130	30	

QA/QC Batch 727763 (ug/Kg), QC Sample No: CQ55312 10X (CQ52312)

Chlorinated Herbicides - Soil

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
2,4,5-T	ND	130	51	60	16.2	54	57	5.4	40 - 140	30	
2,4,5-TP (Silvex)	ND	130	56	66	16.4	64	65	1.6	40 - 140	30	
2,4-D	ND	250	47	55	15.7	58	63	8.3	40 - 140	30	
2,4-DB	ND	2500	32	38	17.1	40	39	2.5	40 - 140	30	l
Dalapon	ND	130	48	63	27.0	53	73	31.7	40 - 140	30	r
Dicamba	ND	130	85	95	11.1	76	86	12.3	40 - 140	30	
Dichloroprop	ND	130	70	80	13.3	92	103	11.3	40 - 140	30	
Dinoseb	ND	130	68	81	17.4	68	68	0.0	10 - 110	20	
MCPA	ND	38000	54	59	8.8	59	65	9.7	40 - 140	30	
MCPP	ND	38000	66	74	11.4	67	71	5.8	40 - 140	30	
% DCAA (Surrogate Rec)	71	%	64	72	11.8	66	75	12.8	30 - 150	30	
% DCAA (Surrogate Rec) (Confirm	72	%	57	70	20.5	55	61	10.3	30 - 150	30	

Comment:

MCP 8151 additional criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%.

QA/QC Batch 728004 (ug/Kg), QC Sample No: CQ51831 2X (CQ52307, CQ52308)

Polychlorinated Biphenyls - Soil

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
PCB-1016	ND	33	95	86	9.9	78	91	15.4	40 - 140	30	
PCB-1221	ND	33							40 - 140	30	
PCB-1232	ND	33							40 - 140	30	
PCB-1242	ND	33							40 - 140	30	
PCB-1248	ND	33							40 - 140	30	
PCB-1254	ND	33							40 - 140	30	
PCB-1260	ND	33	104	87	17.8	75	89	17.1	40 - 140	30	
PCB-1262	ND	33							40 - 140	30	
PCB-1268	ND	33							40 - 140	30	
% DCBP (Surrogate Rec)	121	%	108	93	14.9	81	97	18.0	30 - 150	30	
% DCBP (Surrogate Rec) (Confirm	116	%	105	96	9.0	83	97	15.6	30 - 150	30	
% TCMX (Surrogate Rec)	104	%	95	86	9.9	77	88	13.3	30 - 150	30	

QA/QC Data

SDG I.D.: GCQ52307

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
% TCMX (Surrogate Rec) (Confirm	103	%	94	82	13.6	74	86	15.0	30 - 150	30
QA/QC Batch 728024 (ug/Kg), QC Sample No: CQ52390 2X (CQ52309, CQ52310)										
Polychlorinated Biphenyls - Soil										
PCB-1016	ND	33	93	87	6.7	74	82	10.3	40 - 140	30
PCB-1221	ND	33							40 - 140	30
PCB-1232	ND	33							40 - 140	30
PCB-1242	ND	33							40 - 140	30
PCB-1248	ND	33							40 - 140	30
PCB-1254	ND	33							40 - 140	30
PCB-1260	ND	33	105	86	19.9	75	80	6.5	40 - 140	30
PCB-1262	ND	33							40 - 140	30
PCB-1268	ND	33							40 - 140	30
% DCBP (Surrogate Rec)	99	%	110	90	20.0	79	93	16.3	30 - 150	30
% DCBP (Surrogate Rec) (Confirm	91	%	100	97	3.0	85	96	12.2	30 - 150	30
% TCMX (Surrogate Rec)	82	%	90	86	4.5	72	83	14.2	30 - 150	30
% TCMX (Surrogate Rec) (Confirm	76	%	89	80	10.7	68	80	16.2	30 - 150	30
QA/QC Batch 728175 (ug/Kg), QC Sample No: CQ49646 (CQ52312)										
Pesticides - Soil										
4,4' -DDD	ND	0.83	75	69	8.3	87	85	2.3	40 - 140	30
4,4' -DDE	ND	0.83	74	67	9.9	137	142	3.6	40 - 140	30
4,4' -DDT	ND	0.83	70	66	5.9	105	106	0.9	40 - 140	30
a-BHC	ND	0.50	71	64	10.4	73	70	4.2	40 - 140	30
Alachlor	ND	1.7	NA	NA	NC	NA	NA	NC	40 - 140	30
Aldrin	ND	0.50	72	66	8.7	76	73	4.0	40 - 140	30
b-BHC	ND	0.50	84	77	8.7	88	85	3.5	40 - 140	30
Chlordane	ND	17	73	69	5.6	86	93	7.8	40 - 140	30
d-BHC	ND	1.7	70	65	7.4	78	74	5.3	40 - 140	30
Dieldrin	ND	0.50	74	68	8.5	99	100	1.0	40 - 140	30
Endosulfan I	ND	1.7	74	70	5.6	77	76	1.3	40 - 140	30
Endosulfan II	ND	1.7	74	70	5.6	79	77	2.6	40 - 140	30
Endosulfan sulfate	ND	1.7	78	74	5.3	82	82	0.0	40 - 140	30
Endrin	ND	1.7	70	65	7.4	76	74	2.7	40 - 140	30
Endrin aldehyde	ND	1.7	72	68	5.7	72	72	0.0	40 - 140	30
Endrin ketone	ND	1.7	81	77	5.1	86	83	3.6	40 - 140	30
g-BHC	ND	0.50	87	79	9.6	89	84	5.8	40 - 140	30
Heptachlor	ND	1.7	70	63	10.5	72	68	5.7	40 - 140	30
Heptachlor epoxide	ND	1.7	63	60	4.9	66	64	3.1	40 - 140	30
Hexachlorobenzene	ND	1.7	82	71	14.4	77	78	1.3	40 - 140	30
Methoxychlor	ND	1.7	73	68	7.1	76	74	2.7	40 - 140	30
Toxaphene	ND	67	NA	NA	NC	NA	NA	NC	40 - 140	30
% DCBP	42	%	77	73	5.3	81	78	3.8	30 - 150	30
% DCBP (Confirmation)	38	%	74	71	4.1	73	69	5.6	30 - 150	30
% TCMX	37	%	70	62	12.1	72	71	1.4	30 - 150	30
% TCMX (Confirmation)	34	%	67	60	11.0	68	64	6.1	30 - 150	30
QA/QC Batch 727757 (ug/kg), QC Sample No: CQ52044 (CQ52307, CQ52308, CQ52309, CQ52310)										
Semivolatiles - Soil										
1,1-Biphenyl	ND	230	67	63	6.2	65	63	3.1	40 - 140	30
1,2,4,5-Tetrachlorobenzene	ND	230	73	68	7.1	69	67	2.9	40 - 140	30
1,2,4-Trichlorobenzene	ND	230	71	66	7.3	67	66	1.5	40 - 140	30
1,2-Dichlorobenzene	ND	180	64	61	4.8	60	60	0.0	40 - 140	30
1,2-Diphenylhydrazine	ND	230	64	63	1.6	64	62	3.2	40 - 140	30

QA/QC Data

SDG I.D.: GCQ52307

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
1,3-Dichlorobenzene	ND	230	62	60	3.3	58	59	1.7	40 - 140	30	
1,4-Dichlorobenzene	ND	230	60	58	3.4	57	57	0.0	40 - 140	30	
2,2'-Oxybis(1-Chloropropane)	ND	230	60	59	1.7	59	59	0.0	40 - 140	30	
2,4,5-Trichlorophenol	ND	230	87	80	8.4	81	78	3.8	30 - 130	30	
2,4,6-Trichlorophenol	ND	130	86	82	4.8	83	79	4.9	30 - 130	30	
2,4-Dichlorophenol	ND	130	85	80	6.1	80	78	2.5	30 - 130	30	
2,4-Dimethylphenol	ND	230	78	73	6.6	73	70	4.2	30 - 130	30	
2,4-Dinitrophenol	ND	230	48	41	15.7	22	19	14.6	30 - 130	30	m
2,4-Dinitrotoluene	ND	130	85	83	2.4	84	79	6.1	40 - 140	30	
2,6-Dinitrotoluene	ND	130	85	82	3.6	84	81	3.6	40 - 140	30	
2-Chloronaphthalene	ND	230	72	69	4.3	70	67	4.4	40 - 140	30	
2-Chlorophenol	ND	230	76	73	4.0	71	71	0.0	30 - 130	30	
2-Methylnaphthalene	ND	230	76	72	5.4	73	71	2.8	40 - 140	30	
2-Methylphenol (o-cresol)	ND	230	74	72	2.7	70	70	0.0	30 - 130	30	
2-Nitroaniline	ND	330	102	101	1.0	99	95	4.1	40 - 140	30	
2-Nitrophenol	ND	230	72	69	4.3	73	71	2.8	30 - 130	30	
3&4-Methylphenol (m&p-cresol)	ND	230	77	73	5.3	72	73	1.4	30 - 130	30	
3,3'-Dichlorobenzidine	ND	130	112	106	5.5	107	98	8.8	40 - 140	30	
3-Nitroaniline	ND	330	94	91	3.2	93	88	5.5	40 - 140	30	
4,6-Dinitro-2-methylphenol	ND	230	84	78	7.4	60	53	12.4	30 - 130	30	
4-Bromophenyl phenyl ether	ND	230	84	79	6.1	82	76	7.6	40 - 140	30	
4-Chloro-3-methylphenol	ND	230	85	80	6.1	82	78	5.0	30 - 130	30	
4-Chloroaniline	ND	230	73	70	4.2	70	69	1.4	40 - 140	30	
4-Chlorophenyl phenyl ether	ND	230	74	71	4.1	72	69	4.3	40 - 140	30	
4-Nitroaniline	ND	230	71	70	1.4	73	69	5.6	40 - 140	30	
4-Nitrophenol	ND	230	72	69	4.3	67	62	7.8	30 - 130	30	
Acenaphthene	ND	230	68	64	6.1	66	64	3.1	40 - 140	30	
Acenaphthylene	ND	130	64	60	6.5	62	60	3.3	40 - 140	30	
Acetophenone	ND	230	63	61	3.2	60	60	0.0	40 - 140	30	
Aniline	ND	330	65	64	1.6	61	61	0.0	40 - 140	30	
Anthracene	ND	230	75	71	5.5	74	69	7.0	40 - 140	30	
Benz(a)anthracene	ND	230	78	74	5.3	77	71	8.1	40 - 140	30	
Benzidine	ND	330	68	71	4.3	53	45	16.3	40 - 140	30	
Benzo(a)pyrene	ND	130	87	82	5.9	84	78	7.4	40 - 140	30	
Benzo(b)fluoranthene	ND	160	78	74	5.3	76	71	6.8	40 - 140	30	
Benzo(ghi)perylene	ND	230	84	81	3.6	82	76	7.6	40 - 140	30	
Benzo(k)fluoranthene	ND	230	77	72	6.7	75	70	6.9	40 - 140	30	
Benzoic Acid	ND	670	97	80	19.2	65	50	26.1	30 - 130	30	
Benzyl butyl phthalate	ND	230	78	74	5.3	77	72	6.7	40 - 140	30	
Bis(2-chloroethoxy)methane	ND	230	72	69	4.3	70	68	2.9	40 - 140	30	
Bis(2-chloroethyl)ether	ND	130	67	65	3.0	64	64	0.0	40 - 140	30	
Bis(2-ethylhexyl)phthalate	ND	230	77	73	5.3	77	71	8.1	40 - 140	30	
Carbazole	ND	230	78	74	5.3	76	71	6.8	40 - 140	30	
Chrysene	ND	230	78	74	5.3	76	70	8.2	40 - 140	30	
Dibenz(a,h)anthracene	ND	130	84	79	6.1	80	75	6.5	40 - 140	30	
Dibenzofuran	ND	230	71	68	4.3	68	66	3.0	40 - 140	30	
Diethyl phthalate	ND	230	75	72	4.1	72	69	4.3	40 - 140	30	
Dimethylphthalate	ND	230	77	73	5.3	76	71	6.8	40 - 140	30	
Di-n-butylphthalate	ND	670	81	77	5.1	79	74	6.5	40 - 140	30	
Di-n-octylphthalate	ND	230	80	77	3.8	79	74	6.5	40 - 140	30	
Fluoranthene	ND	230	77	75	2.6	76	70	8.2	40 - 140	30	
Fluorene	ND	230	74	71	4.1	71	69	2.9	40 - 140	30	
Hexachlorobenzene	ND	130	69	65	6.0	68	65	4.5	40 - 140	30	

QA/QC Data

SDG I.D.: GCQ52307

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
Hexachlorobutadiene	ND	230	68	65	4.5	64	63	1.6	40 - 140	30
Hexachlorocyclopentadiene	ND	230	50	46	8.3	51	49	4.0	40 - 140	30
Hexachloroethane	ND	130	61	59	3.3	58	57	1.7	40 - 140	30
Indeno(1,2,3-cd)pyrene	ND	230	82	79	3.7	80	75	6.5	40 - 140	30
Isophorone	ND	130	64	61	4.8	63	61	3.2	40 - 140	30
Naphthalene	ND	230	68	64	6.1	65	63	3.1	40 - 140	30
Nitrobenzene	ND	130	66	66	0.0	65	65	0.0	40 - 140	30
N-Nitrosodimethylamine	ND	230	67	64	4.6	63	63	0.0	40 - 140	30
N-Nitrosodi-n-propylamine	ND	130	66	66	0.0	65	64	1.6	40 - 140	30
N-Nitrosodiphenylamine	ND	130	75	72	4.1	73	69	5.6	40 - 140	30
Pentachloronitrobenzene	ND	230	70	65	7.4	70	64	9.0	40 - 140	30
Pentachlorophenol	ND	230	68	63	7.6	54	49	9.7	30 - 130	30
Phenanthrene	ND	130	73	69	5.6	71	67	5.8	40 - 140	30
Phenol	ND	230	84	82	2.4	81	80	1.2	30 - 130	30
Pyrene	ND	230	76	73	4.0	74	70	5.6	40 - 140	30
Pyridine	ND	230	56	53	5.5	49	53	7.8	40 - 140	30
% 2,4,6-Tribromophenol	77	%	72	68	5.7	73	67	8.6	30 - 130	30
% 2-Fluorobiphenyl	70	%	64	61	4.8	64	62	3.2	30 - 130	30
% 2-Fluorophenol	72	%	68	66	3.0	65	64	1.6	30 - 130	30
% Nitrobenzene-d5	70	%	62	61	1.6	61	61	0.0	30 - 130	30
% Phenol-d5	71	%	67	66	1.5	65	65	0.0	30 - 130	30
% Terphenyl-d14	77	%	69	67	2.9	68	64	6.1	30 - 130	30

Comment:

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

QA/QC Batch 727223 (ug/kg), QC Sample No: CQ52307 (CQ52307, CQ52308, CQ52309, CQ52310, CQ52311)

Volatiles - Soil (Low Level)

1,1,1,2-Tetrachloroethane	ND	5.0	110	110	0.0	110	106	3.7	70 - 130	20
1,1,1-Trichloroethane	ND	5.0	113	111	1.8	118	113	4.3	70 - 130	20
1,1,2,2-Tetrachloroethane	ND	3.0	108	110	1.8	115	109	5.4	70 - 130	20
1,1,2-Trichloroethane	ND	5.0	108	109	0.9	108	103	4.7	70 - 130	20
1,1-Dichloroethane	ND	5.0	108	105	2.8	114	109	4.5	70 - 130	20
1,1-Dichloroethene	ND	5.0	113	109	3.6	120	116	3.4	70 - 130	20
1,1-Dichloropropene	ND	5.0	121	119	1.7	123	118	4.1	70 - 130	20
1,2,3-Trichlorobenzene	ND	5.0	110	112	1.8	106	102	3.8	70 - 130	20
1,2,3-Trichloropropane	ND	5.0	105	106	0.9	113	106	6.4	70 - 130	20
1,2,4-Trichlorobenzene	ND	5.0	114	117	2.6	110	105	4.7	70 - 130	20
1,2,4-Trimethylbenzene	ND	1.0	117	115	1.7	119	112	6.1	70 - 130	20
1,2-Dibromo-3-chloropropane	ND	5.0	98	101	3.0	105	104	1.0	70 - 130	20
1,2-Dibromoethane	ND	5.0	109	111	1.8	113	108	4.5	70 - 130	20
1,2-Dichlorobenzene	ND	5.0	113	113	0.0	114	107	6.3	70 - 130	20
1,2-Dichloroethane	ND	5.0	104	105	1.0	105	100	4.9	70 - 130	20
1,2-Dichloropropane	ND	5.0	110	109	0.9	110	106	3.7	70 - 130	20
1,3,5-Trimethylbenzene	ND	1.0	119	116	2.6	122	114	6.8	70 - 130	20
1,3-Dichlorobenzene	ND	5.0	116	115	0.9	118	112	5.2	70 - 130	20
1,3-Dichloropropane	ND	5.0	111	112	0.9	113	108	4.5	70 - 130	20
1,4-Dichlorobenzene	ND	5.0	116	115	0.9	116	111	4.4	70 - 130	20
1,4-dioxane	ND	100	112	114	1.8	108	99	8.7	40 - 160	20
2,2-Dichloropropane	ND	5.0	111	108	2.7	115	110	4.4	70 - 130	20
2-Chlorotoluene	ND	5.0	116	114	1.7	120	113	6.0	70 - 130	20
2-Hexanone	ND	25	82	87	5.9	89	87	2.3	40 - 160	20
2-Isopropyltoluene	ND	5.0	121	117	3.4	123	115	6.7	70 - 130	20

QA/QC Data

SDG I.D.: GCQ52307

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
4-Chlorotoluene	ND	5.0	118	116	1.7	121	114	6.0	70 - 130	20	
4-Methyl-2-pentanone	ND	25	92	97	5.3	100	96	4.1	40 - 160	20	
Acetone	ND	10	73	77	5.3	86	82	4.8	40 - 160	20	
Acrylonitrile	ND	5.0	98	98	0.0	108	105	2.8	70 - 130	20	
Benzene	ND	1.0	113	112	0.9	115	109	5.4	70 - 130	20	
Bromobenzene	ND	5.0	113	112	0.9	118	110	7.0	70 - 130	20	
Bromochloromethane	ND	5.0	106	108	1.9	107	104	2.8	70 - 130	20	
Bromodichloromethane	ND	5.0	104	106	1.9	103	99	4.0	70 - 130	20	
Bromoform	ND	5.0	99	102	3.0	96	93	3.2	70 - 130	20	
Bromomethane	ND	5.0	115	114	0.9	121	114	6.0	40 - 160	20	
Carbon Disulfide	ND	5.0	116	112	3.5	123	118	4.1	70 - 130	20	
Carbon tetrachloride	ND	5.0	134	131	2.3	117	114	2.6	70 - 130	20	l
Chlorobenzene	ND	5.0	115	114	0.9	117	112	4.4	70 - 130	20	
Chloroethane	ND	5.0	120	113	6.0	122	118	3.3	70 - 130	20	
Chloroform	ND	5.0	107	107	0.0	111	106	4.6	70 - 130	20	
Chloromethane	ND	5.0	125	122	2.4	133	128	3.8	40 - 160	20	
cis-1,2-Dichloroethene	ND	5.0	107	105	1.9	111	107	3.7	70 - 130	20	
cis-1,3-Dichloropropene	ND	5.0	108	109	0.9	106	101	4.8	70 - 130	20	
Dibromochloromethane	ND	3.0	107	108	0.9	103	99	4.0	70 - 130	20	
Dibromomethane	ND	5.0	106	108	1.9	108	102	5.7	70 - 130	20	
Dichlorodifluoromethane	ND	5.0	115	111	3.5	120	115	4.3	40 - 160	20	
Diethyl ether	ND	5.0	100	102	2.0	104	98	5.9	70 - 130	20	
Di-isopropyl ether	ND	5.0	103	102	1.0	105	101	3.9	70 - 130	20	
Ethyl tert-butyl ether	ND	5.0	102	103	1.0	103	100	3.0	70 - 130	20	
Ethylbenzene	ND	1.0	118	116	1.7	120	116	3.4	70 - 130	20	
Hexachlorobutadiene	ND	5.0	118	115	2.6	109	101	7.6	70 - 130	20	
Isopropylbenzene	ND	1.0	120	116	3.4	124	117	5.8	70 - 130	20	
m&p-Xylene	ND	2.0	119	115	3.4	120	115	4.3	70 - 130	20	
Methyl ethyl ketone	ND	5.0	83	88	5.8	88	84	4.7	40 - 160	20	
Methyl t-butyl ether (MTBE)	ND	1.0	101	103	2.0	102	98	4.0	70 - 130	20	
Methylene chloride	ND	5.0	95	95	0.0	99	94	5.2	70 - 130	20	
Naphthalene	ND	5.0	104	109	4.7	111	106	4.6	70 - 130	20	
n-Butylbenzene	ND	1.0	125	121	3.3	124	117	5.8	70 - 130	20	
n-Propylbenzene	ND	1.0	121	118	2.5	126	119	5.7	70 - 130	20	
o-Xylene	ND	2.0	114	112	1.8	115	110	4.4	70 - 130	20	
p-Isopropyltoluene	ND	1.0	121	118	2.5	123	115	6.7	70 - 130	20	
sec-Butylbenzene	ND	1.0	123	119	3.3	127	119	6.5	70 - 130	20	
Styrene	ND	5.0	115	112	2.6	115	110	4.4	70 - 130	20	
tert-amyl methyl ether	ND	5.0	102	105	2.9	101	96	5.1	70 - 130	20	
tert-Butylbenzene	ND	1.0	119	116	2.6	124	117	5.8	70 - 130	20	
Tetrachloroethene	ND	5.0	120	118	1.7	123	118	4.1	70 - 130	20	
Tetrahydrofuran (THF)	ND	5.0	96	103	7.0	104	102	1.9	70 - 130	20	
Toluene	ND	1.0	111	110	0.9	113	109	3.6	70 - 130	20	
trans-1,2-Dichloroethene	ND	5.0	112	109	2.7	119	114	4.3	70 - 130	20	
trans-1,3-Dichloropropene	ND	5.0	106	108	1.9	103	100	3.0	70 - 130	20	
trans-1,4-dichloro-2-butene	ND	5.0	105	109	3.7	110	105	4.7	70 - 130	20	
Trichloroethene	ND	5.0	116	115	0.9	120	114	5.1	70 - 130	20	
Trichlorofluoromethane	ND	5.0	123	119	3.3	131	125	4.7	70 - 130	20	m
Trichlorotrifluoroethane	ND	5.0	124	118	5.0	131	126	3.9	70 - 130	20	m
Vinyl chloride	ND	5.0	126	121	4.0	136	131	3.7	70 - 130	20	m
% 1,2-dichlorobenzene-d4	100	%	99	100	1.0	99	100	1.0	70 - 130	20	
% Bromofluorobenzene	96	%	100	101	1.0	100	100	0.0	70 - 130	20	
% Dibromofluoromethane	95	%	97	99	2.0	97	96	1.0	70 - 130	20	

QA/QC Data

SDG I.D.: GCQ52307

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
% Toluene-d8	100	%	99	100	1.0	99	98	1.0	70 - 130	20	

Comment:

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.
The RPD criteria for the LCS/LCSD is 20%,
The MS/MSD RPD criteria is listed above.

QA/QC Batch 727223H (ug/kg), QC Sample No: CQ52307 50X (CQ52314 (50X))

Volatiles - Soil (High Level)

1,1,1,2-Tetrachloroethane	ND	250	108	108	0.0	99	106	6.8	70 - 130	20	
1,1,1-Trichloroethane	ND	250	109	110	0.9	99	105	5.9	70 - 130	20	
1,1,2,2-Tetrachloroethane	ND	250	108	110	1.8	104	111	6.5	70 - 130	20	
1,1,2-Trichloroethane	ND	250	106	107	0.9	102	107	4.8	70 - 130	20	
1,1-Dichloroethane	ND	250	102	104	1.9	97	103	6.0	70 - 130	20	
1,1-Dichloroethene	ND	250	74	79	6.5	76	81	6.4	70 - 130	20	
1,1-Dichloropropene	ND	250	119	121	1.7	109	115	5.4	70 - 130	20	
1,2,3-Trichlorobenzene	ND	250	117	117	0.0	109	116	6.2	70 - 130	20	
1,2,3-Trichloropropane	ND	250	104	104	0.0	100	105	4.9	70 - 130	20	
1,2,4-Trichlorobenzene	ND	250	124	123	0.8	114	121	6.0	70 - 130	20	
1,2,4-Trimethylbenzene	ND	250	115	115	0.0	108	114	5.4	70 - 130	20	
1,2-Dibromo-3-chloropropane	ND	250	94	94	0.0	85	92	7.9	70 - 130	20	
1,2-Dibromoethane	ND	250	108	109	0.9	103	110	6.6	70 - 130	20	
1,2-Dichlorobenzene	ND	250	114	115	0.9	107	114	6.3	70 - 130	20	
1,2-Dichloroethane	ND	250	102	103	1.0	97	103	6.0	70 - 130	20	
1,2-Dichloropropane	ND	250	108	109	0.9	103	109	5.7	70 - 130	20	
1,3,5-Trimethylbenzene	ND	250	115	116	0.9	108	114	5.4	70 - 130	20	
1,3-Dichlorobenzene	ND	250	118	119	0.8	110	117	6.2	70 - 130	20	
1,3-Dichloropropane	ND	250	111	112	0.9	105	111	5.6	70 - 130	20	
1,4-Dichlorobenzene	ND	250	119	118	0.8	111	117	5.3	70 - 130	20	
1,4-dioxane	ND	5000	104	112	7.4	100	107	6.8	40 - 160	20	
2,2-Dichloropropane	ND	250	104	106	1.9	96	102	6.1	70 - 130	20	
2-Chlorotoluene	ND	250	114	115	0.9	108	114	5.4	70 - 130	20	
2-Hexanone	ND	1300	84	85	1.2	81	85	4.8	40 - 160	20	
2-Isopropyltoluene	ND	250	118	118	0.0	111	118	6.1	70 - 130	20	
4-Chlorotoluene	ND	250	118	118	0.0	110	117	6.2	70 - 130	20	
4-Methyl-2-pentanone	ND	1300	90	92	2.2	89	93	4.4	40 - 160	20	
Acetone	ND	500	58	61	5.0	62	65	4.7	40 - 160	20	
Acrylonitrile	ND	250	93	95	2.1	91	96	5.3	70 - 130	20	
Benzene	ND	250	112	113	0.9	106	111	4.6	70 - 130	20	
Bromobenzene	ND	250	112	113	0.9	106	114	7.3	70 - 130	20	
Bromochloromethane	ND	250	102	104	1.9	97	102	5.0	70 - 130	20	
Bromodichloromethane	ND	250	101	102	1.0	92	98	6.3	70 - 130	20	
Bromoform	ND	250	96	95	1.0	84	90	6.9	70 - 130	20	
Bromomethane	ND	250	70	73	4.2	68	74	8.5	40 - 160	20	
Carbon Disulfide	ND	250	75	79	5.2	76	82	7.6	70 - 130	20	
Carbon tetrachloride	ND	250	108	107	0.9	95	102	7.1	70 - 130	20	
Chlorobenzene	ND	250	115	115	0.0	108	114	5.4	70 - 130	20	
Chloroethane	ND	250	26	27	3.8	24	27	11.8	70 - 130	20	l,m
Chloroform	ND	250	103	104	1.0	96	102	6.1	70 - 130	20	
Chloromethane	ND	250	122	125	2.4	113	122	7.7	40 - 160	20	
cis-1,2-Dichloroethene	ND	250	102	104	1.9	96	103	7.0	70 - 130	20	
cis-1,3-Dichloropropene	ND	250	106	107	0.9	98	104	5.9	70 - 130	20	
Dibromochloromethane	ND	150	103	103	0.0	92	99	7.3	70 - 130	20	
Dibromomethane	ND	250	104	105	1.0	98	104	5.9	70 - 130	20	

QA/QC Data

SDG I.D.: GCQ52307

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Dichlorodifluoromethane	ND	250	113	114	0.9	102	108	5.7	40 - 160	20	
Diethyl ether	ND	250	36	36	0.0	38	38	0.0	70 - 130	20	l,m
Di-isopropyl ether	ND	250	99	100	1.0	95	100	5.1	70 - 130	20	
Ethyl tert-butyl ether	ND	250	100	101	1.0	95	101	6.1	70 - 130	20	
Ethylbenzene	ND	250	117	118	0.9	110	115	4.4	70 - 130	20	
Hexachlorobutadiene	ND	250	122	120	1.7	113	119	5.2	70 - 130	20	
Isopropylbenzene	ND	250	115	116	0.9	108	115	6.3	70 - 130	20	
m&p-Xylene	ND	250	117	118	0.9	111	117	5.3	70 - 130	20	
Methyl ethyl ketone	ND	250	82	82	0.0	75	79	5.2	40 - 160	20	
Methyl t-butyl ether (MTBE)	ND	250	98	98	0.0	93	99	6.3	70 - 130	20	
Methylene chloride	ND	250	91	91	0.0	86	91	5.6	70 - 130	20	
Naphthalene	ND	250	107	108	0.9	102	109	6.6	70 - 130	20	
n-Butylbenzene	ND	250	126	125	0.8	117	122	4.2	70 - 130	20	
n-Propylbenzene	ND	250	119	119	0.0	112	118	5.2	70 - 130	20	
o-Xylene	ND	250	113	114	0.9	107	112	4.6	70 - 130	20	
p-Isopropyltoluene	ND	250	120	119	0.8	112	118	5.2	70 - 130	20	
sec-Butylbenzene	ND	250	121	121	0.0	113	120	6.0	70 - 130	20	
Styrene	ND	250	114	115	0.9	108	114	5.4	70 - 130	20	
tert-amyl methyl ether	ND	250	101	102	1.0	97	102	5.0	70 - 130	20	
tert-Butylbenzene	ND	250	116	117	0.9	109	116	6.2	70 - 130	20	
Tetrachloroethene	ND	250	119	120	0.8	112	117	4.4	70 - 130	20	
Tetrahydrofuran (THF)	ND	250	96	98	2.1	87	93	6.7	70 - 130	20	
Toluene	ND	250	110	110	0.0	104	108	3.8	70 - 130	20	
trans-1,2-Dichloroethene	ND	250	106	108	1.9	100	106	5.8	70 - 130	20	
trans-1,3-Dichloropropene	ND	250	104	104	0.0	95	102	7.1	70 - 130	20	
trans-1,4-dichloro-2-butene	ND	250	104	105	1.0	95	102	7.1	70 - 130	20	
Trichloroethene	ND	250	115	116	0.9	108	114	5.4	70 - 130	20	
Trichlorofluoromethane	ND	250	27	28	3.6	26	28	7.4	70 - 130	20	l,m
Trichlorotrifluoroethane	ND	250	88	91	3.4	88	92	4.4	70 - 130	20	
Vinyl chloride	ND	250	122	125	2.4	115	122	5.9	70 - 130	20	
% 1,2-dichlorobenzene-d4	100	%	100	100	0.0	100	100	0.0	70 - 130	20	
% Bromofluorobenzene	99	%	102	102	0.0	101	101	0.0	70 - 130	20	
% Dibromofluoromethane	90	%	97	97	0.0	92	95	3.2	70 - 130	20	
% Toluene-d8	100	%	99	98	1.0	98	98	0.0	70 - 130	20	

Comment:

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.
The RPD criteria for the LCS/LCSD is 20%,
The MS/MSD RPD criteria is listed above.

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.
m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller

Phyllis Shiller, Laboratory Director
April 25, 2024

Thursday, April 25, 2024

Criteria: MA: S1, S1G2, S1G3, S2, S2G2, S2G3

State: MA

Sample Criteria Exceedances Report

GCQ52307 - PEER

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units
CQ52314	$8260MER	Dibromochloromethane	MA / CMR 310.40.1600 / S1 (mg/kg)	ND	50	5	5	ug/Kg
CQ52314	$8260MER	cis-1,3-Dichloropropene	MA / CMR 310.40.1600 / S1 (mg/kg)	ND	25	10	10	ug/Kg
CQ52314	$8260MER	trans-1,3-Dichloropropene	MA / CMR 310.40.1600 / S1 (mg/kg)	ND	25	10	10	ug/Kg
CQ52314	$8260MER	1,1,2,2-Tetrachloroethane	MA / CMR 310.40.1600 / S1 (mg/kg)	ND	50	5	5	ug/Kg
CQ52314	$8260MER	1,1,2,2-Tetrachloroethane	MA / CMR 310.40.1600 / S2 (mg/kg)	ND	50	20	20	ug/Kg
CQ52314	$8260MER	Dibromochloromethane	MA / CMR 310.40.1600 / S2 (mg/kg)	ND	50	30	30	ug/Kg
CQ52314	$8260MER	1,1,2,2-Tetrachloroethane	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	ND	50	5	5	ug/Kg
CQ52314	$8260MER	Dibromochloromethane	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	ND	50	5	5	ug/Kg
CQ52314	$8260MER	Dibromochloromethane	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-2	ND	50	30	30	ug/Kg
CQ52314	$8260MER	1,1,2,2-Tetrachloroethane	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-2	ND	50	20	20	ug/Kg
CQ52314	$8260MER	Dibromochloromethane	MA / SOIL S-2 STANDARDS / S-2 Soil & GW-1	ND	50	5	5	ug/Kg
CQ52314	$8260MER	1,1,2,2-Tetrachloroethane	MA / SOIL S-2 STANDARDS / S-2 Soil & GW-1	ND	50	5	5	ug/Kg
CQ52314	$8260MER	Dibromochloromethane	MA / SOIL S-2 STANDARDS / S-2 Soil & GW-2	ND	50	30	30	ug/Kg
CQ52314	$8260MER	1,1,2,2-Tetrachloroethane	MA / SOIL S-2 STANDARDS / S-2 Soil & GW-2	ND	50	20	20	ug/Kg
CQ52314	$MCPADD-SM	1,4-Dioxane	MA / CMR 310.40.1600 / S1 (mg/kg)	ND	800	200	200	ug/Kg
CQ52314	$MCPADD-SM	1,4-Dioxane	MA / SOIL S-1 STANDARDS / S-1 Soil & GW-1	ND	800	200	200	ug/Kg
CQ52314	$MCPADD-SM	1,4-Dioxane	MA / SOIL S-2 STANDARDS / S-2 Soil & GW-1	ND	800	200	200	ug/Kg

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

Analysis Comments

April 25, 2024 SDG I.D.: GCQ52307

The following analysis comments are made regarding exceptions to criteria not already noted in the Analysis Report or QA/QC Report:

ETPH Narration

AU-XL2 04/20/24-1: CQ52307, CQ52308, CQ52309, CQ52310

As per section 7.2.3, a discrimination check standard was run and contained the following outliers: C36 29.3%L (20%)

The ETPH method allows for one discrimination check standard outlier.

PCB Narration

AU-ECD3 04/23/24-1: CQ52307, CQ52308, CQ52309, CQ52310

The following Continuing Calibration compounds did not meet % deviation criteria:
Samples: CQ52307, CQ52308
  Preceding CC 423B015 - PCB 1260 20%H (%)
  Succeeding CC 423B028 - PCB 1260 17%H (%)
Samples: CQ52309, CQ52310
  Preceding CC 423B028 - PCB 1260 17%H (%)
  Succeeding CC 423B041 - DCBP SURR 17%H (15%), PCB 1260 19%H (%)

PEST Narration

AU-ECD33 04/24/24-1: CQ52312

The following Continuing Calibration compounds did not meet % deviation criteria:
Samples: CQ52312
  Preceding CC 424B004 - Endosulfan II 26%L (20%)
  Succeeding CC 424B018 - % DCBP 21%L (20%), 4,4'-DDT 24%L (20%), Heptachlor 21%L (20%), Methoxychlor 25%L (20%)
A low "1A" standard was run after the samples to demonstrate capability to detect any compounds outside of the CC acceptance criteria. All reported samples were ND for the affected compounds.

SVOA Narration

CHEM28 04/19/24-1: CQ52307, CQ52308, CQ52309, CQ52310

For 8270 full list, the DDT breakdown and pentachlorophenol & benzidine peak tailing were evaluated in the DFTPP tune and were found to be in control.
For 8270 BN list, benzidine peak tailing was evaluated in the DFTPP tune and was found to be in control.

The following Initial Calibration compounds did not meet recommended response factors: Hexachlorobenzene 0.087 (0.1)
The following Initial Calibration compounds did not meet minimum response factors: None.

The following Continuing Calibration compounds did not meet % deviation criteria: 2-Nitroaniline 32%L (30%)
The following Continuing Calibration compounds did not meet Maximum % deviation criteria: None.
The following Continuing Calibration compounds did not meet recommended response factors: Hexachlorobenzene 0.082 (0.1)
The following Continuing Calibration compounds did not meet minimum response factors: None.

Up to eight compounds can be outside of ICAL %RSD criteria and up to sixteen compounds can be outside of CCAL %Dev criteria if less than 40%.

VOA Narration

CHEM03 04/16/24-2: CQ52307, CQ52308, CQ52309, CQ52310, CQ52311, CQ52314

Analysis Comments

April 25, 2024 SDG I.D.: GCQ52307

The following Initial Calibration compounds did not meet RSD% criteria: Acetone 22% (20%), Dichlorodifluoromethane 23% (20%), Methyl Ethyl Ketone 23% (20%), Trichlorotrifluoroethane 23% (20%)
The following Initial Calibration compounds did not meet maximum RSD% criteria: None.
The following Initial Calibration compounds did not meet recommended response factors: 1,1,2-Trichloroethane 0.194 (0.2)
The following Initial Calibration compounds did not meet minimum response factors: None.

The following Continuing Calibration compounds did not meet % deviation criteria: Carbon tetrachloride 32%H (30%)
The following Continuing Calibration compounds did not meet Maximum % deviation criteria: None.

Up to eight compounds can be outside of ICAL %RSD criteria and up to sixteen compounds can be outside of CCAL %Dev criteria if less than 40%.

Cooler: Yes ☑ No ☐
Coolant: IPK ☑ ICE ☐ No ☐

PHOENIX
Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Temp 2.4 °C Pg 1 of 1

Data Delivery/Contact Options:
☐ Fax:
☐ Phone:
☑ Email: gordend@peercpc.com

Customer: PEER Consultants
Address: 10 Mall Rd Suite 301
Burlington MA 01803
7812388880

Project: M.A.N. School
Report to: d. gorden
Invoice to: d. gorden
QUOTE # Southboro

Project P.O: 8404

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature
Date: 4/15/24

Matrix Code:
DW=Drinking Water GW=Ground Water SW=Surface Water WW=Waste Water
RW=Raw Water SE=Sediment SL=Sludge S=Soil SD=Solid W=Wipe OIL=Oil
B=Bulk L=Liquid X = ________(Other)

Analysis Request

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	2024 Date Sampled	Time Sampled	Hi level VOC	Lo level VOC	TPH GRO	Flash/Ignit	SVOC, TPH DRO, PCB*	TCLP Metals **	Pesticides/Herbicides	Chloride, NO2, NO3, Phosphate	Fecal Coliform.	MS/MSD*	~~GL Amber 8 oz w/H2SO4~~ 120ml ste	Soil VOA Vials [✓] methanol [✓] H2O	GL Soil container (8) oz	GL Soil container (4) oz	40 ml VOA Vial [ ] As is [ ] HCL	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ] 250ml [ ] 500ml [ ] 1000ml	PL H2SO4 [ ] 250ml [ ] 500ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle w/thio	Bacteria Bottle as is
52307	B2 Full	S	4/15	1437	✓	✓	✓	✓	✓		~~✓~~	~~✓~~				5	2	1								
52308	B3 Full	S	|	1139	✓	✓	✓	✓	✓							5	2	1								
52309	B4 Full	S	|	1316	✓	✓	✓	✓	✓							5	2	1								
52310	B5 Full	S	↓	0942	✓	✓	✓	✓	✓							5	2	1								
52311	TB0415244	L	4/10	–	✓	✓										3										
52312	B2-B5 0-2'	S	4/15	1501							✓						1									
52313	B2-B5 WT	S	4/15	1533								✓	✓		1		1									
52314	TB HL																									

Relinquished by:	Accepted by:	Date:	Time:
		4-16-24	1205
		4-16-24	14:45

Comments, Special Requirements or Regulations:
* and MCP 14 metals, pH, corrosivity, conductivity, reactivity
** Follow 20x rule, Call Client first for approval

*MS/MSD are considered site samples and will be billed as such in accordance with the prices quoted.

Turnaround Time:
☐ 1 Day*
☐ 2 Days*
☐ 3 Days*
☑ Standard
☐ Other
* SURCHARGE APPLIES

RI
☐ (Residential) Direct Exposure
☐ (Comm/Industrial) Direct Exposure
☐ GA Leachability
☐ GB Leachability
☐ GA-GW Objectives
☐ GB-GW Objectives

CT
☐ RCP Cert
☐ GW Protection
☐ SW Protection
☐ GA Mobility
☐ GB Mobility
☐ Residential DEC
☐ I/C DEC
☐ Other

MA comm97-001
☐ MCP Certification
☐ GW-1 ☐ MWRA eSMART
☐ GW-2 ☐ S-1 10% CALC
☐ GW-3
☑ S-1 GW-1 ☑ S-1 GW-2 ☑ S-1 GW-3
☑ S-2 GW-1 ☑ S-2 GW-2 ☑ S-2 GW-3
☐ S-3 GW-1 ☐ S-3 GW-2 ☐ S-3 GW-3
☐ SW Protection

State where samples were collected: MA

Data Format
☑ Excel
☑ PDF
☐ GIS/Key
☐ EQuIS
☐ Other

Data Package
☐ Tier II Checklist
☐ Full Data Package*
☑ Phoenix Std Report
☐ Other

* SURCHARGE APPLIES

H: Soil Percolation Test

Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

TOWN OF SOUTHBOROUGH
Owner Name

17 COMMON STREET
Street Address

43-18
Map/Lot #

SOUTHBOROUGH
City

MA
State

01772
Zip Code

53 PARKERVILLE ROAD

B. Site Information

1. (Check one) ☑ New Construction ☐ Upgrade ☐ Repair

2. Soil Survey Available? ☑ Yes ☐ No If yes: NRCS SOIL SURVEY
Source
420B + 651
Soil Map Unit

CANTON & UDORTHENTS
Soil Name

Soil Limitations

Soil Parent material

Landform

3. Surficial Geological Report Available? ☑ Yes ☐ No If yes:
Year Published/Source
Map Unit

HOPE VALLEY ALASKITE GNEISS
Description of Geologic Map Unit:

4. Flood Rate Insurance Map Within a regulatory floodway? ☐ Yes ☑ No

5. Within a velocity zone? ☐ Yes ☑ No

6. Within a Mapped Wetland Area? ☐ Yes ☑ No If yes, MassGIS Wetland Data Layer:
Wetland Type

7. Current Water Resource Conditions (USGS):
Month/Day/ Year
Range: ☐ Above Normal ☐ Normal ☐ Below Normal

8. Other references reviewed: SUDBURY RIVER.

Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 7/24-1 (Hole #) 7/24/24 (Date) AM (Time) CLOUDY 60's (Weather) 42.299 (Latitude) -71.541 (Longitude:)

1. Land Use GRASS/FIELD (e.g., woodland, agricultural field, vacant lot, etc.) GRASS (Vegetation) N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-6% (Slope (%))

Description of Location: ______

2. Soil Parent Material: SANDY LOAM KAME (Landform) SIDE SLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Wetlands ____ feet
Property Line ____ feet Drinking Water Well ____ feet Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☐ No If Yes: ☐ Disturbed Soil ☑ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: ____ Depth Weeping from Pit ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0-76"	FILL										
76-136"	C	SANDY LOAM	2.5Y 4/4	72"	7.5YR5/8						THREE HORIZONS OF FILL

Additional Notes:
WEEPAGE 72"

Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 724-2 Hole # 7/29/24 Date AFT Time CLOUDY 60s Weather 42.299 Latitude -71.541 Longitude:

1. Land Use: LAWN (e.g., woodland, agricultural field, vacant lot, etc.) GRASS Vegetation N/A Surface Stones (e.g., cobbles, stones, boulders, etc.) 2-5% Slope (%)

Description of Location: ______

2. Soil Parent Material: SANDY LOAM KAME Landform SIDE SLOPE Position on Landscape (SU, SH, BS, FS, TS)

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Wetlands ____ feet
Property Line ____ feet Drinking Water Well ____ feet Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☑ Yes ☐ No If yes: ____ Depth Weeping from Pit ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-17"	Ap	SANDY LOAM	10YR 3/2								
17"-94"	C	↓	2.5Y 4/4	42"	7.5YR 5/8			5%			

Additional Notes:
WEEPAGE AT 86"
NO 'B' HORIZON

Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review *(minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 724-3 (Hole #) 7/24/24 (Date) AM (Time) CLOUDY 60S (Weather) 42.299 (Latitude) -71.541 (Longitude:)

1. Land Use: LAWN (e.g., woodland, agricultural field, vacant lot, etc.) GRASS (Vegetation) N/A (Surface Stones (e.g., cobbles, stones, boulders, etc.)) 2-8% (Slope (%))

Description of Location: ______

2. Soil Parent Material: SANDY LOAM KAME (Landform) SIDE SLOPE (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from: Open Water Body ____ feet Drainage Way ____ feet Wetlands ____ feet
Property Line ____ feet Drinking Water Well ____ feet Other ____ feet

4. Unsuitable Materials Present: ☐ Yes ☑ No If Yes: ☐ Disturbed Soil ☐ Fill Material ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☑ No If yes: ____ Depth Weeping from Pit ____ Depth Standing Water in Hole

Soil Log

Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
				Depth	Color	Percent	Gravel	Cobbles & Stones			
0"-11"	Ap	SANDY LOAM	10YR 3/2								
11"-27"	Bw		10YR 5/6								
27"-87"	C		2.5Y 4/4	45"	7.5YR 5/8			5%			

Additional Notes:
NO GROUNDWATER
NO WEEPAGE

Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used: Obs. Hole # _____ Obs. Hole # _____

☐ Depth observed standing water in observation hole _____ inches _____ inches

☑ Depth weeping from side of observation hole _____ inches _____ inches

☑ Depth to soil redoximorphic features (mottles) _____ inches _____ inches

☐ Depth to adjusted seasonal high groundwater (S_h) (USGS methodology) _____ inches _____ inches

_____________________ Index Well Number _____________________ Reading Date

$S_h = S_c – [S_r \times (OW_c – OW_{max})/OW_r]$

Obs. Hole/Well# _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

2. Estimated Depth to High Groundwater: _____ inches

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

☑ Yes ☐ No

b. If yes, at what depth was it observed (exclude A and O Horizons)? Upper boundary: VARIABLE _____ inches Lower boundary: _____ inches

c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator

7/24/24
Date

LAWRENCE L GREENE 2688
Typed or Printed Name of Soil Evaluator / License #

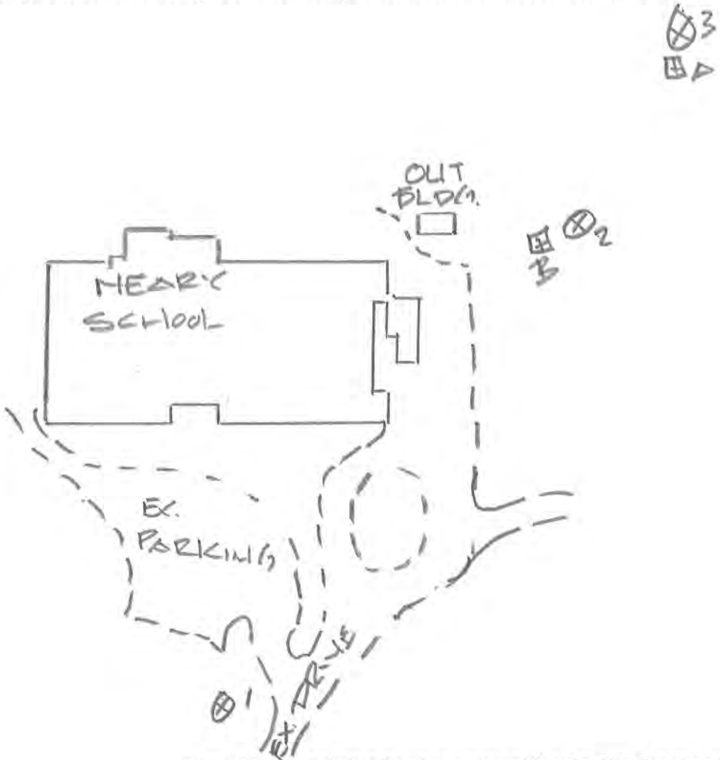
6/30/25
Expiration Date of License

SOUTHBORO BOARD OF HEALTH
Name of Approving Authority Witness

Approving Authority

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Field Diagrams: Use this area for field diagrams:



Commonwealth of Massachusetts
City/Town of SOUTHBOROUGH
Percolation Test
Form 12

Percolation test results must be submitted with the Soil Suitability Assessment for On-site Sewage Disposal. DEP has provided this form for use by local Boards of Health. Other forms may be used, but the information must be substantially the same as that provided here. Before using this form, check with the local Board of Health to determine the form they use.

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

tab ✓

return ✗

A. Site Information

TOWN OF SOUTHBOROUGH
Owner Name

17 COMMON STREET
Street Address or Lot #

SOUTHBOROUGH
City/Town

MA
State

01772
Zip Code

Contact Person (if different from Owner)

Telephone Number

B. Test Results

53 PARKERVILLE ROAD

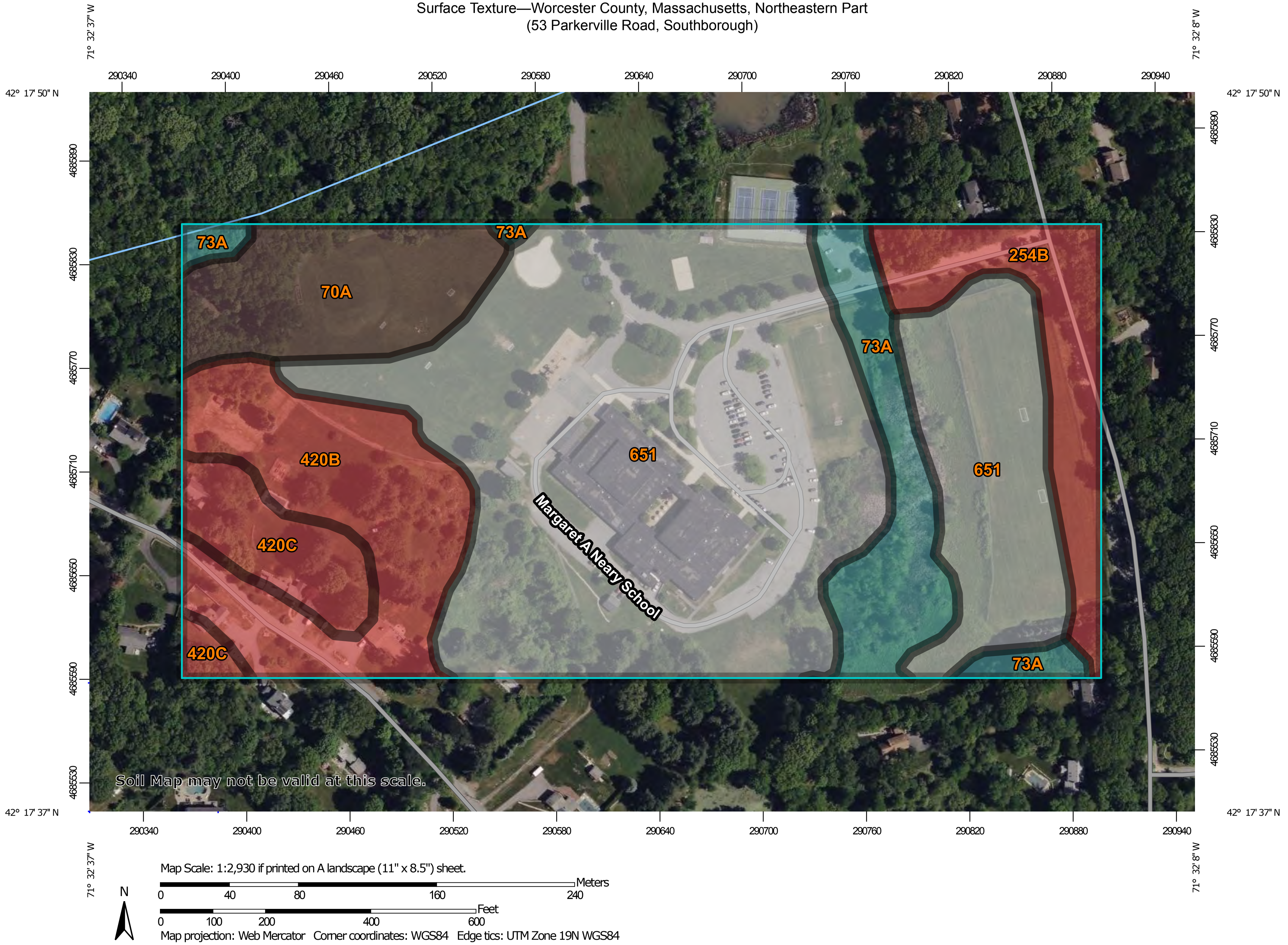
Date	7/24/24	7/24/24
Time		
Observation Hole #	724-3-PERC-A	724-2-PERC-B
Depth of Perc	45"	39"
Start Pre-Soak	8:28	9:12
End Pre-Soak		
Time at 12"	8:43	9:28
Time at 9"	9:25	10:18
Time at 6"	10:30	11:45
Time (9"-6")	65 MIN	87 MIN
Rate (Min./Inch)	22 MIN/INCH	29 MIN/INCH
Test Passed:	☑	☑
Test Failed:	☐	☐

LAR GREENE-MCCARTY
Test Performed By:

SOUTHBOROUGH BOARD OF HEALTH
Board of Health Witness

Comments:

Surface Texture—Worcester County, Massachusetts, Northeastern Part
(53 Parkerville Road, Southborough)



Map Scale: 1:2,930 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

- ☐ Area of Interest (AOI)

Soils

Soil Rating Polygons

- 🟥 Fine sandy loam
- 🟫 Moderately decomposed plant material
- 🟦 Peat
- ☐ Not rated or not available

Soil Rating Lines

- 〰 Fine sandy loam
- 〰 Moderately decomposed plant material
- 〰 Peat
- 〰 Not rated or not available

Soil Rating Points

- 🟥 Fine sandy loam
- 🟫 Moderately decomposed plant material
- 🟦 Peat
- ▣ Not rated or not available

Water Features

- 〰 Streams and Canals

Transportation

- ┼┼┼ Rails
- 〰 Interstate Highways
- 〰 US Routes
- 〰 Major Roads
- 〰 Local Roads

Background

- 🟩 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Worcester County, Massachusetts, Northeastern Part
Survey Area Data: Version 18, Sep 10, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Surface Texture

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
70A	Ridgebury fine sandy loam, 0 to 3 percent slopes	Moderately decomposed plant material	3.1	9.0%
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	Peat	3.0	8.7%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	Fine sandy loam	2.7	7.9%
420B	Canton fine sandy loam, 3 to 8 percent slopes	Fine sandy loam	4.7	13.6%
420C	Canton fine sandy loam, 8 to 15 percent slopes	Fine sandy loam	1.7	5.0%
651	Udorthents, smoothed		19.4	55.8%
Totals for Area of Interest			**34.8**	**100.0%**

Description

This displays the representative texture class and modifier of the surface horizon.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

For an attribute of a soil horizon, a depth qualification must be specified. In most cases it is probably most appropriate to specify a fixed depth range, either in centimeters or inches. The Bottom Depth must be greater than the Top Depth, and the Top Depth can be greater than zero. The choice of "inches" or "centimeters" only applies to the depth of soil to be evaluated. It has no influence on the units of measure the data are presented in.

When "Surface Layer" is specified as the depth qualifier, only the surface layer or horizon is considered when deriving a value for a component, but keep in mind that the thickness of the surface layer varies from component to component.

When "All Layers" is specified as the depth qualifier, all layers recorded for a component are considered when deriving the value for that component.

Whenever more than one layer or horizon is considered when deriving a value for a component, and the attribute being aggregated is a numeric attribute, a weighted average value is returned, where the weighting factor is the layer or horizon thickness.

Test Hole-1

Test hole-2

Test hole-3

Waterline Diagram

I: State Site Permit Tracking Worksheet

Date: 2/25/2025
District: Southborough
Project Name: Neary Elementary School
MSBA Project ID:

SITE PERMIT	REQUIREMENTS	FILING DATE	EXPECTED RESPONSE DATE	TRIGGER - YES/NO	AGENCY COMMENTS/SUGGESTED ACTIONS	DESIGNER RESPONSES
CONCOM	NOI	MM/DD/YYYY	MM/DD/YYYY	Yes	Done concurrent with MADEP filing for NOI in DD phase	
MHC	PNF	7/12/2024	8/23/2024	No		
MA-DOT	PNF with MHC	7/12/2024	8/23/2024	No		
MA-DEP	NOI	MM/DD/YYYY	MM/DD/YYYY	Yes	Done concurrent with MADEP filing for NOI in DD phase	
NHESP	NOI	MM/DD/YYYY	MM/DD/YYYY	No		
MEPA	ENF or EIR	MM/DD/YYYY	MM/DD/YYYY	No		

Instructions to complete the permit tracking table:

1. Enter the date the PNF/NOI was filed.
2. Enter the date when the response is expected.
3. If a response is received from CONCOM/MHC/MA-DOT/MA-DEP/NHESP/MEPA, mention 'YES' in the 'trigger' column. Summarize the proposed/requested/mandated action by the agencies in a few words and corresponding Designer responses in the appropriate column. Please include the full response as an attachment with this submittal for MSBA's reference.
4. If there is no response by the expected response date, mention 'NO' in the 'trigger' column.
5. Indicate "Not Applicable" (where appropriate) in the "trigger" column and describe why each item is not applicable.
6. Describe the status of the following approvals. Any status updates/concerns/notes can be mentioned in the 'Designer Responses' column.
7. Make sure to attach the sheet with every submittal for the project to track any changes.
8. Provide the status of any other state or federal approval not listed above (the following list is not a comprehensive itemization of required state approvals; other requirements may apply, and some items listed below may not be applicable to this project).
9. Provide a copy of the PNF, NOI, appropriate application forms and/or approval letters where applicable.

Architect and Engineer Certification

By signing this certification, I hereby certify that all of the information provided in this "Permit Tracking Table" is true, complete and accurate to the best of my knowledge and belief on the date signed.

Name of Architecture Firm: Arrowstreet

Name of Architect: Laurence Spang, AIA

Signature of Architect:

Date: 02/25/25

By signing this certification, I hereby certify that only the information I specifically reviewed and then provided in this "Permit Tracking Table" is true, complete and accurate to the best of my knowledge and belief on the date signed.

Name of Environmental Permitting Company PEER Consultants, P.C.

Name of Wetland Scientist dave gorden

Signature of Wetland Scientist *dave gorden*

Date: 2/25/25

Use this MEPA guideline checklist to check any aspects that apply to the project, to understand if an ENF/EIR, or any additional review from MEPA may be required.

MEPA Trigger	**(a) ENF and Mandatory EIR.** (Triggered by any of the items in this column)		**Reviewed Y/N**	**Comments**	**(b) ENF and Other MEPA Review if the Secretary So Requires.** (Triggered by any of the items in this column)	
DGA/ ENVIRONMENTAL JUSTICE PROTOCOLS	1. If your site has an Environmental Justice population within a 1-mile DGA (Designated Geographical Area) while the project DOES NOT				None	
	(a) exceed any Air threshold at 301 CMR 11.03(8) OR;	☐	Y			
	(b) generate 150 or more New ADT(Average Daily Traffic) of diesel vehicle traffic over a duration of 1 year (excluding public transit trips)	☐	Y	Bus trips are not increasing.		
	2. If your site has an Environmental Justice population within a 5-mile DGA (Designated Geographical Area) while the project					
	(a) exceeds any Air threshold at 301 CMR 11.03(8) OR;	☐	Y			
	(b) generates 150 or more New ADT(Average Daily Traffic) of diesel vehicle traffic over a duration of 1 year (excluding public transit trips)	☐	Y			
LAND	1. Direct alteration of 50 or more acres of land, unless the Project is consistent with an approved conservation farm plan or forest cutting plan or other similar generally accepted agricultural or forestry practices.	☐	Y	Alteration is less than 10 acres.	1. Direct alteration of 25 or more acres of land, unless the Project is consistent with an approved conservation farm plan or forest cutting plan or other similar generally accepted agricultural or forestry practices.	☐
	2. Creation of ten or more acres of impervious area.	☐	Y		2. Creation of five or more acres of impervious area.	☑
					3. Disposition or change in use of land or an interest in land subject to Article 97 of the Amendments to the Constitution of the Commonwealth, unless the Secretary waives or	☑
					4. Conversion of land in active agricultural use to nonagricultural use, provided the land includes soils classified as prime, state-important or unique by the United States	☑
					5. Release of an interest in land held for conservation, preservation or agricultural or watershed preservation purposes, unless the Secretary waives or modifies the replacement	☑
					6. Approval in accordance with M.G.L. c. 121A of a New urban redevelopment project or a fundamental change in an approved urban redevelopment project, provided that the Project	☑
					7. Approval in accordance with M.G.L. c. 121B of a New urban renewal plan or a major modification of an existing urban renewal plan.	☐
STATE-LISTED SPECIES UNDER M.G.L. c. 131A (Massachusetts Endangered Species Act).	None				1. Alteration of designated significant habitat.	☑
					2. Greater than two acres of disturbance of designated priority habitat, as defined in 321 CMR 10.02, that results in a take of a state-listed endangered or threatened species or species of special concern.	☑
WETLANDS, WATERWAYS AND TIDELANDS.	1. Provided that a Permit is required:				1. Provided that a Permit is required:	
	(a) alteration of one or more acres of salt marsh or bordering vegetating wetlands; or	☐	Y	Current plan does not impact wetland setbacks.	(a) alteration of coastal dune, barrier beach or coastal bank;	☐
	(b) alteration of ten or more acres of any other wetlands.	☐	Y		(b) alteration of 500 or more linear feet of bank along a fish run or inland bank;	☐
	2. Alteration requiring a variance in accordance with the Wetlands Protection Act.	☐	Y		(c) alteration of 1,000 or more sf of salt marsh or outstanding resource waters;	☐
	3. Construction of a New dam.	☐	Y		(d) alteration of 5,000 or more sf of bordering or isolated vegetated wetlands;	☐
	4. Structural alteration of an existing dam that causes an Expansion of 20% or any decrease in impoundment Capacity.	☐	Y		(e) New fill or structure or Expansion of existing fill or structure, except a pile- supported structure, in a velocity zone or regulatory floodway; or	☐
	5. Provided that a Chapter 91 License is required, New non-water dependent use or Expansion of an existing non-water dependent structure, provided the use or structure occupies one or more acres of waterways or tidelands.	☐	Y		(f) alteration of ½ or more acres of any other wetlands.	☐
					2. Construction of a New roadway or bridge providing access to a barrier beach or a New utility line providing service to a structure on a barrier beach.	☐
					3. Dredging of 10,000 or more cy of material.	☐
					4. Disposal of 10,000 or more cy of dredged material, unless at a designated in-water disposal site.	☐

					5. Provided that a Chapter 91 License is required, New or existing unlicensed non-water dependent use of waterways or tidelands, unless the Project is an overhead utility line, a	☐
					6. Construction, reconstruction or Expansion of an existing solid fill structure of 1,000 or more sf base area or of a pile-supported or bottom-anchored structure of 2,000 or more sf base area, except a seasonal, pile-held or bottom-anchored float, provided the structure occupies flowed tidelands or other waterways.	☐
WATER	1. New withdrawal or Expansion in withdrawal of:				1. New withdrawal or Expansion in withdrawal of 100,000 or more gpd from a water source that requires New construction for the withdrawal.	☐
	(a) 2,500,000 or more gpd from a surface water source; or	☐	Y	N/A 7,100 gpd based on 710 enrollment	2. New withdrawal or Expansion in withdrawal of 500,000 or more gpd from a water supply system above the lesser of current system-wide authorized withdrawal volume or three-	☐
	(b) 1,500,000 or more gpd from a groundwater source.	☐	Y	N/A 7,100 gpd based on 710 enrollment	3. Construction of one or more New water mains five or more miles in length.	☐
	2. New interbasin transfer of water of 1,000,000 or more gpd or any amount determined significant by the Water Resources Commission.	☐	Y	Water transfer not being altered.	4. Construction of a New drinking water treatment plant with a Capacity of 1,000,000 or more gpd.	☐
	3. Construction of one or more New water mains ten or more miles in length.	☐	Y		5. Expansion of an existing drinking water treatment plant by the greater of 1,000,000 gpd or 10% of existing Capacity.	☐
	4. Provided that the Project is undertaken by an Agency, New water service to a municipality or water district across a municipal boundary through New or existing	☐	Y	Not crossing municpal boundaries	6. Alteration requiring a variance in accordance with the Watershed Protection Act, unless the Project consists solely of one single family dwelling.	☐
					7. Non-bridged stream crossing 1,000 or less feet upstream of a public surface drinking water supply for purpose of forest harvesting activities.	☐
WASTEWATER	1. Construction of a New wastewater treatment and/or disposal facility with a Capacity of 2,500,000 or more gpd.	☐	Y		1. Construction of a New wastewater treatment and/or disposal facility with a Capacity of 100,000 or more gpd.	☐
	2. New interbasin transfer of wastewater of 1,000,000 or more gpd or any amount determined significant by the Water Resource Commission.	☐	Y	N/A 7,100 gpd based on 710 enrollment	2. Expansion of an existing wastewater treatment and/or disposal facility by the greater of 100,000 gpd or 10% of existing Capacity.	☐
	3. Construction of one or more New sewer mains ten or more miles in length.	☐	Y		3. Construction of one or more New sewer mains:	
	4. Provided that the Project is undertaken by an Agency, New sewer service to a municipality or sewer district across a municipal boundary through New or existing	☐	Y	N/A septic system	(a) that will result in an Expansion in the flow to a wastewater treatment and/or disposal facility by 10% of existing Capacity; or	☐
	5. New discharge or Expansion in discharge of any amount of sewage, industrial waste water or untreated stormwater directly to an outstanding resource water.	☐	Y		(b) five or more miles in length.	☐
	6. New Capacity or Expansion in Capacity for storage, treatment, processing, combustion or disposal of 150 or more wet tpd of sewage sludge, sludge ash, grit, screenings, or other sewage sludge residual materials, unless the Project is an Expansion of an existing facility within an area that has already been sited for the proposed use in accordance with M.G.L. c. 21 or M.G.L. c. 83, § 6.	☐	Y	N/A septic system	4. New discharge or Expansion in discharge:	
					(a) to a sewer system of 100,000 or more gpd of sewage, industrial waste water or untreated stormwater;	☐
					(b) to a surface water of:	
					i. 100,000 or more gpd of sewage;	☐
					ii. 20,000 or more gpd of industrial waste water; or	☐
					iii. any amount of sewage, industrial waste water or untreated stormwater requiring a variance from applicable water quality regulations; or	☐
					(c) to groundwater of:	
					i. 10,000 or more gpd of sewage within an area, zone or district established, delineated or identified as necessary or appropriate to protect a public drinking water supply, an	☐
					ii. 50,000 or more gpd of sewage within any other area;	☐
					iii. 20,000 or more gpd of industrial waste water; or	☐
					iv. any amount of sewage, industrial waste water or untreated stormwater requiring approval by the Department of Environmental Protection of a variance from Title 5 of	☐
					5. New Capacity or Expansion in Capacity for:	
					(a) combustion or disposal of any amount of sewage sludge, sludge ash, grit, screenings, or other sewage sludge residual materials; or	☐
					(b) storage, treatment, or processing of 50 or more wet tpd of sewage sludge or sewage	☐
TRANSPORTATION.	1. Unless the Project consists solely of an internal or on-site roadway or is located entirely on the site of a non-roadway Project:				1. Unless the Project consists solely of an internal or on-site roadway or is located entirely on the site of a non-roadway Project:	
	(a) construction of a New roadway two or more miles in length; or	☐	Y		(a) construction of a New roadway one-quarter or more miles in length; or	☐
	(b) widening of an existing roadway by one or more travel lanes for two or more miles.	☐	Y		(b) widening of an existing roadway by four or more feet for one-half or more miles, excluding widening to add bicycle or pedestrian accomodations.	☐

	2. New interchange on a completed limited access highway. 3. Construction of a New airport. 4. Construction of a New runway or terminal at an existing airport. 5. Construction of a New rail or rapid transit line along a New, unused or abandoned right-of-way for transportation of passengers or freight (not including sidings, spurs or other lines 6. Generation of 3,000 or more New adt on roadways providing access to a single location. 7. Construction of 1,000 or more New parking spaces at a single location.	☐ ☐ ☐ ☐ ☐ ☐	**Y** **Y** **Y** **Y** **Y** **Y**		2. Construction, widening or maintenance of a roadway or its right-of-way that will: (a) alter the bank or terrain located ten more feet from the existing roadway for one- half or more miles, unless necessary to install a structure or equipment; (b) cut five or more living public shade trees of 14 or more inches in diameter at breast height; or (c) eliminate 300 or more feet of stone wall. 3. Expansion of an existing runway at an airport. 4. Construction of a New taxiway at an airport. 5. Expansion of an existing taxiway at Logan Airport. 6. Expansion of an existing terminal at Logan Airport by 100,000 or more sf. 7. Expansion of an existing terminal at any other airport by 25,000 or more sf. 8. Construction of New or Expansion of existing air cargo buildings at an airport by 100,000 or more sf. 9. Conversion of a military airport to a non-military airport. 10. Construction of a New rail or rapid transit line for transportation of passengers or freight. 11. Discontinuation of passenger or freight service along a rail or rapid transit line. 12. Abandonment of a substantially intact rail or rapid transit right-of-way. 13. Generation of 2,000 or more New adt on roadways providing access to a single location. 14. Generation of 1,000 or more New adt on roadways providing access to a single location and construction of 150 or more New parking spaces at a single location. 15. Construction of 300 or more New parking spaces at a single location.	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
ENERGY.	1. Construction of a New electric generating facility with a Capacity of 100 or more MW. 2. Expansion of an existing electric generating facility by 100 or more MW. 3. Construction of a New fuel pipeline ten or more miles in length. 4. Construction of electric transmission lines with a Capacity of 230 or more kv, provided the transmission lines are five or more miles in length along New, unused or abandoned right	☐ ☐ ☐ ☐	Y **Y** **Y** **Y**		1. Construction of a New electric generating facility with a Capacity of 25 or more MW. 2. Expansion of an existing electric generating facility by 25 or more MW. 3. Construction of a New fuel pipeline five or more miles in length. 4. Construction of electric transmission lines with a Capacity of 69 or more kv, provided the transmission lines are one or more miles in length along New, unused or abandoned right	☐ ☐ ☐ ☐
AIR.	1. Construction of a New Stationary Source with federal potential emissions, after construction and the imposition of required controls, of: 250 tpy of any criteria air pollutant; 40 tpy of any HAP; 100 tpy of any combination of HAPs; or 100,000 tpy of GHGs based on CO2 Equivalent. 2. Modification of an existing Stationary Source with federal potential emissions that collectively will result, after construction and the imposition of required controls, of 75,000 tpy of GHGs based on CO2 Equivalent.	☐ ☐	**Y** **Y**		1. Construction of a New Stationary Source with federal potential emissions, after construction and the imposition of required controls, of: 100 tpy of PM10, PM 2.5, CO, lead or SO2; 50 tpy of VOC or NOx; 10 tpy of any HAP; or 25 tpy of any combination of HAPs. 2. Modification of an existing Stationary Source resulting in a "significant net increase" in actual emissions, provided that the stationary source or facility is major for the pollutant. For purposes of this threshold, a "significant net increase" in actual emissions shall mean an increase in emissions of: 15 tpy of PM10; 10 tpy of PM 2.5; 100 tpy of CO; 40 tpy of SO2; 25 tpy of VOC or NOx; 0.6 tpy of lead.	☐ ☐
SOLID AND HAZARDOUS WASTE.	1. New Capacity or Expansion in Capacity of 150 or more tpd for storage, treatment, processing, combustion or disposal of solid waste, unless the Project is a transfer station, is an Expansion of an existing facility within a validly site assigned area for the proposed use, or is exempt from site assignment requirements.	☐	**Y**	N/A this is solid waste not sanitary waste.	1. New Capacity or Expansion in Capacity for combustion or disposal of any quantity of solid waste, or storage, treatment or processing of 50 or more tpd of solid waste, unless the Project is exempt from site assignment requirements. 2. Provided that a Permit is required in accordance with M.G.L. c. 21D, New Capacity or Expansion in Capacity for the storage, recycling, treatment or disposal of hazardous waste.	☐ ☐
HISTORICAL AND ARCHAEOLOGICAL RESOURCES.	None				1. demolition of all or any exterior part of any Historic Structure listed in or located in any Historic District listed in the State Register of Historic Places or the Inventory of Historic and 2. destruction of all or any part of any Archaeological Site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth.	☐ ☐
AREAS OF CRITICAL ENVIRONMENTAL CONCERN.	None				1. Any Project of ½ or more acres within a designated ACEC, unless the Project consists solely of one single family dwelling.	☐
REGULATIONS.	None				Promulgation of New or revised regulations, of which a primary purpose is protecting against Damage to the Environment, that significantly reduce: 1. standards for environmental protection; . 2.opportunities for public participation in permitting or other review processes; or	☐ ☐

					3. public access to information generated or provided in accordance with the regulations.	☐

Architect and Engineer Certification

By signing this certification, I hereby certify that all of the information provided in this "MEPA Trigger Checklist" is true, complete and accurate to the best of my knowledge and belief on the date signed.

Arrowstreet
Name of Architecture Firm

Laurence Spang, AIA
Name of Architect

Laurence Spang
Signature of Architect

02/25/25
Date

By signing this certification, I hereby certify that only the information I specifically reviewed and then provided in this "MEPA Trigger Checklist" is true, complete and accurate to the best of my knowledge and belief on the date signed.

PEER Consultants, P.C.
Name of Environmental Permitting Company

Dave Gorden
Name of Wetland Scientist

Dave Gorden
Signature of Wetland Scientist

2/25/25
Date

ARROWSTREET

J: Resilient Mass Action Team Design Standards Tool Report

Climate Resilience Design Standards Tool Project Report

Neary ES - Southborough

Date Created: 8/7/2024 3:14:14 PM
Created By: arodrigue
Date Report Generated: 8/8/2024 12:26:19 PM
Tool Version: Version 1.2
Project Contact Information: Andy Rodrigue (rodrigue@arrowstreet.com)

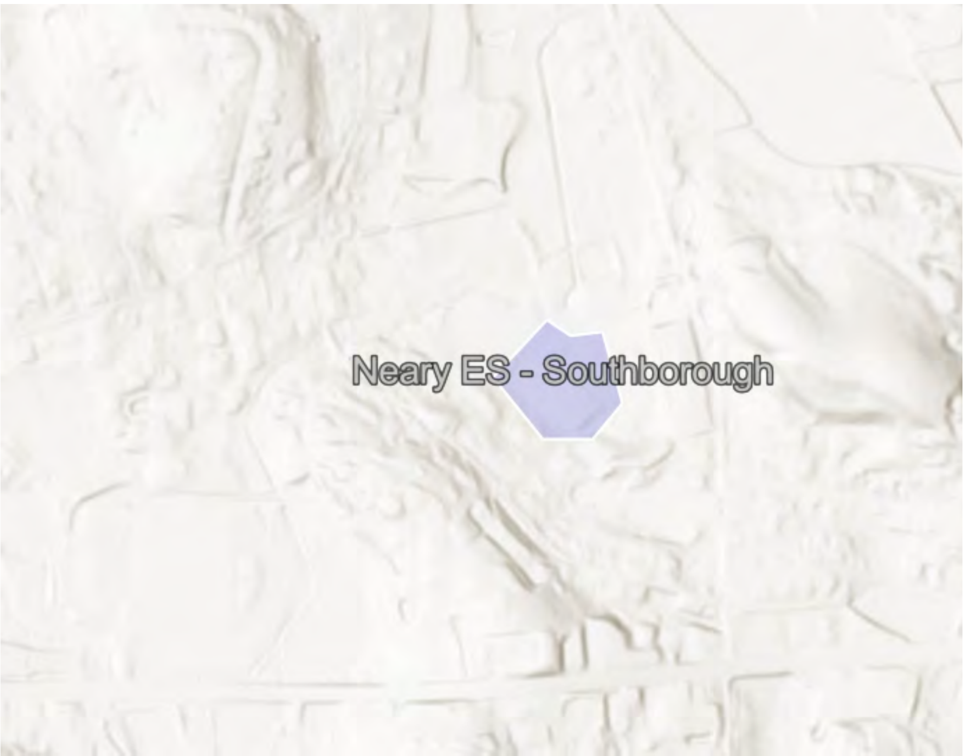
Project Summary

Link to Project

Estimated Capital Cost: $114602730.00
End of Useful Life Year: 2076
Project within mapped Environmental Justice neighborhood: No

Ecosystem Service Benefits	**Scores**
Project Score	🟥 Low

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: 4

Asset Risk	**Sea Level Rise/Storm Surge**	**Extreme Precipitation - Urban Flooding**	**Extreme Precipitation - Riverine Flooding**	**Extreme Heat**
Public School	Low Risk	High Risk	High Risk	High Risk
Recreation Fields	—— Natural Resource project assets do not receive a preliminary climate risk rating. ——			
Geothermal Wells	Low Risk	High Risk	Moderate Risk	High Risk
Wetlands Protection	—— Natural Resource project assets do not receive a preliminary climate risk rating. ——			

Climate Resilience Design Standards Summary

	Target Planning Horizon	**Intermediate Planning Horizon**	**Percentile**	**Return Period**	**Tier**
Sea Level Rise/Storm Surge					
Public School					
Recreation Fields					
Geothermal Wells					
Wetlands Protection					
Extreme Precipitation					
Public School	2070			50-yr (2%)	Tier 3
Recreation Fields	2030				Tier 2
Geothermal Wells	2070			5-yr (20%)	Tier 2

Wetlands Protection	2030		Tier 1
Extreme Heat			
Public School	2070	90th	Tier 3
Recreation Fields	2030	50th	Tier 2
Geothermal Wells	2070	50th	Tier 2
Wetlands Protection	2030	50th	Tier 1

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:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- Existing impervious area of the project site is greater than 50%
- No historic flooding at project site
- No increase to impervious area

Extreme Precipitation - Riverine Flooding

This project received a "Moderate Exposure" because of the following:

- Part of the project is within 500ft of a waterbody and less than 20ft above the 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
- Existing trees are being removed as part of the proposed project
- Existing impervious area of the project site is greater than 50%
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site

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 - Public School
Primary asset criticality factors influencing risk ratings for this asset:

- Asset can be inaccessible/inoperable more than a week after natural hazard event without consequences
- Less than 1,000 people would be directly affected by the loss/inoperability of the asset
- Few alternative programs and/or services are available to support the community

- Cost to replace is greater than $100 million
- There are no hazardous materials in the asset

Asset - Recreation Fields
Primary asset criticality factors influencing risk ratings for this asset:

No score available

Asset - Geothermal Wells
Primary asset criticality factors influencing risk ratings for this asset:

- Asset can be inaccessible/inoperable more than a week after natural hazard event without consequences
- Loss/inoperability of the asset would have impacts limited to the location of infrastructure only
- Inoperability of the asset would not be expected to result in injuries
- Cost to replace is less than $10 million
- There are no hazardous materials in the asset

Asset - Wetlands Protection
Primary asset criticality factors influencing risk ratings for this asset:

No score available

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: Public 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: 50-yr (2%)

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 3

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
Public School	2070	50-Year (2%)	9.7	Downloadable Methodology PDF

Projected Riverine Peak Discharge & Peak Flood Elevation: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Extreme Heat

High Risk

Target Planning Horizon: 2070
Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Heat Index: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

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 3

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): APPLICABLE
Methodology to Estimate Projected Values : Tier 3

Asset: Recreation Fields

Natural Resources

Sea Level Rise/Storm Surge

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

Return Period Recommendations for natural resource assets and subsequent projected values are provided as a consideration for users, not a formal standard. Users should follow industry best practices for designing natural resource assets in coordination with the appropriate regulatory agencies.

Projected Duration of Flooding: NOT APPLICABLE

Projected Design Flood Velocity: NOT APPLICABLE

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation

Target Planning Horizon: 2030

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.

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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
Recreation Fields	2030	25-Year (4%)	7.2	Downloadable Methodology PDF

Return Period Recommendations for natural resource assets and subsequent projected values are provided as a consideration for users, not a formal standard. Users should follow industry best practices for designing natural resource assets in coordination with the appropriate regulatory agencies.

Projected Riverine Peak Discharge & Peak Flood Elevation: APPLICABLE
Methodology to Estimate Projected Values : Tier 2

Extreme Heat

Target Planning Horizon: 2030
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: APPLICABLE
Methodology to Estimate Projected Values : Tier 2

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: NOT APPLICABLE

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): NOT APPLICABLE

Asset: Geothermal Wells Infrastructure

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: 5-yr (20%)

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.

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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
Geothermal Wells	2070	5-Year (20%)	5.9	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): NOT APPLICABLE

Asset: Wetlands Protection Natural Resources

Sea Level Rise/Storm Surge

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

Return Period Recommendations for natural resource assets and subsequent projected values are provided as a consideration for users, not a formal standard. Users should follow industry best practices for designing natural resource assets in coordination with the appropriate regulatory agencies.

Projected Duration of Flooding: NOT APPLICABLE

Projected Design Flood Velocity: NOT APPLICABLE

Projected Scour & Erosion: NOT APPLICABLE

Extreme Precipitation

Target Planning Horizon: 2030

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 1

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
Wetlands Protection	2030	25-Year (4%)	7.2	Downloadable Methodology PDF

Return Period Recommendations for natural resource assets and subsequent projected values are provided as a consideration for users, not a formal standard. Users should follow industry best practices for designing natural resource assets in coordination with the appropriate regulatory agencies.

ATTENTION: This is a Tier 1 project. It is advised to compare the extreme precipitation output values to the NOAA+ methodology to calculate total precipitation depth for 24-hr design storms.

This methodology can be found in the following PDF. (Link).

Projected Riverine Peak Discharge & Peak Flood Elevation: APPLICABLE
Methodology to Estimate Projected Values : Tier 1

Extreme Heat

Target Planning Horizon: 2030
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 1

Projected Annual/Summer/Winter Average Temperatures: APPLICABLE
Methodology to Estimate Projected Values : Tier 1

Projected Heat Index: NOT APPLICABLE

Projected Growing Degree Days: NOT APPLICABLE

Projected Days Per Year With Max Temp > 95°F, >90°F, <32°F: NOT APPLICABLE

Projected Number of Heat Waves Per Year & Average Heat Wave Duration: NOT APPLICABLE

Projected Cooling Degree Days & Heating Degree Days (base = 65°F): NOT APPLICABLE

Project Inputs

Core Project Information

Name:	Neary ES - Southborough
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)?	2076
Location of Project:	Southborough
Estimated Capital Cost:	$114,602,730
Who is the Submitting Entity?	Private Other Arrowstreet Inc. Andy Rodrigue (rodrigue@arrowstreet.com)
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?	Yes
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?	No
Brief Project Description:	A new elementary school building for grades 2-5, situated near a perennial stream and wetland. The project is anticipated to utilize ground-source geothermal wells to heat and cool the building. Other attributes will include stormwater management strategies, preservation of existing wetlands, and a potential for renewable energy sources such as PV panels and battery storage.
Project Submission Comments:	

Project Ecosystem Service Benefits

Factors Influencing Output

✓ Project promotes decarbonization
✓ Project provides recreation

Factors to Improve Output

✓ Incorporate nature-based solutions that may reduce storm damage
✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
✓ Incorporate green infrastructure to filter stormwater
✓ Incorporate nature-based solutions that sequester carbon carbon
✓ Incorporate vegetation that provides pollinator habitat
✓ Identify opportunities to prevent pollutants from impacting ecosystems
✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	Maybe
Recharges groundwater	Maybe
Protects public water supply	Maybe
Filters stormwater using green infrastructure	Maybe
Improves water quality	No
Promotes decarbonization	Yes
Enables carbon sequestration	Maybe
Provides oxygen production	No
Improves air quality	No
Prevents pollution	Maybe
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	Maybe
Provides recreation	Yes
Provides cultural resources/education	Maybe

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)?	No

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?	Unsure
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: Public School
Asset Type: Typically Occupied
Asset Sub-Type: School (primary, secondary, high, vocational, etc.)
Construction Type: New Construction
Construction Year: 2026
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Building may be inaccessible/inoperable more than a week after natural hazard event without consequences

Identify the geographic area directly affected by permanent loss or significant inoperability of the building/facility.
Impacts limited to site only

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?
Moderate – Inoperability may impact other facilities, assets, or buildings, but is not expected to affect their ability to operate

If this building/facility was damaged beyond repair, how much would it approximately cost to replace?
Greater than or equal to $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?
Few 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

Asset: Recreation Fields
Asset Type: Open Space
Asset Sub-Type: Open recreation space
Construction Type: Restoration or enhancement
Construction Year: 2026
Monitoring Frequency: 10

Asset: Geothermal Wells
Asset Type: Green Infrastructure
Asset Sub-Type: Other Green Infrastructure
Construction Type: New Construction
Construction Year: 2026
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Infrastructure may be inaccessible/inoperable more than a week after natural hazard event without consequences.

Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.
Impacts limited to location of infrastructure only

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.
Less than 5,000 people

Identify if the infrastructure provides services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.
The infrastructure does not provide services to populations that reside within Environmental Justice neighborhoods or climate vulnerable populations.

Will the infrastructure reduce the risk of flooding?

No

If the infrastructure 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 infrastructure would not be expected to result in injuries

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?

There are no hazardous materials in the infrastructure

If the infrastructure 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 the infrastructure was damaged beyond repair, how much would it approximately cost to replace?

Less than $10 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.

No

If the infrastructure 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 infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?

Loss of infrastructure is not expected to reduce the ability to maintain government services

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?

No Impact

Asset: Wetlands Protection
Asset Type: Wetland Resource Area - Inland
Asset Sub-Type: Riverfront Area
Construction Type: Maintenance (environmental)
Construction Year: 2026
Monitoring Frequency: 5

Report Comments

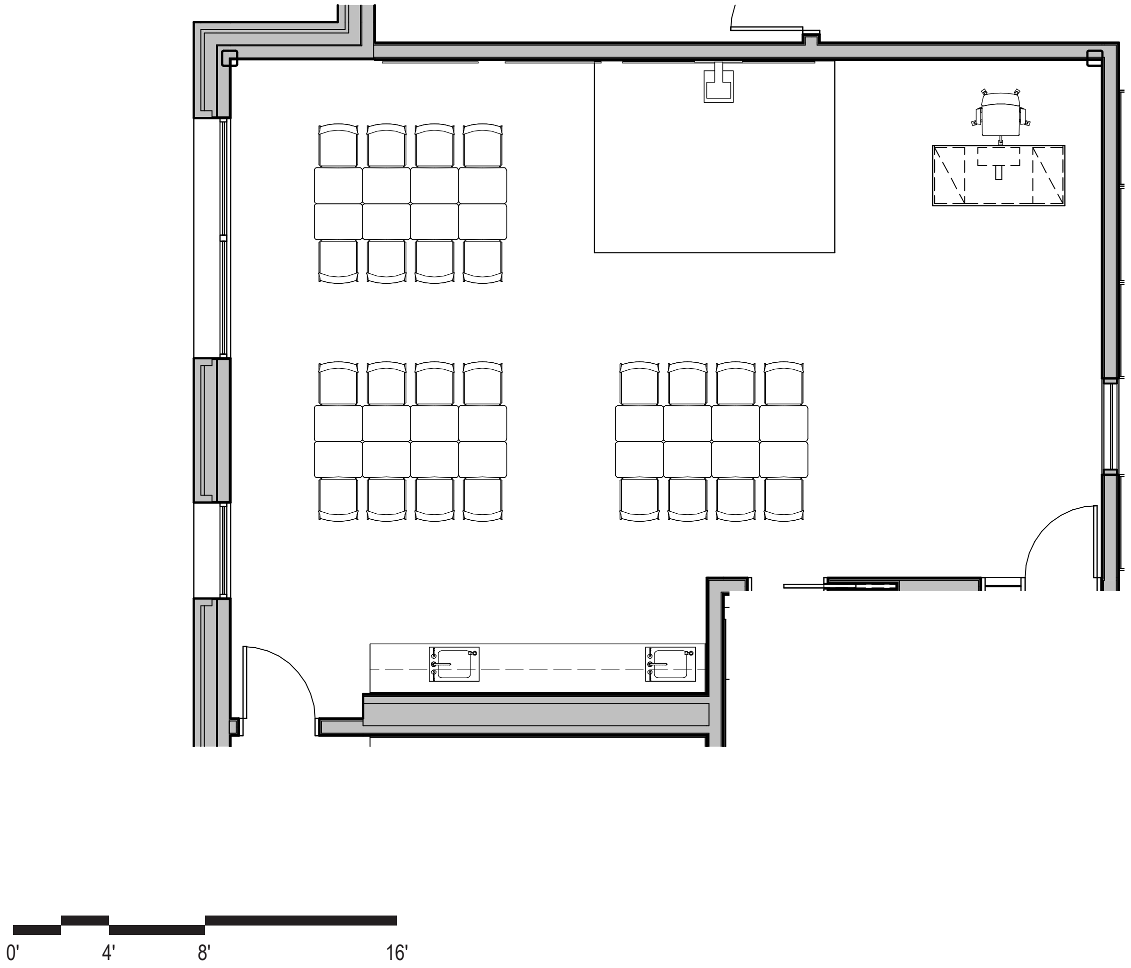
N/A

K: Room Data Sheets

ROOM DATA SHEET GENERAL NOTES

1. Equipment items listed are part of construction budget.
2. Fire Alarm System throughout the building.
3. Mass Notification System throughout the building
4. Central Paging System included in all rooms.
5. Window treatment: All rooms with exterior windows will have window treatments. Refer to SD drawings, for specifics in the Room Finish Schedule
6. Division 9 Acoustic Wall Treatments are shown in the specialties section. Refer to finish section for remaining division 9 items.

1.01 General Classroom - Grades 2-5



Function

Description:	Core Classroom
Net Area:	900 SF
Occupancy:	25 (24 students, 1 teacher)
Quantity:	20

Location

Users:	Teachers, Students
Adjacency:	Core classrooms, Small group room
Orientation & Views:	Exterior Windows, Visible to hallway

Fixtures/Furnishings

Casework:	Base Cabinets Upper Cabinets
Specialties:	Markerboards Tackboards Display Rail
Furnishings:	1 Teacher Desk 1 Task Chair 24 Student Stacking Chairs 24 Student Desks 1 Area Rug
Equipment:	-

Architecture

Windows:	Required
Doors:	Glazed door with sidelight Solid door
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint FRP at wet wall
Ceiling Finish:	Acoustical ceiling tiles, gypsum board 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	Two sinks, one ADA accessible, one deep and wide for larger containers - adult height
Other:	N/A

Technology

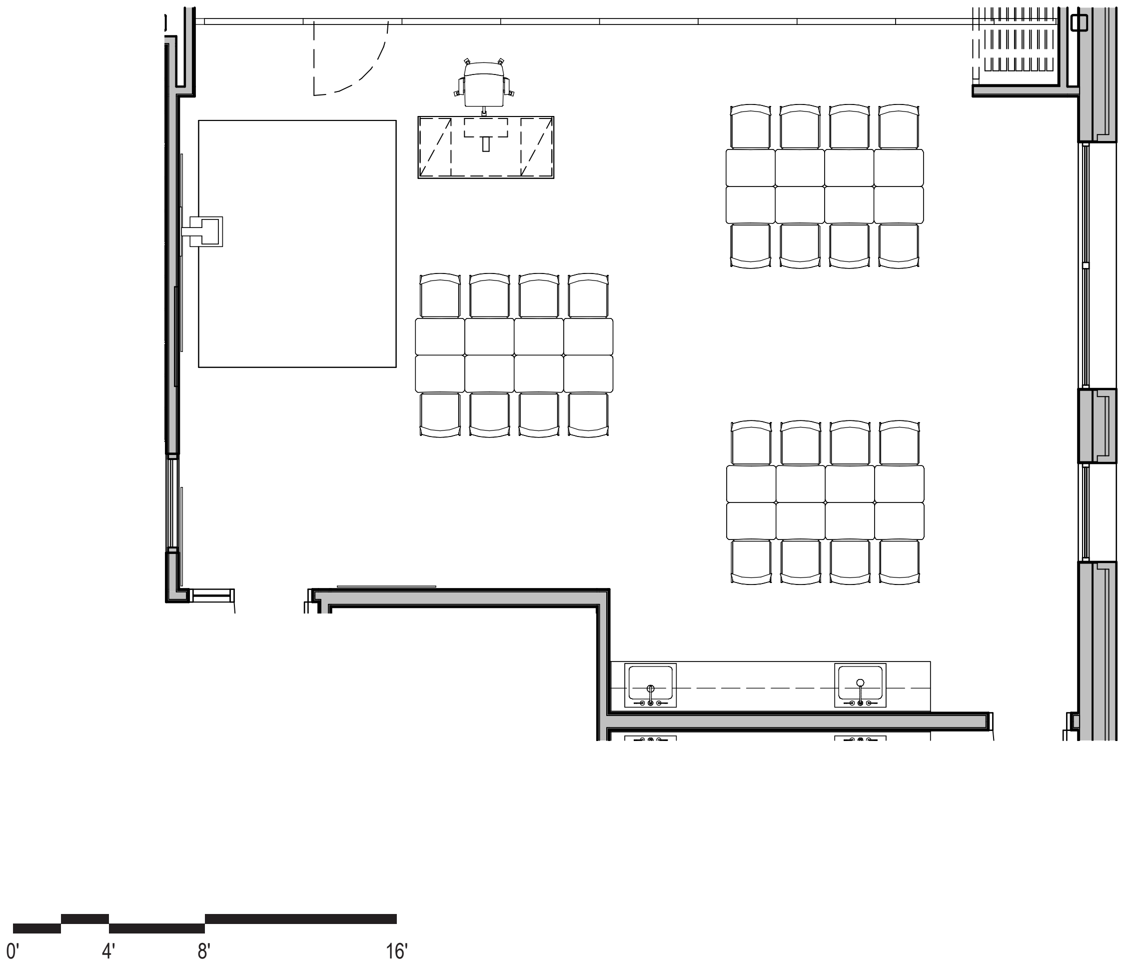
Communications:	Wall-mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projector Sound amplification system
Clock/Speaker:	Masterclock, ceiling mounted speakers

Security

Visibility:	Roller shades on borrowed light

Other

1.02 General Classroom - Grades 2-5 w. Operable Partition



Function

Description:	Core Classroom
Net Area:	900 SF
Occupancy:	25 (24 students, 1 teacher)
Quantity:	8

Location

Users:	Teachers, Students
Adjacency:	Core Classrooms, Small Group
Orientation & Views:	Exterior Windows, Visible to Hallway

Fixtures/Furnishings

Casework:	Base Cabinets Upper Cabinets
Specialties:	Markerboards Tackboards Display Rail Folding Acoustic Partition Acoustical Wall Panels
Furnishings:	1 Teacher Desk 1 Task Chair 24 Student Stacking Chairs 24 Student Desks 1 Area Rug
Equipment:	-

Architecture

Windows:	Required
Doors:	Glazed door with sidelight Solid Door
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint FRP at wet wall
Ceiling Finish:	Acoustical ceiling tiles, gypsum board 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	Two sinks, one ADA accessible, one deep and wide for larger containers - adult height
Other:	N/A

Technology

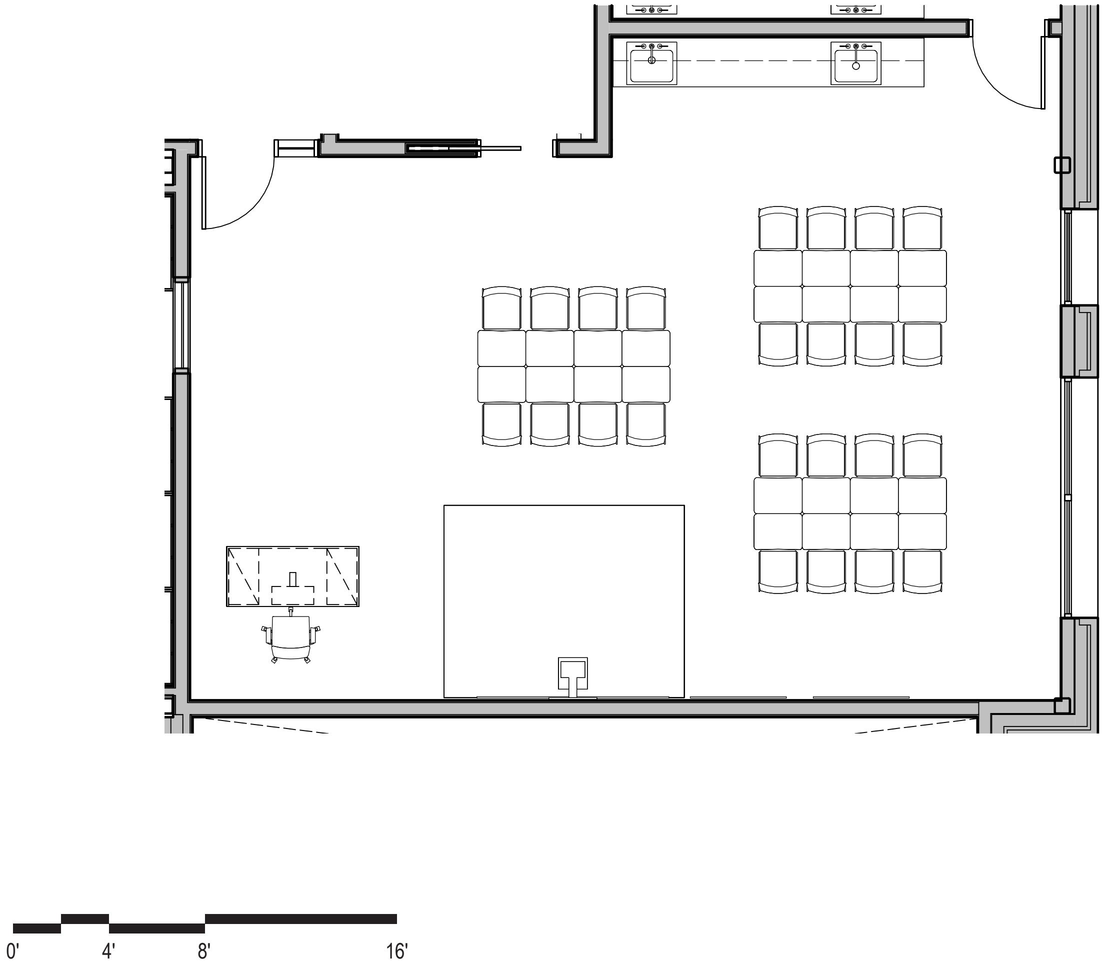
Communications:	Wall-mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projector Sound amplification system
Clock/Speaker:	Masterclock, ceiling mounted speakers

Security

Visibility:	

Other

1.03 World Language



Function

Description:	World Language
Net Area:	900 SF
Occupancy:	25 (24 students, 1 teacher)
Quantity:	2

Location

Users:	Teachers, Students
Adjacency:	Core Classrooms, Small Group
Orientation & Views:	Exterior Windows, Visible to Hallway

Fixtures/Furnishings

Casework:	Base Cabinets Upper Cabinets
Specialties:	Markerboards Tackboards Display Rail
Furnishings:	1 Teacher Desk 1 Task Chair 24 Student Stacking Chairs 24 Student Desks 1 Area Rug
Equipment:	-

Architecture

Windows:	Required
Doors:	Glazed door with sidelight Solid Door
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint FRP at wet wall
Ceiling Finish:	Acoustical ceiling tiles, gypsum board 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	Two sinks, one ADA accessible, one deep and wide for larger containers - adult height
Other:	N/A

Technology

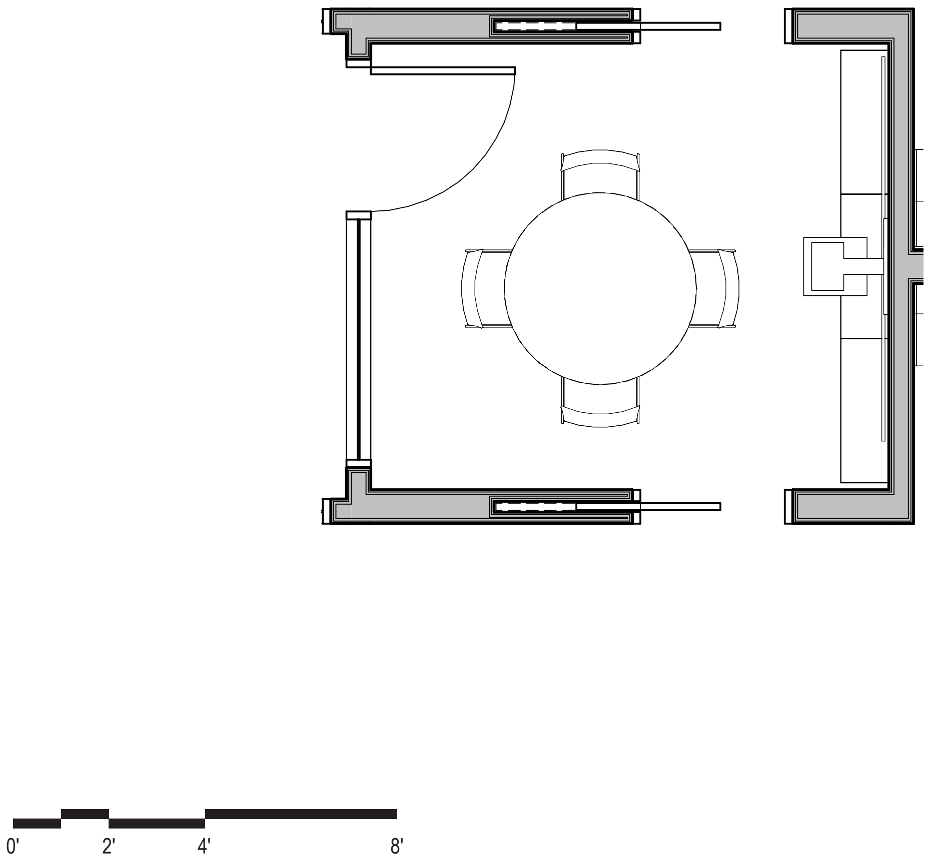
Communications:	Wall-mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projector Sound amplification system
Clock/Speaker:	Masterclock, ceiling mounted speakers

Security

Visibility:	Roller shades on borrowed light Visual observation of Learning Commons

Other

1.04 Small Group Room



Function

Description:	Small Group Room
Net Area:	100 SF
Occupancy:	4
Quantity:	16

Location

Users:	Teachers, Students
Adjacency:	Core Classrooms, Wolrd Language, TLP, CASTLE
Orientation & Views:	Open to Classrooms and Hallway

Fixtures/Furnishings

Casework:	-
Specialties:	Markerboard
Furnishings:	1 Small Group Table 4 Small Group Chairs 3 Bookshelves
Equipment:	-

Architecture

Windows:	Optional
Doors:	Solid door Glazed sliding pocket door
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Gypsum board, Acoustic ceiling cloud 90% light reflectance
Acoustics:	Walls: Standard construction Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	N/A
Other:	N/A

Technology

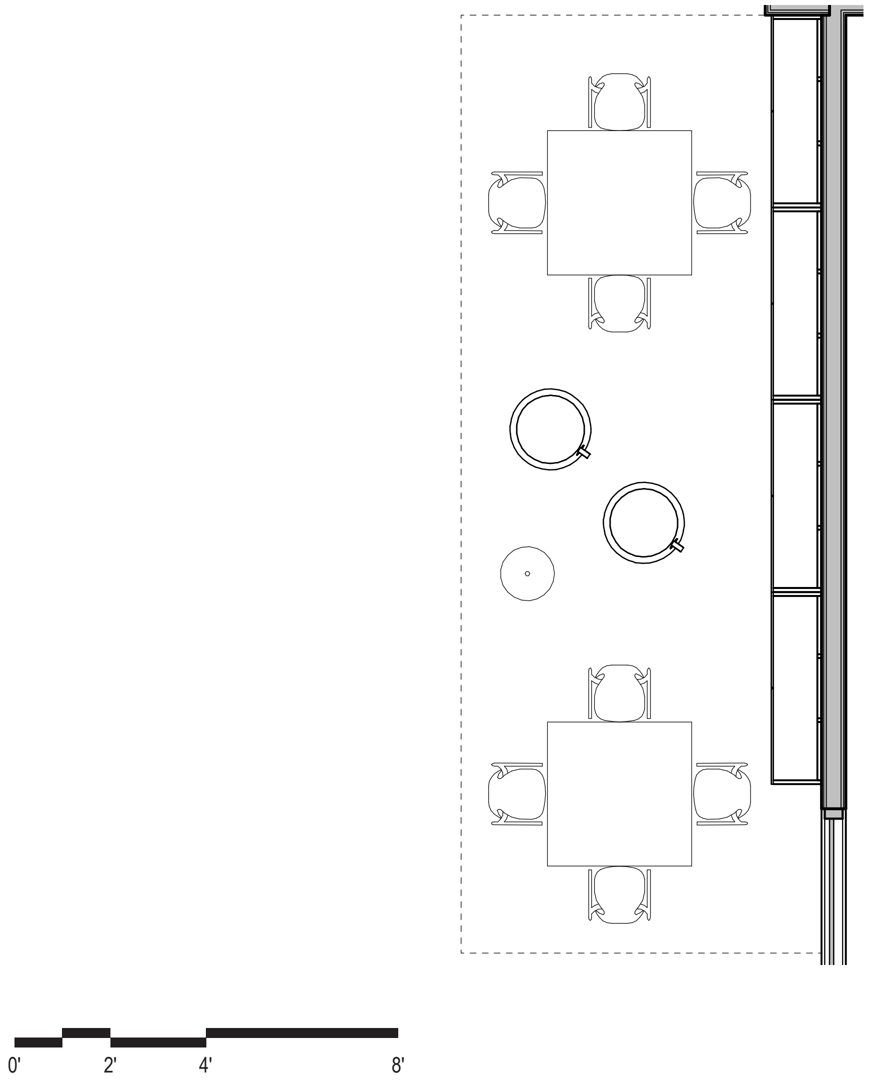
Communications:	-
Data:	WiFi and wall outlets
A/V:	-
Clock/Speaker:	-

Security

Visibility:	Monitor occupants from hallway & adjacent classrooms

Other

1.05 Learning Common



Function

Description:	Flexible open learning commons
Net Area:	Total of 900 SF per grade
Occupancy:	-
Quantity:	4

Location

Users:	Teachers, Students
Adjacency:	Core Classrooms
Orientation & Views:	Visible to Classrooms and Hallway

Fixtures/Furnishings

Casework:	-
Millwork:	Cubbies
Specialties:	Markerboard
Furnishings:	varies
Equipment:	-

Architecture

Windows:	Optional
Doors:	N/A
Lockset Hardware:	N/A
Room Signage:	None
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Gypsum board, Acoustic ceiling cloud 90% light reflectance
Acoustics:	Walls: Standard construction Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	As part of corridor
Zone Controls:	As part of corridor
Pressure:	As part of corridor
CO2 Sensor:	As part of corridor
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	As part of corridor
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	N/A
Other:	N/A

Technology

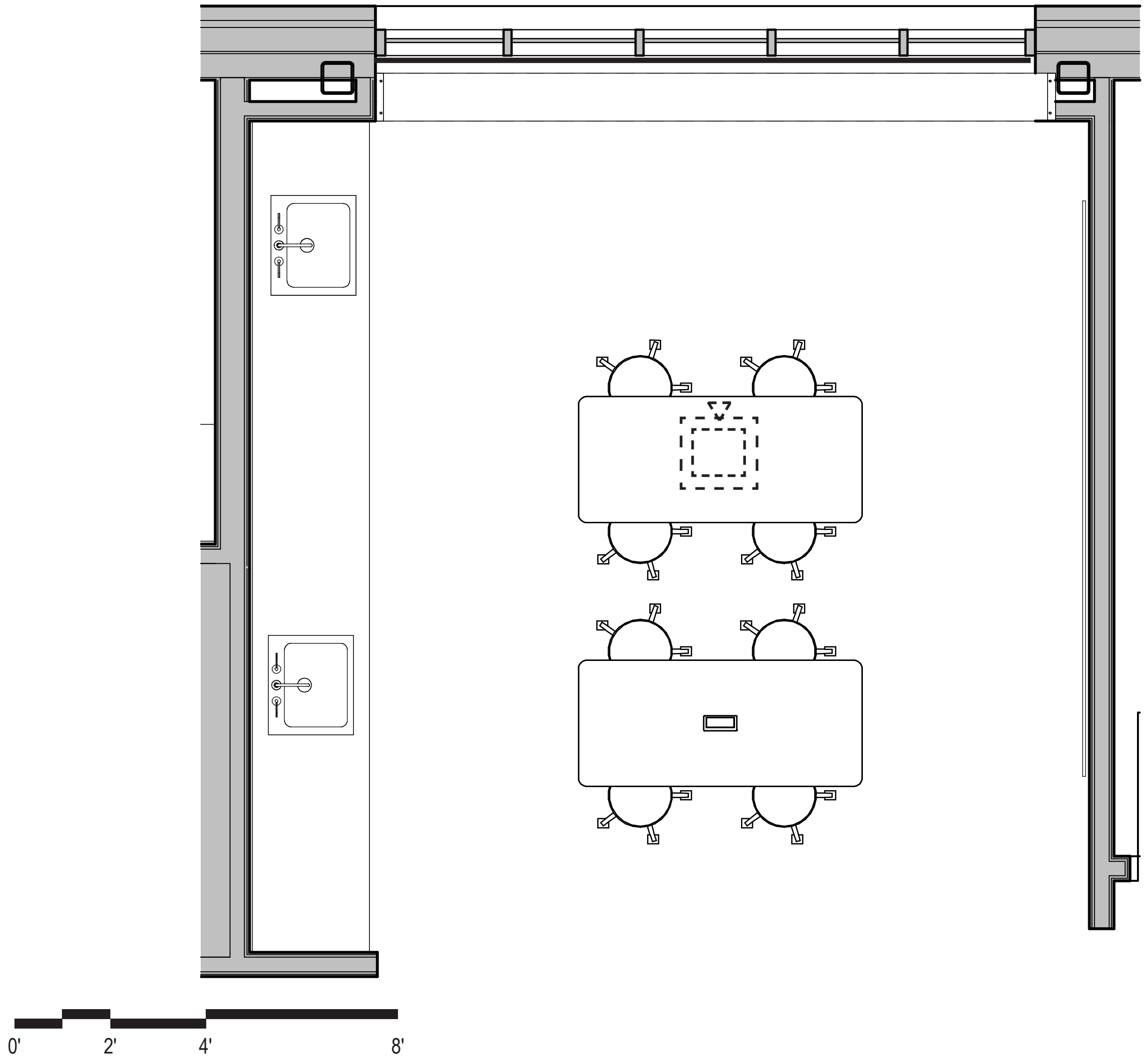
Communications:	-
Data:	WiFi and wall outlets
A/V:	-
Clock/Speaker:	-

Security

Visibility:	Monitor occupants from hallway & adjacent classrooms

Other

1.06 Learning Common Project Area



Function

Description:	Flexible open learning commons for STE program
Net Area:	300 SF included in total of 900 SF per grade
Occupancy:	-
Quantity:	4

Location

Users:	Teachers, Students
Adjacency:	Core Classrooms

Orientation & Views:	External Windows, Visible to Classrooms and Hallway

Fixtures/Furnishings

Casework:	Base Cabinet
Specialties:	Markerboard
Furnishings:	2 Table on casters 8 tall stools

Equipment:	-

Architecture

Windows:	Optional
Doors:	N/A
Lockset Hardware:	N/A
Room Signage:	None
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Gypsum board, Acoustic ceiling cloud 90% light reflectance
Acoustics:	Walls: Standard construction Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	As part of corridor
Zone Controls:	As part of corridor
Pressure:	As part of corridor
CO2 Sensor:	As part of corridor
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	As part of corridor
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	Two sinks, one ADA accessible, one deep and wide for larger containers - adult height
Other:	N/A

Technology

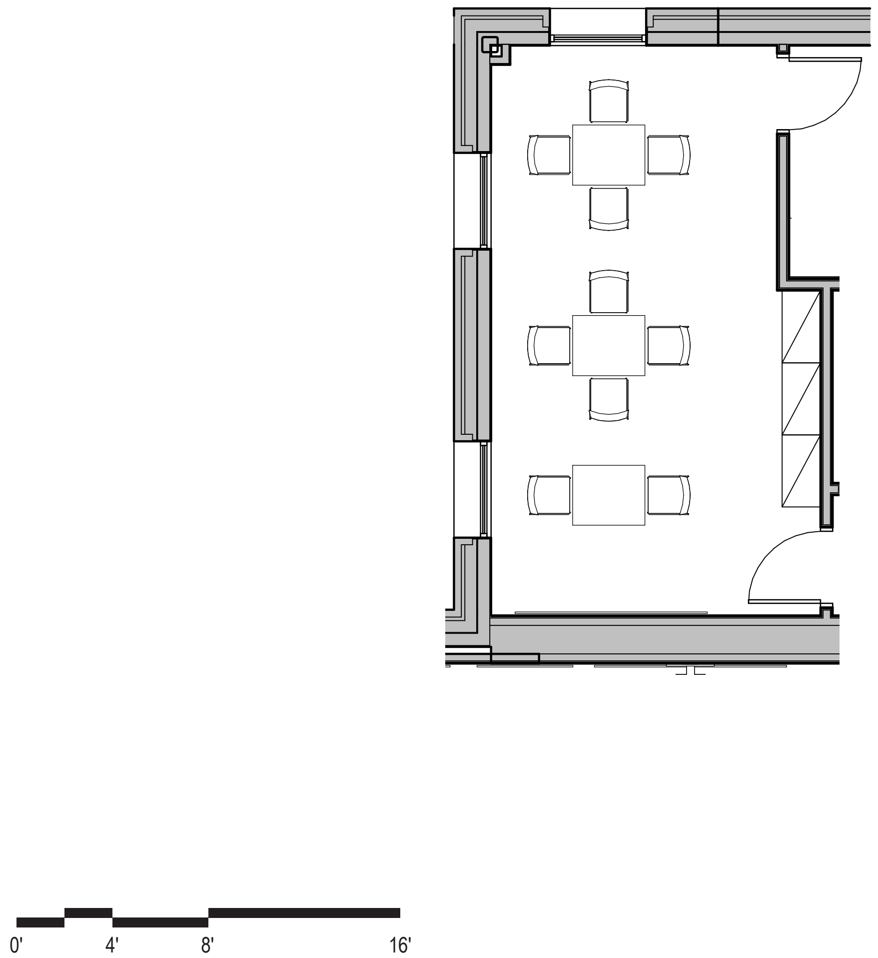
Communications:	-
Data:	WiFi and wall outlets
A/V:	Overhead roll-down projector screen Ceiling mounted projector Sound amplification system
Clock/Speaker:	-

Security

Visibility:	Monitor occupants from hallway & adjacent classrooms

Other

1.07 Teacher Collaboration Room



Function

Description:	Room for teacher collaboration
Net Area:	300 SF
Occupancy:	6
Quantity:	2

Location

Users:	Teachers
Adjacency:	Work room
Orientation & Views:	Exterior Window

Fixtures/Furnishings

Casework:	-
Specialties:	Markerboard
Furnishings:	10 Stacking Chairs 3 Small Table 3 File Cabinet
Equipment:	-

Architecture

Windows:	Exterior desired if possible
Doors:	Glazed door with sidelight
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Gypsum board 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

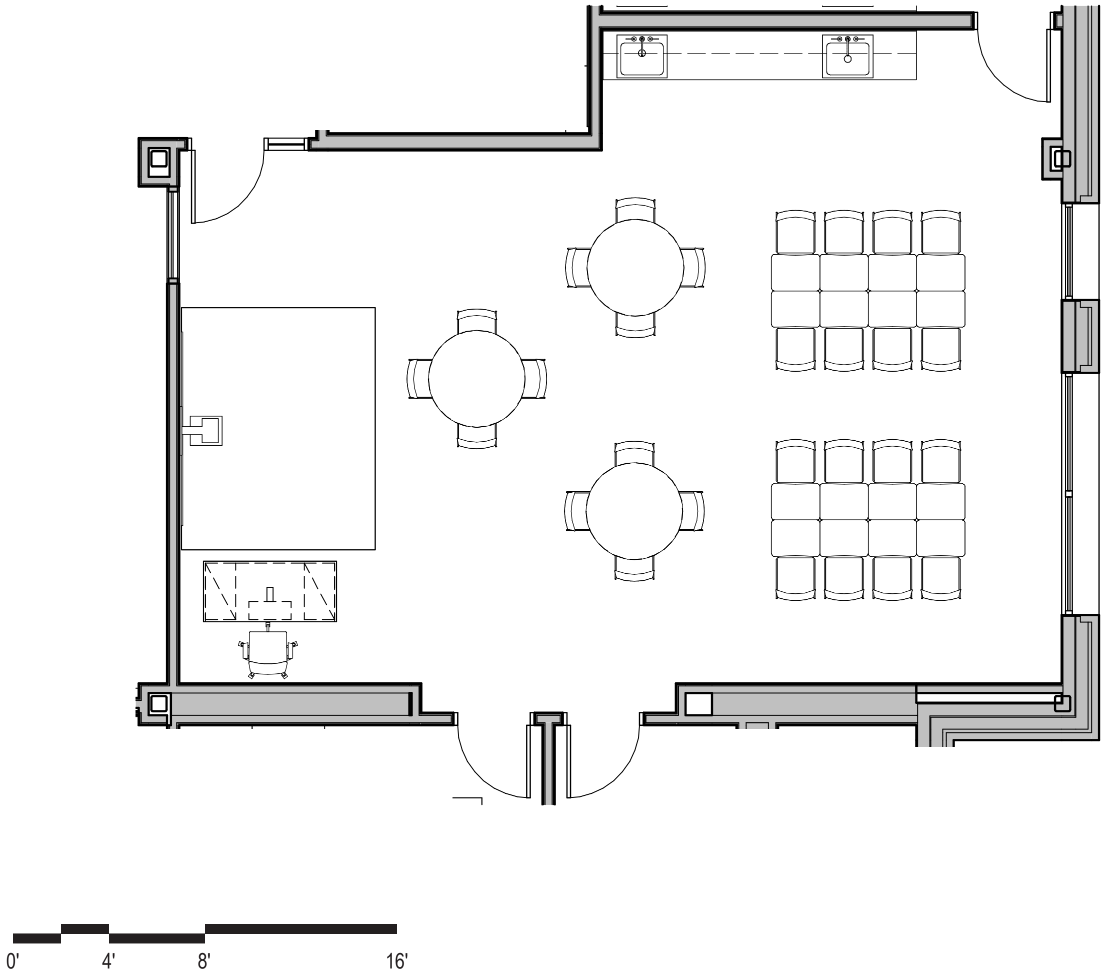
Communications:	Wall-mounted telephone
Data:	WiFi and wall outlets
A/V:	None
Clock/Speaker:	Masterclock, ceiling-mounted speakers

Security

Visibility:	-

Other

2.01 TLP



Function

Description:	Special education classroom for TLP program
Net Area:	900 SF
Occupancy:	25 (24 students, 1 teachers/ paraprofessionals)
Quantity:	1

Location

Users:	Teachers, students
Adjacency:	Core classrooms, Small group Room, Calming room, Toilet Room

Orientation & Views:	Exterior windows, Visible to hallway

Fixtures/Furnishings

Casework:	Base Cabinets Upper Cabinets
Millwork:	Cubbies
Specialties:	Markerboards Tackboards Display Rail
Furnishings:	1 Teacher Desk 1 Task Chair 16 Student Stacking Chairs 16 Student Desks 3 Small Group Tables 12 Small Group Chairs 1 Area Rug

Equipment:	-

Architecture

Windows:	Required
Doors:	Glazed door with sidelight Solid door
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	N/A
Other:	N/A

Technology

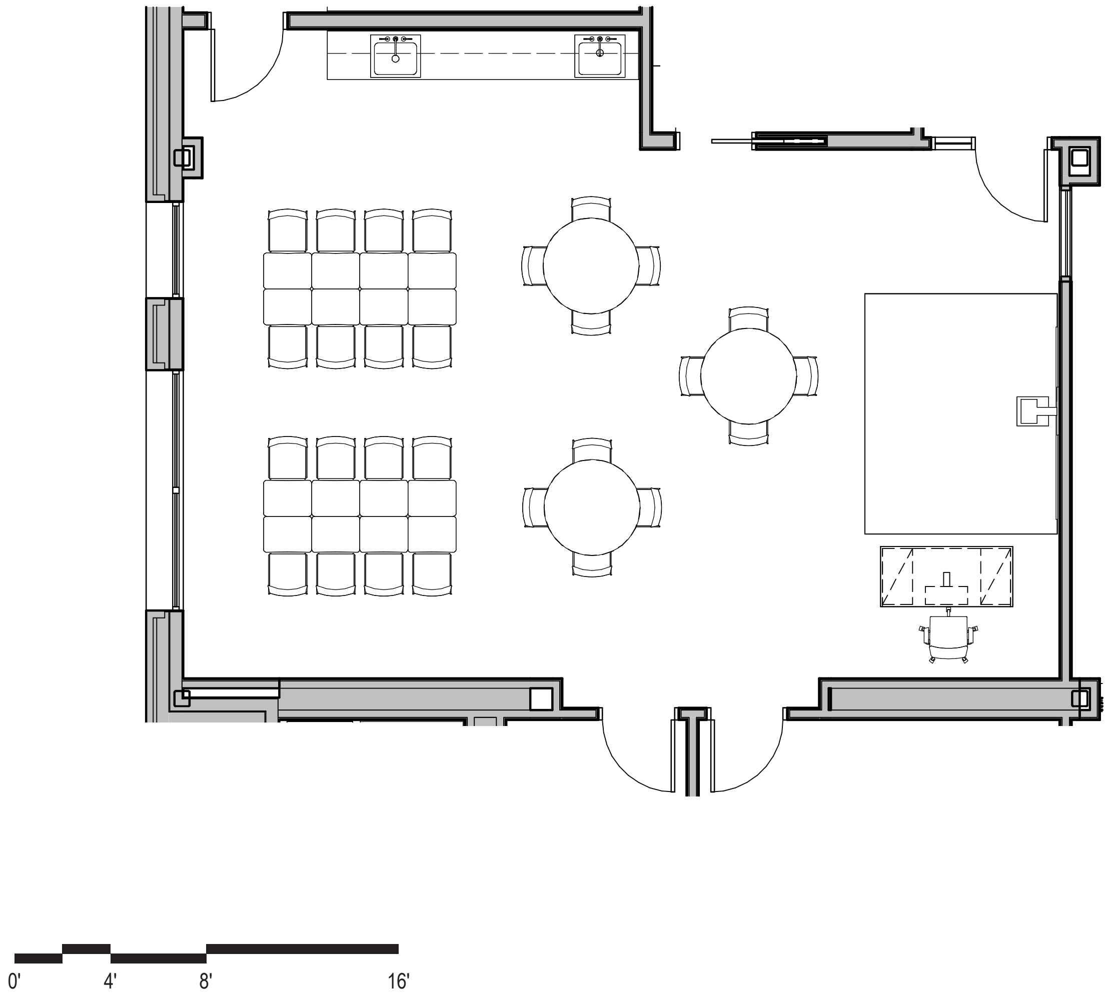
Communications:	Wall-mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projectors Sound amplification system
Clock/Speaker:	Masterclock, ceiling-mounted speakers

Security

Visibility:	Roller shades on borrowed light

Other

2.02 CASTLE



Function

Description:	Special education classroom for CASTLE program
Net Area:	900 SF
Occupancy:	25 (24 students, 1 teachers/ paraprofessionals)
Quantity:	2

Location

Users:	Teachers, students
Adjacency:	Core classrooms, Small group rooms, Toilet room, Claming room
Orientation & Views:	Exterior Window, Visible to hallway

Fixtures/Furnishings

Casework:	Base Cabinets Upper Cabinets
Millwork:	Cubbies
Specialties:	Markerboards Tackboards Display Rail
Furnishings:	1 Teacher Desk 1 Task Chair 16 Student Stacking Chairs 16 Student Desks 3 Small Group Tables 12 Small Group Chairs 1 Area Rug
Equipment:	-

Architecture

Windows:	Required
Doors:	Glazed door with sidelight
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint FRP at wet wall
Ceiling Finish:	Acoustical ceiling tiles, gypsum board 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensor

Plumbing

Sinks:	Two sinks, one ADA accessible, one deep and wide for larger containers, adult - height
Other:	N/A

Technology

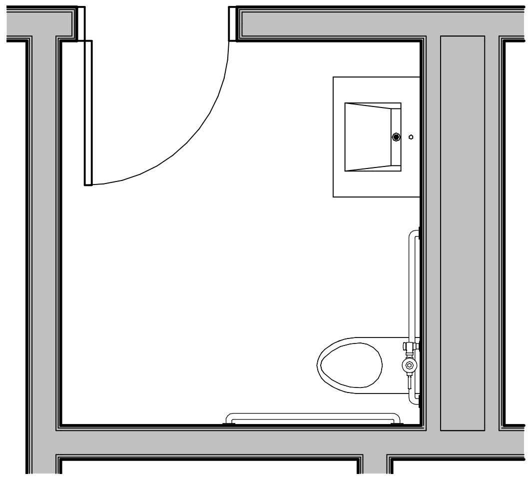
Communications:	Wall mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projector Sound amplification system
Clock/Speaker:	Masterclock, ceiling- mounted speakers

Security

Visibility:	Roller shades on borrowed light

Other

2.03 Toilet Room



Function

Description:	Special education program toilet room
Net Area:	60 SF
Occupancy:	-
Quantity:	2

Location

Users:	Students
Adjacency:	TLP, Calming room, CASTLE
Orientation & Views:	Internal to TLP/CASTLE

Fixtures/Furnishings

Casework:	None
Specialties:	Grab bar
Furnishings:	None
Equipment:	None

Architecture

Windows:	None
Doors:	Solid door
Lockset Hardware:	Privacy operation
Room Signage:	None
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Epoxy
Wall Finish:	Wall tile, paint
Ceiling Finish:	Gypsum board 90% light reflectance
Acoustics:	Standard construction

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Negative
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	GFCI duplex outlet on perimeter wall
Room Lighting:	LED cove linear wall washer
Special Controls:	Occupancy sensor

Plumbing

Sinks:	Wall mounted sink
Other:	Child height toilet

Technology

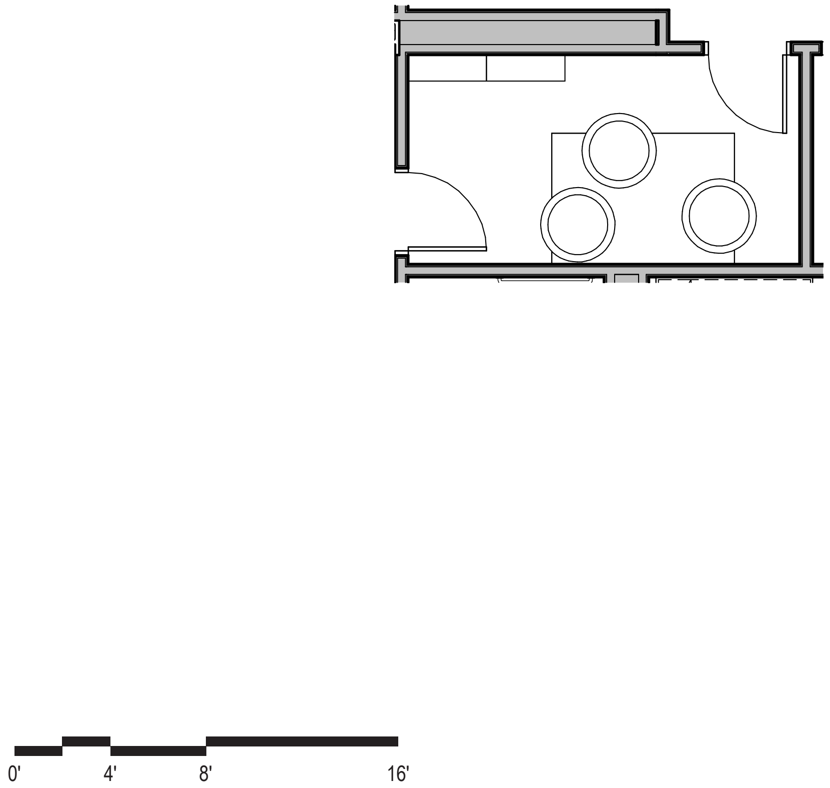
Communications:	None
Data:	None
A/V:	None
Clock/Speaker:	Ceiling mounted speaker

Security

Visibility:	None

Other

2.04 Calming Room



Function

Description:	Calming room
Net Area:	120 SF
Occupancy:	3
Quantity:	2

Location

Users:	Teachers, students
Adjacency:	Core classrooms
Orientation & Views:	None

Fixtures/Furnishings

Casework:	-
Specialties:	-
Furnishings:	3 Ottomans 1 Area Rug 2 Bookshelves
Equipment:	-

Architecture

Windows:	Optional
Doors:	Solid door
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard

Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles, gypsum board 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensor

Plumbing

Sinks:	N/A
Other:	N/A

Technology

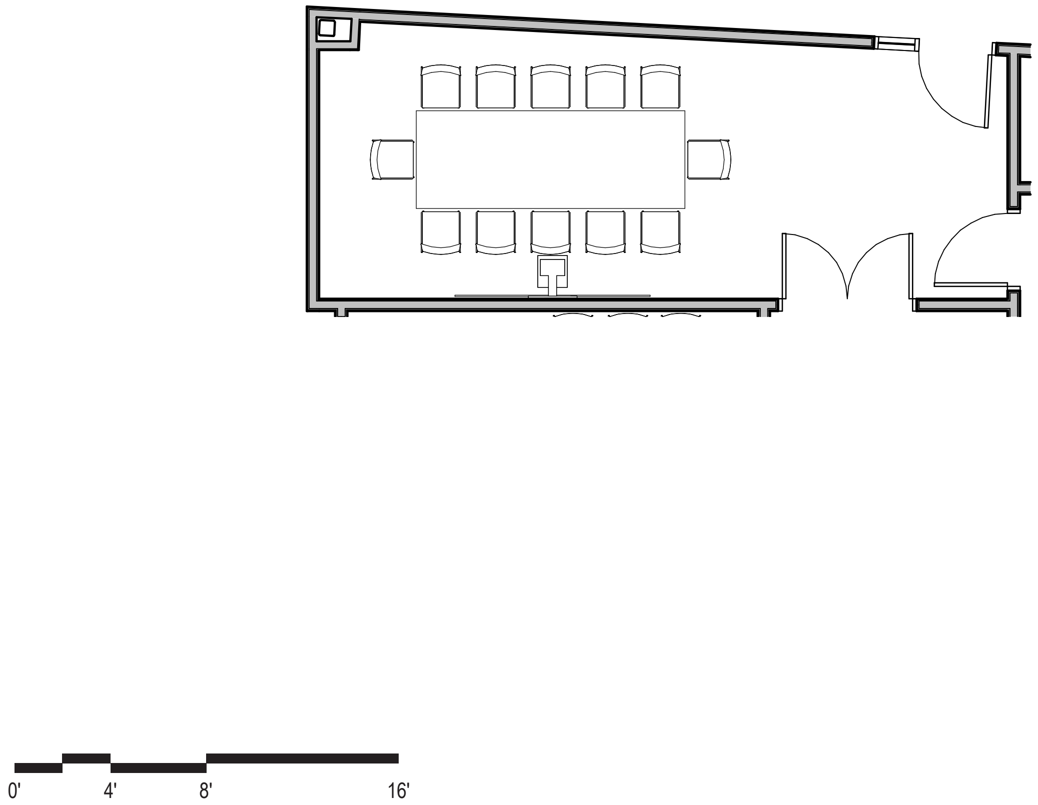
Communications:	N/A
Data:	WiFi and wall outlets
A/V:	N/A
Clock/Speaker:	N/A

Security

Visibility:	Fully visible

Other

2.05 Sped Conference



Function

Description:	Special education conference room
Net Area:	300 SF
Occupancy:	12
Quantity:	1

Location

Users:	Teachers, students
Adjacency:	IDF, Medical suite, Principal office
Orientation & Views:	None

Fixtures/Furnishings

Casework:	-
Specialties:	Markerboard Tackboard
Furnishings:	1 Conference Table 12 Task Chairs
Equipment:	-

Architecture

Windows:	Required
Doors:	Glazed door with sidelight
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensor

Plumbing

Sinks:	N/A
Other:	N/A

Technology

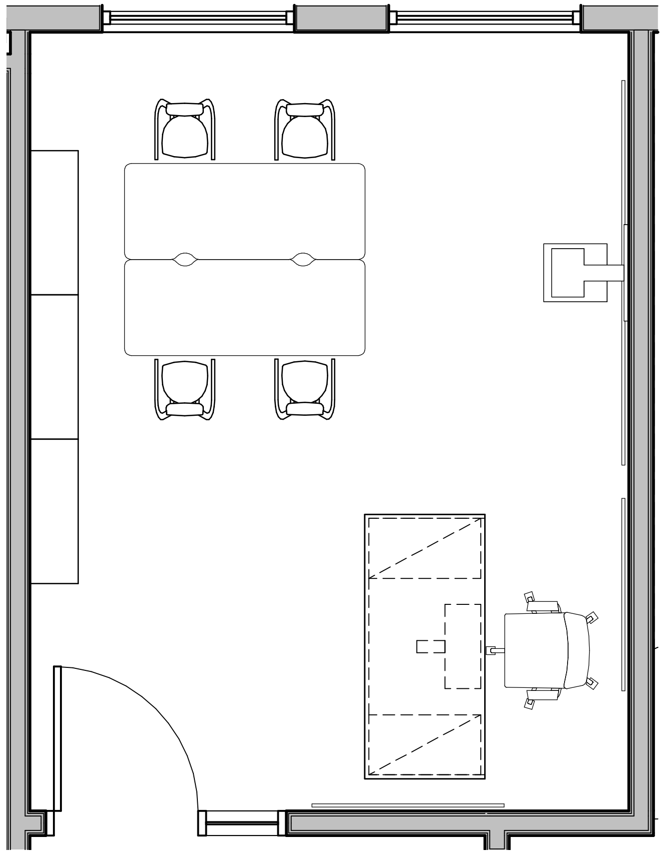
Communications:	Wall-mounted telephone
Data:	WiFi and recessed floor box with data outlets
A/V:	Large monitor w. teleconferencing abilities Short-throw projector Sound amplification system
Clock/Speaker:	Masterclock, ceiling mounted speakers

Security

Visibility:	-

Other

2.06 Resource Room



Function

Description:	Special education small group instructional classroom
Net Area:	200 SF
Occupancy:	5 (4 students, 1 teacher/paraprofessional)
Quantity:	4

Location

Users:	Teachers, students
Adjacency:	Core classrooms, Teacher collab
Orientation & Views:	Exterior Windows

Fixtures/Furnishings

Casework:	-
Specialties:	Markerboards Tackboards Display Rail Acoustic Wall Panels
Furnishings:	1 Teacher Desk 1 Task Chair 2 Student Desks 3 Bookcases 4 Student Chairs
Equipment:	-

Architecture

Windows:	Required
Doors:	Solid door
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensor

Plumbing

Sinks:	None
Other:	N/A

Technology

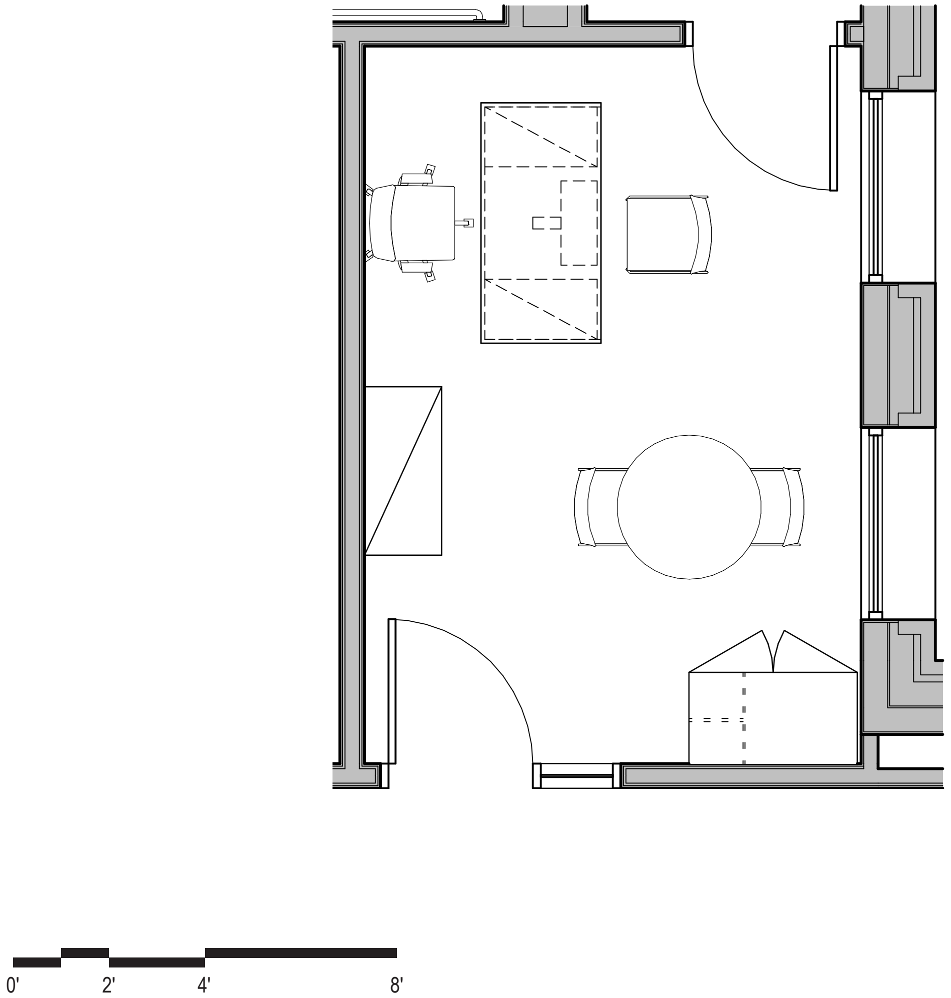
Communications:	Wall mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projector
Clock/Speaker:	Masterclock, ceiling- mounted speakers

Security

Visibility:	-

Other

2.07 School Psychologist



Function

Description:	Psychology Office
Net Area:	150 SF
Occupancy:	3
Quantity:	2

Location

Users:	Teachers, Students
Adjacency:	Behavioral, Closet
Orientation & Views:	Exterior Window

Fixtures/Furnishings

Casework:	-
Specialties:	-
Furnishings:	1 Desk 1 Task Chair 3 Stacking Chairs 1 Small Table 1 Storage Wardrobe 1 File Cabinet
Equipment:	-

Architecture

Windows:	Exterior desired if possible
Doors:	Glazed door with sidelight
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Gypsum board 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

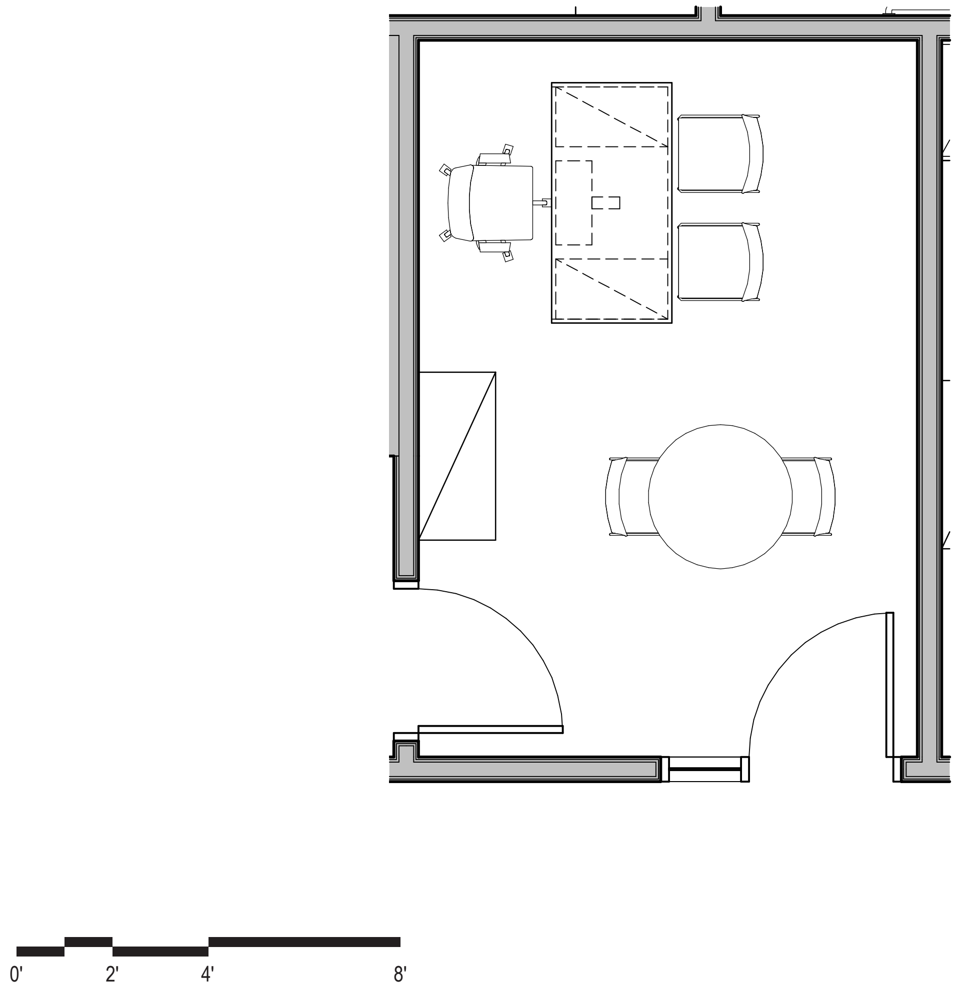
Communications:	Wall-mounted telephone
Data:	WiFi and wall outlets
A/V:	None
Clock/Speaker:	Masterclock, ceiling-mounted speakers

Security

Visibility:	-

Other

2.08 Behavioral Specialist



Function

Description:	Behavioral Office
Net Area:	150SF
Occupancy:	3
Quantity:	2

Location

Users:	Teachers, Students
Adjacency:	Psychology, Calming Room, Closet
Orientation & Views:	None

Fixtures/Furnishings

Casework:	-
Specialties:	-
Furnishings:	1 Desk 1 Task Chair 4 Stacking Chairs 1 Small Table 1 File Cabinet
Equipment:	None

Architecture

Windows:	Optional
Doors:	Glazed door with sidelight
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

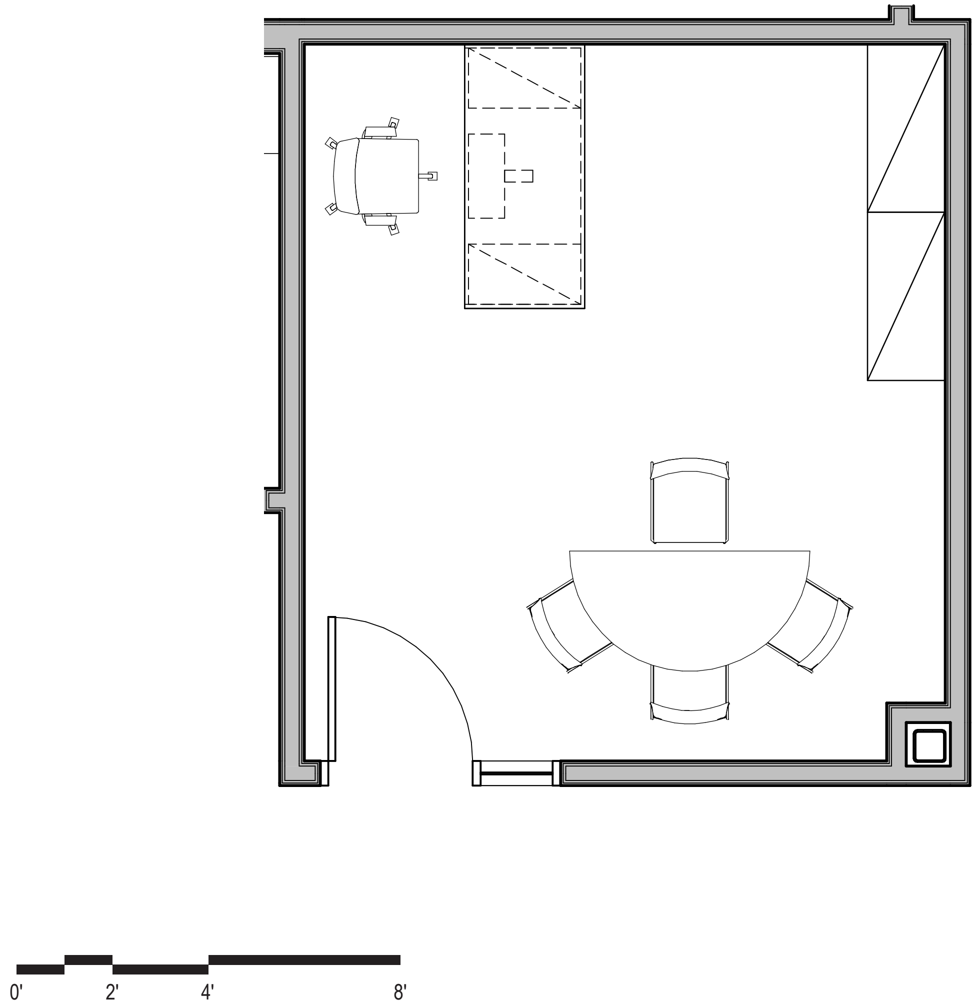
Communications:	Wall-mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projector
Clock/Speaker:	Masterclock, ceiling-mounted speakers

Security

Visibility:	-

Other

2.09 English Language Development Office



Function

Description:	Language Development Office
Net Area:	200 SF
Occupancy:	4
Quantity:	2

Location

Users:	Teachers, Students
Adjacency:	Psychology, SPEECH, Inst. Math, Staff lunch
Orientation & Views:	None

Fixtures/Furnishings

Casework:	None
Specialties:	-
Furnishings:	1 Desk 1 Task Chair 4 Stacking Chairs 1 Half-Round Table 2 File Cabinet
Equipment:	-

Architecture

Windows:	Optional
Doors:	Glazed door with sidelight
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

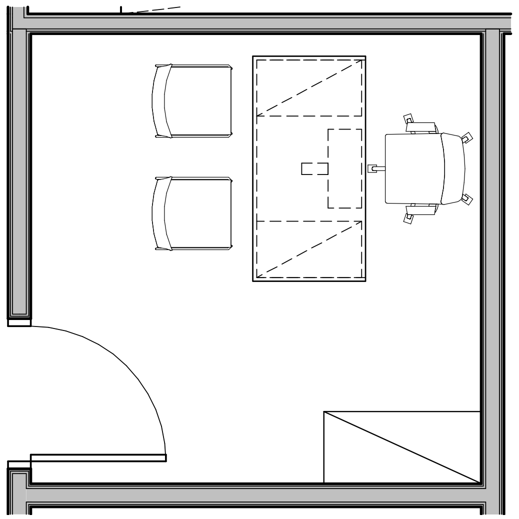
Communications:	Wall-mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projector
Clock/Speaker:	Masterclock, ceiling-mounted speakers

Security

Visibility:	Fully visible

Other

2.10 Speech & Language



Function

Description:	Speech Office
Net Area:	200 SF
Occupancy:	2
Quantity:	1

Location

Users:	Teachers, Students
Adjacency:	Language Development
Orientation & Views:	None

Fixtures/Furnishings

Casework:	None
Specialties:	-
Furnishings:	1 Desk 1 Task Chair 2 Stacking Chairs 1 File Cabinet
Equipment:	-

Architecture

Windows:	Optional
Doors:	Glazed door with sidelight
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

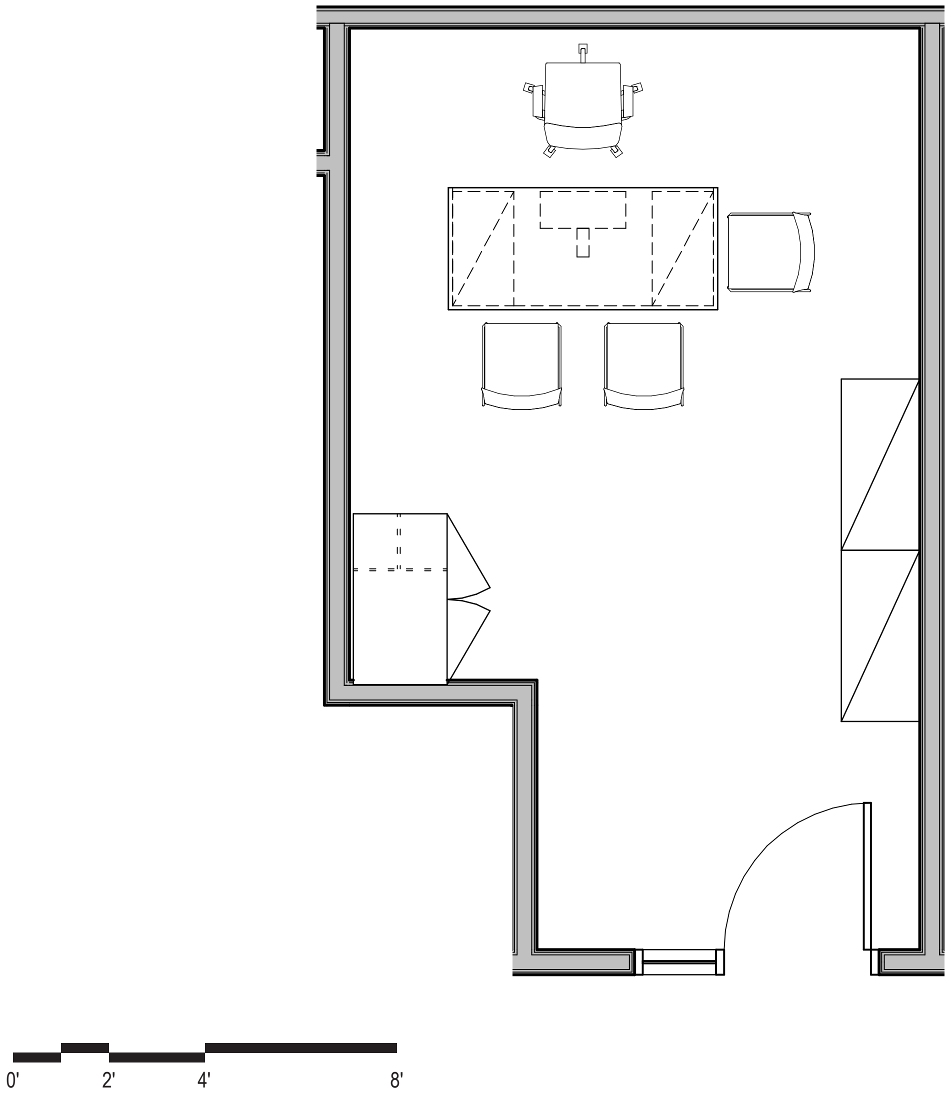
Communications:	Wall-mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projector
Clock/Speaker:	Masterclock, ceiling-mounted speakers

Security

Visibility:	Fully visible

Other

2.11 Reading Office



Function

Description:	Reading Office
Net Area:	200 SF
Occupancy:	4
Quantity:	2

Location

Users:	Teachers, Students
Adjacency:	Behavioral, psychology, reading room
Orientation & Views:	None

Fixtures/Furnishings

Casework:	None
Specialties:	-
Furnishings:	1 Desk 1 Task Chair 3 Stacking Chairs 2 File Cabinet 1 Storage Wardrobe
Equipment:	-

Architecture

Windows:	Optional
Doors:	Glazed door with sidelight
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

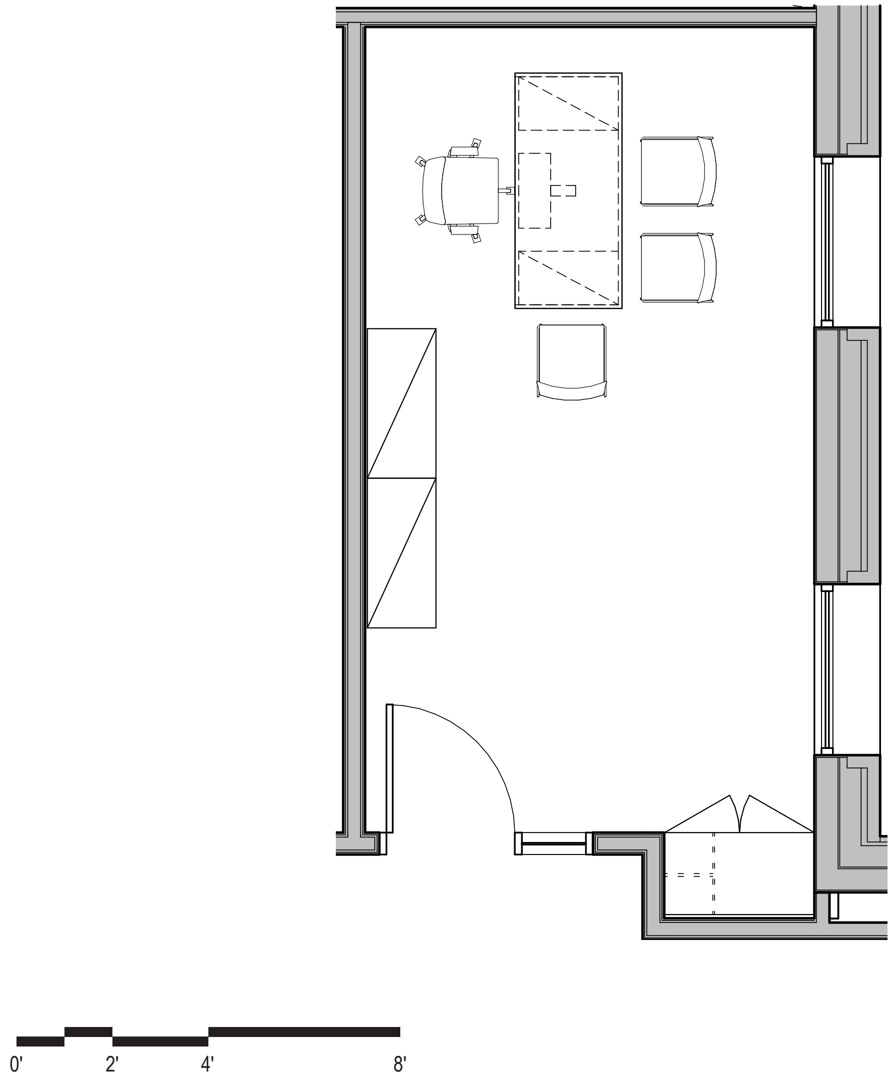
Communications:	Wall-mounted telephone
Data:	WiFi and wall outlets
A/V:	-
Clock/Speaker:	Masterclock, ceiling-mounted speakers

Security

Visibility:	Fully visible

Other

2.12 Math Office



Function

Description:	Math Office
Net Area:	200 SF
Occupancy:	4
Quantity:	2

Location

Users:	Teachers, Students
Adjacency:	Language Development
Orientation & Views:	None

Fixtures/Furnishings

Casework:	None
Specialties:	-
Furnishings:	1 Desk 1 Task Chair 3 Stacking Chairs 2 File Cabinet 1 Storage Wardrobe
Equipment:	-

Architecture

Windows:	Optional
Doors:	Glazed door with sidelight
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

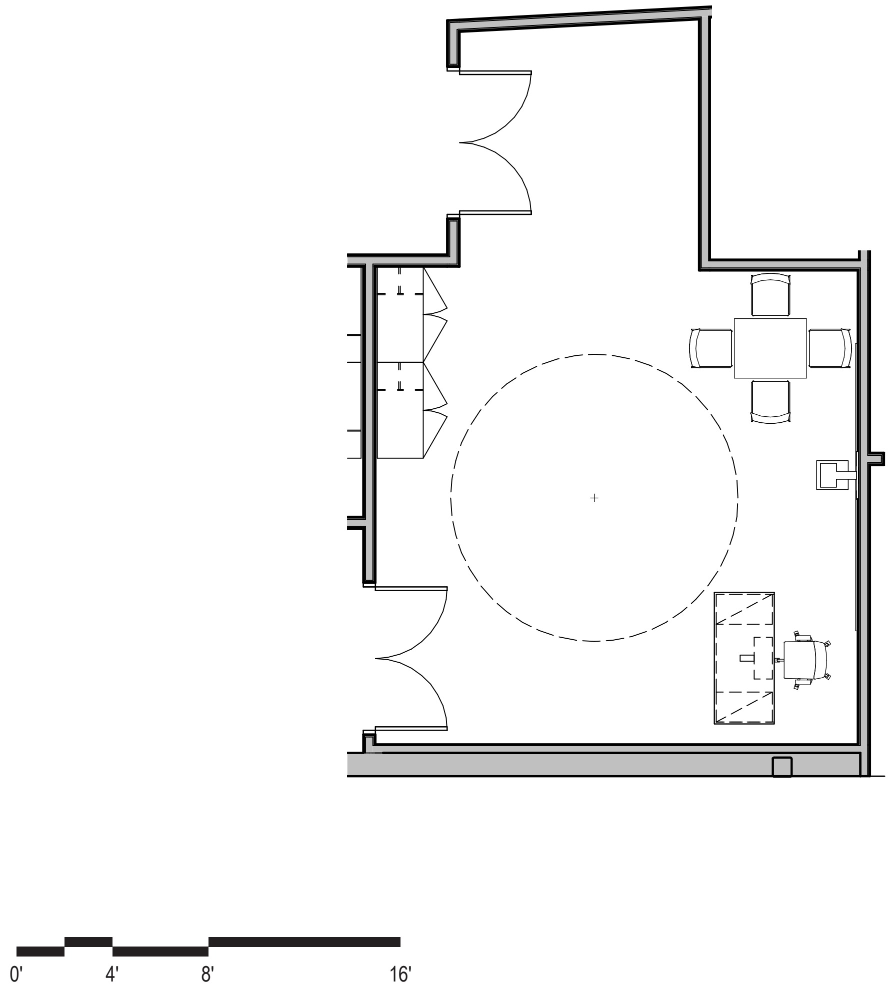
Communications:	Wall-mounted telephone
Data:	WiFi and wall outlets
A/V:	-
Clock/Speaker:	Masterclock, ceiling-mounted speakers

Security

Visibility:	Fully visible

Other

2.13 OT



Function

Description:	Occupational therapy room
Net Area:	500 SF
Occupancy:	26 (25students, 1 teachers/ paraprofessionals)
Quantity:	1

Location

Users:	Teachers. students
Adjacency:	Gym, Adaptive PE/PT. OT/PT Storage
Orientation & Views:	None

Fixtures/Furnishings

Casework:	-
Specialties:	Markerboards Tackboards Ceiling-suspended swings
Furnishings:	1 Teacher Desk 1 Task Chair 4 Student Chairs 1 Student Desks 2 Storage Wardrobes
Equipment:	Therapy Swing

Architecture

Windows:	Optional
Doors:	Solid Door
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant LED recessed downlights
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	N/A
Other:	N/A

Technology

Communications:	Wall mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projector Sound amplification system
Clock/Speaker:	Masterclock, ceiling- mounted speakers

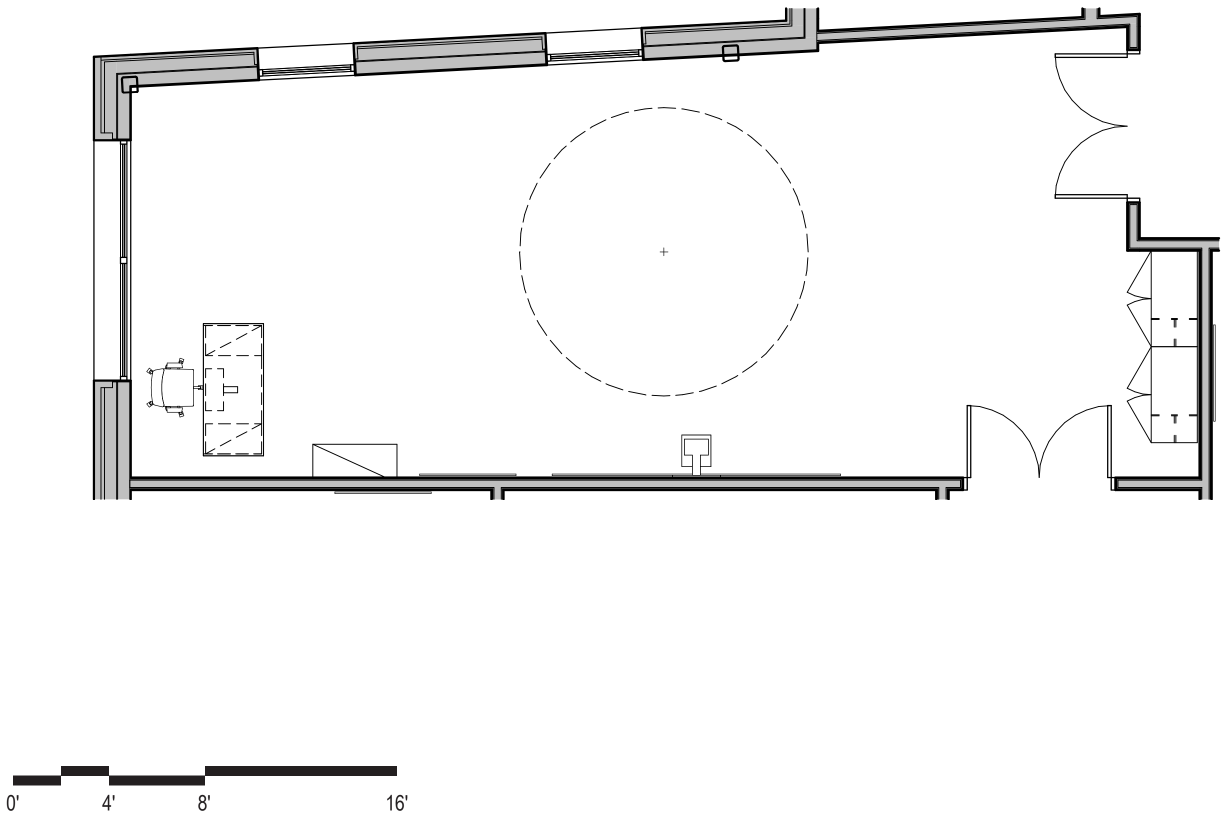
Security

Visibility:	Limited

Other

	Infrastructure for suspended swings

2.14 Adaptive PE/PT



Function

Description:	Adaptive physcial therapy room
Net Area:	750 SF
Occupancy:	26 (25students, 1 teachers/ paraprofessionals)
Quantity:	1

Location

Users:	Teachers. students
Adjacency:	OT
Orientation & Views:	Exterior Windows

Fixtures/Furnishings

Casework:	-
Specialties:	Markerboards Tackboards Ceiling-suspended swings
Furnishings:	1 Teacher Desk 1 Task Chair 2 Storage Wardrobes 1 File Cabinet
Equipment:	-

Architecture

Windows:	Optional
Doors:	Solid Door
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant LED recessed downlights
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	N/A
Other:	N/A

Technology

Communications:	Wall mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projector Sound amplification system
Clock/Speaker:	Masterclock, ceiling- mounted speakers

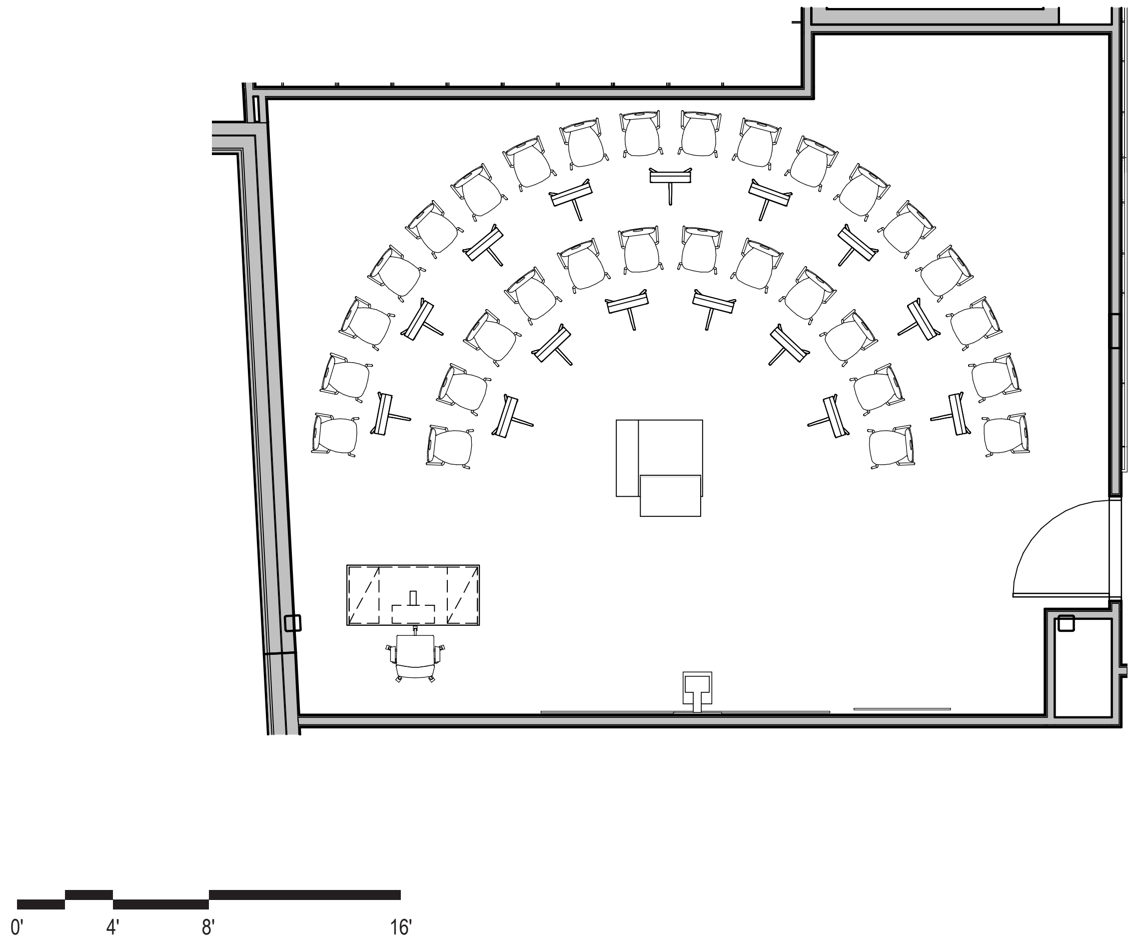
Security

Visibility:	Limited

Other

	Infrastructure for suspended swings

3.01 Music Ensemble Classroom



Function

Description:	Specialized instructional classroom for music and chorus
Net Area:	900 SF
Occupancy:	45
Quantity:	2

Location

Users:	Teachers, Students
Adjacency:	Platform, Music/LG Group
Orientation & Views:	Exterior Windows, Visible to Hallway

Fixtures/Furnishings

Casework:	-
Specialties:	Makerboard Tackboard Acoustic Wall Panels
Furnishings:	Directors Podium 1 Teacher Desk 1 Task Chair 30 Music Stands 30 Stacking Armless Chairs
Equipment:	-

Architecture

Windows:	Optional
Doors:	Solid door
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Specialty ACT
Acoustics:	Walls: STC 55 Ceiling: NRC 0.8, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

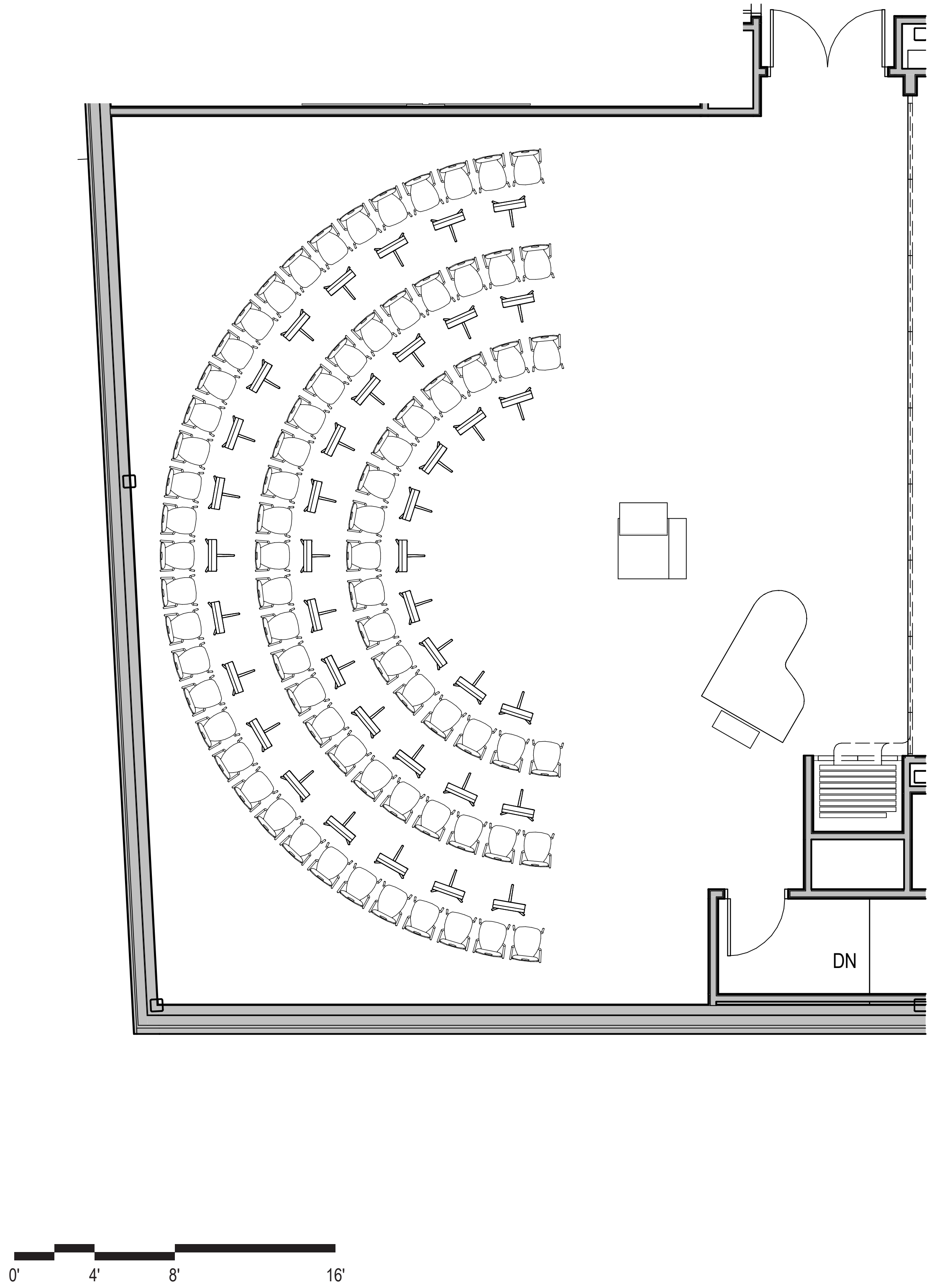
Communications:	Wall mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projector Sound amplification system Recessed AV
Clock/Speaker:	Masterclock, ceiling- mounted speakers

Security

Visibility:	Designed blind spot

Other

3.02 Music Classroom / Large Group



Function

Description:	Specialized instructional classroom for music and chorus
Net Area:	1800 SF
Occupancy:	120
Quantity:	1

Location

Users:	Teachers, Students
Adjacency:	Platform, Music emsemble
Orientation & Views:	Open to platform

Architecture

Windows:	Optional
Doors:	Solid door
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Specialty ACT
Acoustics:	Walls: STC 55 Ceiling: NRC 0.8, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Fixtures/Furnishings

Casework:	-
Specialties:	Makerboard Tackboard Acoustic Wall Panels Folding Acoustic Partition
Furnishings:	Directors Podium 1 Teacher Desk 1 Task Chair 75 Stacking Armless Chairs Grand Piano
Equipment:	-

Technology

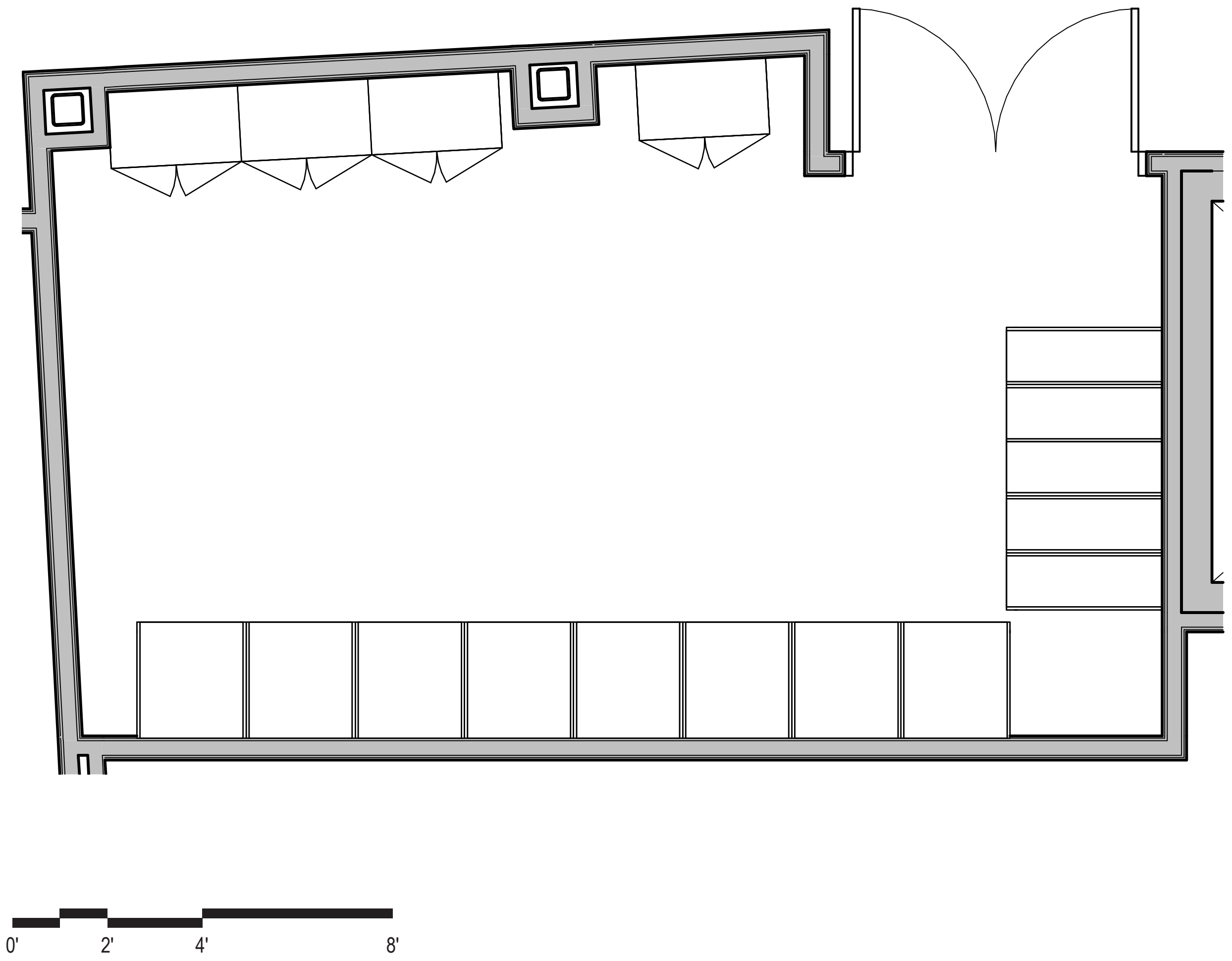
Communications:	Wall mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projector Sound amplification system Recessed AV
Clock/Speaker:	Masterclock, ceiling- mounted speakers

Security

Visibility:	Designed blind spot

Other

3.03 Instrument Storage



Function

Description:	Specialized instructional classroom for music
Net Area:	300 SF
Occupancy:	-
Quantity:	1

Location

Users:	Teachers, Students
Adjacency:	Music Ensemble, Music LG Group
Orientation & Views:	None

Fixtures/Furnishings

Casework:	-
Specialties:	-
Furnishings:	Instrument Storage Cabinets
Equipment:	-

Architecture

Windows:	Exterior
Doors:	Solid door
Lockset Hardware:	Storeroom operation
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Specialty ACT
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Neutral
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensors

Plumbing

Sinks:	N/A
Other:	N/A

Technology

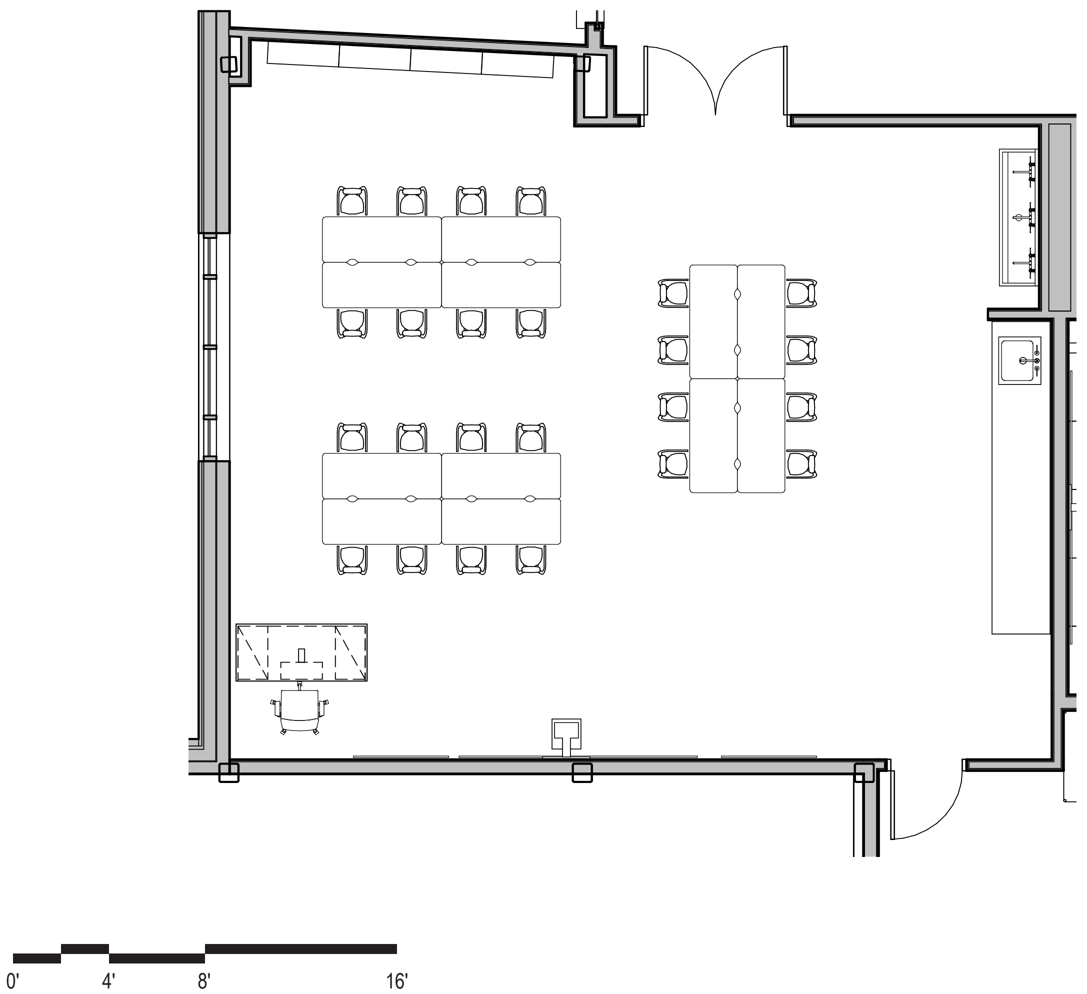
Communications:	None
Data:	WiFi and wall outlets
A/V:	Sound amplification system
Clock/Speaker:	Masterclock, ceiling- mounted speakers

Security

Visibility:	None

Other

3.04 Art Classroom



Function

Description:	Art Classroom
Net Area:	1,000 SF
Occupancy:	26
Quantity:	1

Location

Users:	Teachers, Students
Adjacency:	Kiln room
Orientation & Views:	Exterior Windows

Fixtures/Furnishings

Casework:	Base cabinets Upper cabinets
Specialties:	Markerboard Tackboard Display Rails
Furnishings:	1 Teacher Desk 1 Task Chair 4 Bookcases 24 Student Stacking Chairs 12 Solid Surface Tables on Casters
Equipment:	None

Architecture

Windows:	Required
Doors:	Solid door
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tile, gypsum board
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	GFCI duplex on perimeter walls Cord-reel outlets on ceiling
Room Lighting:	LED linear pendant LED recessed downlight
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	2 sinks, 1 deep and wide for larger containers (one trough style), 1 single bowl sink
Other:	N/A

Technology

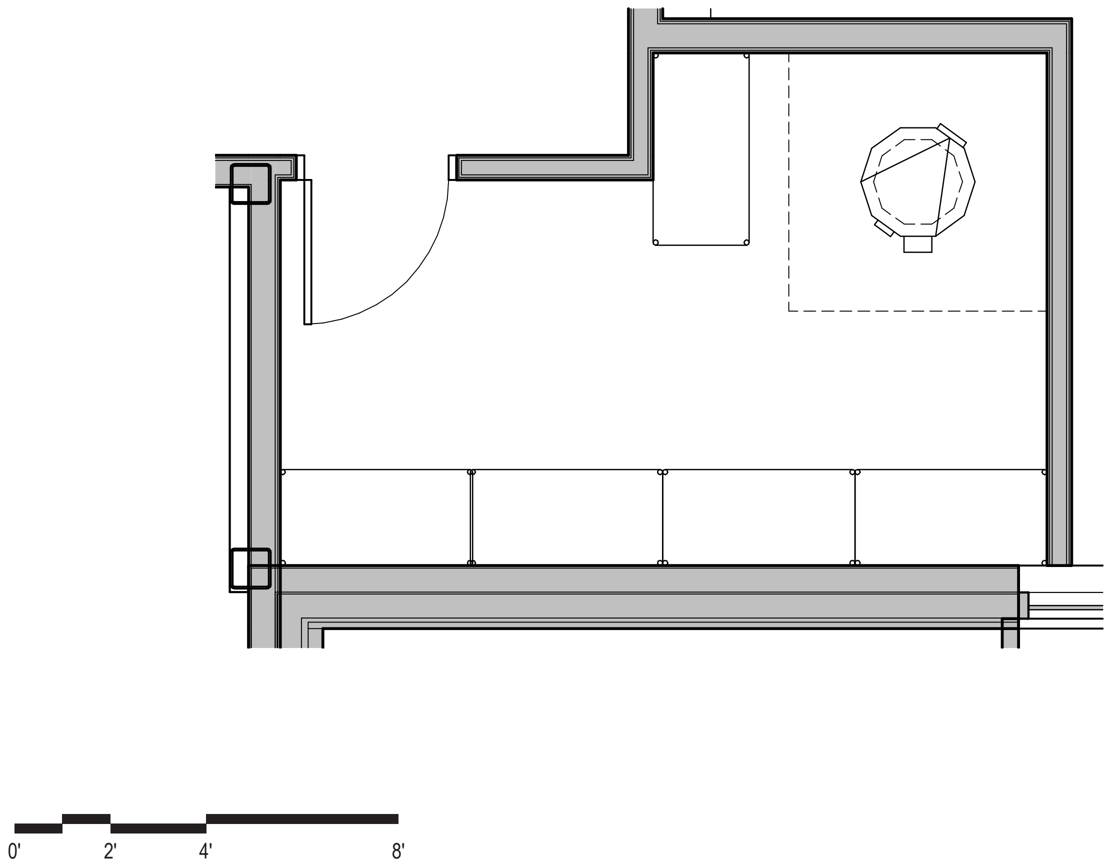
Communications:	Wall mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projector Sound amplification system
Clock/Speaker:	Masterclock, ceiling- mounted speakers

Security

Visibility:	-

Other

3.05 Art Workroom (Storage and Kiln)



Function

Description:	Kiln room
Net Area:	150 SF (combined)
Occupancy:	-
Quantity:	1

Location

Users:	Teachers
Adjacency:	Internal to Art Classroom
Orientation & Views:	None

Fixtures/Furnishings

Casework:	None
Specialties:	None
Furnishings:	5 Metal shelving on casters
Equipment:	Kiln (one only)

Architecture

Windows:	None
Doors:	Solid door
Lockset Hardware:	Storeroom operation
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Exposed
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Neutral
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

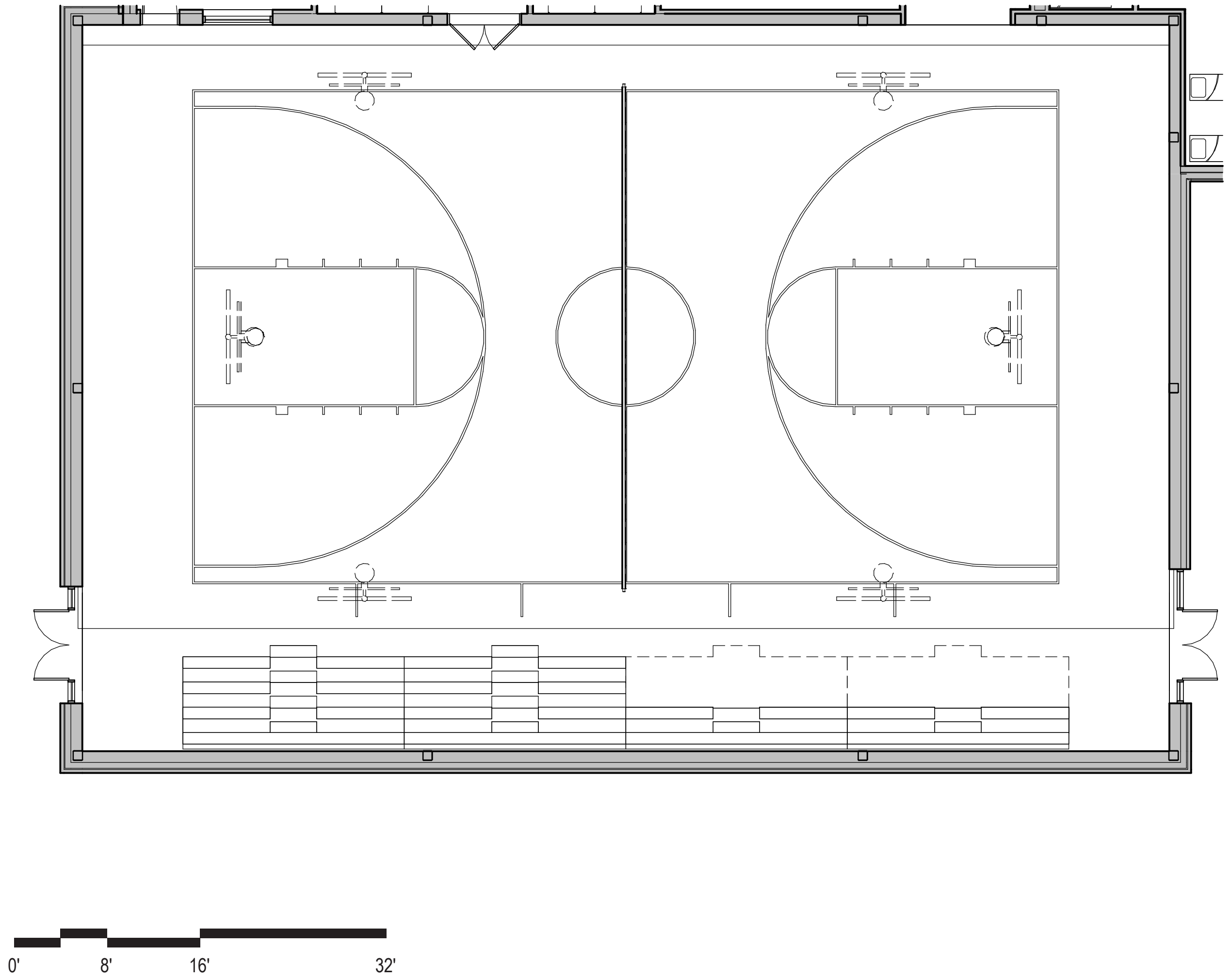
Communications:	None
Data:	None
A/V:	None
Clock/Speaker:	None

Security

Visibility:	None

Other

4.01 Gymnasium



Function

Description:	Gymnasium for physical education, sports, community use and assemblies
Net Area:	6,000 SF
Occupancy:	Typical: 50 Assembly: 580 (with bleachers) Bleacher seating: 160
Quantity:	1

Location

Users:	Teachers, Students, Community
Adjacency:	Medical Suite, Gym Entrance, Gym office, Gym Storage
Orientation & Views:	Exterior windows

Fixtures/Furnishings

Casework:	-
Specialties:	6 Motorized Backboard with Shot Clock 1 Drop Down Motorized Projection Screen Acoustical Wall Panels Wall Gym Pads Gym Curtain 4 Row Bleachers Score Board
Furnishings:	-
Equipment:	-

Architecture

Windows:	Required
Doors:	Storefront Door
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Wood Athletic Flooring with striping
Wall Finish:	Painted CMU Wood fiber acoustic wall panels
Ceiling Finish:	Exposed
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED High bay pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	None
Other:	Water fountain in vestibule

Technology

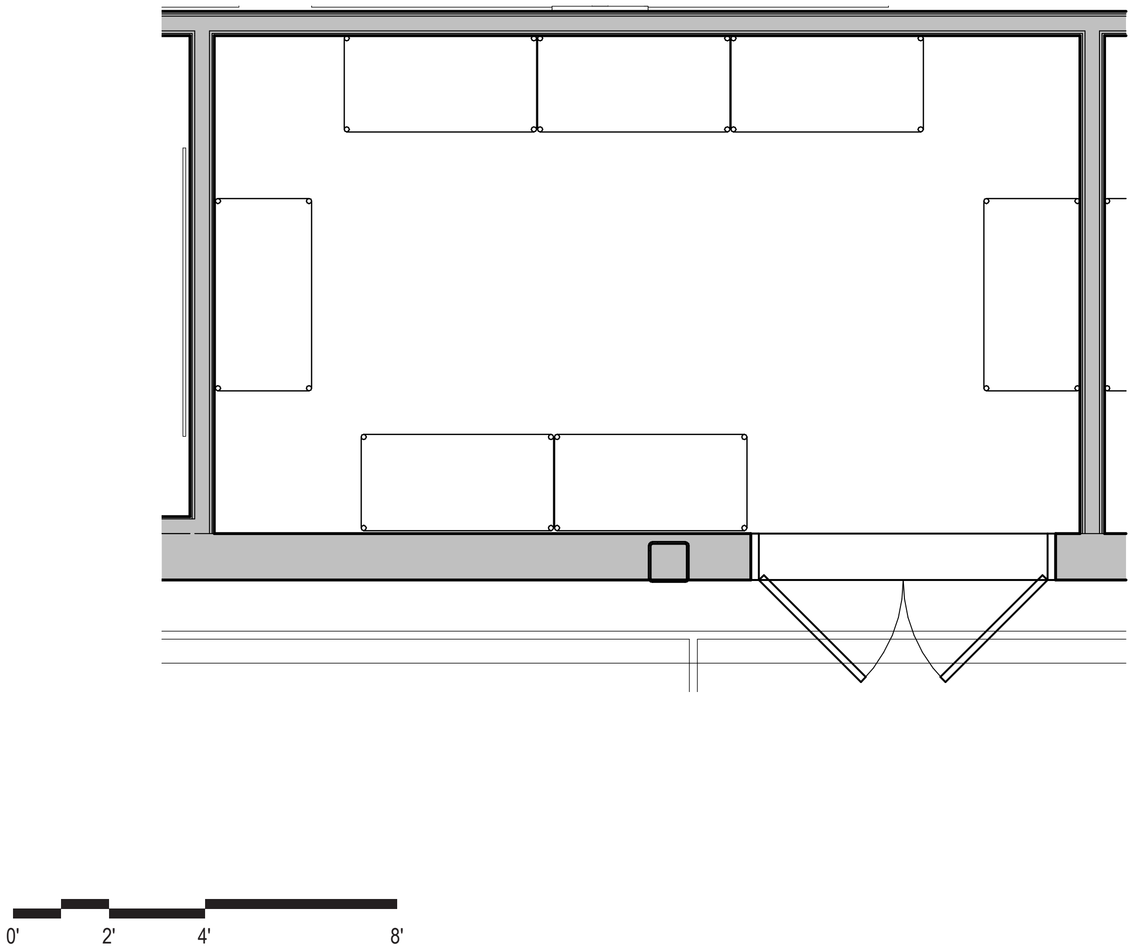
Communications:	Wall-mounted telephone
Data:	Wifi and wall outlets
A/V:	Roll-up projector Ceiling Mounted projector Sound amplification system
Clock/Speaker:	Masterclock, loudspeakers

Security

Visibility:	-

Other

4.02 Gymnasium Storage



Function

Description:	Storage room for gymnasium equipment
Net Area:	150 SF
Occupancy:	-
Quantity:	1

Location

Users:	Teachers
Adjacency:	Gymnasium, Gym Office
Orientation & Views:	Gymnasium

Fixtures/Furnishings

Casework:	-
Specialties:	-
Furnishings:	Hooks, Carts 7 Metal Shelves
Equipment:	-

Architecture

Windows:	None
Doors:	Solid doors
Lockset Hardware:	Storeroom operation
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Exposed
Acoustics:	Standard construction

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	None
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

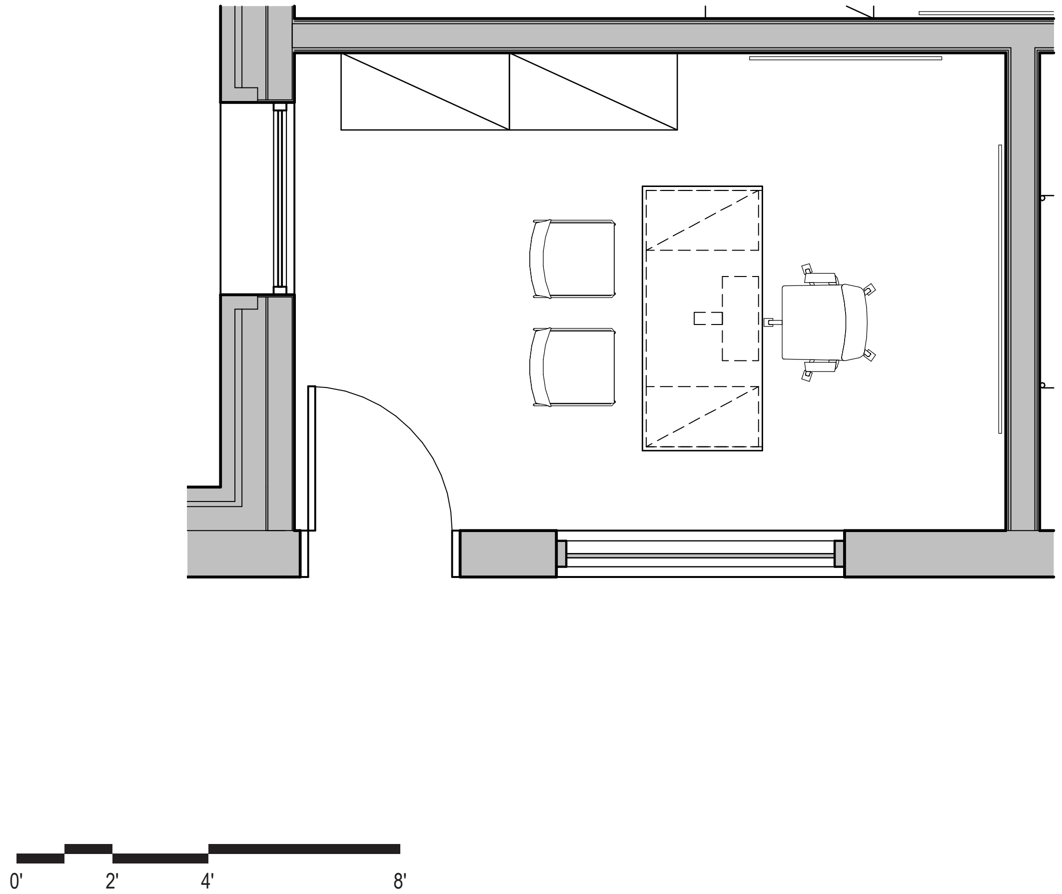
Communications:	None
Data:	None
A/V:	None
Clock/Speaker:	None

Security

Visibility:	None

Other

4.03 Health Instructor Office



Function

Description:	Gym Office
Net Area:	150 SF
Occupancy:	1
Quantity:	1

Location

Users:	Teachers
Adjacency:	Gymnasium, Health and Wellness
Orientation & Views:	Internal towards gymnasium

Fixtures/Furnishings

Casework:	-
Specialties:	Markerboard Tackboard
Furnishings:	1 Teacher Desk 1 Task Chair 2 Stacking Chairs 2 File Cabinets
Equipment:	-

Architecture

Windows:	None
Doors:	Solid door, Fire shutter
Lockset Hardware:	Office operation
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	2x2 Recessed LED fixture
Special Controls:	Occupancy sensors

Plumbing

Sinks:	None
Other:	None

Technology

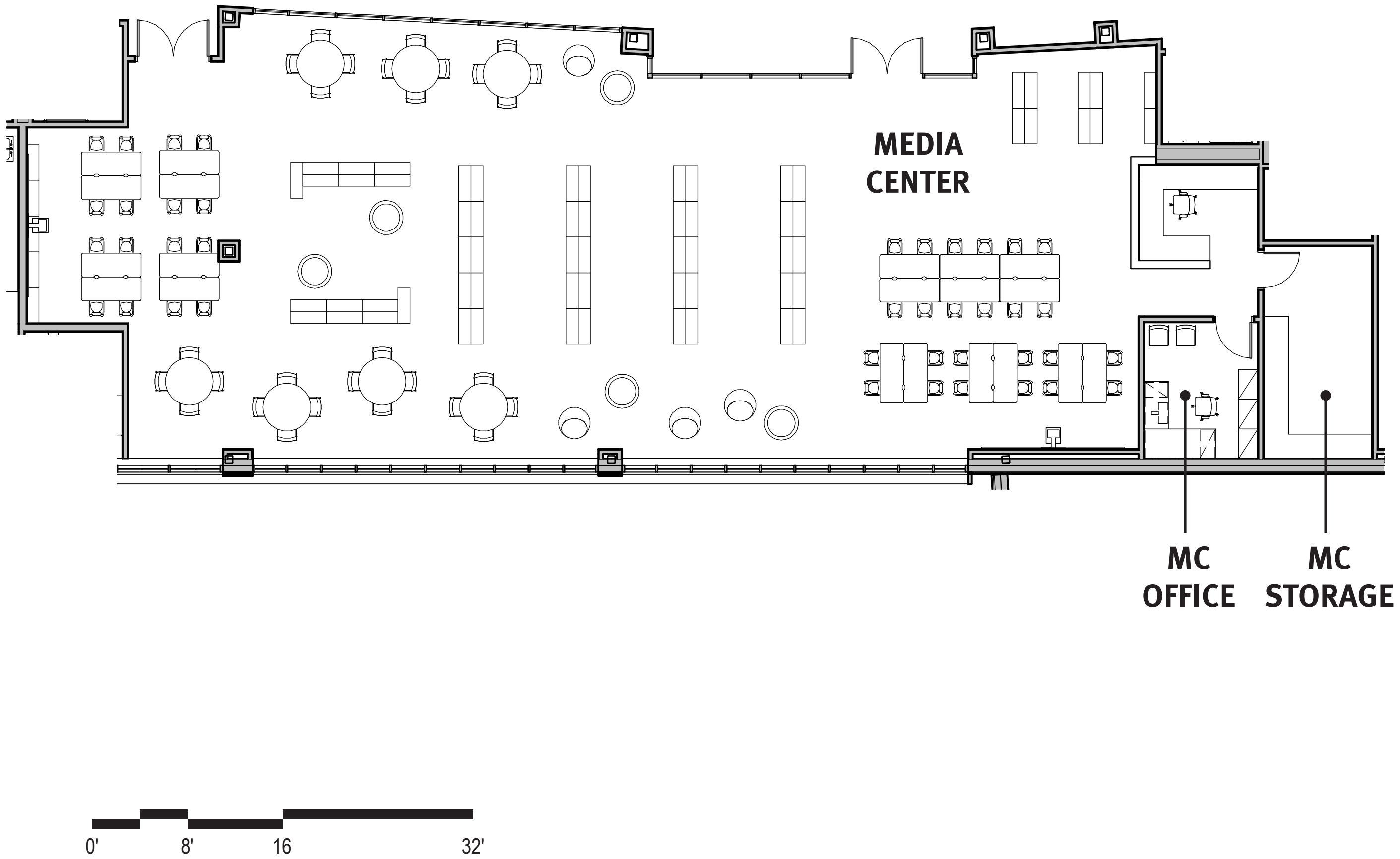
Communications:	Telephone
Data:	WiFi and wall outlets
A/V:	None
Clock/Speaker:	None

Security

Visibility:	Partial

Other

5.01 Media Center



Function

Description:	Media center & reading room & media center office & storage
Net Area:	Total:3,415 SF
Occupancy:	171
Quantity:	1

Location

Users:	Teachers, Students
Adjacency:	Art Classroom
Orientation & Views:	Exterior Windows

Fixtures/Furnishings

Casework:	Upper Cabinets Lower Cabinets
Specialties:	Markerboards Tackboards Acoustical Wall Panels
Furnishings:	1 Teacher Desk 1 Task Chair 3 Lateral Files 7 Small Group Tables 54 Student Stacking Chairs 20 Student Desks 24 Double-sided Bookshelves 7 Single-sided Bookshelves 3 Ottomans 4 Bean Bags

Equipment:	-

Architecture

Windows:	Required
Doors:	Glazed door with sidelight
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Carpet
Wall Finish:	Paint, Wood panel, acoustic panels
Ceiling Finish:	Exposed w. acoustic clouds
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls Recessed floor boxes with outlets
Room Lighting:	LED circular pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	None
Other:	None

Technology

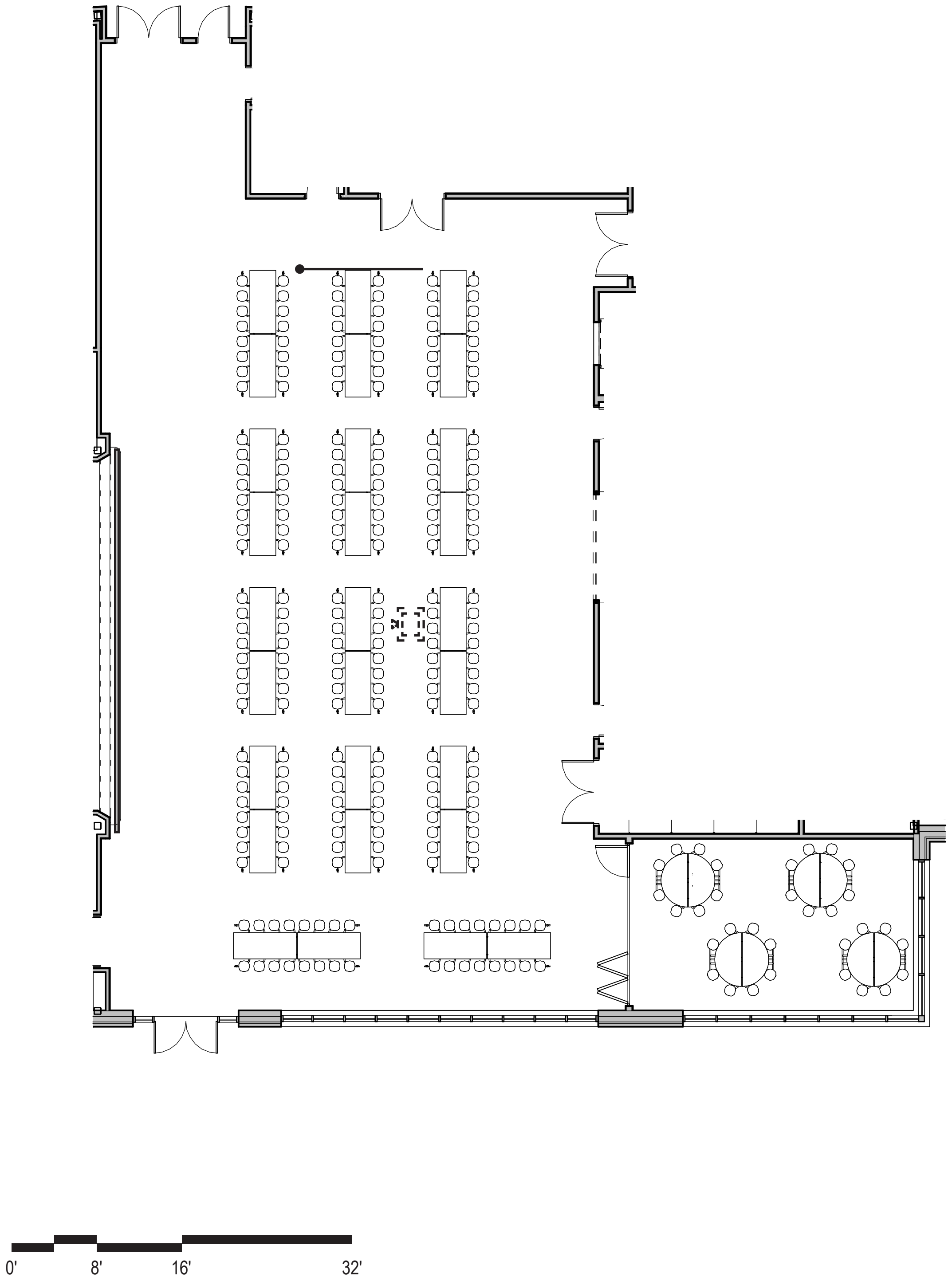
Communications:	Wall mounted telephone
Data:	WiFi and wall outlets
A/V:	Short-throw projectors Sound amplification system
Clock/Speaker:	Masterclock, ceiling- mounted speakers

Security

Visibility:	Partial

Other

6.01 Cafeteria



Function

Description:	Cafeteria
Net Area:	4,575 SF
Occupancy:	261
Quantity:	1

Location

Users:	Students, Teachers, Community
Adjacency:	Kitchen, Servery, Platform
Orientation & Views:	Exterior Windows

Fixtures/Furnishings

Casework:	-
Specialties:	-
Furnishings:	14 Rectangular Lunch Tables 4 Round Lunch Tables Folding Partition Panels (Quiet Lunch Room) Overhead Roll-up Projection Screen
Equipment:	-

Architecture

Windows:	Required
Doors:	Glazed doors with sidelights
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Floor tile
Wall Finish:	Paint, Wall tile
Ceiling Finish:	Exposed Suspended acoustical ceiling baffles, perforated acoustic wood panel
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Neutral
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	None
Other:	Drinking fountain w. bottle filler

Technology

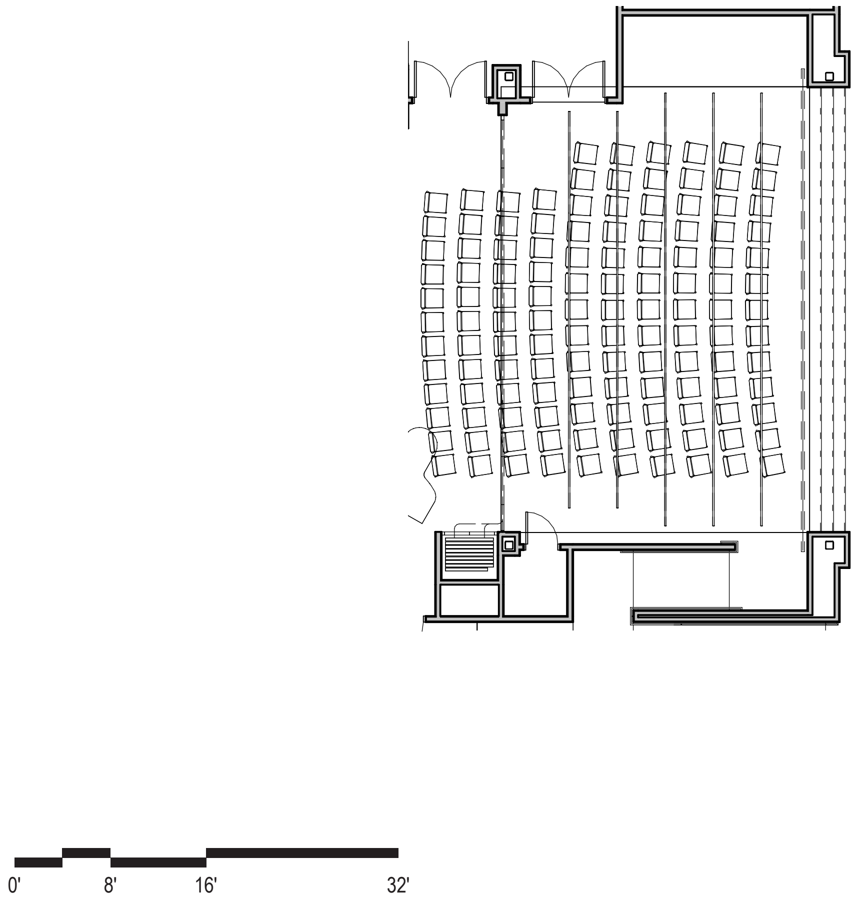
Communications:	Wall mounted telephone
Data:	WiFi and wall outlets
A/V:	Ceiling Mounted Projector Sound amplification system
Clock/Speaker:	Masterclock, ceiling- mounted speakers

Security

Visibility:	Fully visible

Other

6.02 Platform



Function

Description:	Platform for performances, music instruction, and lunch bunch seating
Net Area:	1000 SF
Occupancy:	71
Quantity:	1

Location

Users:	Students, Teachers
Adjacency:	Music Ensemble, Music Large Group Room, Cafeteria
Orientation & Views:	Oriented toward main cafeteria space

Fixtures/Furnishings

Casework:	-
Specialties:	Operable Partition
Furnishings:	-
Equipment:	Rigging, Bi-parting Curtain

Architecture

Windows:	Optional
Doors:	Solid Doors
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Wood Floor
Wall Finish:	Paint
Ceiling Finish:	Exposed
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Neutral
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant Theatrical track lighting
Special Controls:	Daylight & occupancy sensors, control console

Plumbing

Sinks:	None
Other:	N/A

Technology

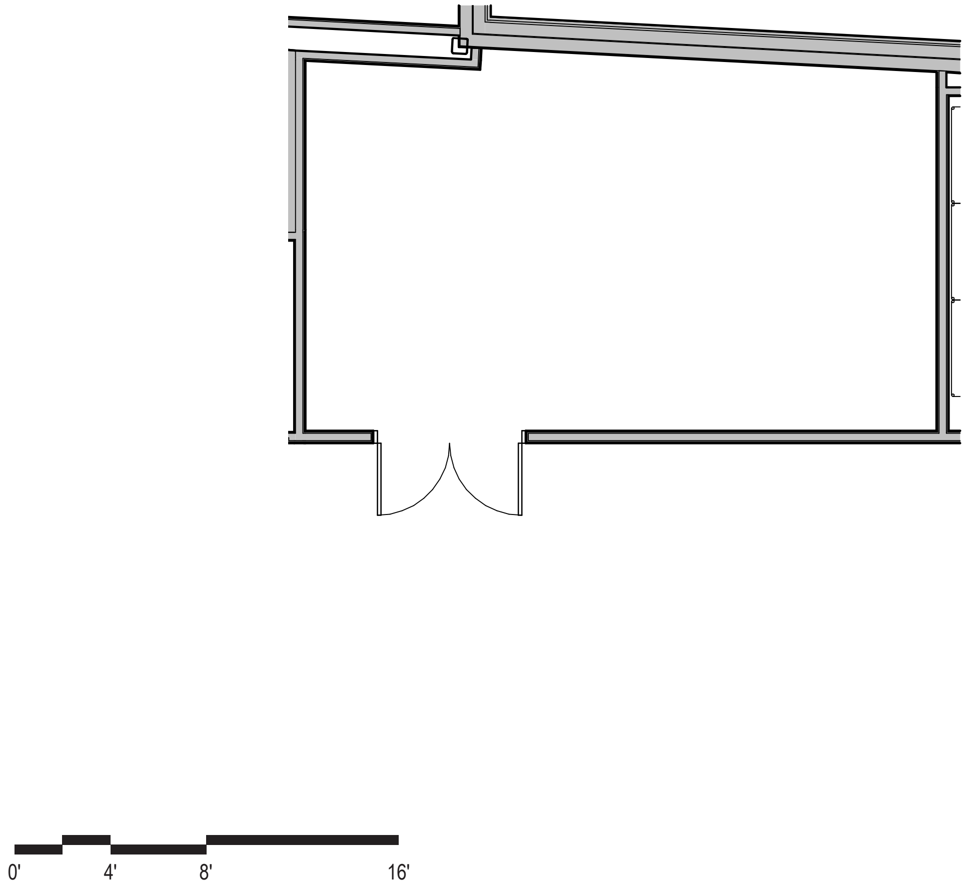
Communications:	-
Data:	WiFi and wall outlets
A/V:	Roll down screen
Clock/Speaker:	-

Security

Visibility:	Partial

Other

6.03 Chair Storage



Function

Description:	Chair Storage
Net Area:	400 SF
Occupancy:	-
Quantity:	1

Location

Users:	Students, Teacher, Community
Adjacency:	Cafeteria, Trash Recycling
Orientation & Views:	Cafeteria

Fixtures/Furnishings

Casework:	-
Specialties:	-
Furnishings:	-
Equipment:	150 Stacking Chairs 6 Chair Dollies

Architecture

Windows:	None
Doors:	Solid Door
Lockset Hardware:	Store room
Room Signage:	Room name and number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Exposed
Acoustics:	Standard construction

HVAC

Temperature:	Standard range
Zone Controls:	As part of Cafeteria
Pressure:	Neutral
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	None

Plumbing

Sinks:	None
Other:	N/A

Technology

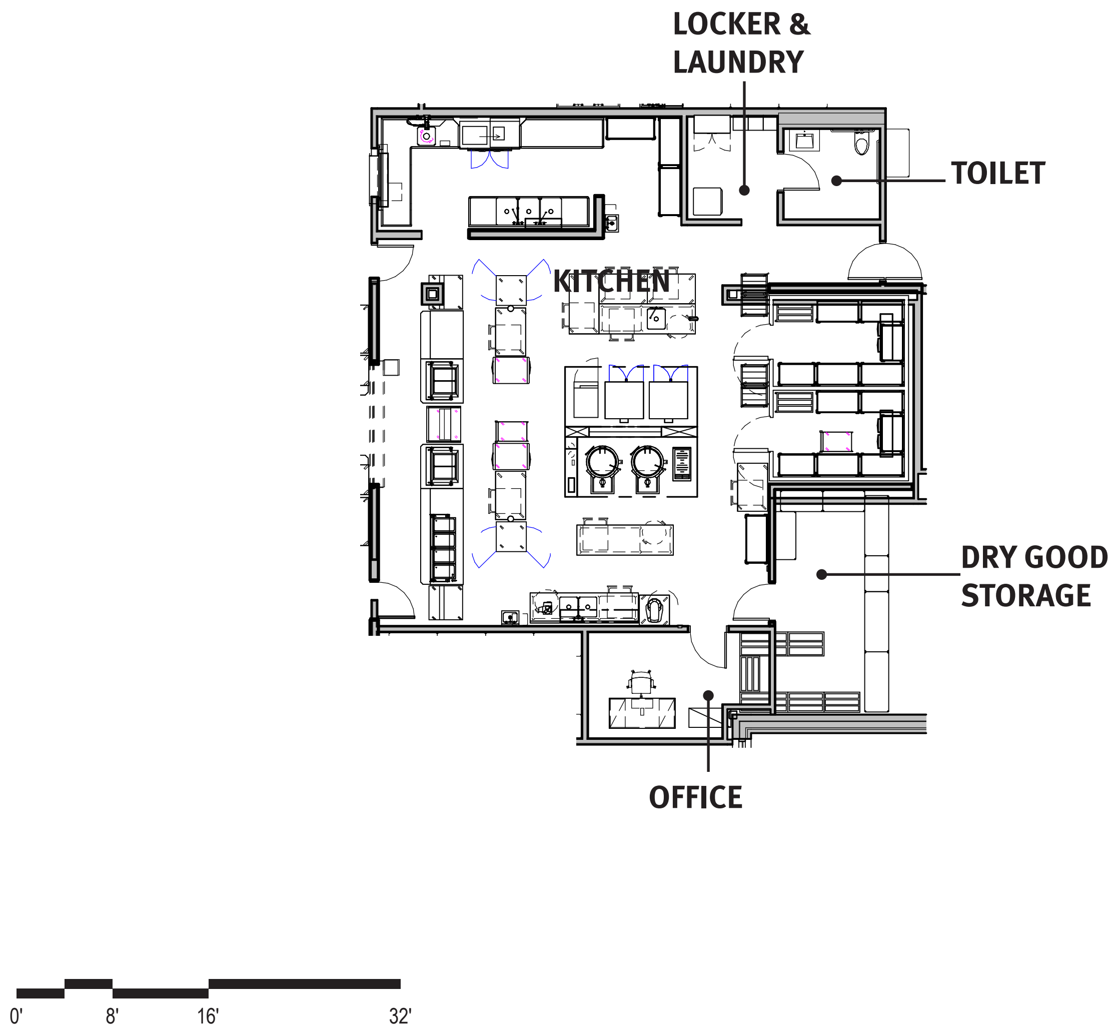
Communications:	None
Data:	None
A/V:	None
Clock/Speaker:	None

Security

Visibility:	N/A

Other

6.05 Kitchen & Kitchen Office



Function

Description:	Kitchen, servery, and kitchen office
Net Area:	Total:2,415 SF (Kitchen: 1,910 SF Kitchen Office: 120 SF Kitchen Toilet: 150 SF Locker & Laundry: 60 SF Dry Good Storage: 175 SF)
Occupancy:	7
Quantity:	1

Location

Users:	Staff

Adjacency:	Cafeteria, Loading
Orientation & Views:	None

Fixtures/Furnishings

Casework:	-
Specialties:	Lockers Tackboard Markerboard
Furnishings:	1 Teacher Desk 1 Task Chair 1 Lateral Files
Equipment:	Refer to equipment list in Appendix

Architecture

Windows:	None
Doors:	Various
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Epoxy
Wall Finish:	Paint FRP wall panels, Metal panels
Ceiling Finish:	Scrubbable acoustical ceiling tile 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Negative
CO2 Sensor:	Yes
Other:	Carbon Monoxide Sensor

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	GFCI duplex outlet on perimeter walls
Room Lighting:	2x2 Recessed LED fixture rated for food preparation areas Pendant LED cylinder fixtures
Special Controls:	Occupancy sensor

Plumbing

Sinks:	Three hand sinks One 3- compartment pot sink One wall mounted sink
Other:	Grease Trap Toilet Dishwasher Washer and dryer

Technology

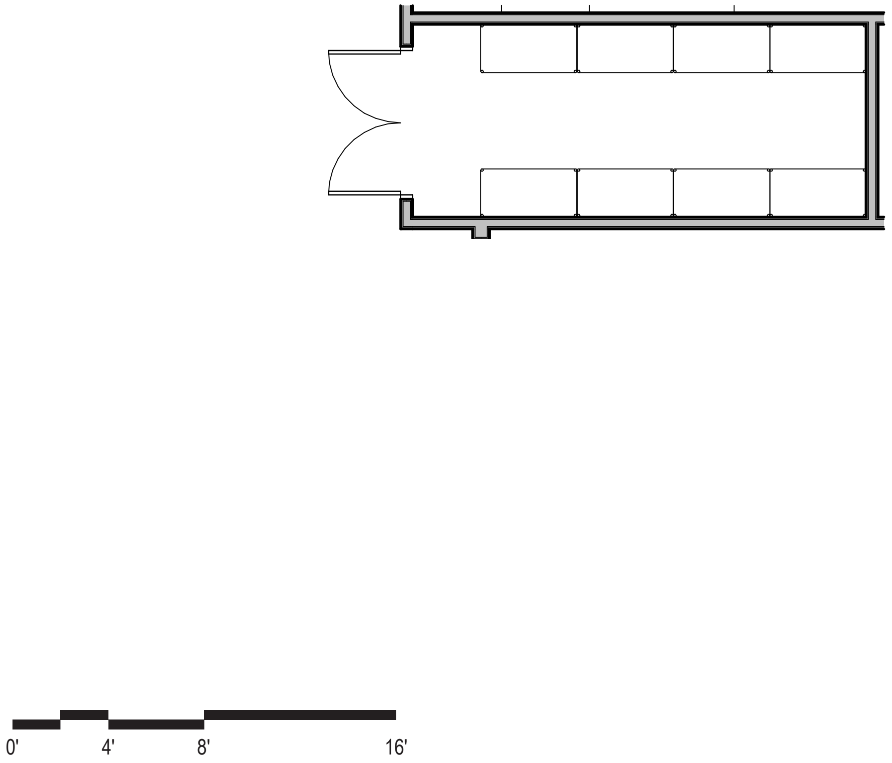
Communications:	Wall mounted telephone
Data:	WiFi
A/V:	None
Clock/Speaker:	Masterclock

Security

Visibility:	Partial

Other

6.04 Extended Day Storage



Function

Description:	For after hours program
Net Area:	150 SF
Occupancy:	-
Quantity:	1

Location

Users:	Students, Teacher, Community
Adjacency:	Cafeteria
Orientation & Views:	-

Fixtures/Furnishings

Casework:	-
Specialties:	-
Furnishings:	-
Equipment:	8 Metal Shelves

Architecture

Windows:	None
Doors:	Solid Door
Lockset Hardware:	Store room
Room Signage:	Room name and number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Exposed
Acoustics:	Standard construction

HVAC

Temperature:	Standard range
Zone Controls:	As part of Cafeteria
Pressure:	Neutral
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	None

Plumbing

Sinks:	None
Other:	N/A

Technology

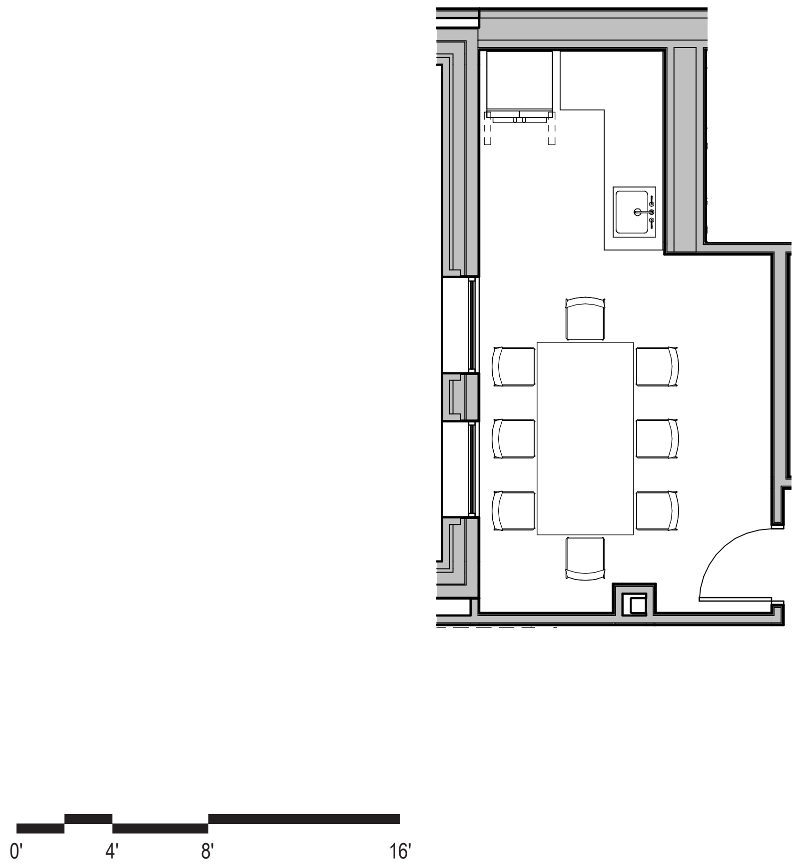
Communications:	None
Data:	None
A/V:	None
Clock/Speaker:	None

Security

Visibility:	N/A

Other

6.05 Staff Lunch Room



Function

Description:	Lunch room for staff
Net Area:	253 SF
Occupancy:	8
Quantity:	1

Location

Users:	Staff, Teachers
Adjacency:	Language Dev. Office
Orientation & Views:	Exterior Windows

Fixtures/Furnishings

Casework:	Base Cabinets Upper Cabinets
Specialties:	-
Furnishings:	1 Conference Tables 8 Task Chairs
Equipment:	Refrigerator Microwave

Architecture

Windows:	Required
Doors:	Glazed door with sidelight
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint Wall tile at wet wall
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	One ADA Sink
Other:	N/A

Technology

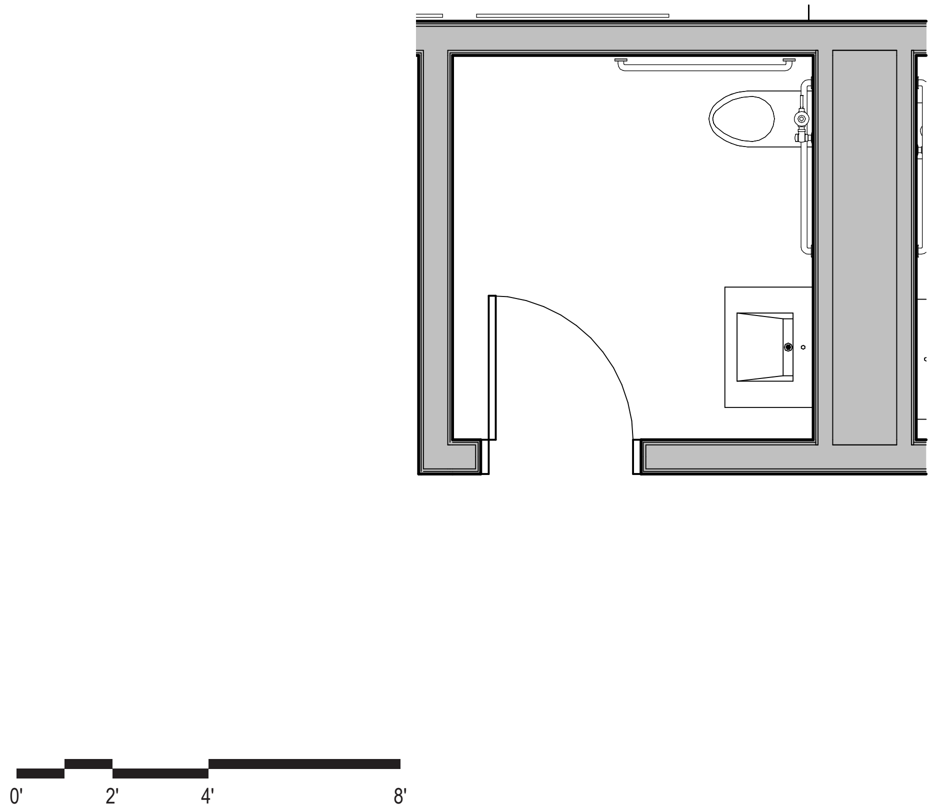
Communications:	None
Data:	WiFi and wall outlets
A/V:	None
Clock/Speaker:	Masterclock, ceiling- mounted speakers

Security

Visibility:	Limited

Other

7.01 Nurse Suite Toilet



Function

Description:	Medical suite toilet
Net Area:	60 SF
Occupancy:	-
Quantity:	1

Location

Users:	Students, Nurse Staff
Adjacency:	Nurse's Office
Orientation & Views:	None

Fixtures/Furnishings

Casework:	-
Specialties:	Grab bars
Furnishings:	-
Equipment:	-

Architecture

Windows:	None
Doors:	Solid door
Lockset Hardware:	Privacy operation
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Epoxy
Wall Finish:	Tile Paint
Ceiling Finish:	Gypsum board 90% light reflectance
Acoustics:	Standard construction

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Negative
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	GFCI duplex outlet
Room Lighting:	LED cove linear wall washer
Special Controls:	Occupancy sensors

Plumbing

Sinks:	1 Wall mounted sink
Other:	Toilet

Technology

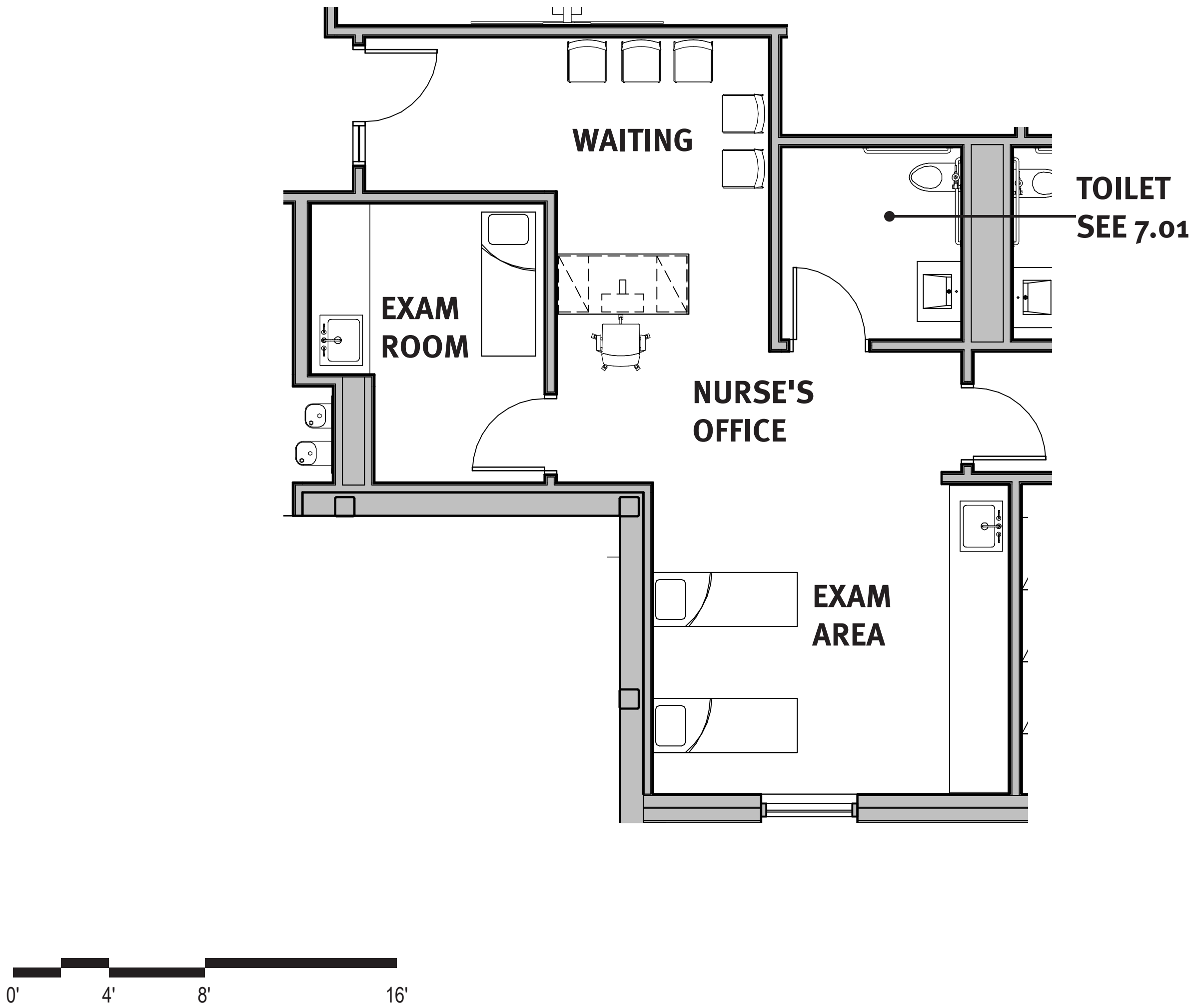
Communications:	None
Data:	None
A/V:	None
Clock/Speaker:	Ceiling mounted speaker

Security

Visibility:	None

Other

7.02 Nurse’s Office / Exam Rooms



Function

Description:	Nurse’s office with exam area
Net Area:	Total: 550 SF (Office & Waiting: 250 SF (3) 100SF Exam Areas)
Occupancy:	4
Quantity:	1

Location

Users:	Nurse Staff
Adjacency:	Medical suite, Administration, Gym, OT

Orientation & Views:	Exterior windows

Fixtures/Furnishings

Casework:	Base Cabinets Upper Cabinets
Specialties:	Ceiling Mounted Cubicle Curtain
Furnishings:	2 Bed 1 Desk 1 Task Chair 3 Guest Chairs

Architecture

Windows:	Required
Doors:	Glazed door with sidelights
Lockset Hardware:	Office operation
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	2x2 LED recessed panels
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	One ADA Sink
Other:	N/A

Technology

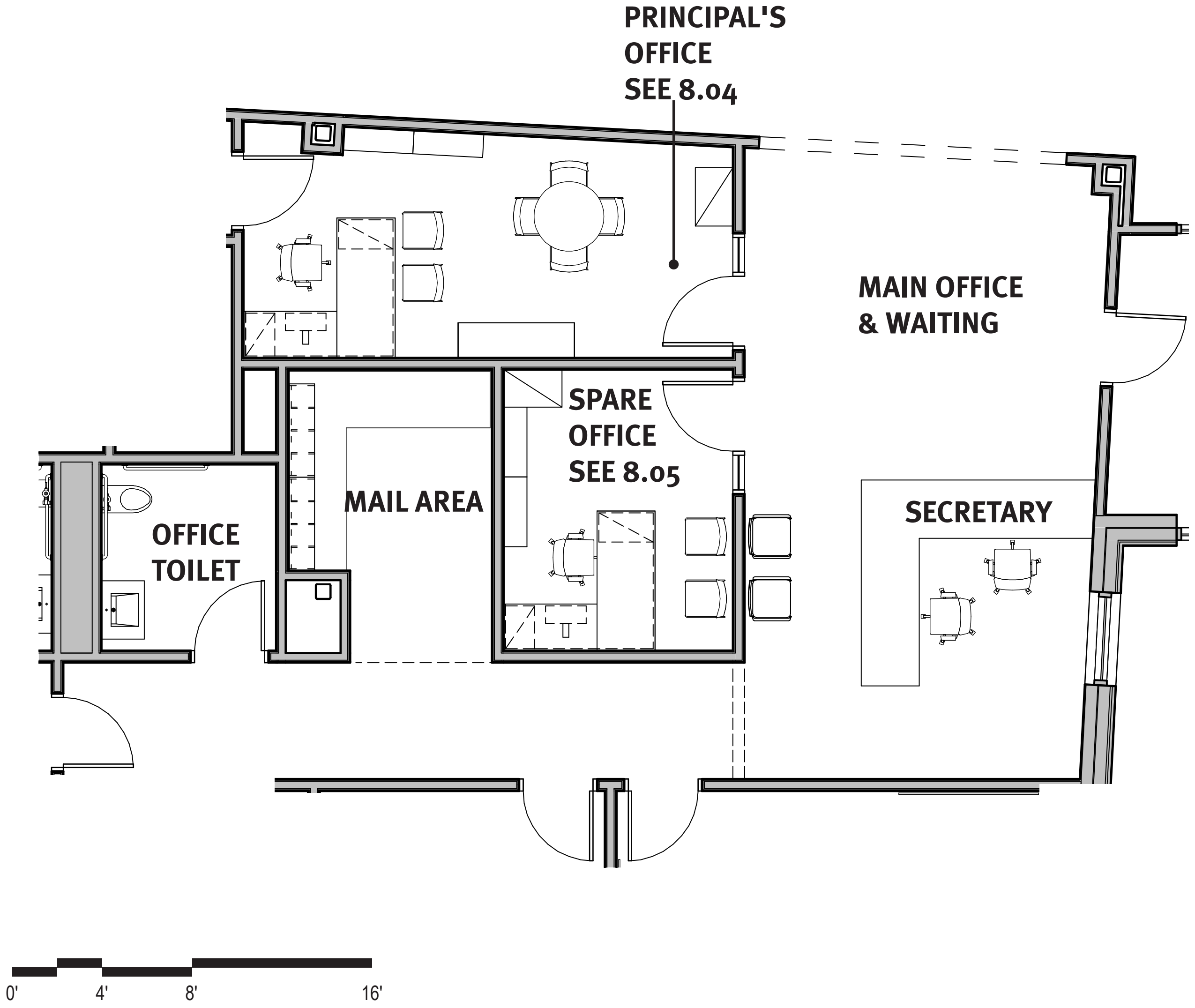
Communications:	Telephone
Data:	WiFi and wall outlets
A/V:	None
Clock/Speaker:	Masterclock,Ceiling mounted speakers

Security

Visibility:	Partial

Other

8.01 General Office & Waiting



Function

Description:	General school office area, waiting area, office toilet room, mail room
Net Area:	Total: 680 SF (General Office 395 SF Secretary 125 SF Mail Area 100 SF Office Toilet 60 SF)
Occupancy:	3
Quantity:	1

Location

Users:	Staff, teachers, parents, community, students
Adjacency:	Main Entrance
Orientation & Views:	Exterior windows Main Vestibule

Fixtures/Furnishings

Casework:	Built in reception desk
Specialties:	Grab Bars
Furnishings:	3 Task Chairs 2 Guest Chairs
Equipment:	Refrigerator Microwave

Architecture

Windows:	Required
Doors:	Glazed doors with sidelight
Lockset Hardware:	Function compatible with District's lockdown protocol
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile Epoxy in restroom
Wall Finish:	Paint Wall Tile (in restroom)
Ceiling Finish:	Gypsum board 90% light reflectance
Acoustics:	Standard construction

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED recessed downlight LED linear pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	Wall mounted sink in restroom
Other:	Standard toilet in restroom

Technology

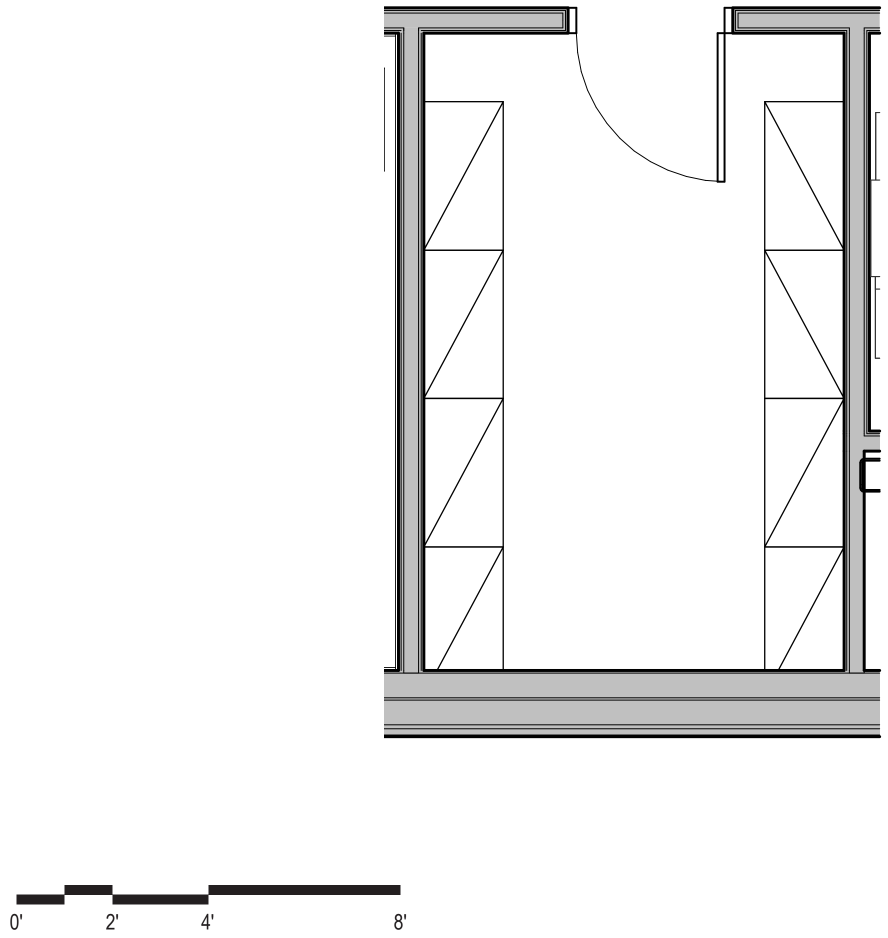
Communications:	Smart Rescue Telephone
Data:	WiFi and wall outlets
A/V:	None
Clock/Speaker:	Masterclock, Ceiling mounted speakers

Security

Visibility:	Fully visible

Other

8.02 Records Room



Function

Description:	Room for storing student records
Net Area:	110 SF
Occupancy:	1
Quantity:	1

Location

Users:	Staff
Adjacency:	General Office. Copy
Orientation & Views:	None

Fixtures/Furnishings

Casework:	None
Specialties:	None
Furnishings:	8 Lateral Files
Equipment:	None

Architecture

Windows:	Optional
Doors:	Solid door
Lockset Hardware:	Office operation
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Standard construction

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	2x4 LED recessed panel
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

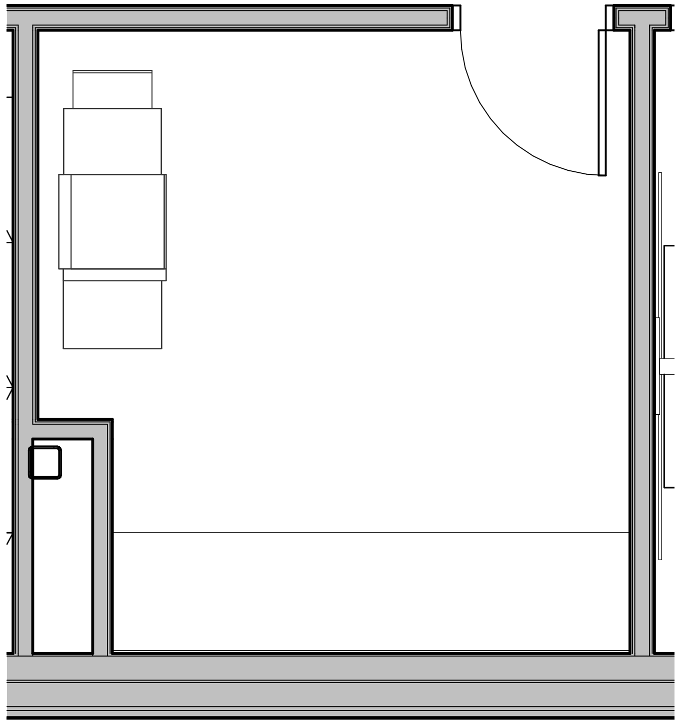
Communications:	None
Data:	WiFi and wall outlets
A/V:	None
Clock/Speaker:	Ceiling mounted speaker

Security

Visibility:	None

Other

8.03 Copy Room



Function

Description:	Room for storing student records
Net Area:	150 SF
Occupancy:	1
Quantity:	1

Location

Users:	Staff
Adjacency:	General Office. Record
Orientation & Views:	None

Fixtures/Furnishings

Casework:	Upper Cabinets Lower Cabinets
Specialties:	-
Furnishings:	-
Equipment:	Copier

Architecture

Windows:	Optional
Doors:	Solid door
Lockset Hardware:	Office operation
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Acoustical ceiling tiles 90% light reflectance
Acoustics:	Standard construction

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	2x4 LED recessed panel
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

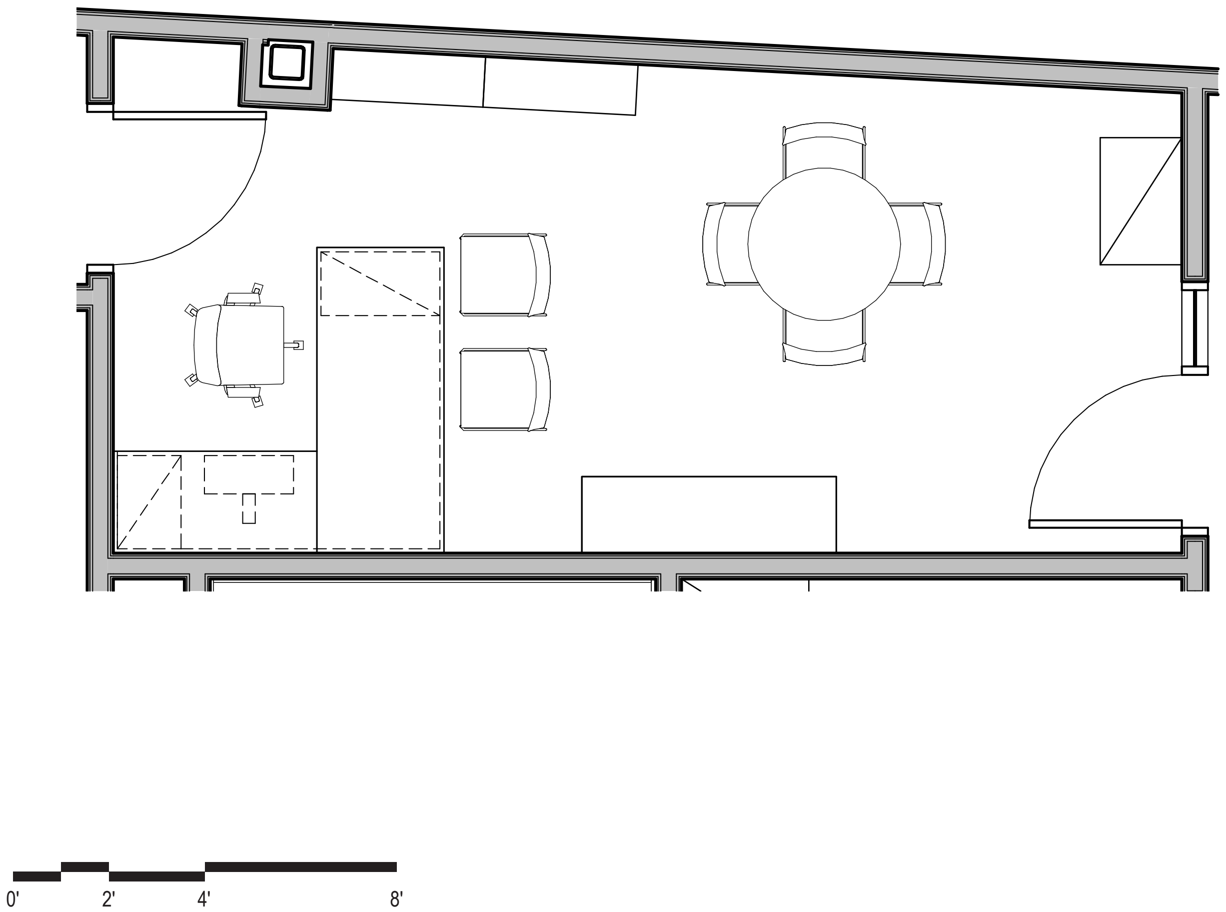
Communications:	None
Data:	WiFi and wall outlets
A/V:	None
Clock/Speaker:	Ceiling mounted speaker

Security

Visibility:	None

Other

8.04 Principal's Office



Function

Description:	Office for school principal
Net Area:	200 SF
Occupancy:	1
Quantity:	1

Location

Users:	Staff, Teachers, Students, Parents
Adjacency:	Administration, General Office
Orientation & Views:	None

Fixtures/Furnishings

Casework:	-
Specialties:	-
Furnishings:	1 Desk 1 Task Chair 2 Side Chairs 4 Stacking Chairs 1 Small Group Table 1 Lateral Files 2 Bookcases 1 Credenza
Equipment:	-

Architecture

Windows:	Optional
Doors:	Glazed door with sidelight
Lockset Hardware:	Office operation
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Gypsum board 90% light reflectance
Acoustics:	Standard construction

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

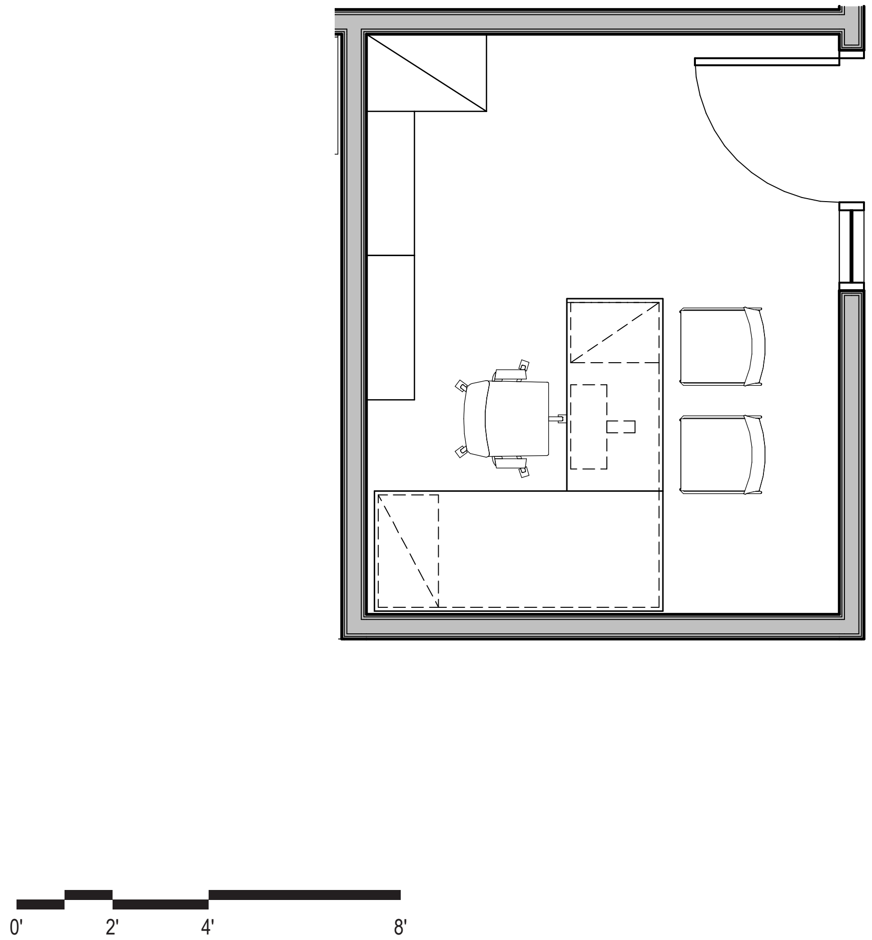
Communications:	Telephone
Data:	WiFi and wall outlets
A/V:	None
Clock/Speaker:	Masterclock, ceiling mounted speakers

Security

Visibility:	Partial

Other

8.05 Spare Office



Function

Description:	Office for school principal
Net Area:	120 SF
Occupancy:	1
Quantity:	1

Location

Users:	Staff, Teachers, Students, Parents
Adjacency:	Administration, General Office
Orientation & Views:	None

Fixtures/Furnishings

Casework:	-
Specialties:	-
Furnishings:	1 Desk 1 Task Chair 2 Side Chairs 2 Stacking Chairs 1 Lateral Files 2 Bookcases
Equipment:	-

Architecture

Windows:	Optional
Doors:	Glazed door with sidelight
Lockset Hardware:	Office operation
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Gypsum board 90% light reflectance
Acoustics:	Standard construction

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

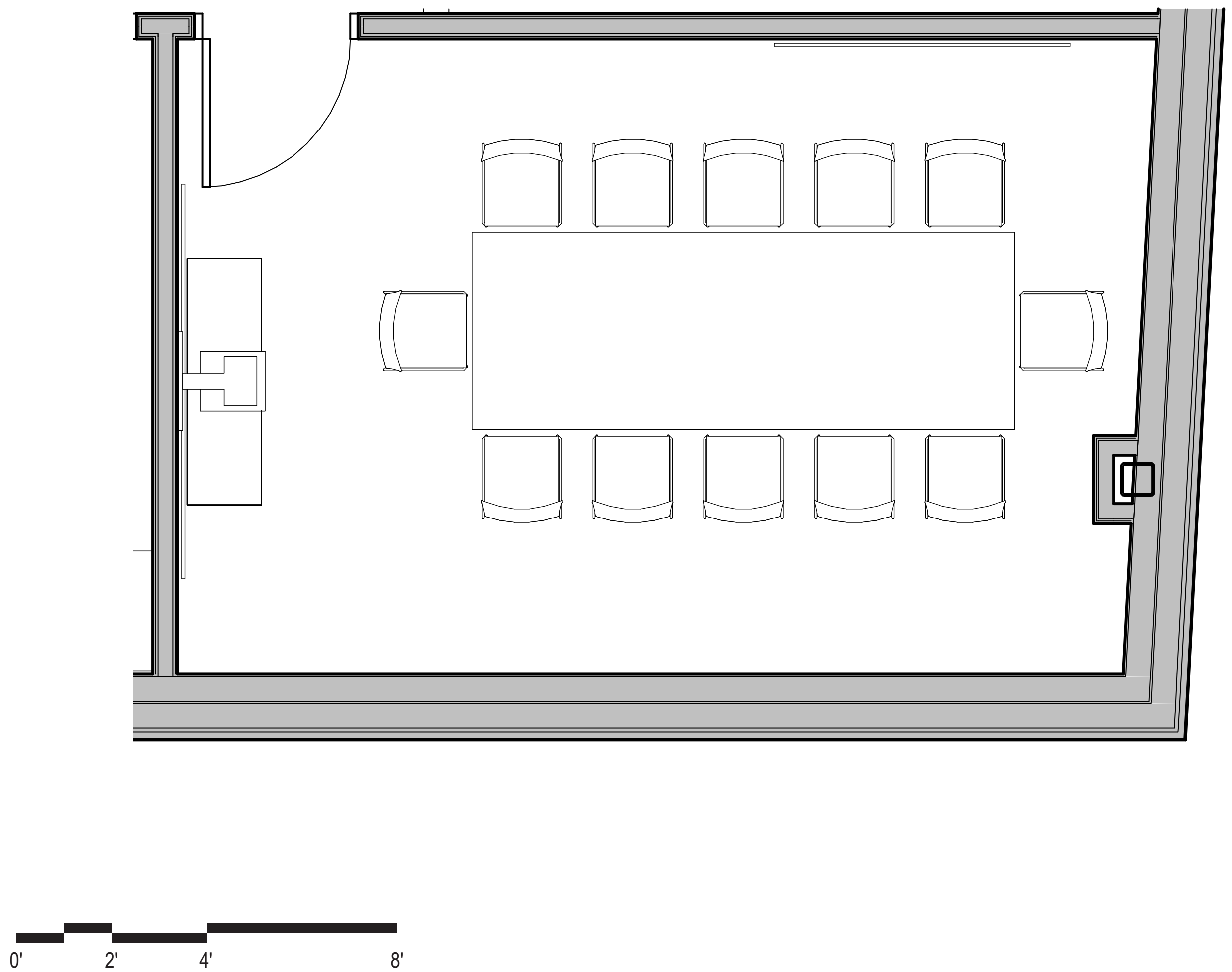
Communications:	Telephone
Data:	WiFi and wall outlets
A/V:	None
Clock/Speaker:	Masterclock, ceiling mounted speakers

Security

Visibility:	Partial

Other

8.06 Conference Room



Function

Description:	Conference room
Net Area:	250 SF
Occupancy:	10
Quantity:	1

Location

Users:	Staff, Teachers
Adjacency:	General Office
Orientation & Views:	Exterior Windows

Fixtures/Furnishings

Casework:	-
Specialties:	Markerboard
Furnishings:	1 Conference Table 12 Task Chairs 1 Credenza
Equipment:	-

Architecture

Windows:	Optional
Doors:	Glazed door with sidelight
Lockset Hardware:	Office operation
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Gypsum board 90% light reflectance
Acoustics:	Walls: STC 50 Ceiling: NRC 0.7, CAC 35

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant LED recessed downlight
Special Controls:	Occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

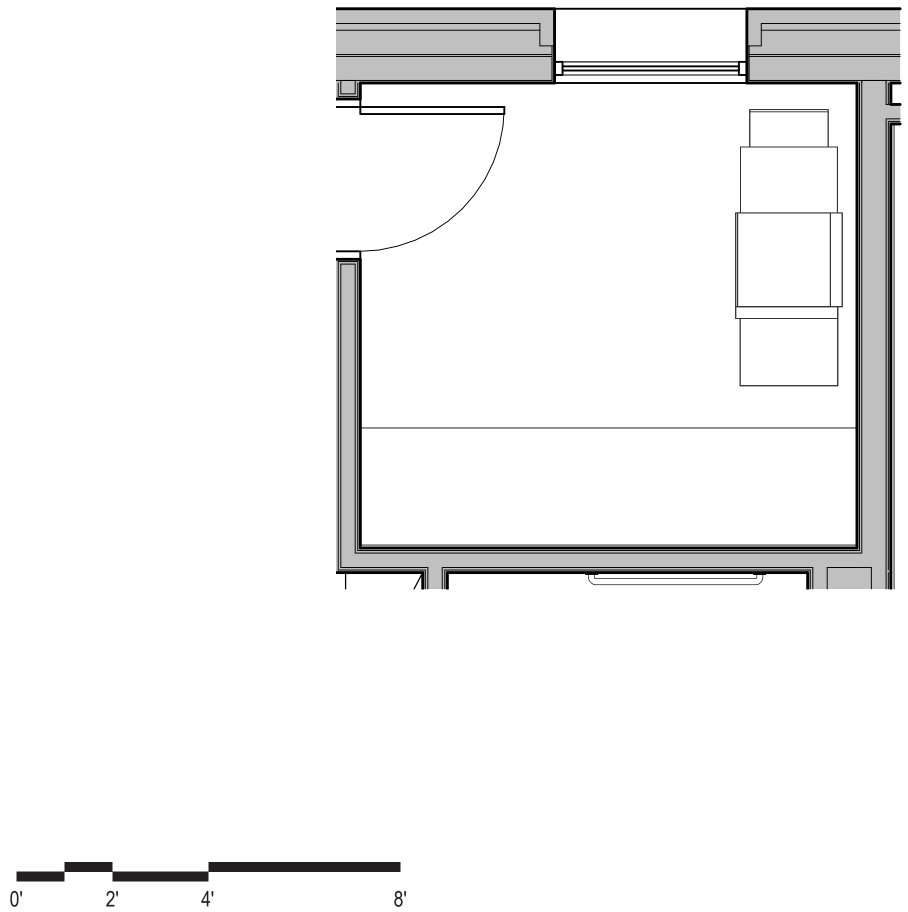
Communications:	Wall mounted telephone
Data:	WiFi and recessed floor box with data outlets
A/V:	Large monitor w. teleconferencing abilities Short-throw Projector
Clock/Speaker:	Masterclock, ceiling- mounted speakers

Security

Visibility:	Partial

Other

8.07 Work Room



Function

Description:	Work room for teachers
Net Area:	100 SF
Occupancy:	2
Quantity:	4

Location

Users:	Staff, Teachers
Adjacency:	Administration, General Office
Orientation & Views:	None

Fixtures/Furnishings

Casework:	Upper Cabinets Lower Cabinets
Specialties:	-
Furnishings:	-
Equipment:	Copier

Architecture

Windows:	Optional
Doors:	Glazed door with sidelight
Lockset Hardware:	Office operation
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Linoleum tile
Wall Finish:	Paint
Ceiling Finish:	Gypsum board 90% light reflectance
Acoustics:	Standard construction

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Daylight & occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

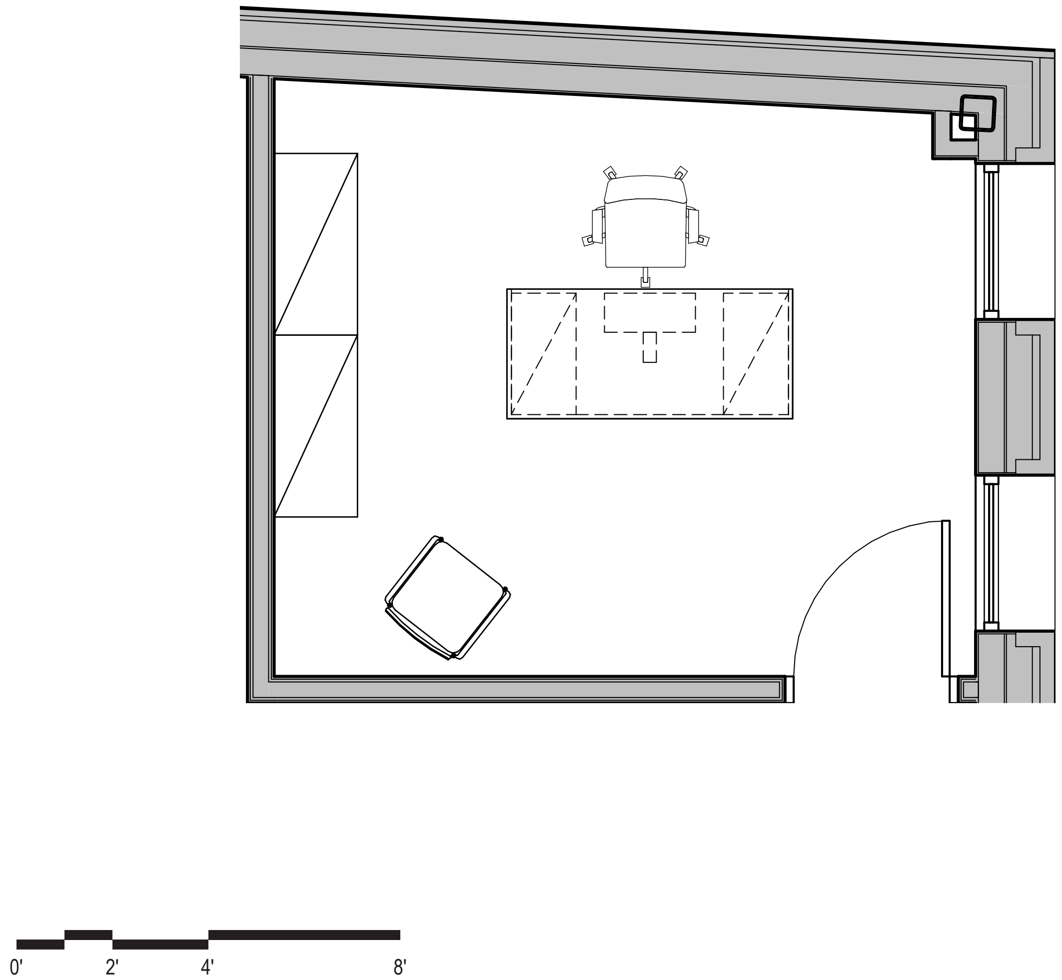
Communications:	Telephone
Data:	WiFi and wall outlets
A/V:	None
Clock/Speaker:	Masterclock, ceiling mounted speakers

Security

Visibility:	Partial

Other

9.01 Custodian’s Office



Function

Description:	Office for school custodian
Net Area:	150 SF
Occupancy:	1
Quantity:	1

Location

Users:	Staff
Adjacency:	Custodial workshop, Storeroom, Receiving
Orientation & Views:	Exterior Windows

Fixtures/Furnishings

Casework:	-
Specialties:	-
Furnishings:	1 Desk 1 Task Chair 2 Lateral Files 1 Side Chair
Equipment:	-

Architecture

Windows:	Optional
Doors:	Solid door
Lockset Hardware:	Office operation
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Sealed concrete
Wall Finish:	Paint
Ceiling Finish:	Exposed
Acoustics:	Standard construction

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Positive
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensors

Plumbing

Sinks:	None
Other:	N/A

Technology

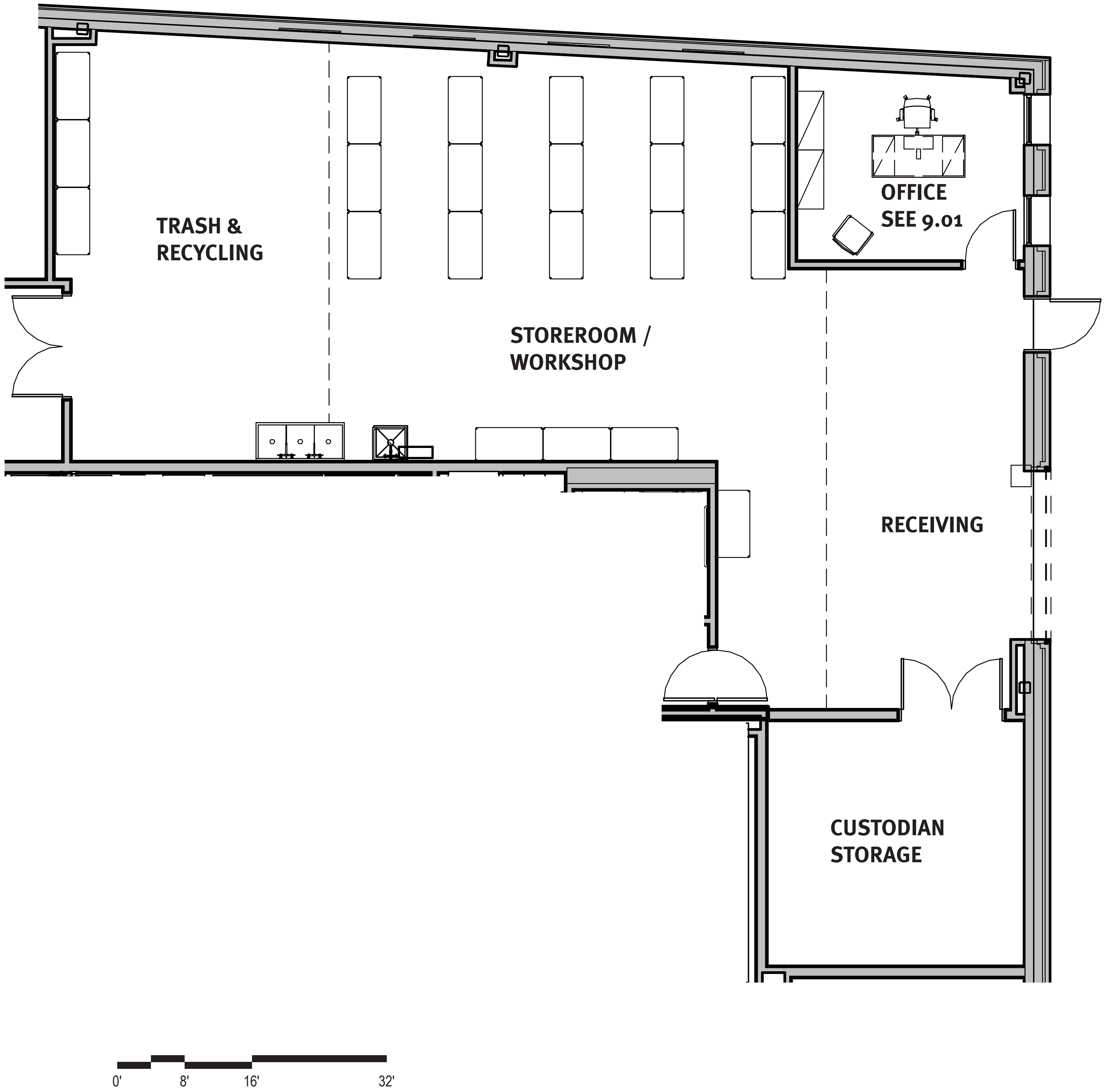
Communications:	Telephone
Data:	WiFi and wall outlets
A/V:	None
Clock/Speaker:	Masterclock, ceiling mounted speakers

Security

Visibility:	None

Other

9.02 Custodian’s Workshop & Storage, Trash&Recycle, Receiving



Function

Description:	Custodian’s Workshop & Storage, Trash&Recycle, Receiving, Custodian storage
Net Area:	1860 sf (Custodian's Workshop 375 sf, Custodian's Storage 375 sf, Recycling / Trash 400 sf, Receiving 303 sf, Storeroom 407 sf)
Occupancy:	-
Quantity:	1

Location

Users:	Staff

Architecture

Windows:	Optional
Doors:	Solid doors Overhead coiling door
Lockset Hardware:	N/A
Room Signage:	Room name & number on adjacent wall
Floor Loading:	Standard
Floor Config:	Flat
Floor Finish:	Sealed Concrete
Wall Finish:	Paint
Ceiling Finish:	Exposed
Acoustics:	Standard construction

HVAC

Temperature:	Standard range
Zone Controls:	Individual room control
Pressure:	Neutral
CO2 Sensor:	Yes
Other:	N/A

Fire Protection

Sprinklered:	Yes

Electrical

Outlets:	Standard duplex on perimeter walls
Room Lighting:	LED linear pendant
Special Controls:	Occupancy sensors

Adjacency:	Kitchen, Cafeteria, Loading Dock
Orientation & Views:	None

Fixtures/Furnishings

Casework:	-
Specialties:	None
Furnishings:	22 Metal Shelves
Equipment:	None

Plumbing

Sinks:	Trough sink Map sink
Other:	N/A

Technology

Communications:	None
Data:	WiFi
A/V:	None
Clock/Speaker:	Masterclock

Security

Visibility:	None

Other

	None

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L: Designer's Cost Estimate

Schematic Design Cost Estimate

Neary Elementary School

Southborough, MA

MSBA Project ID Number: 202102760020

PM&C LLC
20 Downner Ave, Suite 5
Hingham, MA 02043

(T) 781-740-8007
(F) 781-740-1012

Prepared for:

Arrowstreet

February 17, 2025

Neary Elementary School
Southborough, MA

17-Feb-25

Schematic Design Cost Estimate

MAIN CONSTRUCTION COST SUMMARY

	Construction Start		Gross Floor Area	$/sf	Estimated Construction Cost
TRADE COSTS	Jun-26				
New Construction			99,564	$486.68	$48,455,342
Demolish Existing Building			62,756	$10.00	$627,560
Remove Hazardous Materials					$939,392
Premium for out of state soil disposal, Allowance					$350,000
Sitework					$12,699,647
SUBTOTAL TRADE COSTS			99,564	$633.48	$63,071,941
Design and Estimating Contingency	10.0%				$6,307,194
Escalation to Start Date	5.0%				$3,153,597
SUBTOTAL INCLUDING CONTINGENCIES					**$72,532,732**
SDI (non-FSB bids only)	1.4%				$556,483
General Conditions		27	MTHS	$170,000	$4,590,000
General Requirements	4.0%				$2,901,309
Insurances	1.50%				$1,087,991
Bond	0.75%				$543,995
Building Permit					Waived
Fee	3.0%				$2,466,375
CM Contingency	3.0%				$2,540,367
TOTAL ESTIMATED CONSTRUCTION COST			**99,564**	**$876.01**	**$87,219,252**

Anticipated Bid Date:	June 2026
Item 1 - Filed Sub Bids	$32,783,089
Item 2: CM amount	$54,436,163
Total Estimated Cost of Construction	**$87,219,252**

[1] HazMat costs do not include testing, design, + monitoring fees

ALTERNATES (including markups)

Second Art Room	ADD	$	**755,571**
Sliding Storefront Doors	ADD	$	**207,000**
Renovate Existing Playground	ADD	$	**1,053,506**

BASIS OF ESTIMATE

This Schematic Design cost estimate was produced from drawings and specifications prepared by Arrowstreet and their design team dated January 13, 2025. Design and engineering changes occurring subsequent to the issue of these documents have not been incorporated in this estimate.

This estimate includes all direct construction costs, construction managers overhead and profit and design contingency. Cost escalation assumes start dates indicated.

Bidding conditions are expected to be public bidding under 149a of the Massachusetts General Laws to pre-qualified construction managers, 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
- 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)
- Rock excavation; special foundations (unless indicated by design engineers)
- Utility company back charges, including work required off-site
- Work to City streets and sidewalks, (except as noted in this estimate)
- Construction or occupancy phasing or off hours' work, (except as noted in this estimate)

Neary Elementary School
Southborough, MA

17-Feb-25

Schematic Design Cost Estimate

GFA 99,564

CONSTRUCTION COST SUMMARY IN CSI FORMAT

		BUILDING		*SITEWORK*		*TOTAL*	
		Subtotal	*Total*	*Subtotal*	*Total*	*Subtotal*	*Total*
TOTAL PROJECT CSI SUMMARY							
DIV. 2	**EXISTING CONDITIONS**				**$1,566,952**		**$1,566,952**
024116	Structure Demolition			$627,560		$627,560	
028213	Abatement			$939,392		$939,392	
DIV. 3	**CONCRETE**		**$2,395,717**				**$2,395,717**
033000	Cast-in-Place Concrete	$2,383,917				$2,383,917	
033500	Concrete Finishes	$11,800				$11,800	
DIV. 4	**MASONRY**		**$2,788,080**				**$2,788,080**
040001	**Unit Masonry - FSB**	$2,788,080				$2,788,080	
DIV. 5	**METALS**		**$5,617,154**				**$5,617,154**
050001	**Metal Fabrications - FSB**	$690,540				$690,540	
051200	Structural Steel Framing	$4,926,614				$4,926,614	
DIV. 6	**WOODS & PLASTICS**		**$942,789**				**$942,789**
061000	Rough Carpentry	$304,975				$304,975	
064100	Architectural Woodwork	$588,854				$588,854	
066400	FRP Panels	$48,960				$48,960	
DIV. 7	**THERMAL & MOISTURE PROTECTION**		**$5,317,458**				**$5,317,458**
070001	**Waterproofing, Dampproofing and Caulking - FSB**	$759,134				$759,134	
070002	**Roofing and Flashing - FSB**	$2,026,163				$2,026,163	
072100	Thermal Insulation	$707,880				$707,880	
076400	Cladding	$1,389,950				$1,389,950	
078100	Fireproofing	$334,767				$334,767	
078400	Firestopping	$99,564				$99,564	
DIV. 8	**DOORS & WINDOWS**		**$2,849,865**				**$2,849,865**
080001	**Windows**	$2,078,225				$2,078,225	
080002	**Glass and Glazing - FSB**	$60,700				$60,700	
081113	Doors, Frames and Hardware	$335,990				$335,990	
083100	Access Doors and Frames	$10,000				$10,000	
083323	Overhead Coiling Doors	$16,400				$16,400	
083326	Coiling Grilles	$64,700				$64,700	
087100	Door Hardware	$279,600				$279,600	
089000	Louvers	$4,250				$4,250	
DIV. 9	**FINISHES**		**$6,058,729**				**$6,058,729**
090002	**Tiling - FSB**	$218,994				$218,994	
090003	**Acoustical Ceilings - FSB**	$629,120				$629,120	
090005	**Resilient Flooring - FSB**	$529,569				$529,569	
090007	**Painting - FSB**	$283,092				$283,092	
092900	Gypsum Board Assemblies	$3,751,764				$3,751,764	
096400	Wood Flooring	$256,775				$256,775	
096700	Fluid-Applied Flooring	$114,530				$114,530	
096810	Carpet	$35,385				$35,385	
098316	Acoustic Spray	$88,200				$88,200	
098400	Acoustic Room Components	$151,300				$151,300	
DIV 10	**SPECIALTIES**		**$1,131,085**				**$1,131,085**
101100	Visual Display Surfaces	$154,240				$154,240	
101200	Display Cases						
101400	Signage	$308,835				$308,835	
102100	Toilet Compartments and Cubicles	$60,000				$60,000	
102200	Operable Partitions	$216,000				$216,000	
102226	Operable Glass Partitions	$33,000				$33,000	
102600	Wall Protection	$5,000				$5,000	
102800	Toilet Accessories	$39,000				$39,000	
104300	Fire Protection Specialties	$12,450				$12,450	
105000	Lockers	$2,560				$2,560	
108213	Equipment Enclosure	$300,000				$300,000	
DIV. 11	**EQUIPMENT**		**$737,000**				**$737,000**
113100	Appliances	$13,500				$13,500	
114000	Food Service Equipment	$450,950				$450,950	
115213	Projection Screens	$32,000				$32,000	
116200	Theatre Equipment	$35,000				$35,000	
116600	Athletic Equipment	$200,550				$200,550	
117900	Miscellaneous Equipment	$5,000				$5,000	

CONSTRUCTION COST SUMMARY IN CSI FORMAT

		BUILDING		*SITEWORK*		*TOTAL*	
		Subtotal	*Total*	*Subtotal*	*Total*	*Subtotal*	*Total*
TOTAL PROJECT CSI SUMMARY							
DIV. 12 FURNISHINGS			**$1,135,776**				**$1,135,776**
122113	Window Treatments	$88,992				$88,992	
123200	Fixed Casework and Equipment	$1,010,484				$1,010,484	
124813	Entrance Mats and Frames	$36,300				$36,300	
126100	Fixed Audience Seating						
DIV. 13 SPECIAL CONSTRUCTION							
133100	Swimming Pool						
DIV. 14 CONVEYING SYSTEMS			**$170,000**				**$170,000**
142000	**Passenger Elevators - FSB**	$170,000				$170,000	
DIV. 21 FIRE SUPPRESSION			**$870,881**		**$98,093**		**$968,974**
210000	**Fire Protection - FSB**	$870,881		$98,093		$968,974	
DIV. 22 PLUMBING			**$2,295,120**				**$2,295,120**
220000	**Plumbing - FSB**	$2,295,120				$2,295,120	
DIV. 23 HVAC			**$8,860,068**				**$8,860,068**
230000	**HVAC - FSB**	$8,860,068				$8,860,068	
DIV. 26 ELECTRICAL			**$5,457,284**		**$519,500**		**$5,976,784**
260000	**Electrical**	$5,457,284		$519,500		$5,976,784	
DIV. 31 EARTHWORK			**$1,809,836**		**$3,758,763**		**$5,568,599**
311000	Site Preparation			$894,263		$894,263	
312000	Earthwork	$1,809,836		$2,514,500		$4,324,336	
312000	Premium for Soil Disposal			$350,000		$350,000	
312500	Erosion and Sedimentation Control						
DIV. 32 EXTERIOR IMPROVEMENTS					**$4,146,969**		**$4,146,969**
321000	Pavings			$1,863,835		$1,863,835	
323000	Site Improvements			$1,367,035		$1,367,035	
329900	Landscaping			$916,099		$916,099	
DIV. 33 UTILITIES					**$4,526,322**		**$4,526,322**
331000	Water Utilities			$53,750		$53,750	
333000	Sanitary Utilities			$959,092		$959,092	
334000	Storm Utilities			$1,293,480		$1,293,480	
336000	Geothermal Wells			$2,220,000		$2,220,000	
SUBTOTAL DIRECT (TRADE) COST			**$48,436,842**		**$14,616,599**		**$63,053,441**

PM&C

Neary Elementary School 17-Feb-25
Southborough, MA

Schematic Design Cost Estimate GFA 99,564

CONSTRUCTION COST SUMMARY

BUILDING + SITE SUMMARY

BUILDING SYSTEM	*SUB-TOTAL*	*TOTAL*	*$/SF*
A10 FOUNDATIONS		**$4,071,394**	$40.89
A1010 Standard Foundations	$1,704,952		
A1020 Special Foundations	$0		
A1030 Lowest Floor Construction	$2,366,442		
A20 BASEMENT CONSTRUCTION		**$0**	$0.00
A2010 Basement Excavation	$0		
A2020 Basement Walls	$0		
B10 SUPERSTRUCTURE		**$5,714,840**	$57.40
B1010 Upper Floor Construction	$2,426,608		
B1020 Roof Construction	$3,288,232		
B20 EXTERIOR CLOSURE		**$8,830,143**	$88.69
B2010 Exterior Walls	$6,758,508		
B2020 Windows	$1,859,485		
B2030 Exterior Doors	$212,150		
B30 ROOFING		**$2,031,043**	$20.40
B3010 Roof Coverings	$2,013,543		
B3020 Roof Openings	$17,500		
C10 INTERIOR CONSTRUCTION		**$5,536,334**	$55.61
C1010 Partitions	$3,146,523		
C1020 Interior Doors	$815,180		
C1030 Specialties/Millwork	$1,574,631		
C20 STAIRCASES		**$331,681**	$3.33
C2010 Stair Construction	$286,000		
C2020 Stair Finishes	$45,681		
C30 INTERIOR FINISHES		**$2,426,958**	$24.38
C3010 Wall Finishes	$612,471		
C3020 Floor Finishes	$952,678		
C3030 Ceiling Finishes	$861,809		
D10 CONVEYING SYSTEMS		**$174,620**	$1.75
D1010 Elevator	$174,620		

PM&C

Neary Elementary School 17-Feb-25
Southborough, MA

Schematic Design Cost Estimate GFA 99,564

CONSTRUCTION COST SUMMARY

	BUILDING SYSTEM	*SUB-TOTAL*	*TOTAL*	*$/SF*
BUILDING + SITE SUMMARY				
D20	**PLUMBING**		**$2,295,120**	$23.05
D2000	Plumbing	$2,295,120		
D30	**HVAC**		**$8,860,068**	$88.99
D3000	HVAC	$8,860,068		
D40	**FIRE PROTECTION**		**$870,881**	$8.75
D4000	Fire Protection	$870,881		
D50	**ELECTRICAL**		**$5,475,784**	$55.00
D5010	Service & Distribution	$1,479,020		
D5020	Lighting & Power	$1,807,152		
D5030	Communication & Security Systems	$1,739,612		
D5040	Other Electrical Systems	$450,000		
E10	**EQUIPMENT**		**$737,000**	$7.40
E1010	Equipment	$737,000		
E20	**FURNISHINGS**		**$1,099,476**	$11.04
E2010	Fixed Furnishings	$1,099,476		
E2020	Movable Furnishings			
F10	**SPECIAL CONSTRUCTION**		**$0**	$0.00
F1000	Special Construction	$0		
F20	**DEMOLITION & HAZMAT REMOVALS**		**$0**	$0.00
F2010	Building Elements Demolition	$0		
F2020	Hazardous Components Abatement	$0		
TOTAL DIRECT BUILDING COST (Trade Costs)			**$48,455,342**	$486.68

CONSTRUCTION COST SUMMARY

BUILDING SYSTEM	*SUB-TOTAL*	*TOTAL*	*$/SF*
BUILDING + SITE SUMMARY			
G10 SITE PREPARATION		**$2,763,275**	
G20 SITE IMPROVEMENTS		**$4,560,279**	
G30 SITE MECHANICAL UTILITIES		**$4,818,593**	
G40 SITE ELECTRICAL UTILITIES		**$557,500**	
TOTAL DIRECT SITE COST (Trade Costs)		**$12,699,647**	$127.55
TOTAL DIRECT PROJECT COST (Trade Costs)		**$61,154,989**	$614.23

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST

Building Detail

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
	GROSS FLOOR AREA CALCULATION						
	1st Floor	**60,720**	sf				
	2nd Floor	**38,844**	sf				
	TOTAL GROSS FLOOR AREA (GFA)				**99,564**	***sf***	
A10	***FOUNDATIONS***						
A1010	**STANDARD FOUNDATIONS**						
033000	*CONCRETE*						
	Strip Footings	*222*	*CY*				
	Foundation Walls	*369*	*CY*				
	Spread Footings	*396*	*CY*				
	Piers	*44*	*CY*				
	Elevator Pit	*30*	*CY*				
	Total Foundation Concrete	*1,061*	*CY*				
	Strip footings						
	Formwork	**3,800**	sf	18.00	68,400		
	Re-bar	**19,000**	lbs.	2.25	42,750		
	Concrete material; 4,500 psi	**222**	cy	170.00	37,740		
	Placing concrete	**222**	cy	120.00	26,640		
	Foundation walls						
	Formwork	**14,240**	sf	22.00	313,280		
	Re-bar	**35,600**	lbs.	2.25	80,100		
	Concrete material; 4,500 psi	**369**	cy	170.00	62,730		
	Placing concrete	**369**	cy	120.00	44,280		
	Form shelf	**1,780**	lf	12.00	21,360		
	Column Footings						
	Formwork	**6,248**	sf	18.00	112,464		
	Re-bar	**32,755**	lbs.	2.25	73,699		
	Concrete material	**396**	cy	170.00	67,320		
	Placing concrete	**396**	cy	120.00	47,520		
	Set anchor bolts grout plates	**121**	ea	165.00	19,965		
	Piers						
	Formwork	**2,272**	sf	24.00	54,528		
	Re-bar, 300 lbs/cy	**13,200**	lbs	2.25	29,700		
	Concrete material	**44**	cy	170.00	7,480		
	Placing concrete	**44**	cy	120.00	5,280		
	Elevator Pits; 12" walls/footing/slab	**1**	ea				
	Formwork	**480**	sf	26.00	12,480		
	Re-bar	**288**	lbs	2.25	648		
	Concrete material	**10**	cy	170.00	1,700		
	Placing concrete	**10**	cy	120.00	1,200		
	Slab, complete	**20**	cy	290.00	5,800		
	Sump pit premium	**1**	ea	1,500.00	1,500		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Bituminous dampproofing at brick shelf	**10,680**	sf	4.00	NR		
	Waterproofing at elevator pits	**340**	sf	18.00	6,120		
072100	*THERMAL INSULATION*						
	Insulation, 2"	**10,680**	sf	3.50	37,380		
312000	*EARTHWORK*						
	Strip footings						
	Excavation	**2,400**	cy	14.00	33,600		
	Remove off-site	**2,400**	cy	32.00	76,800		
	Backfill with imported material	**2,178**	cy	48.00	104,544		
	Spread footings						
	Excavation	**2,456**	cy	14.00	34,384		
	Remove off-site	**2,456**	cy	32.00	78,592		
	Backfill with imported material	**2,060**	cy	48.00	98,880		
	Miscellaneous						
	Gravel fill beneath footings, 12"	**561**	cy	48.00	26,928		
	Perimeter drain	**1,780**	lf	22.00	39,160		
	Allowance for dewatering	**1**	ls	30,000.00	30,000		
	SUBTOTAL					**1,704,952**	

Building Detail

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
A1020	**SPECIAL FOUNDATIONS**						
	No Work in this section						
	SUBTOTAL					-	
A1030	**LOWEST FLOOR CONSTRUCTION**						
033000	*CONCRETE*						
	New Slab on grade, 5" thick	*60,720*	*sf*				
	Vapor barrier	**60,720**	sf	1.50	91,080		
	Mesh reinforcing 15% lap	**69,828**	sf	1.85	129,182		
	Concrete - 5" thick	**992**	cy	170.00	168,640		
	Placing concrete	**992**	cy	120.00	119,040		
	Moisture mitigation admixture				NR		
	Finishing and curing concrete	**60,720**	sf	4.00	242,880		
	Control joints - saw cut	**60,720**	sf	0.10	6,072		
	Misc.						
	Equipment pads, allowance	**1**	ls	5,000.00	5,000		
	Ramp @ Music and Platform	**400**	sf	35.00	14,000		
072100	*THERMAL INSULATION*						
	Extruded polystyrene, 4"	**60,720**	sf	5.00	303,600		
312000	*EARTHWORK*						
	Slab on grade						
	Cut - over excavated 4' of fill beneath building outside existing footprint	**4,600**	cy	15.00	69,000		
	Fill - import structural - 25% swell	**7,125**	cy	60.00	427,500		
312000	*SOIL DISPOSAL - conversion factor 1.7 to tons*						
	Load excess soils for disposal	**4,600**	cy	2.50	11,500		
	Less than RCS-1 - clean non-regulated	**7,820**	tn	23.00	179,860		
	Compact existing sub-grade	**60,720**	sf	0.50	30,360		
	Compacted granular fill, 12"	**2,361**	cy	48.00	113,328		
	Underslab drainage	**60,720**	sf	3.00	182,160		
	Radon system	**60,720**	sf	3.00	182,160		
	Plumbing E&B	**60,720**	sf	1.50	91,080		
	SUBTOTAL					**2,366,442**	
	TOTAL - FOUNDATIONS						**$4,071,394**
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***	$5,983	per ton				
		804	TNS TOTAL FLOORS AND ROOF				
		16.2	/SF				
B1010	**FLOOR CONSTRUCTION**	38,844	sf				
		311	tns floor only				
		16.0	lb/sf				
033000	*CONCRETE*						
	Concrete on Metal Deck	*38,844*	*sf*				
	WWF reinforcement	**44,671**	sf	1.85	82,641		
	Concrete topping to metal decking, 6-1/2" thick; normal weight	**816**	cy	170.00	138,720		
	Place and finish concrete	**38,844**	sf	4.00	155,376		
	Rebar to decks	**11,653**	lbs	2.25	26,219		
051200	*STRUCTURAL STEEL FRAMING*						
	Structural steel, 16 psf	**311**	tns	5,000.00	1,555,000		
	Metal deck 3"	**38,844**	sf	7.00	271,908		

Building Detail

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
	Shear studs	**8,632**	ea	3.50	30,212		
	Beam penetrations, allow	**1**	ls	25,000.00	25,000		
078400	*FIREPROOFING/FIRESTOPPING*						
	Fireproofing at steel, 1 hour	**38,844**	sf	3.00	116,532		
	Intumescent fireproofing, allowance	**1**	ls	25,000.00	25,000		
	SUBTOTAL					**2,426,608**	
B1020	**ROOF CONSTRUCTION**	61,605	sf		-		
		493	tns				
		16.0	lb/sf				
033000	*CONCRETE*						
	WWF reinforcement	**5,750**	sf	1.85	10,638		
	Concrete fill to metal deck; normal weight, 6" thick	**97**	cy	170.00	16,490		
	Place and finish concrete	**5,000**	sf	4.00	20,000		
	Rebar to decks	**1,500**	lbs	2.25	3,375		
051200	*STRUCTURAL STEEL FRAMING*						
	Structural steel, 16 psf; typical	**493**	tns	5,000.00	2,465,000		
	Roof edge, bent plate, etc.				incl		
	Steel support at roof screen				NR		
	Shear studs	**1,111**	ea	3.50	3,889		
	Expansion joints	**1**	ls	15,000.00	15,000		
	Roof deck 'N' 3"	**55,210**	sf	7.00	386,470		
	Roof deck 'NA' 3" @ Gym	**6,395**	sf	13.00	83,135		
	Roof screen support, 10psf	**13**	tn	7,000.00	91,000		
078400	*FIREPROOFING/FIRESTOPPING*						
	Fireproofing at steel and deck, 1 hour	**55,210**	sf	3.50	193,235		
	SUBTOTAL					**3,288,232**	
	TOTAL - SUPERSTRUCTURE						**$5,714,840**
B20	***EXTERIOR CLOSURE***	*59,250*	*sf*				
B2010	**EXTERIOR WALLS**	49,630	sf				
042000	*MASONRY*						
	12" CMU	**2,500**	sf	45.00	112,500		
	Brick veneer, blended colors; including detailing	**36,720**	sf	54.00	1,982,880		
	Premium detailing	**1**	ls	100,000.00	100,000		
	Window perimeter returns	**2,800**	lf	50.00	140,000		
	6" mineral wool board insulation	**36,720**	sf	7.00	257,040		
	Miscellaneous flashings	**49,630**	sf	1.00	49,630		
	Staging to exterior wall	**59,250**	sf		incl		
	Mockup	**1**	ls	25,000.00	25,000		
055000	*MISC. METALS*						
	Brick relieving angle				w/ B10		
	Misc. metals at masonry including loose lintels	**39,220**	sf	1.50	58,830		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Air barrier	**49,630**	sf	9.00	446,670		
	Air barrier at soffits, overhangs	**885**	sf	9.00	7,965		
	Miscellaneous sealants to closure	**49,630**	sf	0.75	37,223		
	Air barrier/flashing at windows	**4,955**	lf	7.00	34,685		
072100	*THERMAL INSULATION*						
	6" Batt insulation in stud backup	**47,130**	sf	5.00	235,650		
	Insulation at window openings	**4,955**	lf	7.00	34,685		
076400	*CLADDING*						
	Phenolic panel w/ mounting system	**5,245**	sf	120.00	629,400		
	Aluminum composite panel w/ mounting system - change to corrugated metal	**7,665**	sf	80.00	613,200		
	Metal panel at soffits and overhang	**885**	sf	110.00	97,350		

CODE	*DESCRIPTION*	*QTY*	*UNIT*	*UNIT COST*	*COST*	*SUBTOTAL COST*	*TOTAL COST*
Building Detail							
	6" mineral wool board insulation	**13,795**	sf	7.00	96,565		
	Mockup	**1**	ls	50,000.00	50,000		
070002	*ROOFING AND FLASHING*						
	Membrane to back of parapet	**5,940**	sf	18.00	106,920		
092900	*GYPSUM BOARD ASSEMBLIES*						
	Framing and sheathing at canopies and overhang	**885**	sf	24.00	21,240		
	CMFS - 6"	**47,130**	sf	18.00	848,340		
	Gypsum Sheathing	**47,130**	sf	4.50	212,085		
	Drywall lining to interior face of stud backup	**47,130**	sf	5.00	235,650		
101400	*SIGNAGE*						
	Exterior signage, allow	**1**	ls	25,000.00	25,000		
108213	*EQUIPMENT ENCLOSURE*						
	Metal panel roof screen, assume acoustic - reduce by 50%	**2,500**	sf	120.00	300,000		
	SUBTOTAL					**6,758,508**	
B2020	**WINDOWS**	9,620	sf				
061000	*ROUGH CARPENTRY*						
	Wood blocking at openings	**4,955**	lf	12.00	59,460		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Backer rod & double sealant	**4,955**	lf	10.00	49,550		
080001	*METAL WINDOWS*						
	Aluminum framed windows, triple glazed	**4,920**	sf	155.00	762,600		
	Aluminum Curtainwall, triple glazed	**4,700**	sf	185.00	869,500		
	Curtainwall at gymnasium	**475**	sf	185.00	87,875		
	Premium for bullet resistant glazing				NR		
	Premium for School Guard glazing	**350**	sf	75.00	26,250		
	Sunshades				NR		
089000	*LOUVERS*						
	Louvers , allow	**50**	sf	85.00	4,250		
	SUBTOTAL					**1,859,485**	
B2030	**EXTERIOR DOORS**						
081110	*HOLLOW METAL*						
	Single leaf HM door and frame	**3**	ea	1,600.00	4,800		
083323	*OVERHEAD DOOR*						
	Coiled doors, motorized						
	8' x 8'	**1**	ea	6,400.00	6,400		
	10' x 10'	**1**	ea	10,000.00	10,000		
084410	*CURTAINWALL*						
	Glazed aluminum entrance door and hardware in CW frame; pair	**10**	pr	16,000.00	160,000		
	Premium for School Guard glazing	**8**	lvs	750.00	6,000		
087100	*DOOR HARDWARE*						
	Exterior door hardware	**3**	ea	1,400.00	4,200		
	Auto openers	**4**	lvs	5,000.00	20,000		
090007	*PAINTING*						
	Paint doors and frames	**3**	ea	250.00	750		
	SUBTOTAL					**212,150**	
	TOTAL - EXTERIOR CLOSURE						**$8,830,143**
B30	***ROOFING***						
B3010	**ROOF COVERINGS**	*61,605*	*SF*				

Building Detail

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
050001	*MISCELLANEOUS METALS*						
	Roof ladders	**3**	ea	5,000.00	15,000		
061000	*ROUGH CARPENTRY*						
	Blocking at roof edge	**9,680**	lf	10.00	96,800		
070002	*ROOFING AND FLASHING*	*61,605*	*total area*				
	TPO - 1/2" coverboard, minimum 10" polyiso insulation, AVB, thermal barrier board	**61,605**	sf	28.00	1,724,940		
	Premium for 10" insulation at Gym				NR		
	Miscellaneous Roofing						
	Miscellaneous flashings and sealants	**61,605**	sf	0.50	30,803		
	Walkway pads	**1**	ls	25,000.00	25,000		
	Roof Edge Cladding/Fascia						
	Parapet cap	**2,420**	lf	50.00	121,000		
072100	*THERMAL INSULATION*						
	Spray applied cellulose insulation 10" thick to underside of roof deck				NR		
	SUBTOTAL					**2,013,543**	
B3020	**ROOF OPENINGS**						
070002	*ROOFING AND FLASHING*						
	Roof hatch	**3**	ea	5,000.00	15,000		
	Elevator vent	**1**	ea	2,500.00	2,500		
	SUBTOTAL					**17,500**	
	TOTAL - ROOFING						**$2,031,043**
C10	***INTERIOR CONSTRUCTION***						
C1010	**PARTITIONS**						
040001	*MASONRY*						
	8"CMU; elevator shaft	**1,120**	sf	44.00	49,280		
	12" CMU, reinforced; Gymnasium	**1,470**	sf	45.00	66,150		
	Premium for 2 hour rated	**1,120**	sf	5.00	5,600		
050001	*MISCELLANEOUS METALS*						
	Seismic clips to CMU	**46**	ea	300.00	13,800		
	Misc. metals & lintels at CMU partitions	**2,590**	sf	2.00	5,180		
061000	*ROUGH CARPENTRY*						
	Wood blocking and misc. rough carpentry as req'd in partitions	**99,564**	gsf	1.00	99,564		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Miscellaneous sealants at partitions	**95,620**	sf	1.00	95,620		
078400	*FIRESTOPPING*						
	Firestopping at partitions	**99,564**	gsf	1.00	99,564		
080001	*METAL WINDOWS*						
	Interior Storefront at vestibules	**280**	sf	135.00	37,800		
	Interior Storefront at Media	**270**	sf	135.00	36,450		
	Premium for School Guard Glass, 4, allow @ Main entry	**155**	sf	50.00	7,750		
080002	*GLASS AND GLAZING*						
	Borrowed lights - classrooms (L1)	**288**	sf	50.00	14,400		
	Borrowed lights - small group	**400**	sf	50.00	20,000		
081113	*HOLLOW METAL DOORS & FRAMES*						
	Borrowed lights	**688**	sf	35.00	24,080		
092900	*GYPSUM BOARD ASSEMBLIES*	*95,620*	*sf*				
	Standard - 6" MS, 1 layer GWB b/s, insulation	**25,480**	sf	20.50	586,040		
	Corridor - 6" MS 1 layer GWB o/s, 2 layers GWB o/s	**32,900**	sf	23.00	756,700		
	Classroom demising - 6" MS, 2 layers GWB b/s, insulation	**22,960**	sf	25.50	585,480		

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
Building Detail							
	Chase	**2,590**	sf	34.50	89,355		
	Music	**6,720**	sf	25.50	171,360		
	Stairs	**2,870**	sf	30.00	86,100		
	Shaft wall	**2,100**	sf	22.50	47,250		
102200	*OPERABLE PARTITIONS*						
	Folding partition at classrooms, 9' high	**1,350**	gsf	120.00	162,000		
	Folding partition at platform, 10' high	**450**	gsf	120.00	54,000		
102266	*OPERABLE GLAZED PARTITIONS*						
	Folding glass door, 15' x 10'	**150**	sf	220.00	33,000		
	SUBTOTAL					**3,146,523**	
C1020	**INTERIOR DOORS**						
061000	*ROUGH CARPENTRY*						
	Wood blocking at openings	**3,316**	lf	4.00	13,264		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Backer rod & double sealant	**3,316**	lf	3.50	11,606		
080002	*GLASS AND GLAZING*						
	Sidelight	**526**	sf	50.00	26,300		
081113	*HOLLOW METAL DOORS & FRAMES*						
	Single	**136**	ea	450.00	61,200		
	Double	**23**	ea	600.00	13,800		
	Pocket door frame	**32**	ea	1,000.00	32,000		
	Type F	**6**	ea	600.00	3,600		
	Sidelight	**526**	sf	35.00	18,410		
081400	*WOOD DOORS*						
	Type F	**52**	ea	650.00	33,800		
	Type G, glazed panel	**50**	ea	850.00	42,500		
	Type G2, 2 glazed panel	**69**	ea	950.00	65,550		
	Type N, vision panel	**45**	ea	750.00	33,750		
	premium for acoustic gasketing	**1**	ls	2,500.00	2,500		
083110	*ACCESS DOORS AND FRAMES*						
	Access doors	**1**	ls	10,000.00	10,000		
083323	*OVERHEAD GRILLES*						
	OH - 13'-6" x 10'	**1**	ea	13,500.00	13,500		
	OHG 16' x 8'	**4**	ea	12,800.00	51,200		
084110	*ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS*						
	Aluminum door, dbl leaf full lite w/ hardware	**6**	pr	14,000.00	84,000		
087100	*DOOR HARDWARE*						
	Hardware; includes install	**214**	set	1,100.00	235,400		
	Auto openers	**4**	lvs	5,000.00	20,000		
090007	*PAINTING*						
	Paint door & frame	**214**	ea	200.00	42,800		
	SUBTOTAL					**815,180**	
C1030	**SPECIALTIES / MILLWORK**						
055000	*MISCELLANEOUS METALS*						
	Misc. metals as req'd throughout, allowance	**99,564**	gsf	2.50	248,910		
	Handrail at ramps, stainless steel	**128**	lf	150.00	19,200		
	Railing at open to below spaces; perforated metal grille panels	**110**	lf	500.00	55,000		
061000	*ROUGH CARPENTRY*						
	Backer panels in electrical closets	**1**	ls	10,000.00	10,000		
	Rough carpentry & blocking as req'd throughout, allowance	**99,564**	gsf	0.26	25,887		
064020	*INTERIOR ARCHITECTURAL WOODWORK*						

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
Building Detail							
	Window sills; solid surface	**1,239**	lf	60.00	74,340		
	Media						
	Circulation desk	**1**	ls	25,000.00	25,000		
	Bookcases	**1**	ls	20,000.00	20,000		
	Benches/nooks	**1**	ls	20,000.00	20,000		
	General Office Suite						
	Mail box cubbies on base cabinet	**15**	lf	300.00	4,500		
	Reception desk	**20**	lf	900.00	18,000		
	Classrooms						
	Cubbies, 4' x 6'-8"	**104**	units	2,800.00	291,200		
	Display cases	**4**	ea	5,000.00	20,000		
	Bathroom vanity; SSM	**50**	lf	325.00	16,250		
	Miscellaneous wood trim and millwork throughout	**99,564**	gsf	1.00	99,564		
070001	*WATERPROOFING, DAMPPROOFING AND CAULKING*						
	Sealants as req'd throughout, allowance	**99,564**	gsf	0.70	69,695		
101100	*VISUAL DISPLAY SURFACES*						
	Markerboard	**1,888**	sf	26.00	49,088		
	Tackboard	**1,408**	sf	24.00	33,792		
	Projection board	**1,312**	sf	30.00	39,360		
	Visual display rail	**1,280**	lf	25.00	32,000		
101400	*SIGNAGE*						
	Room signage	**191**	loc	175.00	33,425		
	Code and wayfinding signage	**99,564**	gsf	0.50	49,782		
	Dedication plaque	**1**	ea	1,500.00	1,500		
	Custom graphics	**99,564**	gsf	2.00	199,128		
102110	*TOILET COMPARTMENTS*						
	Toilet partition - standard	**20**	ea	1,900.00	38,000		
	Toilet partition - ADA	**8**	ea	2,500.00	20,000		
	Curtain at nurse	**1**	loc	2,000.00	2,000		
102800	*TOILET ACCESSORIES*						
	Gang bathrooms	**8**	rms	3,000.00	24,000		
	Individual bathrooms	**12**	rms	1,200.00	14,400		
	Custodial closet accessories	**2**	rms	300.00	600		
102600	*CORNER GUARDS*						
	Corner guards	**1**	ls	5,000.00	5,000		
104400	*FIRE PROTECTION SPECIALTIES*						
	Fire extinguisher cabinets	**33**	ea	350.00	11,550		
	AED cabinets - allowance	**2**	ea	450.00	900		
105000	*LOCKERS*						
	Staff lockers at kitchen, double tier	**8**	ope	320.00	2,560		
	SUBTOTAL					**1,574,631**	
	TOTAL - INTERIOR CONSTRUCTION						**$5,536,334**
C20	***STAIRCASES***						
C2010	**STAIR CONSTRUCTION**						
033000	*CONCRETE*						
	Concrete to stairs	**4**	flt	4,000.00	16,000		
055000	*MISCELLANEOUS METALS*						
	Stair A, main corridor	**2**	flt	75,000.00	150,000		
	Stairs B & C, egress stairs	**2**	flt	60,000.00	120,000		
	SUBTOTAL					**286,000**	
C2020	**STAIR FINISHES**						

Building Detail

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
090005	*RESILIENT FLOORS*						
	Rubber tread/riser	**648**	lf	22.00	14,256		
	Raised rubber flooring	**265**	sf	25.00	6,625		
	Steps at stage; wood riser and tread	**90**	lf	120.00	10,800		
090007	*PAINTING*						
	Paint to stairs	**4**	flt	3,500.00	14,000		
	SUBTOTAL					**45,681**	
	TOTAL - STAIRCASES						**$331,681**
C30	***INTERIOR FINISHES***						
C3010	**WALL FINISHES**						
066400	*FRP PANELING*						
	Kitchen & Laundry	**1,520**	sf	18.00	27,360		
	Janitor's closets	**800**	sf	18.00	14,400		
	Trash & Recycling	**400**	sf	18.00	7,200		
090002	*TILE*						
	Main corridor	**2,480**	sf	34.00	84,320		
	Bathroom wet wall	**2,745**	sf	34.00	93,330		
	Backsplash	**1,088**	sf	38.00	41,344		
090007	*PAINTING*						
	Paint to GWB	**212,643**	sf	0.90	191,379		
	Paint to CMU	**1,470**	sf	1.25	1,838		
098400	*ACOUSTIC ROOM COMPONENTS*						
	AWP-1; Wood fiber acoustic wall panel						
	Gymnasium, assume 6' high	**1,000**	sf	28.00	28,000		
	AWP-2; Tackable fabric wrapped acoustical wall panel						
	Media, assume 4' high	**1,080**	sf	45.00	48,600		
	AWP-3; Fabric wrapped acoustical wall panel						
	Music large group, assume 4' high	**700**	sf	45.00	31,500		
	Music ensemble, assume 4' high	**960**	sf	45.00	43,200		
	SUBTOTAL					**612,471**	
C3020	**FLOOR FINISHES**						
003300	*CONCRETE FINISHES*						
	Sealed Concrete	**4,720**	sf	2.50	11,800		
090005	*RESILIENT FLOORS*						
	Resilient tile flooring - linoleum	**63,930**	sf	6.75	431,528		
	Athletic resilient flooring	**1,345**	sf	20.00	26,900		
	Rubber base	**12,565**	lf	4.00	50,260		
096400	*WOOD FLOORING*						
	Wood athletic flooring at Gym	**5,795**	sf	30.00	173,850		
	Ventilating cove base	**310**	lf	10.00	3,100		
	Stage resilient flooring	**1,025**	sf	25.00	25,625		
	Moisture mitigation	**5,795**	sf	4.00	23,180		
096700	*EPOXY FLOORING*						
	Poured epoxy w/ integral base - toilet rooms	**2,995**	sf	26.00	77,870		
	Poured epoxy w/ integral base - kitchen	**1,410**	sf	26.00	36,660		
096820	*CARPETING+ WOM*						
	Carpet tile	**5,055**	sf	7.00	35,385		
	Moisture mitigation	**5,055**	sf	4.00	20,220		
	Walk off mat at vestibules	**660**	sf	55.00	36,300		
	SUBTOTAL					**952,678**	
C3030	**CEILING FINISHES**						
090003	*ACOUSTICAL TILE*						

Building Detail

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
	ACT 1 - 2x2	**72,500**	sf	6.00	435,000		
	ACT 2 - 2 x 2; Health zone in kitchen	**1,015**	sf	8.00	8,120		
	Premium for ACT 3, Pyramids in Music room - assume 25%	**900**	sf	40.00	36,000		
	Premium for Learning Commons, Cafeteria, Main corridors, Media	**1**	ls	150,000.00	150,000		
090007	*PAINTING*						
	Paint to GWB ceilings	**700**	sf	1.00	700		
	Paint all exposed structure, deck & mep/fp systems to be painted	**12,650**	sf	2.50	31,625		
092900	*GYPSUM BOARD ASSEMBLIES*						
	GWB ceiling (GWB-1)	**700**	sf	18.00	12,600		
	GWB soffits throughout	**99,564**	gsf	1.00	99,564		
098316	*ACOUSTIC SPRAY*						
	K13 - Music rooms, cafeteria	**9,800**	sf	9.00	88,200		
	SUBTOTAL					**861,809**	
	TOTAL - INTERIOR FINISHES						**$2,426,958**
D10	***CONVEYING SYSTEMS***						
D1010	**ELEVATOR**						
	Passenger elevator, 2 stop, 1 opening; 3500 lbs; 150 fpm	**1**	ea	170,000.00	170,000		
	Pit ladders	**1**	ea	1,620.00	1,620		
	Sill angles	**1**	ea	3,000.00	3,000		
	SUBTOTAL					**174,620**	
	TOTAL - CONVEYING SYSTEMS						**$174,620**
D20	***PLUMBING***						
D2000	**PLUMBING, GENERALLY**						
	Equipment						
	Plumbing service entrance incl. meter and RPZ backflow preventer, 4"	**1**	ls	17,000.00	17,000		
	Domestic water heater (kitchen), 36 KW / 500 gal.	**1**	ea	50,000.00	50,000		
	Domestic water heater (toilet cores, 9 KW / 30 gal.	**2**	ea	2,500.00	5,000		
	Domestic water heater (point-of-use), 8.3 KW	**52**	ea	1,200.00	62,400		
	Exterior grease trap; E+B in site	**1**	ea	20,000.00	20,000		
	Recirc. pump	**2**	ea	3,000.00	6,000		
	Mixing valve station	**3**	ea	6,500.00	19,500		
	Expansion tank	**3**	ea	2,100.00	6,300		
	Domestic water booster system - excluded						
	Elevator sump pump with oil interceptor	**1**	ea	12,500.00	12,500		
	Main kitchen plumbing rough-in	**1**	ls	30,000.00	30,000		
	Miscellaneous Plumbing equipment	**99,564**	gsf	0.45	44,804		
	Plumbing Fixtures & Specialties						
	Water closet, wall/manual flush	**43**	ea	1,625.00	69,875		
	Lavatory, wall/metering faucet	**15**	ea	1,550.00	23,250		
	Lavatory, counter/metering faucet	**20**	ea	1,350.00	27,000		
	Mop sink	**5**	ea	1,750.00	8,750		
	Sink, general	**10**	ea	1,400.00	14,000		
	Sink, classroom	**64**	ea	1,400.00	89,600		
	Sink, art classroom	**1**	ea	1,850.00	1,850		
	Sink, art classroom (3-bay)	**1**	ea	3,850.00	3,850		
	Drinking fountain with bottle filler	**5**	ea	3,500.00	17,500		
	Hose bibb	**5**	ea	200.00	1,000		
	Wall hydrant	**10**	ea	350.00	3,500		
	Floor drain	**12**	ea	1,100.00	13,200		
	Miscellaneous plumbing fixtures and specialties	**99,564**	gsf	0.40	39,826		
	Domestic Water Piping						
	Domestic water pipe with fittings & hangers	**99,564**	gsf	6.00	597,384		
	Domestic water pipe insulation	**99,564**	gsf	0.85	84,629		
	Sanitary Waste & Vent Piping						
	Sanitary waste pipe with fittings & hangers	**99,564**	gsf	5.65	562,537		

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
Building Detail							
	Storm Drainage						
	Roof drains, storm water piping and insulation	**99,564**	gsf	3.75	373,365		
	Miscellaneous						
	Project management and coordination	**1**	ls	85,000.00	85,000		
	Coring, sleeves & firestopping	**1**	ls	3,500.00	3,500		
	Testing and sterilization	**1**	ls	2,000.00	2,000		
	Fees & permits				Waived		
	SUBTOTAL					**2,295,120**	
	TOTAL - PLUMBING						**$2,295,120**
D30	***HVAC***						
D3000	**HVAC, GENERALLY**						
	Geothermal Well Field						
	Closed loop well field, complete; 60 x 650 ft deep				w/G30		
	HVAC Equipment						
	Modular heat pump chillers, water cooled, (7) 50-ton modules	**350**	ton	2,800.00	980,000		
	Groundwater loop pump w/VFD	**2**	ea	38,500.00	77,000		
	Chilled water distribution pump w/VFD	**2**	ea	30,000.00	60,000		
	Compensated chilled water distribution pump w/VFD	**2**	ea	30,000.00	60,000		
	Hot water distribution pump w/VFD	**2**	ea	30,000.00	60,000		
	Plate & frame heat exchanger	**1**	ea	35,000.00	35,000		
	Hydronic specialties (AS, ET, glycol and chemicals)	**1**	ls	35,000.00	35,000		
	Perimeter heating/cooling and misc. HVAC equipment	**99,564**	gsf	3.40	338,518		
	AHU-1 (HW/CHW)	**8,000**	cfm	25.00	200,000		
	AHU-2 (HW/CHW)	**8,000**	cfm	25.00	200,000		
	AHU-3 (HW/CHW)	**8,000**	cfm	25.00	200,000		
	AHU-4 (HW/CHW)	**8,000**	cfm	25.00	200,000		
	AHU-5 (HW/CHW)	**6,500**	cfm	25.00	162,500		
	AHU-6 (HW/CHW)	**12,000**	cfm	25.00	300,000		
	AHU-7 (HW/CHW)	**6,500**	cfm	25.00	162,500		
	MAU-1 (HW/CHW)	**2,500**	cfm	25.00	62,500		
	Electric, IDF Rooms, Ductless Splits	**2**	ea	13,000.00	26,000		
	Exhaust fans	**1**	ls	21,500.00	21,500		
	Sheet Metal & Accessories						
	Ductwork and accessories	**99,564**	gsf	19.00	1,891,716		
	Registers, grilles & diffusers	**99,564**	gsf	1.70	169,259		
	VAV terminal unit	**100**	ea	1,275.00	127,500		
	Duct accessories	**99,564**	gsf	0.85	84,629		
	Hydronic Piping						
	Hot water distribution piping (perimeter heat and AHUs)	**99,564**	gsf	7.70	766,643		
	Chilled water distribution piping (AHUs)	**99,564**	gsf	4.25	423,147		
	Refrigerant Piping						
	Split system refrigerant piping	**2**	ea	6,500.00	13,000		
	Condensate Drain Piping						
	Condensate piping with fittings & hangers	**99,564**	gsf	1.70	169,259		
	Insulation						
	Duct insulation	**60,000**	sf	5.50	330,000		
	Pipe insulation	**99,564**	gsf	3.50	348,474		
	Automatic Temperature Controls						
	HVAC controls, DDC	**99,564**	gsf	8.50	846,294		
	Balancing						
	Balancing, Testing, Commissioning	**99,564**	gsf	0.85	84,629		
	Miscellaneous						
	Project management, coordination and job conditions	**1**	ls	425,000.00	425,000		
	SUBTOTAL					**8,860,068**	
	TOTAL - HVAC						**$8,860,068**
D40	***FIRE PROTECTION***						
D4000	**FIRE PROTECTION, GENERALLY**						
	Equipment						
	6" Fire water service entrance	**1**	ea	7,000.00	7,000		
	6" Double check valve assembly	**1**	ea	7,000.00	7,000		

Building Detail

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
	6" Wet alarm check valve assembly	1	ea	4,800.00	4,800		
	Electric bell	1	ea	550.00	550		
	Fire department connection	1	ea	1,800.00	1,800		
	Fire pump, jockey pump and controller, allow	1	ls	100,000.00	100,000		
	Special fire suppression system (dry pipe, preaction, clean agent) - excluded				NIC		
	Zone control valve stations	2	ea	2,400.00	4,800		
	Fire department valve in cabinet	4	ea	1,050.00	4,200		
	Sprinkler Heads & Piping						
	Main piping and standpipe	1,000	lf	70.00	70,000		
	Sprinkler heads and distribution piping	99,564	gsf	6.35	632,231		
	Miscellaneous						
	Project management and coordination	1	ls	30,000.00	30,000		
	Coring, cutting, sleeves & sealing	1	ls	8,500.00	8,500		
	Fees & permits				waived		
	SUBTOTAL					**870,881**	
	TOTAL - FIRE PROTECTION						**$870,881**
D50	***ELECTRICAL***						
D5010	**SERVICE & DISTRIBUTION**						
	Gear & Distribution						
	Normal Power						
	2500AF/2000AT 120/208V Switchboard	1	ls	135,000.00	135,000		
	Associated panelboards and feeders	99,564	sf	6.50	647,166		
	Generator Power						
	400KW diesel generator with SA/WP cover	1	ls	155,000.00	155,000		
	Quick connect Storm switch	1	ls	21,500.00	21,500		
	800A ATS	1	ls	12,500.00	12,500		
	150A ATS isolation by-pass	1	ls	14,500.00	14,500		
	Annunciator	1	ea	2,500.00	2,500		
	Fuel testing	1	ea	8,500.00	8,500		
	Rigging	1	ea	8,500.00	8,500		
	Associated panelboards and feeders	99,564	sf	1.75	174,237		
	UPS						
	24KW UPS	1	ea	27,000.00	27,000		
	100A Disconnect switch	1	ea	1,250.00	1,250		
	100A panelboard	1	ea	2,300.00	2,300		
	PV						
	Rough-in with empty conduits and backboxes	1	ls	5,000.00	5,000		
	Equipment Wiring feeds and connections						
	Equipment wiring	99,564	sf	0.65	64,717		
	Fire pump feed and connection	1	ea	17,000.00	17,000		
	Jockey pump feed and connection	1	ea	1,500.00	1,500		
	Elevator feed and connection	1	ea	5,000.00	5,000		
	Elevator cab power feed and connection	1	ea	1,250.00	1,250		
	Sump Pump feed and connection	1	ea	1,250.00	1,250		
	Geothermal pumps feed and connection	3	ea	3,500.00	10,500		
	Modular heat pump chillers, water cooled, (7) 50-ton modules feed and connections	7	ea	2,500.00	17,500		
	MAU feed and connection	1	ea	3,500.00	3,500		
	AHU feed and connection	7	ea	3,500.00	24,500		
	Split unit feed and connection	2	ea	2,150.00	4,300		
	Pump feed and connection	8	ea	1,500.00	12,000		
	WH feed and connection	55	ea	850.00	46,750		
	DDC feed and connection	1	ea	500.00	500		
	VFD feed and connection	8	ea	850.00	6,800		
	Kitchen / Servery feed and connections	1	ls	25,000.00	25,000		
	Gymnasium feed and connections	1	ls	12,000.00	12,000		
	Gymnasium scoreboard	1	ls	10,000.00	10,000		
	SUBTOTAL					$ 1,479,020	
D5020	**LIGHTING & POWER**						
	Lighting fixtures						
	LED light fixtures and installation	99,564	sf	8.00	796,512		

Building Detail

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
	Exit Lighting	**99,564**	sf	0.50	49,782		
	Exterior building lighting	**1**	ls	15,000.00	15,000		
	Lighting Control						
	Lighting Controls System	**99,564**	sf	3.00	298,692		
	Lighting circuitry						
	Lighting circuitry	**99,564**	sf	3.00	298,692		
	Branch devices						
	Branch devices	**99,564**	sf	0.50	49,782		
	Branch circuitry						
	Branch circuitry	**99,564**	sf	3.00	298,692		
	SUBTOTAL					$ 1,807,152	
D5030	**COMMUNICATION & SECURITY SYSTEMS**						
	Communications						
	MDF/IDF closets	**1**	loc	12,500.00	12,500		
	Devices & cabling	**99,564**	sf	3.50	348,474		
	Rough-in	**99,564**	sf	0.50	49,782		
	Master Clock \ PA System						
	Head end	**1**	ls	25,000.00	25,000		
	Devices & cabling	**99,564**	sf	0.85	84,629		
	Rough-in	**99,564**	sf	0.25	24,891		
	Audio Visual System						
	Rough-in with conduit stubs and backboxes	**99,564**	sf	0.20	19,913		
	Speech Amplification						
	Speech Amplification	**99,564**	sf	0.70	69,695		
	Digital Signage						
	Digital Signage, empty conduits and back boxes only	**99,564**	sf	0.25	24,891		
	Cafetorium Stage Lighting and dimming system						
	Cafetorium Stage Lighting and dimming system (allow)	**1**	ls	75,000.00	75,000		
	Sound System						
	Gymnasium sound system, allow	**1**	ls	40,000.00	40,000		
	Cafetorium sound system, allow	**1**	ls	40,000.00	40,000		
	Media Center sound system, allow	**1**	ls	25,000.00	25,000		
	Two Way Communications						
	Two Way Communications	**1**	ls	20,000.00	20,000		
	Bi-directional Amplification System						
	BDA/DAS allowance	**99,564**	sf	0.70	69,695		
	Fire Alarm						
	New Control panel with mass notification	**1**	ls	25,000.00	25,000		
	Annunciator	**1**	ea	2,500.00	2,500		
	Beacon	**1**	ea	200.00	200		
	Knox box	**1**	ea	300.00	300		
	Radio master box	**1**	ea	8,000.00	8,000		
	Devices and cabling	**99,564**	sf	2.85	283,757		
	Mass Notification devices	**99,564**	sf	0.85	84,629		
	Test and programming	**1**	ls	7,500.00	7,500		
	Security System						
	Security system	**99,564**	sf	4.00	398,256		
	SUBTOTAL					$ 1,739,612	
D5040	**OTHER ELECTRICAL SYSTEMS**						
	Common Work Result for Electrical						
	Lightning protection system	**1**	ls	70,000.00	70,000		
	Grounding and Bonding	**1**	ls	20,000.00	20,000		
	Temp power and lights	**1**	ls	100,000.00	100,000		
	Seismic	**1**	ls	10,000.00	10,000		
	Coordination, BIM	**1**	ls	250,000.00	250,000		
	Fees & Permits				Waived		
	SUBTOTAL					$450,000	
	TOTAL - ELECTRICAL						**$5,475,784**

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
Building Detail							
E10	***EQUIPMENT***						
114000	*FOODSERVICE EQUIPMENT*						
	Food service equipment budget, 5/8/24	**1**	ls	450,950.00	450,950		
110000	*EQUIPMENT*						
	Refrigerator	**4**	ea	2,200.00	8,800		
	Refrigerator, UC	**1**	ea	1,100.00	1,100		
	Microwaves	**4**	ea	650.00	2,600		
	Ice maker	**1**	ea	1,000.00	1,000		
	Art						
	Kiln	**1**	ea	5,000.00	5,000		
	Gym						
	Wall pads - gym	**2,135**	sf	30.00	64,050		
	Basketball backstops	**6**	ea	14,000.00	84,000		
	Volleyball sleeves	**1**	ls	2,500.00	2,500		
	Score board in Gym	**1**	loc	20,000.00	20,000		
	Divider curtain @ gym	**1**	ea	30,000.00	30,000		
	Wall pads - Health & Wellness				N/A		
	Basketball backstops - Health & Wellness				N/A		
	Bleacher -motorized telescoping				FF&E		
115213	*PROJECTION SCREENS*						
	Projection screens	**2**	ea	10,000.00	20,000		
	Projection screens at Learning Commons	**4**	ea	3,000.00	12,000		
	Short throw projectors				NIC		
116100	*THEATRICAL EQUIPMENT*						
	Rigging equipment, allowance - Cafeteria	**1**	loc	35,000.00	35,000		
	SUBTOTAL					**737,000**	
	TOTAL - EQUIPMENT						**$737,000**
E20	***FURNISHINGS***						
E2010	**FIXED FURNISHINGS**						
122100	*WINDOW TREATMENT*						
	Window treatment, roller shades @ Exterior windows	**4,920**	sf	9.00	44,280		
	Motorized shades, allow	**1**	ls	35,000.00	35,000		
	Manual blackout shades at interior sidelights and storefront	**1,214**	sf	8.00	9,712		
123000	*CASEWORK*						
	Classroom	**32**	rms		-		
	Base cabinet, SSM countertop	**448**	lf	525.00	235,200		
	Wall cabinet	**448**	lf	300.00	134,400		
	Art	**1**	rms		-		
	Base cabinet, Epoxy countertop	**14**	lf	525.00	7,350		
	Wall cabinet	**14**	lf	300.00	4,200		
	Exam	**1**	rms		-		
	Base cabinet, SSM countertop	**22**	lf	525.00	11,550		
	Wall cabinet	**13**	lf	300.00	3,900		
	Learning Commons	**4**	rms		-		
	Work counter, SSM	**60**	lf	275.00	16,500		
	Miscellaneous casework	**99,564**	gsf	6.00	597,384		
	SUBTOTAL					**1,099,476**	
E2020	**MOVABLE FURNISHINGS**						
	All movable furnishings to be provided and installed by owner				NIC		
	SUBTOTAL					**-**	
	TOTAL - FURNISHINGS						**$1,099,476**
F10	***SPECIAL CONSTRUCTION***						

CODE	*DESCRIPTION*	*QTY*	*UNIT*	*UNIT COST*	*COST*	*SUBTOTAL COST*	*TOTAL COST*
Building Detail							
	F1000 SPECIAL CONSTRUCTION						
	No items in this section						
	SUBTOTAL					-	
	TOTAL - SPECIAL CONSTRUCTION						
	F20 SELECTIVE BUILDING DEMOLITION						
	F2010 BUILDING ELEMENTS DEMOLITION						
	See summary						
	SUBTOTAL					-	
	F2020 HAZARDOUS COMPONENTS ABATEMENT						
	See summary						
	SUBTOTAL					-	
	TOTAL - SELECTIVE BUILDING DEMOLITION						

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
Site Detail							
G10	*SITE PREPARATION*						
G1010	**SITE CLEARING**						
311000	*GENERAL CONDITIONS*						
	6' high site construction fence	**2,500**	lf	30.00	75,000		
	6' high site construction fence sliding gate	**2**	loc	10,000.00	20,000		
	Site construction entrance and removal/restoration	**2**	loc	12,000.00	24,000		
	Site construction fence maintenance	**2,500**	lf	8.00	20,000		
	Mobilization & Demobilization	**1**	ea	80,000.00	80,000		
	Temp laydown areas	**1**	ls	10,000.00	10,000		
	Construction offices area prep - allowance	**1**	ls	10,000.00	10,000		
	Temporary signs	**1**	ls	20,000.00	20,000		
	Wheel wash rack	**1**	ls	20,000.00	20,000		
	Engineering/layout	**1**	ls	50,000.00	50,000		
	As-builts	**1**	ls	5,000.00	5,000		
	Concrete pump staging areas	**2**	loc	10,000.00	20,000		
	Concrete washout area	**1**	ea	2,500.00	2,500		
	Snow removal - allowance	**1**	ls		GR's		
	Winter conditions - allowance	**1**	ls		GR's		
	Police details	**1**	ls		GR's		
	Site security	**1**	ls		GR's		
	Job site construction trailer	**1**	ls		GR's		
	Temp utilities for job trailer	**1**	ls		GR's		
311000	*SITE DEMOLITION AND RELOCATIONS*						
	Demolish existing paving	**118,000**	sf	1.00	118,000		
	Miscellaneous site demolition; furnishings, concrete pads, signs etc.	**1**	ls	25,000.00	25,000		
311000	*UTILITY DEMOLITION*						
	Demolish existing utilities	**1**	ls	50,000.00	50,000		
	Cut/cap utility lines	**1**	ls	25,000.00	25,000		
	Pump and remove septic tanks	**1**	ls	10,000.00	10,000		
	Pump and remove pump chamber	**1**	ls	5,000.00	5,000		
	Remove and fill leach field	**1**	ls	25,000.00	25,000		
	Asbestos water main removal allowance	**1**	ls	50,000.00	50,000		
311000	*ROADWAY WORK*						
	Sawcut	**250**	lf	8.25	2,063		
	Remove pavement	**3,400**	sf	3.50	11,900		
	Temp pavement patching	**3,400**	sf	8.00	27,200		
	Steel plates	**1**	ls	2,500.00	2,500		
	Police details	**10**	dy	850.00	8,500		
	Permanent pavement patch	**3,400**	sf	10.00	34,000		
311000	*VEGETATION & TOPSOIL MANAGEMENT*						
	Clear and grub	**1**	ls	10,000.00	10,000		
	Tree clearing - increased due to leach field drainage area increase	**1**	ls	25,000.00	25,000		
	Vegetation protection fencing	**1,000**	lf	25.00	25,000		
	Strip + dispose topsoil	**6,400**	cy	11.50	73,600		
312000	*SOIL DISPOSAL - conversion factor 1.7 to tons*						
	Load excess soils for disposal	**6,400**	cy	2.50	16,000		
	Clean non-regulated	**10,880**	tn	10.00	108,800		
	Street sweeping allowance during hauling	**1**	ls	10,000.00	10,000		
312000	*EROSION & SEDIMENT CONTROL*						
	Silt Fence; installation and removal	**2,500**	lf	20.00	50,000		
	Silt Sacks; installation and removal	**19**	ea	250.00	4,750		
	Groundwater management	**1**	ls	125,000.00	125,000		
	Street sweeping & dust control allowance	**1**	ls	25,000.00	25,000		
	Erosion Control monitoring & maintenance	**1**	ls	35,000.00	35,000		
	SUBTOTAL					1,258,813	
312000	*SITE EARTHWORK*						
	Site cut to design subgrade	*4,625*	*cy*				
	Cut	**4,625**	cy	10.00	46,250		
312000	*SOIL DISPOSAL - conversion factor 1.7 to tons*						
	Load excess soils for disposal	**4,625**	cy	2.50	11,563		
	Less than RCS-1 - clean non-regulated	**7,863**	tn	23.00	180,849		
	Site fill to design subgrade	*10,000*	*cy*				

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
Site Detail							
	Fill - imported; swell 25%	**12,500**	cy	48.00	600,000		
	Allowance to removal/replacement of swamp deposits B101 indicates swamp deposits down to 11' from existing grade	**500**	cy	100.00	50,000		
312000	*GEOTHERMAL*						
	Support of geothermal	**60**	ea	3,500.00	210,000		
312000	*ROCK REMOVAL*						
	Rock removal allowance	**1**	ls	150,000.00	150,000		
312000	*ESTABLISHING GRADE*						
	Sub grade establishment	**343,000**	sf	0.25	85,750		
	Fine grading throughout the site	**343,000**	sf	0.35	120,050		
312000	*HAZARDOUS MATERIALS*						
	UST removal allowance	**1**	ls	50,000.00	50,000		
	SUBTOTAL					1,504,462	
	TOTAL - SITE PREPARATION						**$2,763,275**
G20	***SITE IMPROVEMENTS***						
G2010	**ROADWAYS**						
321000	***ROADWAYS AND PARKING LOTS***						
	Asphalt Paving; parking lots and roadway	*104,200*	*sf*				
	gravel base; 18" thick	**5,789**	cy	55.00	318,395		
	asphalt top; 2" thick	**1,331**	tns	225.00	299,475		
	asphalt binder; 2.5" thick	**1,658**	tns	180.00	298,440		
	Overlay milled access roadway	*30,000*	*sf*				
	2" Top Course	**376**	tn	225.00	84,600		
	Mill (Cold Plane) Existing Roadways	**3,333**	sy	13.00	43,329		
	Sweeping and tack	**1**	ls	25,000.00	25,000		
	Roadway markings allowance	**1**	ls	15,000.00	15,000		
320000	*CURBING*						
	Granite curb - 50%	**4,526**	lf	65.00	294,190		
	Concrete curb - 50%	**1,974**	lf	40.00	78,960		
	ADA Curb cuts	**10**	ea	850.00	8,500		
320000	*ROAD MARKINGS AND SIGNS*						
	Parking spot	**128**	ea	85.00	10,880		
	Parking spot ADA	**10**	ea	250.00	2,500		
	Sign allowance	**1**	ls	25,000.00	25,000		
	Playground pavement markings allowance	**1**	ls	25,000.00	25,000		
	Pavement markings allowance	**1**	ls	20,000.00	20,000		
	Crosswalk hatching	**2**	loc	2,500.00	5,000		
	SUBTOTAL					1,554,269	
321000	***PEDESTRIAN PAVING***						
	Concrete sidewalks	*19,200*	*sf*				
	gravel base; 8" thick	**476**	cy	55.00	26,180		
	Broom finish concrete paving; 6" thick	**19,200**	sf	15.00	288,000		
	Concrete pavers on concrete slabs	*5,510*	*sf*				
	gravel base; 8" thick	**137**	cy	55.00	7,535		
	structural soils; 36" thick	**612**	cy	100.00	61,200		
	Concrete slab paving; 4" thick	**5,510**	sf	13.00	71,630		
	Concrete pavers	**5,510**	sf	30.00	165,300		
	Geotextiles	**5,510**	sf	0.55	3,031		
320000	*STAIRS AND RAMPS*						
	Allowance for ramps/stairs	**1**	ls	100,000.00	100,000		
	SUBTOTAL					722,876	
323000	***SITE IMPROVEMENTS***						
	SITE FURNISHINGS						

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
Site Detail							
	Bollards - concrete filled steel	**12**	ea	900.00	10,800		
	Bollards - stainless steel	**13**	ea	2,500.00	32,500		
	School sign	**1**	ea	25,000.00	25,000		
	Bike racks	**7**	ea	1,000.00	7,000		
	Flagpole - 35' Ht.	**1**	ea	7,000.00	7,000		
	Flagpole foundation	**1**	ea	4,500.00	4,500		
	Trash and Recycling receptacles	**10**	ea	2,500.00	25,000		
	Benches	**14**	ea	3,500.00	49,000		
	Picnic tables	**16**	ea	4,500.00	72,000		
	Movable tables	**7**	ea	2,000.00	14,000		
	Misc. site improvements	**1**	ls	75,000.00	75,000		
	Granite seatwalls	**100**	lf	2,500.00	250,000		
	Reduce planting and seating at center courtyard	**(1)**	ls	50,000.00	(50,000)		
	PLAY AREAS						
	Playgrounds	18,000	*sf*				
	gravel base; 12" thick	**667**	cy	55.00	36,685		
	Drainage allowance	**18,000**	sf	5.00	90,000		
	Turf area with pad	**18,000**	sf	25.00	450,000		
	Berm construction allowance - includes structural soil - shape/compact	**278**	cy	150.00	41,700		
	Flush transition curb	**800**	lf	65.00	52,000		
	Allowance for play equipment				NR		
	FENCING						
	4' Ht - Chain link fence - existing playground - in exist wall	**435**	lf	85.00	36,975		
	4' Ht - Chain link fence - new playground - set in mow strip	**135**	lf	125.00	16,875		
	4' Ht - Chain link single gate	**2**	ea	2,000.00	4,000		
	Misc. fencing allowance	**1**	ls	100,000.00	100,000		
	Vehicular gate	**2**	ea	8,500.00	17,000		
	SUBTOTAL					1,367,035	
	Landscaping						
329900	*TOPSOIL*						
	Topsoil - imported 6" thick; swell 25%	**3,426**	cy	65.00	222,690		
	Soil and mulch at planting areas; 12" thick	**148**	cy	80.00	11,840		
329900	*LAWN AND SEED - included size of septic field in seeding*	*148,000*	*sf*				
	Topsoil - imported 6" thick	**2,741**	cy		incl. above		
	Scarify subgrade	**148,000**	sf	0.25	37,000		
	Power rake and hydroseed disturbed areas	**148,000**	sf	0.35	51,800		
	Landscape curbing - granite	**910**	lf	150.00	136,500		
	Boulders	**25**	ea	500.00	12,500		
329900	*TREES*						
	Deciduous trees	**66**	ea	2,500.00	165,000		
329900	*SHRUBS*						
	Shrubs - #5 container	**96**	ea	75.00	7,200		
329900	*GROUNDCOVERS - GRASSES/PERENNIALS/VINES*						
	Groundcovers - #3 container	**61**	ea	35.00	2,135		
329900	*MAINTENANCE*						
	1-yr plant maintenance	**1**	ls	17,433.50	17,434		
	1-yr lawn maintenance	**1**	ls	10,000.00	10,000		
329900	*IRRIGATION*						
	Allowance for irrigation in lawn areas	**148,000**	sf	1.50	222,000		
	Allowance for irrigation in plant beds	**4,000**	sf	5.00	20,000		
	SUBTOTAL					916,099	
	TOTAL - SITE IMPROVEMENTS						**$4,560,279**
G30	***SITE MECHANICALS***						
G3010	**WATER SUPPLY**						
210000	*FIRE PROTECTION*						
	8" CLDI	**880**	lf	67.50	59,400		
	6" CLDI	**20**	lf	49.64	993		

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
Site Detail							
	Fire department connection	**1**	ea	2,500.00	2,500		
	Gate valve	**12**	ea	1,850.00	22,200		
	Fire hydrant	**1**	ea	6,500.00	6,500		
	Thrust blocks	**13**	ea	500.00	6,500		
331000	*WATER UTILITIES*						
	4" CLDI	**100**	lf	67.50	6,750		
	2" Irrigation - allowance	**250**	lf	28.00	7,000		
331000	*CONNECTIONS*						
	Connect to existing water line; 6/8/10 (in roadway)	**2**	ea	20,000.00	40,000		
312000	*EXCAVATION & BACKFILL*	*1,250*	*lf*				
	DI gravity piping excavation	**1,111**	cy	46.75	51,939		
	Trench bedding	**250**	cy	38.50	9,625		
	Pressure test & chlorinate	**1,250**	lf	5.00	6,250		
	Allowance for temporary water service	**1**	ea	25,000.00	25,000		
	Allowance for temporary support of existing utilities	**1**	ea	15,000.00	NR		
	SUBTOTAL					244,657	
G3020	**SANITARY SEWER**						
333000	*SANITARY SEWER*						
	6" PVC	**420**	lf	21.16	8,887		
	4" PVC	**830**	lf	18.50	15,355		
	SMH - 0-5' deep	**3**	ea	4,800.00	14,400		
	Septic drain field	**21,515**	sf	30.00	645,450		
	Grease trap - 6,000 gal.	**1**	ea		w/ plumbing		
	Septic tank; 15,000 gal - primary	**1**	ea	75,000.00	75,000		
	Pump chamber; 10,000 gal	**1**	ea	50,000.00	50,000		
	Pump system	**1**	ls	100,000.00	100,000		
	Filter system allowance	**1**	ls	50,000.00	50,000		
312000	*EXCAVATION & BACKFILL - force main*	*830*	*lf*				
	Force main piping excavation- assume shallow	**492**	cy	46.75	23,001		
	Trench bedding	**246**	cy	38.50	9,471		
312000	*EXCAVATION & BACKFILL - Gravity*	*420*	*lf*				
	PVC gravity piping excavation	**373**	cy	46.75	17,438		
	Trench bedding	**124**	cy	38.50	4,774		
	Pressure testing	**420**	lf	4.00	1,680		
	Video Inspection	**1**	ls	10,000.00	NR		
	Grease trap; 6,000 gal. (e/b only) incl. shoring	**1**	ea	10,000.00	10,000		
	Septic tank; 15,000 gal (e/b only) incl. shoring	**1**	ea	15,000.00	15,000		
	Pump chamber; 10,000 gal (e/b only) incl. shoring	**1**	ea	20,000.00	20,000		
	Filter system (e/b only) incl. shoring	**1**	ea	10,000.00	incl. above		
	Allowance for temporary sewer service	**1**	ea	25,000.00	NR		
	Allowance for temporary support of existing utilities	**1**	ea	15,000.00	NR		
	SUBTOTAL					1,060,456	
G3030	**STORM SEWER**						
334000	*STORM DRAINAGE*						
	18" HDPE	**60**	lf	100.00	6,000		
	12" HDPE	**2,211**	lf	80.00	176,880		
	4' Dia. DMH - 0-5' deep	**14**	ea	4,800.00	67,200		
	AD	**1**	ea	2,500.00	2,500		
	OCS	**2**	ea	10,000.00	20,000		
	WQS	**3**	ea	25,000.00	75,000		
	FES	**1**	ea	2,500.00	2,500		
	CB - 4' Dia.	**19**	ea	4,200.00	79,800		
334000	*CONNECTIONS*						
	Connect to existing structure (inside site)	**1**	ea	5,000.00	5,000		
334000	*SURFACE DRAINAGE SYSTEMS*						
	Biofiltration basin	**6,900**	sf	18.00	124,200		
334000	*SUBSURFACE DRAINAGE SYSTEMS*						
	Underground recharger	**15,300**	sf	48.00	734,400		
	SUBTOTAL					1,293,480	
G3060	**FUEL DISTRIBUTION**						
220001	*NATURAL GAS*						

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
Site Detail							
	No work in this section						
	SUBTOTAL					-	
G3090	**OTHER SITE MECHANICAL UTILITIES**						
336600	*GEOTHERMAL WELLS*						
	Closed loop well field, complete; 60 x 650 ft deep	**60**	wells	37,000.00	2,220,000		
	SUBTOTAL					2,220,000	
	TOTAL - SITE MECHCANICAL UTILITIES						**$4,818,593**
G40	***SITE ELECTRICAL UTILITY***						
G40	**ELECTRICAL**						
	Civil						
	Trenching, Backfilling, Concrete work						
	Primary ductbank	**410**	lf	50.00	20,500		
	Secondary ductbank	**50**	lf	50.00	2,500		
	Generator ductbank	**100**	lf	50.00	5,000		
	Telecommunication ductbank	**200**	lf	50.00	10,000		
	SUBTOTAL					38,000	
	Service						
	Pole riser	**1**	ls	1,500.00	1,500		
	Manhole	**1**	ls	8,500.00	8,500		
	Primary conduit 2-4" conduits (allow)	**410**	lf	50.00	20,500		
	2000A secondary service	**50**	lf	850.00	42,500		
	Generator service	**150**	lf	500.00	75,000		
	Communications						
	Pole riser	**1**	ls	1,500.00	1,500		
	Duct bank 4-4" conduits (allow)	**200**	lf	100.00	20,000		
	Site Lighting						
	Site lighting and circuitry (allow)	**1**	ls	225,000.00	225,000		
	EV Stations						
	Dual EV stations (allow)	**8**	loc	15,000.00	120,000		
	Site Demolition						
	Site Demolition	**1**	loc	5,000.00	5,000		
	SUBTOTAL					519,500	
	TOTAL - SITE ELECTRICAL UTILTIES						**$557,500**

CODE	DESCRIPTION	QTY	UNIT	UNIT COST	COST	SUBTOTAL COST	TOTAL COST
ALTERNATES							
	Second Art Room						
	BASE ESTIMATE						
	ADD ALTERNATE						
	Additional Art Room, increased GFA	**1,500**	gsf	365.01	547,515		
	SUBTOTAL					547,515	
	SUBTOTAL					*ADD*	***$547,515***
	Sliding Storefront Doors						
	BASE ESTIMATE						
	ADD ALTERNATE						
	Sliding storefront door assembly, 8' x 7'	**10**	loc	15,000.00	150,000		
	SUBTOTAL					150,000	
	SUBTOTAL					*ADD*	***$150,000***
	Renovate Existing Playground						
	BASE ESTIMATE						
	ADD ALTERNATE						
	Demolish existing playground	**8,300**	sf	1.25	10,375		
	Playgrounds - New	8,300	*sf*				
	gravel base; 12" thick	**307**	cy	55.00	16,885		
	Drainage allowance	**8,300**	sf	5.00	41,500		
	Poured-in-place - west of school	**8,300**	sf	38.00	315,400		
	Flush transition curb	**450**	lf	65.00	29,250		
	Allowance for play equipment	**1**	ls	350,000.00	350,000		
	SUBTOTAL					763,410	
	SUBTOTAL					*ADD*	***$763,410***

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M: OPM's Cost Estimate

PCM COMPANY
Accuracy You Can Build On

NEARY ELEMENTARY SCHOOL

SKANSKA
SD ESTIMATE
2/18/2025

THE ATTACHED COST ESTIMATE IS BASED ON THE FOLLOWING DOCUMENTS:

Drawings Dated		Number of Sheets
1/13/2025	SD Drawings Civil, LS and architectural	23
1/13/2025	Neary Pricing Information	3
1/13/2025	Neary-Exterior Materials Diagram	2
1/13/2025	SD Pricing – Narratives	22
1/13/2025	Neary SD Project Manual	105
1/6/2025	Neary es landscape draft spec	5

ASSUMPTIONS AND EXCLUSIONS:

1 Loose Furniture Excluded
2 We have included full height 12" CMU at the gym
3 Gutters are excluded, listed in the narrative but not shown
4 Abatement pricing based on consultants estimate
5 FS equipment pricing based on consultants estimate.
6 MEP equipment sizing is included based on Schematic Design Project Manual dated 2/25/25
7 Escalation is based on July 2026 construction start.
8 Costs of temporary modular trailers are excluded. Temp power and electrical equipment to serve the modulars is excluded.
9 Solar panels and EV chargers are excluded. Provisions for future are included.
10 Primary power, conduit and transformer are excluded.
11 Fire pump allowance is included.
12 VE is included based on the Vinal Voted doc dated 2.13.25

PCM reserve the right to revise and/or ammend this estimate accordingly should any new or additional information be made available to us.

Project estimate prepared by:

Joe Scala, Lead Estimator
Preferred Construction Management Co., Inc.
joe@pcmcompany.com
(t) 774-275-1262

NEARY ELEMENTARY SCHOOL **SD ESTIMATE**

PCM COMPANY
Accuracy You Can Build On

PROJ. NO: 28-116
REVISION: POST RECON 1
EST DATE: 2/18/2025
GROSS SF: *99,564*

DESCRIPTION	UNIT COST	TOTAL COST
A10 - FOUNDATIONS	$ 40.54	$ 4,036,484
A20 - BASEMENT CONSTRUCTION	$ -	$ -
B10 - SUPERSTRUCTURE	$ 56.88	$ 5,662,943
B20 - ENCLOSURE	$ 87.56	$ 8,717,356
B30 - ROOFING	$ 22.33	$ 2,223,070
C10 - INTERIOR CONSTRUCTION	$ 57.23	$ 5,697,582
C20 - STAIRS	$ 3.33	$ 332,000
C30 - INTERIOR FINISHES	$ 25.97	$ 2,585,362
D10 - CONVEYING	$ 1.92	$ 191,500
D20 - PLUMBING	$ 23.85	$ 2,374,810
D30 - HVAC	$ 90.18	$ 8,978,862
D40 - FIRE PROTECTION	$ 8.00	$ 796,948
D50 - ELECTRICAL	$ 59.83	$ 5,957,194
E10 - EQUIPMENT	$ 7.32	$ 728,530
E20 - FURNISHINGS	$ 10.23	$ 1,018,626
F10 - SPECIAL CONSTRUCTION	$ -	$ -
F20 - SELECTIVE BUILDING DEMOLITION	$ 16.80	$ 1,672,184
G10 - SITE PREPARATIONS	$ 25.58	$ 2,547,106
G20 - SITE IMPROVEMENTS	$ 41.59	$ 4,140,544
G30 - SITE CIVIL / MECHANICAL UTILITIES	$ 46.70	$ 4,649,206
G40 - SITE ELECTRICAL UTILITIES	$ 6.40	$ 637,133
CONSTRUCTION SUBTOTAL	**$ 632.23**	**$ 62,947,439**
DESIGN / ESTIMATE CONTINGENCY -- 10%	10.0%	$ 6,294,744
CM CONTINGENCY	3.0%	$ 2,077,265
GENERAL CONDITIONS / REQUIREMENTS (MOS)	27	$ 6,885,000
SOIL DISPOSAL ALLOWANCE	1	$ 350,000
CONSTRUCTION SUBTOTAL	**$ 788.98**	**$ 78,554,449**
BOND AND INSURANCE -- 3%	3.0%	$ 2,356,633
CONSTRUCTION SUBTOTAL	**$ 812.65**	**$ 80,911,082**
CONTRACTOR FEE -- 3%	3.0%	$ 2,427,332
CONSTRUCTION SUBTOTAL	**$ 837.03**	**$ 83,338,415**
ESCALATION	5.0%	$ 4,166,921
CONSTRUCTION GRAND TOTAL	**$ 878.89**	**$ 87,505,335**

ALTERNATES

ADD ALTERNATE 1 - ADD 2ND ART ROOM, 1,000 SF NET/1,500 GSF		$ 409,750.00
ADDONS	35%	$ 143,413
ADD ALTERNATE 1 - ADD 2ND ART ROOM, 1,000 SF NET/1,500 GSF	$ 641.94	**$ 962,913**

ADD ALTERNATE 2 - SLIDING DOORS ILO SWING		$ 182,600
ADDONS	35%	$ 63,910
ADD ALTERNATE 2 - SLIDING DOORS ILO SWING	$ 2.48	**$ 246,510**

ADD ALTERNATE 3 - ADD FOR PIP & EQUIPMENT AT PLAYGROUND		$ 837,392
ADDONS	35%	$ 293,087
ADD ALTERNATE 3 - ADD FOR PIP & EQUIPMENT AT PLAYGROUND	$ 11.35	**$ 1,130,479**

DEDICT ALTERNATE 4 - MILL AND OVERLAY SCHOOL DRIVE, 30,000 SF		$ (105,000)
ADDONS	35%	$ (36,750)
DEDICT ALTERNATE 4 - MILL AND OVERLAY SCHOOL DRIVE, 30,000 SF	$ (4.73)	**$ (141,750)**

VE OPTIONS

VE OPTION 1 - CHANGE BRICK TO CMU AT GYM		$ (93,540)
ADDONS	35%	$ (32,739)
VE OPTION 1 - CHANGE BRICK TO CMU AT GYM	$ (1.27)	**$ (126,279)**

VE OPTION 2 - DELETE CW/SF AT FRONT ENTRANCE		$ (42,788)
ADDONS	35%	$ (14,976)
VE OPTION 2 - DELETE CW/SF AT FRONT ENTRANCE	$ (0.58)	**$ (57,763)**

VE OPTION 3 - UNIFORM COLOR PATTERN FOR BRICK		$ (104,121)
ADDONS	35%	$ (36,442)
VE OPTION 3 - UNIFORM COLOR PATTERN FOR BRICK	$ (1.41)	**$ (140,563)**

VE OPTION 6 - REDUCE CONCRETE SIDEWALKS TO BITUMINOUS		$ (217,033)
ADDONS	35%	$ (75,962)
VE OPTION 6 - REDUCE CONCRETE SIDEWALKS TO BITUMINOUS	$ (2.94)	**$ (292,995)**

VE OPTION 7 - CHANGE BIT. DRIVE DRIVE AT REAR TO CRUSHED STONE		$ (61,579)
ADDONS	35%	$ (21,553)
VE OPTION 7 - CHANGE BIT. DRIVE DRIVE AT REAR TO CRUSHED STONE	$ (0.83)	**$ (83,132)**

NEARY ELEMENTARY SCHOOL | **SD ESTIMATE**

PCM COMPANY
Accuracy You Can Build On

	PROJ. NO:	28-116
	REVISION:	**POST RECON 1**
	EST DATE:	**2/18/2025**
GROSS SF:		***99,564***

DESCRIPTION	**UNIT COST**	**TOTAL COST**
VE OPTION 8 - DELETE PLANTING AND OUTDOOR SEATING AT CENTER COURTYARD		$ (157,000)
ADDONS	35%	$ (54,950)
VE OPTION 8 - DELETE PLANTING AND OUTDOOR SEATING AT CENTER COURTYARD		**INC**
VE OPTION 9 REDUCE ACCADEMIC WING FLOOR TO FLOOR HEIGHT BY 4"		$ (107,642)
ADDONS	35%	$ (37,675)
VE OPTION 9 REDUCE ACCADEMIC WING FLOOR TO FLOOR HEIGHT BY 4"	$ (1.46)	**$ (145,317)**
VE OPTION 10 - DELETE BLEACHERS AT GYM (FF&E)		$ (38,250)
ADDONS	35%	$ (13,388)
VE OPTION 10 - DELETE BLEACHERS AT GYM (FF&E)		**INC**
VE OPTION 11 - REDUCE GYM SIZE BY 680 SF		$ (153,340)
ADDONS	35%	$ (53,669)
VE OPTION 11 - REDUCE GYM SIZE BY 680 SF	$ (304.43)	**$ (207,009)**
VE OPTION 13 - CHANGE COPPER FEEDER CABLES TO ALUMINUM		$ (72,000)
ADDONS	35%	$ (25,200)
VE OPTION 13 - CHANGE COPPER FEEDER CABLES TO ALUMINUM	$ (0.98)	**$ (97,200)**
VE OPTION 14 REDUCE MOVEABLE PARTITIONS		$ (131,250)
ADDONS	35%	$ (45,938)
VE OPTION 14 REDUCE MOVEABLE PARTITIONS	$ (1.78)	**$ (177,188)**
VE OPTION 16 - REMOVE ADJOINING DOORS BETWEEN CLASSROOMS		$ (48,400)
ADDONS	35%	$ (16,940)
VE OPTION 16 - REMOVE ADJOINING DOORS BETWEEN CLASSROOMS	$ (0.66)	**$ (65,340)**
VE OPTION 17 - REMOVE BORROWED LIGHT FROM CLASSROOMS TO LEARNING COMMONS		$ (33,280)
ADDONS	35%	$ (11,648)
VE OPTION 17 - REMOVE BORROWED LIGHT FROM CLASSROOMS TO LEARNING COMMONS	$ (0.45)	**$ (44,928)**

DESCRIPTION	UNIT COST	TOTAL COST
VE OPTION 18 - REMOVE TILE BEHIND SINKS IN CLASSROOMS		$ (44,480)
ADDONS	35%	$ (15,568)
VE OPTION 18 - REMOVE TILE BEHIND SINKS IN CLASSROOMS	$ (0.60)	**$ (60,048)**

VE OPTION 19 - EWA-5 ILO ACM PANELS, DEDUCT TO GO TO AL CORRUGATED PANELS		
ADDONS	35%	$ -
VE OPTION 19 - EWA-5 ILO ACM PANELS, DEDUCT TO GO TO AL CORRUGATED PANELS		**INC**

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
A - SUBSTRUCTURE				
A10 - FOUNDATIONS				
A1010 - STANDARD FOUNDATIONS				
SPREAD FOOTINGS				
FORM & POUR	136	EA	950.00	$ 129,200.00
FORMWORK MATERIAL	4351	SF	6.75	$ 29,368.66
REBAR - ASSUME 75 LBS/CY	14.1	TN	4,000.00	$ 56,522.22
CONCRETE	377	CY	175.00	$ 65,942.59
FOOTINGS, CONTINUOUS - ASSUME 3'X1'				
FORM & POUR	1781	LF	75.00	$ 133,575.00
FORMWORK MATERIAL	3562	SF	6.75	$ 24,043.50
REBAR - ASSUME 75 LBS/CY	7.4	TN	4,000.00	$ 29,683.33
CONCRETE	198	CY	175.00	$ 34,630.56
MISC INTERIOR FOOTINGS, CONTINUOUS - ASSUME 3'X1'				
FORM & POUR	500	LF	75.00	$ 37,500.00
FORMWORK MATERIAL	1000	SF	6.75	$ 6,750.00
REBAR - ASSUME 75 LBS/CY	2.1	TN	4,000.00	$ 8,333.33
CONCRETE	56	CY	175.00	$ 9,722.22
FOUNDATION WALLS - ASSUME 4' FROST WALLS				
FORM & POUR	1781	LF	125.00	$ 222,625.00
FORMWORK MATERIAL	14248	SF	6.75	$ 96,174.00
REBAR - ASSUME 125 LBS/CY	19	TN	4,000.00	$ 76,956.79
CONCRETE	308	CY	175.00	$ 53,869.75
FORM SHELF	1781	LF	7.50	$ 13,357.50
PIERS - 36"x36"	65	EA	1,800.00	$ 117,000.00
THERMAL MOISTURE PROTECTION				
FOUNDATION WATERPROOFING AT NEW FOUND WALL	8905	SF	7.50	$ 66,787.50
RIGID INSULATION AT FOUNDATION	8905	SF	3.50	$ 31,167.50
EARTHWORK				
FOUNDATION EXCAVATION				
EXCAVATE AT FOOTINGS	2213	CY	40.00	$ 88,537.78

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
GRAVEL BELOW FOOTINGS	626	CY	65.00	$ 40,697.22
IMPORTED BACKFILL AT FOUNDATIONS	1331	CY	55.00	$ 73,200.25
BACKFILL AT FOUNDATIONS	0	CY	35.00	$ -
EXPORT	3763	TON	25.00	$ 94,071.39
DEWATERING				
DEWATERING	3	MO	10,000.00	$ 30,000.00
PERFERATED UNDERDRAIN				
PVC - 4" FOUNDATION DRAIN	0	LF	35.00	$ -
PVC - 4" FOUNDATION DRAIN	1781	LF	35.00	$ 62,335.00
A1010 - STANDARD FOUNDATIONS				**$ 1,632,051.09**
A1020 - SPECIAL FOUNDATIONS				
UNDERPINNING		CF	100.00	$ -
A1020 - SPECIAL FOUNDATIONS				**$ -**
A1030 - SLAB ON GRADE				
ELEVATOR PIT	1	EA	12,000.00	$ 12,000.00
SLAB ON GRADE				
5" SOG + WWF	60802	SF	9.75	$ 592,819.50
REBAR - #.5/SF	15	TN	4,000.00	$ 60,802.00
APRONS/ENTRIES	1500	SF	15.00	$ 22,500.00
THERMAL MOISTURE PROTECTION				
WATERPROOFING; AT ELEVATOR PIT	1	EA	8,000.00	$ 8,000.00
VAPOR BARRIER AT SLAB ON GRADE	60802	SF	1.50	$ 91,203.00
RIGID INSULATION AT SLABS 4' ONLY	60802	SF	4.00	$ 243,208.00
PASSIVE RADON SYSTEM	60842	SF	2.00	$ 121,684.00
EARTHWORK				
CUT AT BUILDING FOOTPRINT 3'	6756	CY	30.00	$ 202,673.33
STOCKPILS FOR SITE FILLS		CY	10.00	$ -
EXPORT	11485	TON	25.00	$ 287,120.56
IMPORT STRUCTURAL FILL	6756	CY	55.00	$ 371,567.78
STONE UNDER SLAB	2307	CY	60.00	$ 138,448.89

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
UNDERSLAB E&B	2000	LF	35.00	$ 70,000.00
PERFERATED UNDERDRAIN				
PVC - 4" FOUNDATION DRAIN	60802	SF	3.00	$ 182,406.00
A1030 - SLAB ON GRADE				**$ 2,404,433.06**
A10 - FOUNDATIONS				**$ 4,036,484.15**
A20 - BASEMENT CONSTRUCTION				
A20 - BASEMENT CONSTRUCTION				**$ -**
B - SHELL				
B10 - SUPERSTRUCTURE				
B1010 - FLOOR CONSTRUCTION				
SLAB ON DECK				
SOD - 6-1/2" TOTAL THICKNESS + WWF	39170	SF	10.50	$ 411,285.00
METAL DECK				
3" GALV COMPOSITE DECKING	39170	SF	6.25	$ 244,812.50
STRUCTURAL STEEL				
JOISTS, COLUMNS, BEAMS #16/sf	626720	LBS		
CONNECTIONS, PLATES, HARDWARE 20%		INC		
TOTAL LBS	626720	LBS		
JOISTS, COLUMNS, BEAMS	313.36	TN	4,750.00	$ 1,488,460.00
FLOOR AND BEAM PENS	20	EA	1,500.00	$ 30,000.00
EXPANSION JOINTS				
FLOOR EXPANSION JOINT	100	LF	200.00	$ 20,000.00
FIREPROOFING/FIRESTOPPING				
FIRESTOPPING	99,564	SF	1.00	$ 99,564.00
SPRAY ON FIREPROOFING	39170	SF	3.50	$ 137,095.00
B1010 - FLOOR CONSTRUCTION				**$ 2,431,216.50**
B1020 - ROOF CONSTRUCTION				
SLAB ON DECK				

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
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99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
SOD AT MECH AREAS	6304	SF	12.00	$ 75,648.00
METAL DECK				
1-1/2" 20 GA	47,695	SF	5.75	$ 274,246.25
ACOUSTICAL DECKING AT GYM & CAFÉ	6395	SF	11.75	$ 75,141.25
3" GALV DECKING AT MECH AREAS	6304	SF	7.50	$ 47,280.00
STRUCTURAL STEEL				
JOISTS, COLUMNS, BEAMS #16/sf	966304	LBS		
CONNECTIONS, PLATES, HARDWARE 20%		INC		
TOTAL LBS	966304	LBS		
JOISTS, COLUMNS, BEAMS	483.2	TN	4,750.00	$ 2,294,972.00
EQUIPMENT DUNNAGE	7.5	TN	6,500.00	$ 48,750.00
FLOOR AND BEAM PENS	20	EA	1,500.00	$ 30,000.00
STRUCTURAL SUPPORTS #10/SF	12.5	TONS	7,500.00	$ 93,750.00
ROUGH CARPENTRY				
ROOF BLOCKING	4630	LF	12.00	$ 55,560.00
EXPANSION JOINTS				
ROOF EXPANSION JOINT		LF	150.00	NIC
SPRAY ON FIREPROOFING				NIC
SPRAY ON FIREPROOFING	60,394	SF	3.50	$ 211,379.00
INTUMECENT FP	1	LS	25,000.00	$ 25,000.00
B1020 - ROOF CONSTRUCTION				**$ 3,231,726.50**
B10 - SUPERSTRUCTURE				**$ 5,662,943.00**
B20 - ENCLOSURE				
B2010 - EXTERIOR WALLS				
MOCK UPS				
MOCK UP ALLOW	1	EA	75,000.00	$ 75,000.00
EXTERIOR MASONRY				
BRICK VENEER EWA 1,2 & 3	35,907	SF	52.00	$ 1,867,164.00
ADD FOR DECORATIVE BRICK / COLOR	35,907	SF	3.00	$ 107,721.00
ADD FOR BRICK RETURNS	2,800	LF	50.00	$ 140,000.00

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
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99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
MINERAL WOOL BOARD INSULATION - 6"	35,907	SF	6.00	$ 215,442.00
12" CMU BACKUP GROUTED	2,500	SF	48.50	$ 121,250.00
STAGING	37,255	SF	5.00	$ 186,275.00
STRUCTURAL STEEL				
EXTERIOR WALL SUPPORTS	49738	SF	1.00	$ 49,738.00
EXTERIOR PANELS				
PHENOLIC PANEL RAINSCREEN	5,211	SF	127.00	$ 661,797.00
METAL PANEL RAINSCREEN	8,620	SF	117.00	$ 1,008,540.00
DEDUCT TO GO TO CORRUGATED METAL	8,620	SF	-35.00	$ (301,700.00)
MINERAL WOOL BOARD INSULATION - 6"	22,451			INC
ROOFING				
ROOFING MEMBRANE AT PARAPETS	4,630	SF	21.00	$ 97,230.00
ROOFTOP SCREEN				
ROOF SCREEN 150 LF PER NARRATIVE - CITYSCAPES	2500	SF	120.00	$ 300,000.00
THERMAL MOISTURE PROTECTION				
AIR & MOISTURE BARRIER SYSTEM	49,738	SF	9.25	$ 460,076.50
JOINT SEALANTS & CAULKING				
EXTERIOR WALL SEALANTS	49,738	SF	1.35	$ 67,146.30
EXTERIOR LGMF				
EXTERIOR WALL - 6.5" STUD, SHEATHING	44,874	SF	27.50	$ 1,234,035.00
6" LGMF				INC
EXTERIOR SHEATHING				INC
INSULATION				INC
GWB AT EXTERIOR WALLS	44,874	SF	4.75	$ 213,151.50
SIGNAGE				
EXTERIOR SIGNAGE	1	LS	25,000.00	$ 25,000.00
B2010 - EXTERIOR WALLS				**$ 6,527,866.30**
B2020 - EXTERIOR WINDOWS				

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
EXTERIOR MASONRY				
PRECAST STILLS AT WINDOWS	464	LF	90.00	$ 41,760.00
ROUGH CARPENTRY				
WINDOW BLOCKING	4351	LF	12.75	$ 55,475.25
JOINT SEALANTS & CAULKING				
EXTERIOR WALL SEALANTS	9718	SF	3.00	$ 29,154.00
ALUMINUM WINDOWS				
TRIPLE GLAZED AL WINDOWS	4768	SF	175.00	$ 834,400.00
CURTAIN WALL				
CURTAINWALL TRIPLE GLAZED	4950	SF	200.00	$ 990,000.00
ADD FOR SECURITY GLASS - SCHOOL GUARD SG4	408	SF	75.00	$ 30,600.00
B2020 - EXTERIOR WINDOWS				**$ 1,981,389.25**
B2030 - EXTERIOR DOORS				
ALUMINUM & GLASS DOORS				
EXTERIOR				
ALUMINUM, DOUBLE	9	EA	15,000.00	$ 135,000.00
ADD FOR SECURITY GLASS - SCHOOL GUARD SG4	4	EA	2,000.00	$ 8,000.00
HARDWARE	18	LEAF	1,800.00	$ 32,400.00
AUTOMATIC OPERATOR	4	LEAF	2,500.00	$ 10,000.00
DOORS & FRAMES				
HOLLOW METAL FRAMES				
1/1A SINGLE HM	2	EA	525.00	$ 1,050.00
HOLLOW METAL DOORS				
F FLUSH HM DOOR	2	EA	600.00	$ 1,200.00
HARDWARE MATERIAL				
HARDWARE SETS	2	EA	900.00	$ 1,800.00
DOORS / FRAMING / HARDWARE LABOR				
INSTALL SINGLE FRAMES	2	EA	290.00	$ 580.00
HARDWARE INSTALLATION	2	EA	435.00	$ 870.00

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
OVERHEAD DOORS				
10'X10' STL OVERHEAD COILING DOOR	1	EA	10,800.00	$ 10,800.00
8'X8' STL OVERHEAD COILING DOOR	1	EA	6,400.00	$ 6,400.00
B2030 - EXTERIOR DOORS				**$ 208,100.00**
B20 - ENCLOSURE				**$ 8,717,355.55**
B30 - ROOFING				
B3010 - ROOF COVERINGS				
ROOFING				
TPO MEMBRANE, PRO. BOARD, INS, VB, 1/2" THERMAL BOARD	58,120	SF	27.50	$ 1,598,300.00
ADD FOR ADDITIONAL 5" OF INSULATION	58,120	SF	5.50	$ 319,660.00
ROOF HATCH	3	EA	3,500.00	$ 10,500.00
ROOF DRAIN: SUPPLY, SET, FLASH	25	EA	500.00	$ 12,500.00
PARAPET COPING - METAL-ERA REVEAL	2315	LF	42.00	$ 97,230.00
ROOF FLASHING	116,240	SF	1.00	$ 116,240.00
ROOF ACCESSORIES				
ROOF LADDERS BETWEEN LEVELS	3	EA	3,200.00	$ 9,600.00
WALK PADS	428	LF	35.00	$ 14,980.00
ROOF EDGE FALL PROTECTION AT EDGE OF ROOF DECK	500	LF	30.00	$ 15,000.00
GUTTERS & DOWNSPOUTS	0	LF	30.00	$ -
JOINT SEALANTS & CAULKING				
JOINT SEALANTS BUDGET	116,240	SF	0.25	$ 29,060.00
INSULATION				
10" SPRAY APPLIED CELLULOSE AT UNDERSIDE OF DECK	0	SF	24.00	NIC
B3010 - ROOF COVERINGS				**$ 2,223,070.00**
B30 - ROOFING				**$ 2,223,070.00**
C - INTERIORS				
C10 - INTERIOR CONSTRUCTION				
C1010 - PARTITIONS				
INTERIOR CMU PARTITIONS				

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
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99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
12" CMU AT GYM	1581	SF	50.00	$ 79,050.00
ELEVATOR SHAFT - 8" (45'HT)	1216	SF	45.00	$ 54,720.00
MISCELLANEOUS METALS				
SEISMIC CLIPS	275	EA	125.00	$ 34,375.00
FOLDING PARTITION TRACK SUPPORT	187	LF	225.00	$ 42,075.00
ROUGH CARPENTRY				
INTERIOR BLOCKING	99,564	SF	1.00	$ 99,564.00
FIREPROOFING/FIRESTOPPING				
FIRESTOPPING	99,564	SF	1.00	$ 99,564.00
SEALANTS				
MISC WALL SEALANTS	99,564	SF	0.35	$ 34,847.40
INTERIOR GLAZING				
INTERIOR ALUMINUM STOREFRONT - VESTIBULE	372	SF	135.00	$ 50,220.00
INTERIOR ALUMINUM STOREFRONT - MEDIA CENTER	384	SF	120.00	$ 46,080.00
TRANSACTION WINDOW (AT VESTIBULE)	1	EA	5,000.00	$ 5,000.00
BORROWED LIGHTS AT CLASSROOMS ASSUMES 4X4 HM WINDOW	32	EA	1,040.00	$ 33,280.00
ADD FOR SCHOOL GUARD AT CLASSROOM GLASS	1	LS	50,000.00	$ 50,000.00
MISC. INTERIOR FIXED WINDOWS	500	SF	75.00	$ 37,500.00
MISC INTERIOR GLAZING	99,564	SF	1.00	$ 99,564.00
INTERIOR PARTITIONS				
TYPICAL INTERIOR PARTITIONS - 6" MS, INSULATION, 2GYP	19643	SF	17.50	$ 343,752.50
TYPICAL CORRIDOR PARTITIONS - 6" MS, INSULATION, 3GYP	28044	SF	21.50	$ 602,935.25
TYPICAL DEMISING PARTITIONS - 6" MS INSULATION, 4GYP	27289	SF	25.50	$ 695,869.50
CHASE WALLS - 6" MS, INSULATION, 4GYP	11368	SF	25.50	$ 289,884.00
STAIR WALLS - 6" MS, INSULATION, 4GYP	2480	SF	28.00	$ 69,426.00
1 SIDED WALLS - HC, INSULATION, GYP	2117	SF	9.50	$ 20,111.50
ADD FOR MR AT BATHROOMS WALLS	9874	SF	3.00	$ 29,622.00
ADD FOR LVL 5, ABUSE RES, IMPACT GYP	1	LS	25,000.00	$ 25,000.00
ADD ADDITIONAL SOUND ATT REQUIREMENTS	1	LS	50,000.00	$ 50,000.00
OPERABLE PARTITIONS				
15'X10' FP-TYPE STL-DOOR STL-FRAME AT QUIET LUNCH	15	LF	2,200.00	$ 33,000.00

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
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2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
FOLDING PANEL PARTITION AT CLASSROOMS	140	LF	1,250.00	$ 175,000.00
HORIZONTALLY RETRACTABLE ACOUSTIC WALL	32	LF	1,600.00	$ 51,200.00
C1010 - PARTITIONS				**$ 3,151,640.15**
C1020 - INTERIOR DOORS				
MISCELLANEOUS METALS				
OH DOOR FRAMES	4	EA	2,000.00	$ 8,000.00
SLIDING GRILL TRACK SUPPORT	20	LF	250.00	$ 5,000.00
INTERIOR STOREFRONT				
INTERIOR ALUMINUM DOORS				
DOUBLE	4	EA	8,000.00	$ 32,000.00
ADD FOR HARDWARE	4	LEAF	1,500.00	$ 6,000.00
AUTOMATIC OPERATOR	4	LEAF	2,500.00	$ 10,000.00
GLAZING				
GLASS AT DOORS	138	EA	225.00	$ 31,050.00
GLASS AT FRAMES	46	EA	225.00	$ 10,350.00
FIRE RATED GLASS	1	LS	15,000.00	$ 15,000.00
HM / WOOD DOORS / FRAMES				
HOLLOW METAL FRAMES				
1/1A SINGLE HM	99	EA	600.00	$ 59,400.00
2/2A DOUBLE HM	26	EA	700.00	$ 18,200.00
3 SINGLE HM W/ SIDELIGHT	46	EA	675.00	$ 31,050.00
4 HM POCKET DOOR	24	EA	1,100.00	$ 26,400.00
HOLLOW METAL DOORS				
F FLUSH HM DOOR	6	EA	650.00	$ 3,900.00
STAINLESS STEEL DOORS				
F FLUSH SS DOOR	1	EA	1,500.00	$ 1,500.00
WOOD DOORS				
F FLUSH WD DOOR	52	EA	750.00	$ 39,000.00
G FLUSH WOOD W/ HALF LIGHT	51	EA	850.00	$ 43,350.00
G2 FLUSH WOOD FULL LIGHT	68	EA	900.00	$ 61,200.00
N FLUSH WOOD WITH VISION	19	EA	825.00	$ 15,675.00
N FLUSH WOOD W/ VISION POCKET DOOR	24	EA	1,050.00	$ 25,200.00
ADD FOR ACCOUSTICAL RATING AT MUSIC ROOM	3	EA	1,100.00	$ 3,300.00

NEARY ELEMENTARY SCHOOL
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99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
HARDWARE MATERIAL				
HARDWARE SETS	224	EA	950.00	$ 212,800.00
ADD POCKET DOOR HARDWARE	24	EA	1,000.00	$ 24,000.00
DOORS / FRAMING / HARDWARE LABOR				
INSTALL SINGLE FRAMES	145	EA	290.00	$ 42,050.00
INSTALL DOUBLE FRAMES	26	EA	362.50	$ 9,425.00
INSTALL POCKET DOOR FRAMES	24	EA	870.00	$ 20,880.00
HARDWARE INSTALLATION	224	EA	435.00	$ 97,440.00
OVERHEAD DOORS				
13'-6"X10' ALUM OVERHEAD GRILLE	4	EA	8,775.00	$ 35,100.00
16'X8' SLIDING FOLDING GRILL	1	EA	16,000.00	$ 16,000.00
PAINT				
DOOR FRAMES	195	EA	175.00	$ 34,125.00
OH DOOR FRAMES	5	EA	750.00	$ 3,750.00
C1020 - INTERIOR DOORS				**$ 941,145.00**
C1030 - SPECIALTIES				
MISCELLANEOUS METALS				
MISC METALS NOT YET DEFINED	99,564	SF	2.50	$ 248,910.00
RAMP & BAND CORRIDOR	190	SF	55.00	$ 10,450.00
ADD FOR GUARDRAILS/HANDRAILS	85	LF	225.00	$ 19,125.00
RAILING AT MAIN STAIR	105	LF	450.00	$ 47,250.00
INTERIOR FINISH CARPENTRY BUDGET				
MISC. MILLWORK NOT YET DESIGNED	99564	SF	2.00	$ 199,128.00
WOOD WINDOW SILLS	927	LF	30.00	$ 27,820.00
CLASSROOM CUBBIES	104	EA	2,000.00	$ 208,000.00
MISC LOCATIONS				
BASE CABINET	93	LF	450.00	$ 41,850.00
WALL CABINET	93	LF	400.00	$ 37,200.00
RECEPTION DESK	20	LF	1,100.00	$ 22,000.00
MAILBOX UNIT	1	LS	7,500.00	$ 7,500.00
DISPLAY CASES	4	EA	10,000.00	$ 40,000.00

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
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99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
MEDIA CENTER CASEWORK	1	LS	20,000.00	$ 20,000.00
JOINT SEALANTS & CAULKING	99564	SF	0.75	$ 74,673.00
VISUAL DISPLAYS				
MAGNETIC WHITEBOARDS, 4x5FT , MATERIAL ONLY	58	EA	360.00	$ 20,880.00
MAGNETIC WHITEBOARDS, 8x5FT , MATERIAL ONLY	41	EA	720.00	$ 29,520.00
TACKBOARDS 4X5	90	EA	300.00	$ 27,000.00
LABOR TO INSTALL	378	HRS	145.00	$ 54,810.00
VISUAL DISPLAY TACK RAILS	1280	LF	16.00	$ 20,480.00
TOILET PARTITIONS				
TOILET PARITION	20	EA	1,550.00	$ 31,000.00
TOILET PARITION - ADA	8	EA	2,200.00	$ 17,600.00
CUBICALS / CURTAINS				
CUBICAL TRACK WITH CURTAIN (AT NURSES)	12	LF	275.00	$ 3,300.00
LOCKERS				
STUDENT LOCKERS				NIC
LOCKERS AT KITCHEN	4	EA	750.00	$ 3,000.00
TOILET AND BATH ACCESSORIES				
SINGLE USER BATHROOMS	15	LOC	1,500.00	$ 22,500.00
MULTI-USER BATHROOMS	4	LOC	10,000.00	$ 40,000.00
SOAP/PAPER TOWEL AT CLASSROOM/MISC SINKS	35	LOC	250.00	$ 8,750.00
SIGNAGE				
INTERIOR SIGNAGE	99,564	SF	0.75	$ 74,673.00
CUSTOM GRAPHICS	99,564	SF	2.00	$ 199,128.00
MISC. SPECIALTIES				
EMERGENCY ACCESS AND INFO CABINETS - KNOXBOX 3200	1	EA	4,000.00	$ 4,000.00
EMERGENCY EVACUATION CHAIRS	3	EA	1,800.00	$ 5,400.00
AED CABINETS	3	EA	950.00	$ 2,850.00
FE CABINETS	20	EA	450.00	$ 9,000.00
FE AT BOH	10	EA	200.00	$ 2,000.00

99,564 GROSS SF

DESCRIPTION		QUANTITY	UNIT	UNIT COST	TOTAL
WALL PROTECTION					
CORNER GUARDS	SS AT ALL GYP CORNERS	25	EA	200.00	$ 5,000.00
UTILITY SHELVING		1	LS	20,000.00	$ 20,000.00
C1030 - SPECIALTIES					**$ 1,604,797.00**
C10 - INTERIOR CONSTRUCTION					**$ 5,697,582.15**
C20 - STAIRS					
C2010 - STAIR CONSTRUCTION					
CONCRETE					
PAN FILLED TREADS / LANDINGS		4	FLT	5,500.00	$ 22,000.00
METAL STAIRS					
EGRESS STAIRS W / PICKET RAILS		2	FLT	47,500.00	$ 95,000.00
OPEN STAIR AT MAIN CORRIDOR		2	FLT	75,000.00	$ 150,000.00
SS HANDRAILS, PERFORATED METAL GRILL PANELS					Inc
WOOD FRAMED STAIRS					
PLATFORM STEPS		90	LF	35.00	$ 3,150.00
FINISHES					
RUBBER TREADS & LANDINGS		6	FLT	8,500.00	$ 51,000.00
WOOD TREADS AND RISERS AT PLATFORM STAIR		90	LF	65.00	$ 5,850.00
PAINT STAIRS		4	FLT	1,250.00	$ 5,000.00
C2010 - STAIR CONSTRUCTION					**$ 332,000.00**
C20 - STAIRS					**$ 332,000.00**
C30 - INTERIOR FINISHES					
C3010 - WALL FINISHES					
PAINT					
WALLS		168395	SF	1.50	$ 252,592.50
ACOUSTICAL WALL PANELS					
AWP-1 RECYCLED WOOD FIBER PANEL		1872	SF	28.00	$ 52,416.00
AWP-2 FABRIC WRAPPED TACKABLE		1080	SF	34.00	$ 36,720.00
AWP-3 FABRIC WRAPPED NON-TACKABLE		1660	SF	32.00	$ 53,120.00

NEARY ELEMENTARY SCHOOL
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2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
AWP-3 FABRIC WRAPPED NON-TACKABLE CAFETERIA	1000	SF	32.00	$ 32,000.00
WALL COVERING				
FRP AT SERVERY (CAF?)	1980	SF	7.50	$ 14,850.00
PVC PANES	2802	SF	9.75	$ 27,319.50
TILE				
PORCELAIN WALL TILE AT BATHROOMS FULL HEIGHT	2896	SF	35.00	$ 101,360.00
CERAMIC WALL TILE AT MAIN CORRIDOR	2495	SF	35.00	$ 87,325.00
CERAMIC WALL TILE AT BACKSPLASHES	1112	SF	40.00	$ 44,480.00
C3010 - WALL FINISHES				**$ 702,183.00**
C3020 - FLOOR FINISHES				
MOISTURE MITIGATION AT RESILIENT	10000	SF	5.00	$ 50,000.00
EPOXY RESINOUS FLOOR				
EP-1 TOILET ROOMS	2887	SF	24.00	$ 69,288.00
EP-2 KITCHEN	1855	SF	21.00	$ 38,955.00
ADD FOR INTEGRAL BASE	1515	LF	13.00	$ 19,695.00
SEALED CONCRETE				
SC-1	5092	SF	2.25	$ 11,457.00
GYM FLOOR				
WDF-1 WOOD ATHLETIC FLOORING	5774	SF	28.00	$ 161,672.00
SLEEPER/SUBFLOOR				INC
PERIMETER BASE	310	LF	7.50	$ 2,325.00
CARPET AND RESILIENT				
CPT-1 CARPET TILE	5188	SF	7.00	$ 36,316.00
AF-1 ATHLETIC RESILIENT FLOORING	1362	SF	21.00	$ 28,602.00
AF-2 STAGE RESILIENT FLOORING	1003	SF	27.50	$ 27,582.50
RF-1 LINOLEUM TILE	62833	SF	7.00	$ 439,831.00
RF-2 SHEET LINOLEUM	631	SF	10.00	$ 6,310.00
RB-1	13937	LF	4.50	$ 62,716.50
WALK OF MAT				

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
WO-1	710	SF	60.00	$ 42,600.00
C3020 - FLOOR FINISHES				**$ 997,350.00**
C3030 - CEILING FINISHES				
GYP SOFFITS AND CEILINGS				
GWB CEILINGS	1750	SF	12.00	$ 21,000.00
GWB SOFFITS ASSUMED, NOT SHOWN	1500	SF	15.00	$ 22,500.00
ACOUSTIC CEILING				
ACT-1	69104	SF	6.75	$ 466,452.00
ACT-2	791	SF	10.00	$ 7,910.00
ACT-3	3623	SF	7.50	$ 27,172.50
ACB-1	300	SF	75.00	$ 22,500.00
SPECIALTY CEILING / ACOUSTIC CEILING PANELS				
ACOUSTIC CEILING PREMIUM AT MEDIA, CAFETERIA, LEARNING	5000	SF	30.00	$ 150,000.00
ACOUSTICAL TREATMENT				
K-13 SPRAY ACOUSTIC TREATMENT AT MUSIC, BAND, ART & MEDIA	9800	SF	11.00	$ 107,800.00
PAINT				
CEILINGS AND SOFFITS	3250	SF	3.00	$ 9,750.00
EXPOSED CEILNGS / STRUCTURE	12686	SF	4.00	$ 50,744.00
C3030 - CEILING FINISHES				**$ 885,828.50**
C3040 - INTERIOR COATINGS & SPECIAL FINISHES				
C30 - INTERIOR FINISHES				**$ 2,585,361.50**

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
D - SERVICES				
D10 - CONVEYING				
D1010 - ELEVATORS & LIFTS				
MISC METALS				
ELEVATOR MISC PACKAGE	1	LS	7,500.00	$ 7,500.00
ELEVATOR				
OTIS GEN 2 3,500LBS 150 FPM	2	STOPS	80,000.00	$ 160,000.00

NEARY ELEMENTARY SCHOOL
SD ESTIMATE

DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
ELEVATOR CAB FINISHES	1	LS	15,000.00	$ 15,000.00
OPERATOR FOR TESTING & INSPECTIONS	5	MD	1,800.00	$ 9,000.00
D1010 - ELEVATORS & LIFTS				**$ 191,500.00**
D10 - CONVEYING				**$ 191,500.00**
D20 - PLUMBING				
D2010 - PLUMBING FIXTURES				
FIXTURES, *INCLUDES ROUGH-IN*				
WATER CLOSET	43	EA	2,000.00	$ 86,000.00
LAVATORY	30	EA	2,000.00	$ 60,000.00
SINKS	15	EA	2,000.00	$ 30,000.00
SINKS W/ BUBBLER	64	EA	3,800.00	$ 243,200.00
LAB / ART SINKS	1	EA	2,800.00	$ 2,800.00
ELECTRIC WATER COOLER W/ BOTTLE FILLER	6	EA	3,600.00	$ 21,600.00
EMERGENCY SHOWER / EYEWASH	1	EA	3,200.00	$ 3,200.00
MOP SINK	5	EA	2,200.00	$ 11,000.00
HOSE BIBS *ASSUMED*	4	EA	1,500.00	$ 6,000.00
FREEZE PROOF HOSE BIBS	2	EA	1,800.00	$ 3,600.00
WASHER OUTLET BOX	2	EA	650.00	$ 1,300.00
ICE MAKER OUTLET BOX	4	EA	650.00	$ 2,600.00
D2010 - PLUMBING FIXTURES				**$ 471,300.00**
D2020 - DOMESTIC WATER DISTRIBUTION				
DOMESTIC WATER PIPING				
PER FIXTURE	177	EA	4,000.00	$ 708,000.00
KITCHEN REQUIREMENTS	1	ALLW	30,000.00	$ 30,000.00
EQUIPMENT				
CIRCULATION PUMPS	3	EA	2,170.00	$ 6,510.00
ELECTRIC WATER HEATER - 36KW, 500 GAL	1	EA	13,460.00	$ 13,460.00
ELECTRIC WATER HEATER - 9KW, 30 GAL	2	EA	7,800.00	$ 15,600.00
EXPANSION TANKS	3	EA	3,480.00	$ 10,440.00
D2020 - DOMESTIC WATER DISTRIBUTION				**$ 784,010.00**
D2030 - SANITARY WASTE				

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
SANITARY & VENT PIPING				
PER FIXTURE	171	EA	4,500.00	$ 769,500.00
KITCHEN REQUIREMENTS	1	ALLW	25,000.00	$ 25,000.00
EQUIPMENT				
ELEVATOR SUMP PUMP, INCL DISCHARGE	1	EA	8,500.00	$ 8,500.00
FLOOR DRAINS	37	EA	4,500.00	$ 166,500.00
D2030 - SANITARY WASTE				**$ 969,500.00**
D2040 - RAIN WATER DRAINAGE				
ROOF DRAINS	25	EA	6,000.00	$ 150,000.00
D2040 - RAIN WATER DRAINAGE				**$ 150,000.09**
D20 - PLUMBING				**$ 2,374,810.09**
D30 - HVAC				
D3020 - HEAT GENERATING SYSTEMS				
EQUIPMENT				
HOT WATER PUMPS - PRIMARY	2	EA	25,560.00	$ 51,120.00
HOT WATER PUMPS - SECONDARY	2	EA	13,560.00	$ 27,120.00
EXPANSION TANKS, AIR SEPARATORS, ETC	1	LS	25,000.00	$ 25,000.00
D3020 - HEAT GENERATING SYSTEMS				**$ 103,240.00**
D3030 - COOLING GENERATING SYSTEMS				
EQUIPMENT				
MODULAR HEAT PUMP GENERATORS - 50 TON	7	EA	140,000.00	$ 980,000.00
CHILLED WATER PUMPS - PRIMARY	2	EA	25,560.00	$ 51,120.00
CHILLED WATER PUMPS - SECONDARY	2	EA	13,560.00	$ 27,120.00
GEOTHERMAL WATER PUMPS - PRIMARY	2	EA	36,600.00	$ 73,200.00
GEOTHERMAL WATER PUMPS - SECONDARY	2	EA	17,760.00	$ 35,520.00
WATER TO REFRIGERANT HEAT EXCHANGER	2	EA	33,000.00	$ 66,000.00
EXPANSION TANKS, AIR SEPARATORS, ETC	1	LS	35,000.00	$ 35,000.00
D3030 - COOLING GENERATING SYSTEMS				**$ 1,267,960.00**
D3040 - DISTRIBUTION SYSTEMS				

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
AIR DISTRIBUTION				
DUCTWORK - ASSUME 1 LBS/SF	99564	LBS	19.00	$ 1,891,716.00
INSULATION	74673	SF	6.50	$ 485,374.50
DIFFUSERS / REGISTERS; *INCL DAMPERS / FLEX*	399	EA	265.00	$ 105,735.00
DISPLACEMENT DIFFUSERS	399	EA	550.00	$ 219,450.00
STAINLESS STEEL DUCTWORK FOR KITCHEN EXHAUST	1	ALLW	50,000.00	$ 50,000.00
HYDRONIC PIPING & INSULATION	99564	SF	12.50	$ 1,244,550.00
EQUIPMENT				
DOAS UNIT - 6,500 CFM	2	EA	195,000.00	$ 390,000.00
DOAS UNIT - 8,000 CFM	4	EA	224,000.00	$ 896,000.00
DOAS UNIT - 12,000 CFM	1	EA	312,000.00	$ 312,000.00
KITCHEN MAKEUP AIR UNIT	1	EA	35,000.00	$ 35,000.00
KILN EXHAUST REQUIREMENTS	1	LS	9,000.00	$ 9,000.00
RIGGING	1	LS	200,000.00	$ 200,000.00
D3040 - DISTRIBUTION SYSTEMS				**$ 5,838,825.59**
D3050 - TERMINAL & PACKAGE UNITS				
EQUIPMENT				
VAV BOXES	83	EA	2,800.00	$ 232,400.00
UNIT HEATERS	8	EA	2,430.00	$ 19,440.00
RADIANT CEILING PANELS	40	EA	4,500.00	$ 180,000.00
FIN-TUBE RADIATION	300	LF	175.00	$ 52,500.00
SPLIT UNITS AT IT/ELECTRICAL CLOSETS	6	EA	12,000.00	$ 72,000.00
D3050 - TERMINAL & PACKAGE UNITS				**$ 556,340.00**
D3060 - CONTROLS & INSTUMENTATION				
CONTROLS	10.00%			$ 776,636.56
D3060 - CONTROLS & INSTUMENTATION				**$ 776,636.56**
D3070 - SYSTEMS TESTING & BALANCING				
TEST AND BALANCE	2.00%			$ 170,860.04

NEARY ELEMENTARY SCHOOL
SD ESTIMATE

DETAILED ITEM TAKEOFF

2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
COMMISIONING	1	LS	125,000.00	$ 125,000.00
D3070 - SYSTEMS TESTING & BALANCING				**$ 295,860.04**
D3090 - OTHER HVAC SYSTEMS & EQUIPMENT				
COORDINATION	1	LS	65,000.00	$ 65,000.00
MANAGEMENT	1	LS	75,000.00	$ 75,000.00
D3090 - OTHER HVAC SYSTEMS & EQUIPMENT				**$ 140,000.00**
D30 - HVAC				**$ 8,978,862.19**
D40 - FIRE PROTECTION				
D4040 - SPRINKLERS				
NEW WET SPRINKLER SYSTEM	99564	SF	7.00	$ 696,948.00
INCLUDING MAINS, BRANCH PIPING AND HEADS				
FIRE PUMP ALLOWANCE	1	ALLW	100,000.00	$ 100,000.00
D4040 - SPRINKLERS				**$ 796,948.00**
D40 - FIRE PROTECTION				**$ 796,948.00**
D50 - ELECTRICAL				
D5010 - ELECTRICAL SERVICE & DISTIBUTION				
TEMP POWER ALLOWANCE	99,564	SF	1.00	$ 99,564.00
POWER AND DISTRIBUTION				
SWITCH GEAR - 2000 AMP	1	EA	145,000.00	$ 145,000.00
PANELS & TRANSFORMERS	99,564	SF	3.25	$ 323,583.00
TRANSFER SWITCHES	2	EA	10,000.00	$ 20,000.00
BRANCH FEEDERS AND SUBFEEDERS	1	ALLW	400,000.00	$ 400,000.00
GENERATOR - 400 KW	1	LS	300,000.00	$ 300,000.00
UPS - 24KW	1	EA	26,000.00	$ 26,000.00
D5010 - ELECTRICAL SERVICE & DISTIBUTION				**$ 1,314,147.00**
D5020 - LIGHTING & BRANCH WIRING				
LIGHT FIXTURES				
LIGHT FIXTURES - ASSUME 1 EA / 55 SF	1700	EA	325.00	$ 552,500.00

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
GYM LIGHT FIXTURES - ASSUME 1 EA / 200 SF	31	EA	550.00	$ 17,050.00
LABOR TO INSTALL FIXTURES (ALLOW 1.5HRS/EA)	1731	EA	247.50	$ 428,422.50
STAGE LIGHTING SYSTEM	1	LS	75,000.00	$ 75,000.00
LIGHTING CONTROL SYSTEM	99564	SF	2.50	$ 248,910.00
POWER & LIGHTING DEVICES				
LIGHTING CONTROL DEVICES	300	EA	250.00	$ 75,000.00
POWER DEVICES	1577	EA	200.00	$ 315,400.00
WIRE & CONDUIT, *FOR LIGHTS*				
CONDUIT - ALLOW 3/4" EMT	18352.8	LF	13.98	$ 256,572.14
#12	550.584	CLF	78.00	$ 42,945.55
MC CABLE - ASSUME 50%	428.232	CLF	430.00	$ 184,139.76
HVAC LINE VOLTAGE	1	LS	200,000.00	$ 200,000.00
PROVISIONS FOR FUTURE PV	1	ALLW	50,000.00	$ 50,000.00
MISC POWER: *INCLUDING CONDUIT, WIRE & JUNCTION BOX FOR COMPLETE INSTALLATION*				
ELEVATOR / SUMP PUMP	1	EA	3,000.00	$ 3,000.00
FIRE PUMP	1	EA	7,500.00	$ 7,500.00
GYM EQUIPMENT	1	LS	5,000.00	$ 5,000.00
KITCHEN	1	LS	20,000.00	$ 20,000.00
D5020 - LIGHTING & BRANCH WIRING				**$ 2,481,439.96**
D5030 - COMMUNICATIONS & SECURITY				
FIRE ALARM				
NEW FIRE ALARM SYSTEM	99,564	SF	4.25	$ 423,147.00
DAS / BDA SYSTEM	99,564	SF	0.75	$ 74,673.00
TWO-WAY COMMUNICATION SYSTEM	99,564	SF	0.30	$ 29,869.20
SPEECH REINFORCEMENT	99,564	SF	0.75	$ 74,673.00
SECURITY & ACCESS CONTROL	99,564	SF	4.00	$ 398,256.00

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
TELE/DATA	99,564	SF	5.50	$ 547,602.00
PA/CLOCK SYSTEM	99,564	SF	1.50	$ 149,346.00
AUDIO / VISUAL - ROUGH IN ONLY	99564	SF	1.25	$ 124,455.00
SOUND SYSTEM ALLOWANCE	1	ALLW	105,000.00	$ 105,000.00
D5030 - COMMUNICATIONS & SECURITY				**$ 1,927,021.20**
D5090 - OTHER ELECTRICAL SERVICES				
GROUNDING SYSTEMS	99564	SF	0.35	$ 34,847.40
LIGHTNING PROTECTION	99564	SF	0.60	$ 59,738.40
COORDINATION	1	LS	65,000.00	$ 65,000.00
MANAGEMENT	1	LS	75,000.00	$ 75,000.00
NEW SERVICE & EQUIPMENT FOR TEMP MODULARS	*1*	*ALLW*		*EXCLUDED*
D5090 - OTHER ELECTRICAL SERVICES				**$ 234,585.80**
D50 - ELECTRICAL				**$ 5,957,193.96**

E - EQUIPMENT & FURNISHINGS				
E10 - EQUIPMENT				
E1020 - INSTITUTIONAL EQUIPMENT				
THEATER & STAGE				
STAGE CURTAINS	32	LF	750.00	$ 24,000.00
STAGE RIGGING - THREE PIPE BATTENS	32	LF	300.00	$ 9,600.00
MEDIA CENTER EQUIPMENT	1	LS	50,000.00	$ 50,000.00
ARTS & CRAFTS				
KILN	1	EA	7,500.00	$ 7,500.00
AV EQUIPMENT				
PROJECTION SCREENS	2	EA	4,500.00	$ 9,000.00
PROJECTORS				BY OWNER

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

PCM COMPANY

99,564 GROSS SF

DESCRIPTION		QUANTITY	UNIT	UNIT COST	TOTAL
E1020 - INSTITUTIONAL EQUIPMENT					$ 100,100.00
E1090 - OTHER EQUIPMENT					
KITCHEN EQUIPMENT	**PER NARRATIVE**	1	LS	450,950.00	$ 450,950.00
KITCHEN APPLIANCES					
REFRIGERATOR		2	EA	2,500.00	$ 5,000.00
SM REFRIGERATOR		1	EA	1,200.00	$ 1,200.00
MICROWAVE		2	EA	750.00	$ 1,500.00
ICE MAKER		1	EA	1,000.00	$ 1,000.00
WASHER		1	EA	1,200.00	$ 1,200.00
DRYER		1	EA	1,200.00	$ 1,200.00
GYM EQUIPMENT					
BASKETBALL BACKSTOP		6	EA	7,000.00	$ 42,000.00
SCOREBOARD		1	EA	20,000.00	$ 20,000.00
VOLLEYBALL & BADMINTON					FF&E
WALL PADS 7'	GYM & ADAPTIVE PE	1860	SF	23.00	$ 42,780.00
GYM DIVIDER CURTAIN		44	LF	1,400.00	$ 61,600.00
BLEACHERS TELESCOPING		225	LF	150.00	VE
E1090 - OTHER EQUIPMENT					$ 628,430.00
E10 - EQUIPMENT					**$ 728,530.00**
E20 - FURNISHINGS					
E2010 - FIXED FURNISHINGS					
WINDOW TREATMENT					
BLINDS / SHADES AT AL WINDOWS		4768	SF	14.00	$ 66,752.00
CASEWORK					
CLASSROOMS					
BASE CABINET		448	LF	450.00	$ 201,600.00
WALL CABINET		448	LF	400.00	$ 179,200.00
TALL CABINET / TEACHER WARDROBE		32	EA	1,500.00	$ 48,000.00
MUSIC INSTRUMENT STORAGE		1	LS	15,000.00	$ 15,000.00
MISC CASEWORK		99,564	SF	3.50	$ 348,474.00

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
SCIENCE CASEWORK				
ART				
BASE CABINET	15	LF	600.00	$ 9,000.00
WALL CABINET	15	LF	650.00	$ 9,750.00
TALL CABINET	4	LF	1,500.00	$ 6,000.00
COUNTERS				
QUARTZ CT AT CASEWORK	541	LF	225.00	$ 121,725.00
QUARTZ CT AT BATHROOMS	40	LF	225.00	$ 9,000.00
EPOXY CT AT ART	15	LF	275.00	$ 4,125.00
E2010 - FIXED FURNISHINGS				**$ 1,018,626.00**
E20 - FURNISHINGS				**$ 1,018,626.00**
F - SPECIAL CONSTRUCTION & DEMOLITION				
F10 - SPECIAL CONSTRUCTION				
F10 - SPECIAL CONSTRUCTION				**$ -**
F20 - SELECTIVE BUILDING DEMOLITION				
F2010 - BUILDING ELEMENTS DEMOLITION				
BUILDING DEMOLITION				
DEMO EXISTING SCHOOL	61066	SF	8.00	$ 488,528.00
REMOVE FOUNDATIONS/SOG	61066	SF	2.00	$ 122,132.00
F2010 - BUILDING ELEMENTS DEMOLITION				**$ 610,660.00**
F2020 - HAZARDOUS COMPONENTS ABATEMENT				
HAZARDOUS MATERIAL ABATEMENT (PER REPORT)	1	LS	939,392.00	$ 939,392.00
BULK WALL AND FOUNDATION ABATEMENT	61066	SF	2.00	$ 122,132.00
F2020 - HAZARDOUS COMPONENTS ABATEMENT				**$ 1,061,524.00**
F20 - SELECTIVE BUILDING DEMOLITION				**$ 1,672,184.00**
G - BUILDING SITEWORK				
G10 - SITE PREPARATIONS				
G1020 - SITE DEMOLITION & RELOCATIONS				

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
SITE DEMOLITION				
SITE STRIP / DEMO	283077	SF	1.10	$ 311,384.70
EXPORT STRIPPED AREAS	8912	TON	25.00	$ 222,792.08
UTILITY CUTS AND CAPS	4	EA	15,000.00	$ 60,000.00
DEMO UTILITY PIPING & STRUCTURES	1	LS	125,000.00	$ 125,000.00
MISC SITE DEMOLITION	1	LS	125,000.00	$ 125,000.00
G1020 - SITE DEMOLITION & RELOCATIONS				**$ 844,176.78**
G1030 - SITE EARTHWORK				
GC/PR/PREP				
SITE GENERAL CONDITIONS	1	LS	250,000.00	$ 250,000.00
CONSTRUCTION ENTRANCE W/ FILTER FABRIC	1	EA	7,500.00	$ 7,500.00
CONSTRUCTION FENCE - CLF	2500	LF	30.00	$ 75,000.00
DUST CONTROL	1	LS	20,000.00	$ 20,000.00
STREET SWEEPING	25	DYS	950.00	$ 23,750.00
EROSION AND SEDIMENT CONTROL				
INLET FILTER	5	EA	750.00	$ 3,750.00
SILT FENCE	2425	LF	20.00	$ 48,500.00
MISC ERROSION CONTROL	1	LS	25,000.00	$ 25,000.00
MAINTAIN ERROSION CONTROL	25	MD	850.00	$ 21,250.00
EARTHWORK				
SITE CUTS AND FILLS				
SITE CUTS TO EXPORT	3777	CY	25.00	$ 94,425.00
FILLS REQUIRED	*6,272*	*CY*		
IMPORT FILLS	6275	CY	60.00	$ 376,500.00
LOAD FOR EXPORT	4777	CY	5.00	$ 23,885.00
EXPORTS FROM SITE CUTS	6421	TON	25.00	$ 160,522.50
ROUGH GRADE SITE	350630	SF	0.25	$ 87,657.50
FINE GRADE SITE	350630	SF	0.30	$ 105,189.00
SITE DEWATERING	3	MO	60,000.00	$ 180,000.00
LEDGE REMOVAL	1	LS	150,000.00	$ 150,000.00
SWAMP DEPOSITS	1	LS	50,000.00	$ 50,000.00
G1030 - SITE EARTHWORK				**$ 1,702,929.00**
G1040 - HAZARDOUS WASTE REMEDIATION				

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
CONTAMINATED MATERIALS				*EXCLUDED*
G1040 - HAZARDOUS WASTE REMEDIATION				$ -
G10 - SITE PREPARATIONS				$ 2,547,105.78
G20 - SITE IMPROVEMENTS				
G2010 - ROADWAYS & PARKING LOTS				
CURBS				
GRANITE CURB	5400	LF	60.00	$ 324,000.00
CURB AT EMERGENCY DRIVE	900	LF	35.00	$ 31,500.00
BIT PAVEMENT				
SD PAVEMENT 3"	1261	TON	185.00	$ 233,341.01
HD PAVEMENT 4.5"	699	TON	175.00	$ 122,295.83
EMERGENCY PAVEMENT PAVEMENT 3"	289	TON	185.00	$ 53,436.74
GRAVEL BASE	3838	CY	65.00	$ 249,474.81
FINE GRADE & PREP	103628	SF	1.00	$ 103,628.00
LINES & STRIPING	103628	SF	0.15	$ 15,544.20
MILL AND OVERLAY	33000	SF	3.50	$ 115,500.00
G2010 - ROADWAYS & PARKING LOTS				$ 1,248,720.60
G2030 - PEDESTRIAN PAVING				
CONCRETE				
SIDEWALK	19460	SF	14.75	$ 287,035.00
CONCRETE PADS	1000	SF	15.00	$ 15,000.00
CONCRETE BASE AT PAVERS	6210	SF	12.00	$ 74,520.00
HARDSCAPE				
UNIT PAVERS	6210	SF	42.00	$ 260,820.00
EARTHWORK				
GRAVEL BASE	823	CY	65.00	$ 53,504.63
FINE GRADE & PREP	26670	SF	1.25	$ 33,337.50
G2030 - PEDESTRIAN PAVING				$ 724,217.13
G2040 - SITE DEVELOPMENT				

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
RETAINING WALLS **IN PROJECT MANUAL BUT NOT SPEC/PLANS**				NIC
RETAINING WALL AT NORTHEAST CORNER OF SITE	1	LS	75,000.00	$ 75,000.00
CONCRETE				
FOOTINGS FOR SITE IMPROVEMENTS	46	EA	500.00	$ 23,000.00
EXTERIOR STEPS & RAMPS	1	LS	35,000.00	$ 35,000.00
FIELDS / COURTS				NIC
STRIP EXISTING FIELD	26932	SF	0.42	
EXPORT	1130	TON	25.00	
TOPSOIL	723	CY	75.00	
TALL FESCUE BLUE MIX AT OUTFIELD	20440	SF	0.65	
ATHLETIC FIELD MIX AT INFIELD	2984	SF	2.00	
INFIELD	3508	SF	7.50	
IRRIGATION SYSTEM	26932	SF	2.00	
CHAINLINK BACKSTOP/FENCING	175	LF	200.00	
BENCHES	2	EA	1,500.00	
SITE IMPROVEMENTS **PER SD LS SPEC**				
BENCHES METAL W/ WOOD SLATS	14	EA	3,500.00	$ 49,000.00
BIKE RACKS	7	EA	1,800.00	$ 12,600.00
TRASH RECEPTACLES	10	EA	2,500.00	$ 25,000.00
MONOLITHIC GRANITE BENCH	68	LF	2,000.00	$ 136,000.00
RAISED PLANTERS	4179	SF	10.00	$ 41,790.00
MOUNTED TABLES AND CHAIRS		EA	4,500.00	VE
MOVEABLE TABLES AND CHAIRS		EA	3,000.00	VE
PAINTED LINE GAMES	6	EA	500.00	$ 3,000.00
SS BOLLARDS	13	EA	4,000.00	$ 52,000.00
FLAG POLE	1	LS	6,500.00	$ 6,500.00
DIRECTIONAL / PARKING SIGNAGE	1	LS	10,000.00	$ 10,000.00
MONUMENT SIGN	1	EA	35,000.00	$ 35,000.00
SALVAGED BOULDERS, SEATWALLS, SHADE ELEMENTS, TREE ROOT BENCH	1	LS	50,000.00	$ 50,000.00
UTILITY/TRASH ENCLOSURE 8' BRICK WALL	400	SF	95.00	$ 38,000.00
RAILINGS AT STEPS/RAMPS	1	LS	25,000.00	$ 25,000.00
EXCAVATE FOR SITE IMPROVEMENTS	5	CD	4,500.00	$ 22,500.00
MISC SITE IMPROVEMENTS	1	LS	250,000.00	$ 250,000.00

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
FENCES AND GATES				
4' CHAIN LINK FENCING	135	LF	80.00	$ 10,800.00
GATE	2	EA	950.00	$ 1,900.00
PLAY AREAS				
SYNTHETIC TURF AT LEARNING COURTYARD	6318	SF	20.00	$ 126,360.00
SYNTHETIC TURF AT INFORMAL PLAY	11825	SF	20.00	$ 236,500.00
GRANITE CURB AT SYNTHETIC	580	LF	60.00	$ 34,800.00
BASE AT SYNTHETIC TURF	672	CY	65.00	$ 43,677.59
FINE GRADE & PREP	11825	SF	1.00	$ 11,825.00
PLAYGROUND EQUIPMENT				NIC
G2040 - SITE DEVELOPMENT				**$ 1,355,252.59**
G2050 - LANDSCAPING				
LANDSCAPING				
RAISED PLANTER	4179	SF	10.00	$ 41,790.00
PLANTINGS - PER SD LS SPEC				
DECIDUOUS TREE 3-3.5" CAL	66	EA	3,750.00	$ 247,500.00
SCREEN PLANTING	1	LS	7,500.00	$ 7,500.00
SHRUBS	96	EA	125.00	$ 12,000.00
GROUNDCOVER	61	EA	15.00	$ 915.00
DELETE CENTER COURTYARD PLANTINGS	-1	LS	10,000.00	$ (10,000.00)
PLANTING SOILS	426	CY	80.00	$ 34,080.00
MULCH	144	CY	95.00	$ 13,680.00
TOPSOIL	2435	CY	75.00	$ 182,648.61
TALL FESCUE BLUE MIX SEED	80680	SF	0.60	$ 48,408.00
ADDITIONAL SEED AREAS	50827	SF	0.60	$ 30,496.20
IRRIGATION SYSTEM	135557	SF	1.50	$ 203,335.50
G2050 - LANDSCAPING				**$ 812,353.31**
G20 - SITE IMPROVEMENTS				**$ 4,140,543.63**
G30 - SITE CIVIL / MECHANICAL UTILITIES				
G3010 - WATER SUPPLY				
WATER DISTRIBUTION				
DUCTILE IRON PIPE INC E&B & BEDDING				
4"	98	LF	128.00	$ 12,544.00

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

PCM COMPANY

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
6"	17	LF	152.00	$ 2,584.00
8"	865	LF	177.00	$ 153,105.00
GATE VALVE AND BOX	8	EA	3,100.00	$ 24,800.00
WET TAP	2	EA	7,500.00	$ 15,000.00
FIRE HYDRANT	1	EA	9,500.00	$ 9,500.00
PATCH ROADWAY	1	EA	7,500.00	$ 7,500.00
EXPORT SPOILS	247	TON	15.00	$ 3,697.50
PATCH ROADWAY	1	EA	15,000.00	$ 15,000.00
G3010 - WATER SUPPLY				**$ 243,730.50**
G3020 - SANITARY SEWER				
SANITARY SEWER				
4" SCH 80 PVC	867	LF	90.00	$ 78,030.00
6" SCH 80 PVC	148	LF	98.00	$ 14,504.00
BLOWER PIPE	223	LF	100.00	$ 22,300.00
10K GAL PUMP AND CHAMBER	1	EA	65,000.00	$ 65,000.00
15K GAL SEPTIC TANK	1	EA	45,000.00	$ 45,000.00
6K GAL GREASE TRAP	1	EA	30,000.00	$ 30,000.00
FAST FILTER	1	EA	25,000.00	$ 25,000.00
VALVE MH	1	EA	7,500.00	$ 7,500.00
LEACH FIELD				
EXCAVATE	3984	CY	35.00	$ 139,449.07
SAND/GRAVEL	3984	CY	65.00	$ 258,976.85
PIPING	21515	SF	7.50	$ 161,362.50
EXPORT SOILS	6773	TONS	25.00	$ 169,331.02
G3020 - SANITARY SEWER				**$ 1,016,453.44**
G3030 - STORM SEWER				
STORM SYSTEM				
HDPE				
12"	2068	LF	105.00	$ 217,140.00
18"	29	LF	122.00	$ 3,538.00
FES OUTLET	1	EA	2,500.00	$ 2,500.00
WATER QUALITY UNITS	3	EA	9,500.00	$ 28,500.00
CATCH BASINS	19	EA	4,500.00	$ 85,500.00
MANHOLES	14	EA	5,500.00	$ 77,000.00

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
OUTLET CONTROL STRUCTURE	2	EA	7,500.00	$ 15,000.00
SUBSURFACE FILTER SYSTEMS	15427	SF		
EXCAVATE AND LOAD FOR EXPORT	2857	CY	35.00	$ 99,989.81
SAND/GRAVEL	2285	CY	65.00	$ 148,556.30
UNITS	15427	SF	20.00	$ 308,540.00
EXPORT	5684	TON	15.00	$ 85,257.83
PATCH ROADWAY	2	EA	15,000.00	$ 30,000.00
G3030 - STORM SEWER				**$ 1,101,521.94**
G3050 - COOLING DISTRIBUTION				
GEOTHERMAL WELLS				
1-1/4" CLOSED LOOP WELLS	39000	LF	47.50	$ 1,852,500.00
HORIZONTAL PIPING	1500	LF	25.00	$ 37,500.00
WATER CONTAINMENT/DEWATERING	1	LS	75,000.00	$ 75,000.00
GROUTING & TESTING	60	EA	1,500.00	$ 90,000.00
EARTHWORK				
SUPPORT OF GEOTHERMAL SUB	60	EA	3,000.00	$ 180,000.00
E&B FOR HORIZONTAL PIPING	1500	LF	35.00	$ 52,500.00
G3050 - COOLING DISTRIBUTION				**$ 2,287,500.00**
G30 - SITE CIVIL / MECHANICAL UTILITIES				**$ 4,649,205.89**
G40 - SITE ELECTRICAL UTILITIES				
G4010 - ELECTRICAL DISTRIBUTION				
ELECTRICAL SERVICE				
PRIMARY POWER - CONDUIT ONLY, WIRE BY OTHERS	450	LF	75.00	$ 33,750.00
SECONDARY POWER (CONDUIT & WIRE)	65	LF	750.00	$ 48,750.00
TRANSFORMER - EXCLUDED, ASSUMED BY OTHERS				
OH POWER - EXCLUDED, ASSUMED BY OTHERS				
TRENCH AND BACKFILL	515	LF	50.00	$ 25,750.00
DUCTBANK CONCRETE FILL	114	CY	300.00	$ 34,333.33
MANHOLE	3	EA	6,500.00	$ 19,500.00
G4010 - ELECTRICAL DISTRIBUTION				**$ 162,083.33**
G4020 - SITE LIGHTING				

NEARY ELEMENTARY SCHOOL
SD ESTIMATE
DETAILED ITEM TAKEOFF
2/18/2025

99,564 GROSS SF

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
SITE LIGHTING NOT SHOWN, ASSUMED				
WIRE & CONDUIT, 1"	1500	LF	22.00	$ 33,000.00
TRENCH & BACKFILL	1500	LF	25.00	$ 37,500.00
POLE & FIXTURE	20	EA	3,800.00	$ 76,000.00
ADD FOR CONCRETE BASE	20	EA	850.00	$ 17,000.00
G4020 - SITE LIGHTING				**$ 163,500.00**
G4030 - SITE COMMUNICATION & SECURITY				
COMMUNICATION DISTRIBUTION (NOT SHOWN, ASSUMED)				
CONDUIT - (4) 4" CONDUIT	450	LF	125.00	$ 56,250.00
TRENCH AND BACKFILL	450	LF	30.00	$ 13,500.00
SAND BED	150	CY	65.00	$ 9,750.00
G4030 - SITE COMMUNICATION & SECURITY				**$ 79,500.00**
G4090 - OTHER SITE ELECTRICAL UTILITIES				
EMERGENCY GENERATOR DISTRIBUTION (ASSUMED)				
CONDUIT & WIRE	150	LF	500.00	$ 75,000.00
TRENCH AND BACKFILL	150	LF	50.00	$ 7,500.00
DUCTBANK CONCRETE FILL	12.5	CY	300.00	$ 3,750.00
ELECTRIC TO VEHICLE CHARGING STATIONS				
(4) #4 AWG & (1) #8 AWG GND IN 2" CONDUIT	400	LF	64.50	$ 25,800.00
TRENCH AND BACKFILL	400	LF	50.00	$ 20,000.00
EV CHARGING STATION - DUAL HEAD	8	EA	12,500.00	$ 100,000.00
G4090 - OTHER SITE ELECTRICAL UTILITIES				**$ 232,050.00**
G40 - SITE ELECTRICAL UTILITIES				**$ 637,133.33**

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N: Life Cycle Cost Analysis (LCCA)

Engineering Economic Analysis
for
Neary Elementary School

Southborough, MA

December 27, 2024

Prepared for:

Margaret A. Neary School

Be Ready, Be Responsible, Be Respectful, Be Safe and Always Be Kind!

Prepared by:

GGD Consulting Engineers, Inc.
375 Faunce Corner Road, Suite D
Dartmouth, MA 02747

Neary Elementary School
Engineering Economic Analysis

Table of Contents

EXECUTIVE SUMMARY

Section 1.0: Executive Summary

The Neary Elementary School is a new two-story school with an approximate gross area of 99,564 s.f. located in Southborough, MA. The building has been simulated with the school's anticipated hours of operation provided by the owner.

It is anticipated that the school will be open from 7:00 am – 6:00 pm (Mon-Fri) with typical student hours will occur from 9:00 am – 4:00 pm (Mon-Fri). Limited summer programming shall occur during the same hours for summer camp programming. The Gym will also have limited evening use during the typical school year for youth basketball until 9:00 pm.

The goal of the mechanical system lifecycle engineering economic analysis is to assess the performance of various mechanical systems in comparison to a baseline mechanical system.

Each option is compared to the baseline system to determine the greatest combined savings over a 50 year cycle to determine the most advantageous system considering anticipated hours of operation (provided by owner), electrical costs, maintenance costs, initial construction costs, and replacement costs.

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.

Upon completion of the mechanical system lifecycle engineering economic analysis, the design building is simulated with the recommended mechanical system in comparison to an ASHRAE Standard 90.1-2010 baseline building to project the anticipated energy cost percentage savings for LEED V4 EAc2 – Optimize Energy Performance.

Section 1.1: Mechanical System Analysis

1.1.A: System Option One (Baseline) – VRF ASHP System with Supplemental Electric Heating Units

- 100% outside air ASHP heating/cooling VAV air handling units with energy recovery wheels and terminal variable air volume boxes with demand control ventilation providing ventilation to the terminal VRF units serving the following areas:
    - AHU-1: 7,000 CFM Classrooms, Support, & Circulation Areas
    - AHU-2: 7,000 CFM Classrooms, Support, & Circulation Areas
    - AHU-3: 7,000 CFM Classrooms, Support, & Circulation Areas
    - AHU-4: 7,000 CFM Classrooms, Support, & Circulation Areas
    - AHU-6: 10,000 CFM Administration, Music, Art, Lobby, & Media Center
- Terminal VRF heat pump evaporator units serving the spaces indicated above
- Insulated refrigerant and condensate piping systems
- Air-source heat recovery VRF heat pump condensing units (150 ton total capacity, 135 ton cooling load, 110 ton heating load)
- ASHP cooling/heating VAV air handling units with energy recovery wheels and demand control ventilation providing mixed-air over-head distribution the following areas:
    - AHU-5: 8,500 CFM Gym

  - AHU-7: 7,500 CFM Cafeteria

- 100% outside air ASHP cooling/heating VAV make-up air handling unit and kitchen exhaust fans with kitchen hood controls serving the following areas:

  - MAU-1: 2,500 CFM Kitchen

- Overhead fiberglass insulated supply and return air ductwork distribution system

- Electric radiation and unit heaters for heating only areas such as storage rooms, entry ways, corridors, etc.

- Direct digital controls throughout

1.1.B: System Option Two – Chilled/Hot Water Cooling/Heating VAV Air Handling Unit Displacement Ventilation Systems with Ground-Source Heat Pump (GSHP) Heat Recovery Chiller/Heater Geothermal Plant

- 100% outside air hot water heating/chilled water cooling air handling units with energy recovery wheels and terminal variable air volume boxes with demand control ventilation providing displacement ventilation to the following areas:

  - AHU-1: 8,000 CFM Classrooms, Support, & Circulation Areas
  - AHU-2: 8,000 CFM Classrooms, Support, & Circulation Areas
  - AHU-3: 8,000 CFM Classrooms, Support, & Circulation Areas
  - AHU-4: 8,000 CFM Classrooms, Support, & Circulation Areas
  - AHU-6: 12,000 CFM Administration, Music, Art, Lobby, & Media Center

- Passive chilled beam cooling/heating panels located along exterior walls of the above areas

- Hot water heating/chilled water cooling VAV air handling units with energy recovery wheels and demand control ventilation providing displacement ventilation to the following areas:

  - AHU-5: 6,500 CFM Gym
  - AHU-7: 6,500 CFM Cafeteria

- Hot water radiant heating panels located along exterior walls of the above areas

- 100% outside air chilled/hot water VAV make-up air handling unit and kitchen exhaust fans with kitchen hood controls serving the following areas:

  - MAU-1: 2,500 CFM Kitchen

- Overhead fiberglass insulated supply and return air ductwork distribution system

- Hot water radiation and unit heaters for heating only areas such as storage rooms, entry ways, corridors, etc.

- (60) 650’ closed-loop type ground source geothermal wells (4.5 tons each for 275 tons total capacity)

- (7) 50 ton (350 ton total capacity, 275 ton cooling load, 200 ton heating load) high-efficiency water-to-water source modular hilled/hot water heat recovery heat pump plant providing chilled and hot water to the building (2 modules for redundancy)

- (1) 1,600 MBH (470 kW) electric hot water boilers (Back Up Only)

- Chilled, condenser, geothermal well, and hot water primary pumping with variable frequency drives

- Direct digital controls throughout

1.1.C: System Option Three – Chilled/Hot Water VAV Air Handling Unit Displacement Ventilation Systems with ASHP Heat Recovery Chiller/Heater Plant

- This option is identical to Option 2 as outlined above but will utilize the following air-source chilled/hot water plant equipment rather than the geothermal heat pump chilled/hot water plant and wellfield outlined above:

    - (12) 30 ton (360 ton total capacity, 275 ton cooling load, 200 ton heating load) high-efficiency air-to-water source modular chilled/hot water heat recovery heat pump plant providing chilled and hot water to the building (2 modules for redundancy)

    - (2) 1,600 MBH (470 kW) electric hot water boilers (Back Up Only)

    - Chilled and hot water primary pumping with variable frequency drives

Section 1.2: Mechanical System Analysis Conclusion

The air-source VRF system is selected as the baseline system since it is a high-performance system with a relatively low first cost system compared to other designs. Unfortunately, the selection may result in overall ownership costs that in some cases are higher when compared to the alterative systems primarily relating to increased annual operating costs and/or replacement costs over the building's life span. The option comparison of each alternative system to the baseline assesses the benefits of improved systems with potentially reduced operating costs and improved thermal comfort with the goal of selecting the system with the highest ownership savings over the 50 year study period.

Annual electrical consumption is calculated through the results of a thermal dynamic heat transfer analysis utilizing Energy Plus/Carrier Hourly Analysis Program (HAP) software with all architectural data provided by Arrowstreet.

The building envelope reflects Arrowstreet's high-efficiency design with assembly rated U-Values as follows: These assemblies are clear field derated but do not yet include linear derating.

Roof:	U-0.027
Stud Walls:	U-0.032
CMU Wall (Gym):	U-0.037
Curtainwall:	U-0.20, 0.33 SHGC
Fixed Windows:	U-0.20, 0.33 SHGC
Operable Windows:	U-0.22, 0.33 SHGC

Utility cost data for electricity was obtained from utility bills provided by the owner as follows:

Electricity – National Grid: General Service Demand G-2

- Customer Charge: $30.00/month
- Supply Energy (Constellation): $0.12320/kWh
- Distribution: $0.01369/kWh
- Transition: -$0.00049/kWh
- Transmission: $0.03105/kWh
- Distribution Demand: $13.36/kW
- Energy Efficiency: $0.00909/kWh
- Renewable Energy: $0.0005/kWh
- Net Meter Recovery: $0.01232/kWh
- Distributed Solar: $0.00471/kWh
- Electric Vehicle: $0.00027/kWh

The “Building Life-Cycle” analysis was performed in BLCC v5.3-22 and includes future worth of each system option considered using the DOE rates for nominal discount (1.4%), escalation (for each utility type based on region), inflation (2.0%), and interest (2.0%). The analysis includes equipment replacement costs for major system components after 20, 30, and 40 years (varying per system option as indicated in the replacement cost estimate sheet).

Our observation of the Mechanical System Payback Summary, not including incentives, suggests that the baseline system Option 1, Air-Source VRF Heat Pump System, represents the lowest life cycle cost of the system options studied as neither of the alternative options studied result in positive life cycle savings over the 50 year study period.

Section 1.3: Potential Incentives & Federal Tax Credit Analysis

Additional Life Cycle Calculations have been performed to account for potential incentives that each option could qualify for that should be factored in selecting the most cost effective system.

Section 1.3.1: Mass Save Space Heating Heat Pump Incentives

Mass Save’s Commercial New Construction Program provides Space Heating Heat Pump Adder and Post Construction incentives for various types of heat pump equipment that would apply to each system option as follows:

Option	**Type of Heat Pump**	**Incentive Rate**	**Peak Heating Load**	**Potential Incentive**	**Adder Total Incentive**	**Post Construction Total Incentive**
1	Air Source Heat Pumps	$800/ton	90 tons	$72,000	**$204,000**	**$348,455**
	VRF Heat Pumps	$1,200/ton	110 tons	$132,000		
2	Ground Source Heat Pumps	$4,500/ton	200 tons	$900,000	**$900,000**	**$1,109,128**
3	Air Source Heat Pumps	$800/ton	200 tons	$160,000	**$160,000**	**$304,455**

(Note that the above equipment capacities and incentives will need to be further reviewed, coordinated, and confirmed by Mass Save and the design team as the design proceeds. Indicated System Capacities reflect peak heating load per Mass Save Requirements. Refer to the Mass Save Incentive calculations performed by Arrowstreet in the Appendix of this report for complete incentive calculations.)

When accounting for the potential Mass Save incentives, the Mechanical System Payback Summary suggests that the baseline system Option 1, Air-Source VRF Heat Pump System, represents the lowest life cycle cost of the system options studied as neither of the alternative options studied result in positive life cycle savings over the 50 year study period.

Section 1.3.2: Geothermal Federal Tax Credit

There are significant federal tax credits potentially available to the town for installing a geothermal heating system. Per the 2022 Inflation Reduction Act, the Federal Investment Tax Credit (§ 48) can range from 6% to 30% if Prevailing Wage and Apprenticeship (PWA) requirements are met. Additional tax credits may also be available for using Domestic Content (up to 10% of related domestic steel and iron material and manufactured product costs). For the purpose of this study, a 25.5% federal tax credit was factored at this time assuming PWA requirements would be met (accounting for a 15% deduction required by projects funded by tax exempt bonds to the 30% incentive). Please note that it is recommended that the Town consult with a financial tax advisor or attorney to complete the required IRS documentation if a Geothermal heating system is selected.

When accounting for the Mass Save Incentives and Federal Tax Credit, the Mechanical System Payback Summary suggests that Option 2, Displacement Ventilation w/ a Ground-Source Heat Recovery Heat Pump Plant, represents the greatest total life cycle savings by yielding an approximate $2,500,480 savings over the 50 year study period with an instant payback compared to the baseline system.

The geothermal system additionally provides further benefits that should be considered such as providing the lowest EUI of all options at 24.0 kBTU/s.f./yr. The system further provides system longevity, reduced maintenance, reduced downtime, and improved controllability of equipment. The geothermal design also does not require exterior mounted condensing equipment which will provide the best acoustics of all options studied.

For additional information please refer to the following references:

- ClimateMaster’s IRA 2023 Commercial Geothermal Tax Guide, weblink @ lc028-climatemaster-commercial-federal-tax-incentives-brochure.pdf , and included in Appendix B
- IRS Clean Energy Tax Credit Information: Publication 5817-G (6-2023) (irs.gov), weblink @ https://www.irs.gov/pub/irs-pdf/p5817g.pdf, and included in Appendix B
- IRS & US Treasury Dept Notice 2023-44: Additional Guidance for the Qualifying Advanced Energy Project Credit Allocation Program under Section 48C(e) (irs.gov), weblink @ https://www.irs.gov/pub/irs-drop/n-23-44.pdf

Section 2.0: LEED Energy Savings Summary

To estimate the LEED V4 EAc2 – Optimize Energy Performance (2024 Update) savings, energy model simulations have been performed comparing the design building to a baseline ASHRAE Standard 90.1-2010 building.

1. The ASHRAE Standard 90.1-2010 baseline building is as follows:

- Envelope:
    - Wall: U-0.064
    - Roof: U-0.048
    - Windows: 0.55 U-Value, 0.40 SHGC
    - Curtainwall/Storefront: 0.45 U-Value, 0.40 SHGC

- Mechanical System:
    - System 6 - Packaged dx cooling air handling units with energy recovery wheels and terminal fan-powered VAV boxes with electric reheat coils (one per floor)
    - System 4 – Packaged electric heat pump cooling/heating constant volume single zone air handling units (serving spaces with loads varying by 10 Btuh/s.f. of the average space load)
- Domestic Hot Water System:
    - Instantaneous electric domestic hot water system
- Lighting System:
    - 0.99 w/s.f.

2. The design building is as follows:

- Envelope:
    - Roof: U-0.027
    - Stud Walls: U-0.032
    - CMU Walls: U-0.037
    - Curtainwall: U-0.20, 0.33 SHGC
    - Fixed Windows: U-0.20, 0.33 SHGC
    - Operable Windows: U-0.22, 0.33 SHGC
- Mechanical System:
    - (Refer to System Option descriptions)
- Domestic Hot Water System:
    - Instantaneous electric domestic hot water system
- Lighting System:
    - 0.50 w/s.f.

Section 2.1: LEED Energy Savings Analysis Conclusion

A comparison of the Design Building against the ASHRAE Standard 90.1-2010 Baseline Building results in the following energy cost savings for LEED V4 EAc2 – Optimize Energy Performance for each System Option as follows:

- System Option 1 – 39.6% cost & 39.3% emissions savings for 8 total points
- System Option 2 – 51.0% cost & 47.1% emissions savings for 12 total points
- System Option 3 – 44.3% cost & 42.8% emissions savings for 10 total points

Note:

The values indicated above are based on energy modelling performed for system comparison purposes only. Our office strongly recommends adding a 30% safety factor to the calculated values of this report for budgeting purposes to account for potential variances to the actual operation of the building. Per ASHRAE Standard 90.1:

Neither the proposed building performance nor the baseline building performance are predictions of actual energy consumption or costs for the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by this procedure, changes in energy rates between design of the building and occupancy, and the precision of the calculation tool.

Neary Elementary School - Mechanical System Payback Summary

Option	System	Gross Capital Investment*	Annual Elec. Cons. (kWh)	Annual Electric Cost	Annual Utility $/s.f.	Annual kBTU/s.f. (EUI)	Annual Maint. Cost	20 Year Equipment Replacement Cost	30 Year Equipment Replacement Cost	40 Year Equipment Replacement Cost	Combined Annual Expense	Combined Expense Savings**	Total Life-Cycle Savings***	Discounted Payback (Years)****
1	1. Variable Refrigerant Flow (VRF) Units w/ Air-Source Condensers serving the Classrooms, Administration and Support Areas 2. ASHP DOAS AHU's w/ ERV & Terminal VAV's w/ DCV providing Ventilation to the VRF Units 3. Mixed-Air Overhead AHSP VAV AHU's w/ ERV & DCV serving the Cafe/Stage and Gym areas 4. Supplemental Electric Resistance Heating Units	$8,308,330	805,686	$215,295 $161,137 $128,910	$2.16	**27.6**	$63,443	$1,297,500	$435,000	$2,145,000	$278,738	-	-	-

Option	System	Gross Capital Investment*	Annual Elec. Cons. (kWh)	Annual Electric Cost	Annual Utility $/s.f.	Annual kBTU/s.f. (EUI)	Annual Maint. Cost	20 Year Equipment Replacement Cost	30 Year Equipment Replacement Cost	40 Year Equipment Replacement Cost	Combined Annual Expense	Combined Expense Savings**	Total Life-Cycle Savings***	Discounted Payback (Years)****
2	1. Displacement Ventilation Diffusers w/ Radiant Cooling/Heating Panels 2. CHW/HHW DOAS AHU's ERV & Terminal VAV's w/ DCV 3. High-Efficiency Ground Source Heat Pump (GSHP) Chiller/Heater Plant w/ Geothermal Well Field 4. Backup Side-Stream Electric Boiler Plant	$11,931,368	701,296	$174,545 $126,233 $98,181	$1.75	**24.0**	$53,880	$0	$3,007,500	$0	$228,425	**$50,313**	**-$1,302,692**	**Not Reached** *******
3	1. Displacement Ventilation Diffusers w/ Radiant Cooling/Heating Panels 2. CHW/HHW Dedicated Outdoor Air System (DOAS) AHU's ERV & Terminal VAV's w/ DCV 3. High-Efficiency ASHP Chiller/Heater Plant 4. Backup Electric Boiler Plant	$9,767,368	759,153	$198,514 $151,831 $121,464	$1.99	**26.0**	$53,891	$1,368,000	$1,797,500	$1,368,000	$252,405	**$26,333**	**-$1,021,317**	**Not Reached** *******

cost with $0.06
savings assuming PPA

cost with $0.10
savings assuming PPA

* Capital Investment Costs based upon project cost estimates performed by PM&C dated 12/6/24.
** Combined expense savings is the difference between the combined annual expense of the baseline and system in comparison.
*** Total life-cycle savings is based on a 50 year study period.
**** Discounted payback years is based upon BLCC5 Life Cycle Analysis.
***** Discounted payback never reached within 50 year study period.
****** Discounted payback never reached because system is more efficient and/or less expensive than baseline system.

Note 1: Values based on energy model performed for HVAC System Life Cycle Cost Analysis purposes. A 30% safety factor should be applied for budgeting purposes to account for potential variances to the actual operation of the building. Per ASHRAE Standard 90.1:

Neither the proposed building performance nor the baseline building performance are predictions of actual energy consumption or costs for the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by this procedure, changes in energy rates between design of the building and occupancy, and the precision of the calculation tool.

Neary Elementary School - Mechanical System Payback Summary
Including Mass Save Incentives

Baseline	System	Gross Capital Investment*	Mass Save Total Incentive**	Net Investment	Annual Elec. Cons. (kWh)	Annual Electric Cost	Annual Utility $/s.f.	Annual kBTU/s.f. (EUI)	Annual Maint. Cost	20 Year Equipment Replacement Cost	30 Year Equipment Replacement Cost	40 Year Equipment Replacement Cost	Combined Annual Expense	Combined Expense Savings***	Total Life-Cycle Savings***	Discounted Payback (Years)****
1	**1. Variable Refrigerant Flow (VRF) Units w/ Air-Source Condensers serving the Classrooms, Administration and Support Areas** **2. ASHP DOAS AHU's w/ ERV & Terminal VAV's w/ DCV providing Ventilation to the VRF Units** **3. Mixed-Air Overhead AHSP VAV AHU's w/ ERV & DCV serving the Cafe/Stage and Gym areas** **4. Supplemental Electric Resistance Heating Units**	$8,308,330	$348,455	**$7,959,875**	805,686	$215,295	$2.16	**27.6**	$63,443	$1,297,500	$435,000	$2,145,000	$278,738	-	-	-

Option	System	Gross Capital Investment*	Mass Save Total Incentive**	Net Investment	Annual Elec. Cons. (kWh)	Annual Electric Cost	Annual Utility $/s.f.	Annual kBTU/s.f. (EUI)	Annual Maint. Cost	20 Year Equipment Replacement Cost	30 Year Equipment Replacement Cost	40 Year Equipment Replacement Cost	Combined Annual Expense	Combined Expense Savings**	Total Life-Cycle Savings***	Discounted Payback (Years)****
2	**1. Displacement Ventilation Diffusers w/ Radiant Cooling/Heating Panels** **2. CHW/HHW DOAS AHU's ERV & Terminal VAV's w/ DCV** **3. High-Efficiency Ground Source Heat Pump (GSHP) Chiller/Heater Plant w/ Geothermal Well Field** **4. Backup Side-Stream Electric Boiler Plant**	$11,931,368	$1,109,128	**$10,822,240**	701,296	$174,545	$1.75	**24.0**	$53,880	$0	$3,007,500	$0	$228,425	**$50,313**	-$542,019	**Not Reached** *******
3	**1. Displacement Ventilation Diffusers w/ Radiant Cooling/Heating Panels** **2. CHW/HHW Dedicated Outdoor Air System (DOAS) AHU's ERV & Terminal VAV's w/ DCV** **3. High-Efficiency ASHP Chiller/Heater Plant** **4. Backup Electric Boiler Plant**	$9,767,368	$304,455	**$9,462,913**	759,153	$198,514	$1.99	**26.0**	$53,891	$1,368,000	$1,797,500	$1,368,000	$252,405	**$26,333**	-$1,065,317	**Not Reached** *******

* Capital Investment Costs based upon project cost estimates performed by PM&C dated 12/6/24.
** Total payment costs indicated for these incentives need to be confirmed by the appropriate providers.
*** Combined expense savings is the difference between the combined annual expense of the baseline and system in comparison.
**** Total life-cycle savings is based on a 50 year study period.
***** Discounted payback years is based upon BLCC5 Life Cycle Analysis.
****** Discounted payback never reached within 50 year study period.
******* Discounted payback never reached because system is more efficient and/or less expensive than baseline system.

Note 1: Values based on energy model performed for HVAC System Life Cycle Cost Analysis purposes. A 30% safety factor should be applied for budgeting purposes to account for potential variances to the actual operation of the building. Per ASHRAE Standard 90.1:

Neither the proposed building performance nor the baseline building performance are predictions of actual energy consumption or costs for the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by this procedure, changes in energy rates between design of the building and occupancy, and the precision of the calculation tool.

GGD Consulting Engineers, Inc.
375 Faunce Corner Road, Suite D
Dartmouth, MA 02747

Neary Elementary School - Mechanical System Payback Summary
Including Mass Save Incentives & Federal Tax Credit

Baseline	System	Gross Capital Investment*	Mass Save Total Incentive**	25.5% IRA Geothermal Federal Tax Credit***	Net Investment	Annual Elec. Cons. (kWh)	Annual Electric Cost	Annual Utility $/s.f.	Annual kBTU/s.f. (EUI)	Annual Maint. Cost	20 Year Equipment Replacement Cost	30 Year Equipment Replacement Cost	40 Year Equipment Replacement Cost	Combined Annual Expense	Combined Expense Savings***	Total Life-Cycle Savings***	Discounted Payback (Years)****
1	**1. Variable Refrigerant Flow (VRF) Units w/ Air-Source Condensers serving the Classrooms, Administration and Support Areas** **2. ASHP DOAS AHU's w/ ERV & Terminal VAV's w/ DCV providing Ventilation to the VRF Units** **3. Mixed-Air Overhead AHSP VAV AHU's w/ ERV & DCV serving the Cafe/Stage and Gym areas** **4. Supplemental Electric Resistance Heating Units**	$8,308,330	$348,455	$0	**$7,959,875**	805,686	$215,295	$2.16	**27.6**	$63,443	$1,297,500	$435,000	$2,145,000	$278,738	-	-	-

Option	System	Gross Capital Investment*	Mass Save Total Incentive**	25.5% IRA Geothermal Federal Tax Credit***	Net Investment	Annual Elec. Cons. (kWh)	Annual Electric Cost	Annual Utility $/s.f.	Annual kBTU/s.f. (EUI)	Annual Maint. Cost	20 Year Equipment Replacement Cost	30 Year Equipment Replacement Cost	40 Year Equipment Replacement Cost	Combined Annual Expense	Combined Expense Savings***	Total Life-Cycle Savings***	Discounted Payback (Years)****
2	**1. Displacement Ventilation Diffusers w/ Radiant Cooling/Heating Panels** **2. CHW/HHW DOAS AHU's ERV & Terminal VAV's w/ DCV** **3. High-Efficiency Ground Source Heat Pump (GSHP) Chiller/Heater Plant w/ Geothermal Well Field** **4. Backup Side-Stream Electric Boiler Plant**	$11,931,368	$1,109,128	$3,042,499	**$7,779,741**	701,296	$174,545	$1.75	**24.0**	$53,880	$0	$3,007,500	$0	$228,425	**$50,313**	**$2,500,480**	**Instant ********
3	**1. Displacement Ventilation Diffusers w/ Radiant Cooling/Heating Panels** **2. CHW/HHW Dedicated Outdoor Air System (DOAS) AHU's ERV & Terminal VAV's w/ DCV** **3. High-Efficiency ASHP Chiller/Heater Plant** **4. Backup Electric Boiler Plant**	$9,767,368	$304,455	$0	**$9,462,913**	759,153	$198,514	$1.99	**26.0**	$53,891	$1,368,000	$1,797,500	$1,368,000	$252,405	**$26,333**	**-$1,065,317**	**Not Reached *********

* Capital Investment Costs based upon project cost estimates performed by PM&C dated 12/6/24.
** Total payment costs indicated for these incentives need to be confirmed by the appropriate providers.
*** Combined expense savings is the difference between the combined annual expense of the baseline and system in comparison.
**** Total life-cycle savings is based on a 50 year study period.
***** Discounted payback years is based upon BLCC5 Life Cycle Analysis.
****** Discounted payback never reached within 50 year study period.
******* Discounted payback never reached because system is more efficient and/or less expensive than baseline system.

Note 1: Values based on energy model performed for HVAC System Life Cycle Cost Analysis purposes. A 30% safety factor should be applied for budgeting purposes to account for potential variances to the actual operation of the building. Per ASHRAE Standard 90.1:

Neither the proposed building performance nor the baseline building performance are predictions of actual energy consumption or costs for the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by this procedure, changes in energy rates between design of the building and occupancy, and the precision of the calculation tool.

Neary Elementary School - LEED v4.0 Energy Savings Summary

Baseline	Description	Annual Elec. Cons. (kWh)	Annual Electric Cost	Annual Utility $/s.f.	Annual kBTU/s.f. (EUI)	Annual GHG Emissions (kg CO2)	Combined Expense Savings**	Energy Cost Savings Percentage**	GHG Emissions Savings Percentage**	Energy Cost Savings Points	GHG Emissions Savings Points	Total LEED EAc2 Points
LEED Baseline	**1. ASHRAE 90.1-2010 Envelope 2. ASHRAE 90.1-2010 Mechanical Systems (System 6 - Packaged VAV AHU's w/ Fan-Powered VAV Boxes w/ Electric Reheat) 3. ASHRAE 90.1-2010 Lighting System (0.99 w/s.f.) 4. ASHRAE 90.1-2010 Electric Domestic Hot Water Systems**	1,326,335	$356,166	$3.58	45.5	339,137.6	-	-	-	-	-	-

System Option	Description	Annual Elec. Cons. (kWh)	Annual Electric Cost	Annual Utility $/s.f.	Annual kBTU/s.f. (EUI)	Annual GHG Emissions (kg CO2)	Combined Expense Savings**	Energy Cost Savings Percentage**	GHG Emissions Savings Percentage**	Energy Cost Savings Points	GHG Emissions Savings Points	Total LEED EAc2 Points
1	**1. Design Envelope 2. Design Mechanical Systems (Air-Source VRF Heat Pump System) 3. Design High-Efficiency Lighting System (0.5 w/s.f.) 4. Electric Domestic Hot Water Systems**	805,686	$215,295	$2.16	27.6	206,010.1	$140,871	**39.6%**	**39.3%**	**4**	**4**	**8**
2	**1. Design Envelope 2. Design Mechanical Systems (Displacement Ventilation System with Ground-Source Heat Recovery Heat Pump Chiller/Heater Plant) 3. Design High-Efficiency Lighting System (0.5 w/s.f.) 4. Electric Domestic Hot Water Systems**	701,296	$174,545	$1.75	24.0	179,318.1	$181,621	**51.0%**	**47.1%**	**7**	**5**	**12**
3	**1. Design Envelope 2. Design Mechanical Systems (Displacement Ventilation System with Air-Source Heat Recovery Heat Pump Chiller/Heater Plant) 3. Design High-Efficiency Lighting System (0.5 w/s.f.) 4. Electric Domestic Hot Water Systems**	759,153	$198,514	$1.99	26.0	194,111.8	$157,652	**44.3%**	**42.8%**	**5**	**5**	**10**

*Combined expense savings is the difference between the combined annual expense of the baseline and building in comparison.
**Energy cost/Greenhouse Gas (GHG) emissions savings percentage is the difference between the annual energy costs of the baseline and building in comparison.

Note 1: Values based on energy model performed for HVAC System Life Cycle Cost Analysis purposes. A 30% safety factor should be applied for budgeting purposes to account for potential variances to the actual operation of the building. Per ASHRAE Standard 90.1:

Neither the proposed building performance nor the baseline building performance are predictions of actual energy consumption or costs for the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by this procedure, changes in energy rates between design of the building and occupancy, and the precision of the calculation tool.

LIFE CYCLE ANALYSES

NIST BLCC 5.3-22: Comparative Analysis

Consistent with Federal Life Cycle Cost Methodology in OMB Circular A-94

Base Case: Option 1 - ASHP VRF System

Alternative: Option 2 - GSHP Displacement

General Information

File Name:	C:\Users\keith_lane.GGDMAIL\BLCC 5.3-22\projects\Neary Elementary School.xml
Date of Study:	Wed Dec 11 11:52:38 EST 2024
Project Name:	Neary Elementary School
Project Location:	Massachusetts
Analysis Type:	OMB Analysis, Non-Energy Project
Analysis Purpose:	Public Investment or Regulatory Analysis
Analyst:	
Base Date:	September 1, 2026
Service Date:	September 1, 2026
Study Period:	50 years 0 months(September 1, 2026 through August 31, 2076)
Discount Rate:	1.4%
Discounting Convention:	End-of-Year

Comparison of Present-Value Costs

PV Life-Cycle Cost

	Base Case	Alternative	Savings from Alternative
Initial Investment Costs:			
Capital Requirements as of Base Date	$8,308,330	$11,931,368	-$3,623,038
Future Costs:			
Energy Consumption Costs	$5,612,628	$4,885,418	$727,209
Energy Demand Charges	$2,104,793	$1,371,281	$733,512
Energy Utility Rebates	$0	$0	$0
Water Costs	$0	$0	$0
Recurring and Non-Recurring OM&R Costs	$4,769,612	$3,909,987	$859,625
Capital Replacements	$0	$0	$0
Residual Value at End of Study Period	$0	$0	$0
	------------	------------	------------
Subtotal (for Future Cost Items)	$12,487,032	$10,166,686	$2,320,346
	------------	------------	------------
Total PV Life-Cycle Cost	$20,795,362	$22,098,054	-$1,302,692

Net Savings from Alternative Compared with Base Case

PV of Non-Investment Savings	$2,320,346
- Increased Total Investment	$3,623,038

Net Savings	-$1,302,692

Savings-to-Investment Ratio (SIR)

SIR = 0.64

SIR is lower than 1.0; project alternative is not cost effective.

Adjusted Internal Rate of Return

AIRR = 0.50%

AIRR is lower than your discount rate; project alternative is not cost effective.

Payback Period

Estimated Years to Payback (from beginning of Service Period)

Simple Payback never reached during study period.

Discounted Payback never reached during study period.

Energy Savings Summary

Energy Savings Summary (in stated units)

Energy	-----Average	Annual	Consumption-----	Life-Cycle
Type	Base Case	Alternative	Savings	Savings
Electricity	805,686.0 kWh	701,296.0 kWh	104,390.0 kWh	5,219,357.1 kWh

Energy Savings Summary (in MBtu)

Energy	-----Average	Annual	Consumption-----	Life-Cycle
Type	Base Case	Alternative	Savings	Savings
Electricity	2,749.1 MBtu	2,392.9 MBtu	356.2 MBtu	17,809.2 MBtu

Emissions Reduction Summary

Energy	-----Average	Annual	Emissions-----	Life-Cycle
Type	Base Case	Alternative	Reduction	Reduction
Electricity				
CO2	265,904.93 kg	231,452.53 kg	34,452.40 kg	1,722,572.79 kg
SO2	75.41 kg	65.64 kg	9.77 kg	488.55 kg
NOx	203.04 kg	176.73 kg	26.31 kg	1,315.31 kg
Total:				
CO2	265,904.93 kg	231,452.53 kg	34,452.40 kg	1,722,572.79 kg
SO2	75.41 kg	65.64 kg	9.77 kg	488.55 kg
NOx	203.04 kg	176.73 kg	26.31 kg	1,315.31 kg

NIST BLCC 5.3-22: Comparative Analysis

Consistent with Federal Life Cycle Cost Methodology in OMB Circular A-94

Base Case: Option 1 - ASHP VRF System

Alternative: Option 3 - ASHP VRF System

General Information

File Name:	C:\Users\keith_lane.GGDMAIL\BLCC 5.3-22\projects\Neary Elementary School.xml
Date of Study:	Wed Dec 11 11:53:01 EST 2024
Project Name:	Neary Elementary School
Project Location:	Massachusetts
Analysis Type:	OMB Analysis, Non-Energy Project
Analysis Purpose:	Public Investment or Regulatory Analysis
Analyst:	
Base Date:	September 1, 2026
Service Date:	September 1, 2026
Study Period:	50 years 0 months(September 1, 2026 through August 31, 2076)
Discount Rate:	1.4%
Discounting Convention:	End-of-Year

Comparison of Present-Value Costs

PV Life-Cycle Cost

	Base Case	Alternative	Savings from Alternative
Initial Investment Costs:			
Capital Requirements as of Base Date	$8,308,330	$9,767,368	-$1,459,038
Future Costs:			
Energy Consumption Costs	$5,612,628	$5,288,466	$324,162
Energy Demand Charges	$2,104,793	$1,827,419	$277,375
Energy Utility Rebates	$0	$0	$0
Water Costs	$0	$0	$0
Recurring and Non-Recurring OM&R Costs	$4,769,612	$4,933,427	-$163,815
Capital Replacements	$0	$0	$0
Residual Value at End of Study Period	$0	$0	$0
	------------	------------	------------
Subtotal (for Future Cost Items)	$12,487,032	$12,049,311	$437,721
	------------	------------	------------
Total PV Life-Cycle Cost	$20,795,362	$21,816,679	-$1,021,317

Net Savings from Alternative Compared with Base Case

PV of Non-Investment Savings	$437,721
- Increased Total Investment	$1,459,038

Net Savings	-$1,021,317

Savings-to-Investment Ratio (SIR)

SIR = 0.30

SIR is lower than 1.0; project alternative is not cost effective.

Adjusted Internal Rate of Return

AIRR = -1.01%

AIRR is lower than your discount rate; project alternative is not cost effective.

Payback Period

Estimated Years to Payback (from beginning of Service Period)

Simple Payback never reached during study period.

Discounted Payback never reached during study period.

Energy Savings Summary

Energy Savings Summary (in stated units)

Energy	-----Average	Annual	Consumption-----	Life-Cycle
Type	**Base Case**	**Alternative**	**Savings**	**Savings**
Electricity	805,686.0 kWh	759,153.0 kWh	46,533.0 kWh	2,326,586.3 kWh

Energy Savings Summary (in MBtu)

Energy	-----Average	Annual	Consumption-----	Life-Cycle
Type	**Base Case**	**Alternative**	**Savings**	**Savings**
Electricity	2,749.1 MBtu	2,590.3 MBtu	158.8 MBtu	7,938.6 MBtu

Emissions Reduction Summary

Energy	-----Average	Annual	Emissions-----	Life-Cycle
Type	**Base Case**	**Alternative**	**Reduction**	**Reduction**
Electricity				
CO2	265,904.93 kg	250,547.39 kg	15,357.54 kg	767,855.92 kg
SO2	75.41 kg	71.06 kg	4.36 kg	217.77 kg
NOx	203.04 kg	191.31 kg	11.73 kg	586.32 kg
Total:				
CO2	265,904.93 kg	250,547.39 kg	15,357.54 kg	767,855.92 kg
SO2	75.41 kg	71.06 kg	4.36 kg	217.77 kg
NOx	203.04 kg	191.31 kg	11.73 kg	586.32 kg

NIST BLCC 5.3-22: Comparative Analysis

Consistent with Federal Life Cycle Cost Methodology in OMB Circular A-94

Base Case: Rebate Option 1 - ASHP VRF System

Alternative: Rebate Option 2 - GSHP Displacement

General Information

File Name:	C:\Users\keith_lane.GGDMAIL\BLCC 5.3-22\projects\Neary Elementary School.xml
Date of Study:	Fri Dec 27 14:47:32 EST 2024
Project Name:	Neary Elementary School
Project Location:	Massachusetts
Analysis Type:	OMB Analysis, Non-Energy Project
Analysis Purpose:	Public Investment or Regulatory Analysis
Analyst:	
Base Date:	September 1, 2026
Service Date:	September 1, 2026
Study Period:	50 years 0 months(September 1, 2026 through August 31, 2076)
Discount Rate:	1.4%
Discounting Convention:	End-of-Year

Comparison of Present-Value Costs

PV Life-Cycle Cost

	Base Case	Alternative	Savings from Alternative
Initial Investment Costs:			
Capital Requirements as of Base Date	$7,959,875	$10,822,240	-$2,862,365
Future Costs:			
Energy Consumption Costs	$5,612,628	$4,885,418	$727,209
Energy Demand Charges	$2,104,793	$1,371,281	$733,512
Energy Utility Rebates	$0	$0	$0
Water Costs	$0	$0	$0
Recurring and Non-Recurring OM&R Costs	$4,769,612	$3,909,987	$859,625
Capital Replacements	$0	$0	$0
Residual Value at End of Study Period	$0	$0	$0
	------------	------------	------------
Subtotal (for Future Cost Items)	$12,487,032	$10,166,686	$2,320,346
	------------	------------	------------
Total PV Life-Cycle Cost	$20,446,907	$20,988,926	-$542,019

Net Savings from Alternative Compared with Base Case

PV of Non-Investment Savings	$2,320,346
- Increased Total Investment	$2,862,365

Net Savings	-$542,019

Savings-to-Investment Ratio (SIR)

SIR = 0.81

SIR is lower than 1.0; project alternative is not cost effective.

Adjusted Internal Rate of Return

AIRR = 0.98%

AIRR is lower than your discount rate; project alternative is not cost effective.

Payback Period

Estimated Years to Payback (from beginning of Service Period)

Discounted Payback never reached during study period.

Simple Payback occurs in year 41

Energy Savings Summary

Energy Savings Summary (in stated units)

Energy	-----Average	Annual	Consumption-----	Life-Cycle
Type	Base Case	Alternative	Savings	Savings
Electricity	805,686.0 kWh	701,296.0 kWh	104,390.0 kWh	5,219,357.1 kWh

Energy Savings Summary (in MBtu)

Energy	-----Average	Annual	Consumption-----	Life-Cycle
Type	Base Case	Alternative	Savings	Savings
Electricity	2,749.1 MBtu	2,392.9 MBtu	356.2 MBtu	17,809.2 MBtu

Emissions Reduction Summary

Energy	-----Average	Annual	Emissions-----	Life-Cycle
Type	Base Case	Alternative	Reduction	Reduction
Electricity				
CO2	265,904.93 kg	231,452.53 kg	34,452.40 kg	1,722,572.79 kg
SO2	75.41 kg	65.64 kg	9.77 kg	488.55 kg
NOx	203.04 kg	176.73 kg	26.31 kg	1,315.31 kg
Total:				
CO2	265,904.93 kg	231,452.53 kg	34,452.40 kg	1,722,572.79 kg
SO2	75.41 kg	65.64 kg	9.77 kg	488.55 kg
NOx	203.04 kg	176.73 kg	26.31 kg	1,315.31 kg

NIST BLCC 5.3-22: Comparative Analysis

Consistent with Federal Life Cycle Cost Methodology in OMB Circular A-94

Base Case: Rebate Option 1 - ASHP VRF System

Alternative: Rebate Option 3 - ASHP VRF System

General Information

File Name:	C:\Users\keith_lane.GGDMAIL\BLCC 5.3-22\projects\Neary Elementary School.xml
Date of Study:	Fri Dec 27 14:47:57 EST 2024
Project Name:	Neary Elementary School
Project Location:	Massachusetts
Analysis Type:	OMB Analysis, Non-Energy Project
Analysis Purpose:	Public Investment or Regulatory Analysis
Analyst:	
Base Date:	September 1, 2026
Service Date:	September 1, 2026
Study Period:	50 years 0 months(September 1, 2026 through August 31, 2076)
Discount Rate:	1.4%
Discounting Convention:	End-of-Year

Comparison of Present-Value Costs

PV Life-Cycle Cost

	Base Case	Alternative	Savings from Alternative
Initial Investment Costs:			
Capital Requirements as of Base Date	$7,959,875	$9,462,913	-$1,503,038
Future Costs:			
Energy Consumption Costs	$5,612,628	$5,288,466	$324,162
Energy Demand Charges	$2,104,793	$1,827,419	$277,375
Energy Utility Rebates	$0	$0	$0
Water Costs	$0	$0	$0
Recurring and Non-Recurring OM&R Costs	$4,769,612	$4,933,427	-$163,815
Capital Replacements	$0	$0	$0
Residual Value at End of Study Period	$0	$0	$0
	------------	------------	------------
Subtotal (for Future Cost Items)	$12,487,032	$12,049,311	$437,721
	------------	------------	------------
Total PV Life-Cycle Cost	$20,446,907	$21,512,224	-$1,065,317

Net Savings from Alternative Compared with Base Case

PV of Non-Investment Savings	$437,721
- Increased Total Investment	$1,503,038

Net Savings	-$1,065,317

Savings-to-Investment Ratio (SIR)

SIR = 0.29

SIR is lower than 1.0; project alternative is not cost effective.

Adjusted Internal Rate of Return

AIRR = -1.07%

AIRR is lower than your discount rate; project alternative is not cost effective.

Payback Period

Estimated Years to Payback (from beginning of Service Period)

Simple Payback never reached during study period.

Discounted Payback never reached during study period.

Energy Savings Summary

Energy Savings Summary (in stated units)

Energy	-----Average	Annual	Consumption-----	Life-Cycle
Type	Base Case	Alternative	Savings	Savings
Electricity	805,686.0 kWh	759,153.0 kWh	46,533.0 kWh	2,326,586.3 kWh

Energy Savings Summary (in MBtu)

Energy	-----Average	Annual	Consumption-----	Life-Cycle
Type	Base Case	Alternative	Savings	Savings
Electricity	2,749.1 MBtu	2,590.3 MBtu	158.8 MBtu	7,938.6 MBtu

Emissions Reduction Summary

Energy	-----Average	Annual	Emissions-----	Life-Cycle
Type	Base Case	Alternative	Reduction	Reduction
Electricity				
CO2	265,904.93 kg	250,547.39 kg	15,357.54 kg	767,855.92 kg
SO2	75.41 kg	71.06 kg	4.36 kg	217.77 kg
NOx	203.04 kg	191.31 kg	11.73 kg	586.32 kg
Total:				
CO2	265,904.93 kg	250,547.39 kg	15,357.54 kg	767,855.92 kg
SO2	75.41 kg	71.06 kg	4.36 kg	217.77 kg
NOx	203.04 kg	191.31 kg	11.73 kg	586.32 kg

NIST BLCC 5.3-22: Comparative Analysis

Consistent with Federal Life Cycle Cost Methodology in OMB Circular A-94

Base Case: Rebate Option 1 - ASHP VRF System

Alternative: IRA Rebate Option 2 - GSHP Displacement

General Information

File Name:	C:\Users\keith_lane.GGDMAIL\BLCC 5.3-22\projects\Neary Elementary School.xml
Date of Study:	Fri Dec 27 14:49:32 EST 2024
Project Name:	Neary Elementary School
Project Location:	Massachusetts
Analysis Type:	OMB Analysis, Non-Energy Project
Analysis Purpose:	Public Investment or Regulatory Analysis
Analyst:	
Base Date:	September 1, 2026
Service Date:	September 1, 2026
Study Period:	50 years 0 months(September 1, 2026 through August 31, 2076)
Discount Rate:	1.4%
Discounting Convention:	End-of-Year

Comparison of Present-Value Costs

PV Life-Cycle Cost

	Base Case	**Alternative**	**Savings from Alternative**
Initial Investment Costs:			
Capital Requirements as of Base Date	$7,959,875	$7,779,741	$180,134
Future Costs:			
Energy Consumption Costs	$5,612,628	$4,885,418	$727,209
Energy Demand Charges	$2,104,793	$1,371,281	$733,512
Energy Utility Rebates	$0	$0	$0
Water Costs	$0	$0	$0
Recurring and Non-Recurring OM&R Costs	$4,769,612	$3,909,987	$859,625
Capital Replacements	$0	$0	$0
Residual Value at End of Study Period	$0	$0	$0
	------------	------------	------------
Subtotal (for Future Cost Items)	$12,487,032	$10,166,686	$2,320,346
	------------	------------	------------
Total PV Life-Cycle Cost	$20,446,907	$17,946,427	$2,500,480

Net Savings from Alternative Compared with Base Case

PV of Non-Investment Savings	$2,320,346
- Increased Total Investment	-$180,134

Net Savings	$2,500,480

NOTE: Meaningful SIR, AIRR and Payback can not be computed unless incremental savings and total savings are both positive.

Energy Savings Summary

Energy Savings Summary (in stated units)

Energy	**-----Average**	**Annual**	**Consumption-----**	**Life-Cycle**
Type	**Base Case**	**Alternative**	**Savings**	**Savings**
Electricity	805,686.0 kWh	701,296.0 kWh	104,390.0 kWh	5,219,357.1 kWh

Energy Savings Summary (in MBtu)

Energy	**-----Average**	**Annual**	**Consumption-----**	**Life-Cycle**
Type	**Base Case**	**Alternative**	**Savings**	**Savings**
Electricity	2,749.1 MBtu	2,392.9 MBtu	356.2 MBtu	17,809.2 MBtu

Emissions Reduction Summary

Energy Type	-----Average Base Case	Annual Alternative	Emissions----- Reduction	Life-Cycle Reduction
Electricity				
CO2	265,904.93 kg	231,452.53 kg	34,452.40 kg	1,722,572.79 kg
SO2	75.41 kg	65.64 kg	9.77 kg	488.55 kg
NOx	203.04 kg	176.73 kg	26.31 kg	1,315.31 kg
Total:				
CO2	265,904.93 kg	231,452.53 kg	34,452.40 kg	1,722,572.79 kg
SO2	75.41 kg	65.64 kg	9.77 kg	488.55 kg
NOx	203.04 kg	176.73 kg	26.31 kg	1,315.31 kg

COST ESTIMATES

Schematic Design Cost Estimate

HVAC Options Only

Margaret A. Neary Elementary School

Southborough, MA

PM&C LLC
20 Downer Avenue, Suite 5
Hingham, MA 02043
(T) 781-740-8007

Prepared for:

Arrowstreet

December 6, 2024

Margaret A. Neary Elementary School
Southborough, MA

6-Dec-24

Schematic Design Cost Estimate

HVAC PRICING OPTIONS

MAIN CONSTRUCTION COST SUMMARY

	Gross Floor Area	$/sf	Estimated Cost (No Markups)
Option 1 - Air source variable refrigerant flow (VRF)	99,564	$83.45	**$8,308,330**
Option 2 - Geothermal Water Source Heat Recovery Heat Pump Chiller and Heating Plant with VAV Displacement System	99,564	$119.84	**$11,931,368**
Option 3 - Air Source Heat Pump Heat Recovery Chiller/ Heater	99,564	$98.10	**$9,767,368**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
OPTION 1							
D30	*HVAC*						
D30	**HVAC, GENERALLY**						
	OPTION 1: AIR SOURCE VRF						
	HVAC Equipment						
	VRF heat pump condensing units	**150**	ton	3,000.00	450,000		
	VRF branch controllers	**10**	ea	7,500.00	75,000		
	VRF fan coil units	**120**	ea	2,750.00	330,000		
	Condensate pump	**130**	ea	250.00	32,500		
	Perimeter heating and misc. HVAC equipment, electric	**99,564**	sf	2.50	248,910		
	AHU-1 (DOAS w/remote heat pump condenser)	**7,000**	cfm	30.00	210,000		
	AHU-2 (DOAS w/remote heat pump condenser)	**7,000**	cfm	30.00	210,000		
	AHU-3 (DOAS w/remote heat pump condenser)	**7,000**	cfm	30.00	210,000		
	AHU-4 (DOAS w/remote heat pump condenser)	**7,000**	cfm	30.00	210,000		
	AHU-5 (DOAS w/remote heat pump condenser)	**8,500**	cfm	30.00	255,000		
	AHU-6 (DOAS w/remote heat pump condenser)	**10,000**	cfm	30.00	300,000		
	AHU-7 (DOAS w/remote heat pump condenser)	**7,500**	cfm	30.00	225,000		
	MAU-1 (DOAS w/remote heat pump condenser)	**2,500**	cfm	30.00	75,000		
	Electric, IDF Rooms, Ductless Splits	**2**	ea	15,000.00	30,000		
	Exhaust fans	**1**	ls	25,000.00	25,000		
	Sheet Metal & Accessories						
	Ductwork and accessories	**80,000**	lb	19.00	1,520,000		
	Registers, grilles & diffusers	**99,564**	gsf	2.00	199,128		
	VAV terminal unit	**100**	ea	1,500.00	150,000		
	Duct accessories	**99,564**	gsf	1.00	99,564		
	Refrigerant Piping						
	VRF system refrigerant piping	**99,564**	gsf	12.00	1,194,768		
	Split system refrigerant piping	**2**	ea	7,500.00	15,000		
	Condensate Drain Piping						
	Condensate piping with fittings & hangers	**99,564**	gsf	3.00	298,692		
	Insulation						
	Duct insulation	**50,000**	sf	7.00	350,000		
	Pipe insulation	**99,564**	gsf	2.50	248,910		
	Automatic Temperature Controls						
	HVAC controls, DDC	**99,564**	gsf	8.50	846,294		
	Balancing						
	Balancing, Testing, Commissioning	**99,564**	gsf	1.00	99,564		
	Miscellaneous						
	Project management, coordination and job conditions	**1**	ls	400,000.00	400,000		
	SUBTOTAL					8,308,330	
	TOTAL - HVAC						**$8,308,330**

Schematic Design Cost Estimate GFA 99,564

CSI CODE	*DESCRIPTION*	*QTY*	*UNIT*	*UNIT COST*	*EST'D COST*	*SUB TOTAL*	**TOTAL COST**
OPTION 2							
D30	***HVAC***						
D30	**HVAC, GENERALLY**						
	OPTION 2: GEOTHERMAL WITH HEAT PUMP CHILLERS						
	Geothermal Well Field						
	Closed loop well field, complete; 60 x 650 ft deep	**60**	wells	39,000.00	2,340,000		
	HVAC Equipment						
	Modular heat pump chillers, water cooled, (7) 50-ton modules	**350**	ton	3,200.00	1,120,000		
	Groundwater loop pump w/VFD	**2**	ea	45,000.00	90,000		
	Chilled water distribution pump w/VFD	**4**	ea	35,000.00	140,000		
	Hot water distribution pump w/VFD	**4**	ea	35,000.00	140,000		
	Plate & frame heat exchanger	**1**	ea	40,000.00	40,000		
	Hydronic specialties (AS, ET, glycol and chemicals)	**1**	ls	40,000.00	40,000		
	Perimeter heating/cooling and misc. HVAC equipment	**99,564**	sf	4.00	398,256		
	AHU-1 (HW/CHW)	**8,000**	cfm	25.00	200,000		
	AHU-2 (HW/CHW)	**8,000**	cfm	25.00	200,000		
	AHU-3 (HW/CHW)	**8,000**	cfm	25.00	200,000		
	AHU-4 (HW/CHW)	**8,000**	cfm	25.00	200,000		
	AHU-5 (HW/CHW)	**6,500**	cfm	25.00	162,500		
	AHU-6 (HW/CHW)	**12,000**	cfm	25.00	300,000		
	AHU-7 (HW/CHW)	**6,500**	cfm	25.00	162,500		
	MAU-1 (HW/CHW)	**2,500**	cfm	25.00	62,500		
	Electric, IDF Rooms, Ductless Splits	**2**	ea	15,000.00	30,000		
	Exhaust fans	**1**	ls	25,000.00	25,000		
	Sheet Metal & Accessories						
	Ductwork and accessories	**90,000**	lb	19.00	1,710,000		
	Registers, grilles & diffusers	**99,564**	gsf	2.00	199,128		
	VAV terminal unit	**100**	ea	1,500.00	150,000		
	Duct accessories	**99,564**	gsf	1.00	99,564		
	Hydronic Piping						
	Hot water distribution piping (perimeter heat and AHUs)	**99,564**	gsf	9.00	896,076		
	Chilled water distribution piping (AHUs)	**99,564**	gsf	5.00	497,820		
	Refrigerant Piping						
	Split system refrigerant piping	**2**	ea	7,500.00	15,000		
	Condensate Drain Piping						
	Condensate piping with fittings & hangers	**99,564**	gsf	2.00	199,128		
	Insulation						
	Duct insulation	**60,000**	sf	7.00	420,000		
	Pipe insulation	**99,564**	gsf	4.00	398,256		
	Automatic Temperature Controls						
	HVAC controls, DDC	**99,564**	gsf	9.00	896,076		
	Balancing						
	Balancing, Testing, Commissioning	**99,564**	gsf	1.00	99,564		
	Miscellaneous						
	Project management, coordination and job conditions	**1**	ls	500,000.00	500,000		
	SUBTOTAL					11,931,368	
	TOTAL - HVAC						**$11,931,368**

Margaret A. Neary Elementary School 06-Dec-24
Southborough, MA

Schematic Design Cost Estimate GFA 99,564

	CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
	OPTION 3							
	D30	***HVAC***						
	D30	**HVAC, GENERALLY**						
1		**OPTION 3: AIR SOURCE HEAT PUMP CHILLERS**						
2		HVAC Equipment						
3		Modular heat pump chillers, air cooled, (12) 30-ton modules	**360**	ton	3,800.00	1,368,000		
4		Chilled water distribution pump w/VFD	**4**	ea	35,000.00	140,000		
5		Hot water distribution pump w/VFD	**4**	ea	35,000.00	140,000		
6		Electric boiler (backup), 250 KW	**1**	ea	28,000.00	28,000		
7		Plate & frame heat exchanger	**1**	ea	40,000.00	40,000		
8		Hydronic specialties (AS, ET, glycol and chemicals)	**1**	ls	30,000.00	30,000		
9		Perimeter heating/cooling and misc. HVAC equipment	**99,564**	sf	4.00	398,256		
10		AHU-1 (HW/CHW)	**8,000**	cfm	25.00	200,000		
11		AHU-2 (HW/CHW)	**8,000**	cfm	25.00	200,000		
12		AHU-3 (HW/CHW)	**8,000**	cfm	25.00	200,000		
13		AHU-4 (HW/CHW)	**8,000**	cfm	25.00	200,000		
14		AHU-5 (HW/CHW)	**6,500**	cfm	25.00	162,500		
15		AHU-6 (HW/CHW)	**12,000**	cfm	25.00	300,000		
16		AHU-7 (HW/CHW)	**6,500**	cfm	25.00	162,500		
17		MAU-1 (HW/CHW)	**2,500**	cfm	25.00	62,500		
18		Electric, IDF Rooms, Ductless Splits	**2**	ea	15,000.00	30,000		
19		Exhaust fans	**1**	ls	25,000.00	25,000		
20		Sheet Metal & Accessories						
21		Ductwork and accessories	**90,000**	lb	19.00	1,710,000		
22		Registers, grilles & diffusers	**99,564**	gsf	2.00	199,128		
23		VAV terminal unit	**100**	ea	1,500.00	150,000		
24		Duct accessories	**99,564**	gsf	1.00	99,564		
25		Hydronic Piping						
26		Hot water distribution piping (perimeter heat and AHUs)	**99,564**	gsf	9.00	896,076		
27		Chilled water distribution piping (AHUs)	**99,564**	gsf	5.00	497,820		
28		Refrigerant Piping						
29		Split system refrigerant piping	**2**	ea	7,500.00	15,000		
30		Condensate Drain Piping						
31		Condensate piping with fittings & hangers	**99,564**	gsf	2.00	199,128		
32		Insulation						
33		Duct insulation	**60,000**	sf	7.00	420,000		
34		Pipe insulation	**99,564**	gsf	4.00	398,256		
35		Automatic Temperature Controls						
36		HVAC controls, DDC	**99,564**	gsf	9.00	896,076		
37		Balancing						
38		Balancing, Testing, Commissioning	**99,564**	gsf	1.00	99,564		
39		Miscellaneous						
40		Project management, coordination and job conditions	**1**	ls	500,000.00	500,000		
		SUBTOTAL					9,767,368	
		TOTAL - HVAC						**$9,767,368**

GGD Consulting Engineers, Inc.
375 Faunce Corner Road, Suite D
Dartmouth, MA 02747

Neary Elementary School - Replacement Costs

Option 1 - Air-Source VRF System

20 Year Equipment Replacement	
Equipment	**Total Cost**
Air-Source Heat Pump AHU Condensers	$847,500
Air-Source Heat Pump VRF Condensers	$450,000
Total	**$1,297,500**
30 Year Equipment Replacement	
Terminal VRF Evaporators	$330,000
VRF Branch Circuit Controllers	$75,000
Ductless Splits	$30,000
Total	**$435,000**
40 Year Equipment Replacement	
Equipment	**Total Cost**
Air-Source Heat Pump AHU's	$1,695,000
Air-Source Heat Pump VRF Condensers	$450,000
Total	**$2,145,000**

Option 2 - Geothermal Heat Pump Plant CHW/HW Displacement

30 Year Equipment Replacement	
CHW/HHW AHU's	$1,487,500
Ground-Source Heat Pump Chiller/Heaters	$1,120,000
Ductless Splits	$30,000
Pumps	$370,000
Total	**$3,007,500**

Option 3 - Air-Source Heat Pump CHW/HW Plant Displacement

20 Year Equipment Replacement	
Equipment	**Total Cost**
Air-Source Heat Pump Chiller/Heaters	$1,368,000
Total	**$1,368,000**
30 Year Equipment Replacement	
CHW/HHW AHU's	$1,487,500
Ductless Splits	$30,000
Pumps	$280,000
Total	**$1,797,500**
40 Year Equipment Replacement	
Equipment	**Total Cost**
Air-Source Heat Pump Chiller/Heaters	$1,368,000
Total	**$1,368,000**

Replacement costs indicated above reflect the values of the project cost estimates performed by PM&C dated 12/6/24.

Neary Elementary School - Annual Maintenance Costs

Option 1 - Air-Source VRF System

Unit Type	Quantity	Cost/Unit	Annual Cost
Indoor VRF Evaporators	120	$150	$18,000
Air-Cooled VRF Outdoor Units	1	$5,000	$5,000
VAV Box	100	$50	$5,000
Terminal Equipment (CUH's, UH's, etc.)	99,564	$0.03	$2,987
ATC Controls	99,564	$0.10	$9,956
Large ASHP AHU's (>6,000 CFM)	7	$2,750	$19,250
Small ASHP AHU's (<6,000 CFM)	1	$2,250	$2,250
Split System DCU's	2	$500	$1,000
		TOTAL	**$63,443**

Option 2 - Geothermal Heat Pump Plant Displacement

Unit Type	Quantity	Cost/Unit	Annual Cost
VAV Box	100	$50	$5,000
Terminal Equipment (CUH's, UH's, RP's, etc.)	99,564	$0.05	$4,978
Water Treatment	99,564	$0.125	$12,446
ATC Controls	99,564	$0.10	$9,956
Large CHW AHU's (>6,000 CFM)	7	$2,000	$14,000
Small CHW AHU's (<6,000 CFM)	1	$1,500	$1,500
Split System DCU's	2	$500	$1,000
Geothermal Plant	1	$5,000	$5,000
		TOTAL	**$53,880**

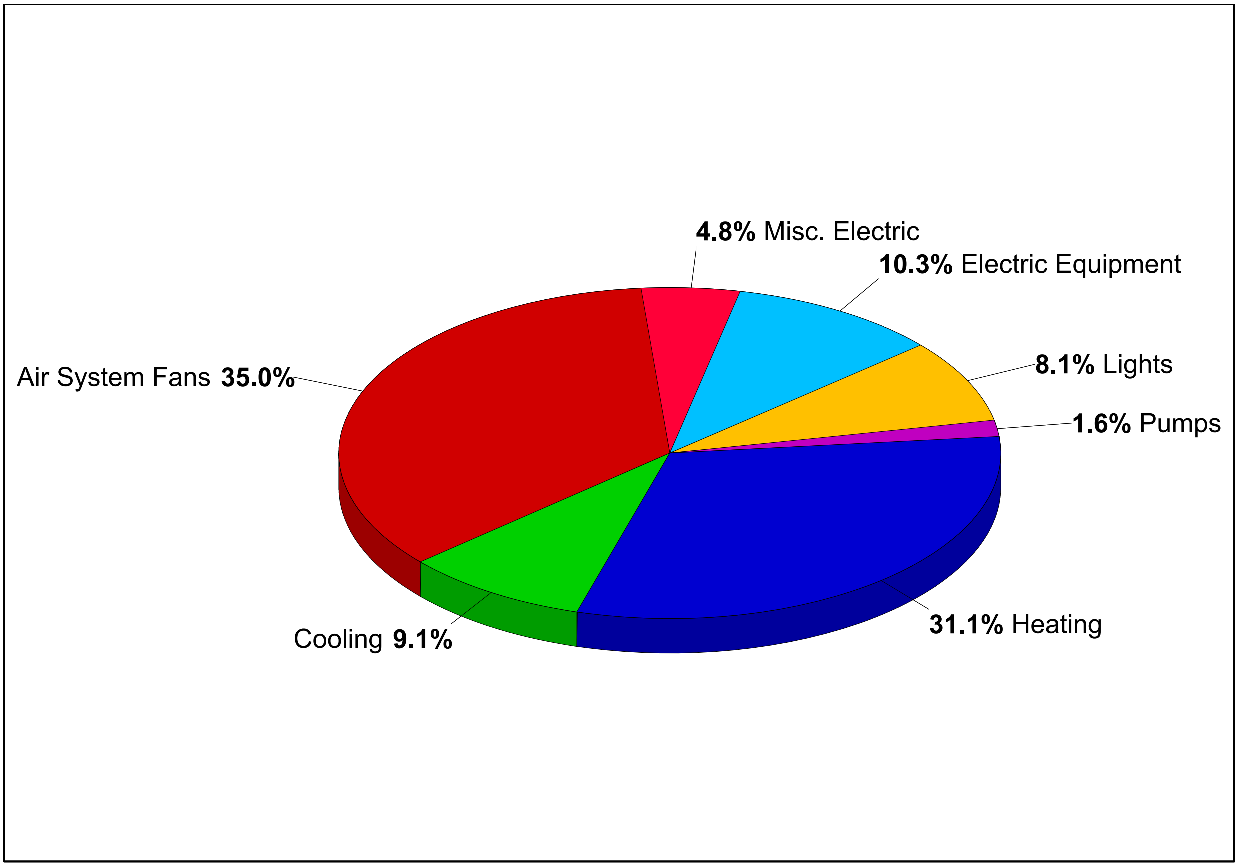
Option 3 - Air-Source Heat Pump Plant Displacement

Unit Type	Quantity	Cost/Unit	Annual Cost
VAV Box	100	$50	$5,000
Terminal Equipment (CUH's, UH's, RP's, etc.)	99,564	$0.05	$4,978
Water Treatment	99,564	$0.10	$9,956
ATC Controls	99,564	$0.10	$9,956
Large CHW AHU's (>6,000 CFM)	7	$2,000	$14,000
Small CHW AHU's (<6,000 CFM)	1	$1,500	$1,500
Split System DCU's	2	$500	$1,000
Air-Source Heat Pump Plant	1	$7,500	$7,500
		TOTAL	**$53,891**

ENERGY MODEL OUTPUTS

Annual Component Costs - [B] Air-Source VAV

Project: Fall Brook ES - LCCA Model 12/13/2024
Prepared by: GGD Consulting Engineers, Inc. 3:45 PM



1. Annual Costs

Component	Annual Cost ($)	($/sqft)	Percent of Total (%)
Air System Fans	52,381	0.498	35.0
Cooling	13,541	0.129	9.1
Heating	46,509	0.442	31.1
Pumps	2,340	0.022	1.6
Heat Rejection Fans	0	0.000	0.0
HVAC Sub-Total	**114,771**	**1.091**	**76.7**
Lights	12,182	0.116	8.1
Electric Equipment	15,365	0.146	10.3
Misc. Electric	7,236	0.069	4.8
Misc. Fuel Use	0	0.000	0.0
Non-HVAC Sub-Total	**34,784**	**0.331**	**23.3**
Grand Total	**149,555**	**1.421**	**100.0**

Note: Cost per unit floor area is based on the gross building floor area.

Gross Floor Area	**105,220.8**	sqft
Modeled Floor Area	**105,220.8**	sqft

Energy Budget by System Component - [B] Air-Source VAV

Project: Fall Brook ES - LCCA Model 12/13/2024
Prepared by: GGD Consulting Engineers, Inc. 3:45 PM

1. Annual Coil Loads

Component	Load (kBTU)	(kBTU/sqft)
Cooling Coil Loads	1,068,621	10.156
Heating Coil Loads	869,127	8.260
Grand Total	**1,937,748**	**18.416**

2. Energy Consumption by System Component

Component	Site Energy (kBTU)	Site Energy (kBTU/sqft)	Source Energy (kBTU)	Source Energy (kBTU/sqft)
Air System Fans	1,062,706	10.100	3,795,377	36.071
Cooling	272,245	2.587	972,303	9.241
Heating	941,751	8.950	3,363,398	31.965
Pumps	47,451	0.451	169,469	1.611
Heat Rejection Fans	0	0.000	0	0.000
HVAC Sub-Total	**2,324,153**	**22.088**	**8,300,547**	**78.887**
Lights	247,971	2.357	885,612	8.417
Electric Equipment	313,010	2.975	1,117,893	10.624
Misc. Electric	147,105	1.398	525,375	4.993
Misc. Fuel Use	0	0.000	0	0.000
Non-HVAC Sub-Total	**708,086**	**6.730**	**2,528,880**	**24.034**
Grand Total	**3,032,239**	**28.818**	**10,829,427**	**102.921**

Notes:

1. 'Cooling Coil Loads' is the sum of all air system cooling coil loads.
2. 'Heating Coil Loads' is the sum of all air system heating coil loads.
3. Site Energy is the actual energy consumed.
4. Source Energy is the site energy divided by the electric generating efficiency (28.0%).
5. Source Energy for fuels equals the site energy value.
6. Energy per unit floor area is based on the gross building floor area.

Gross Floor Area	**105220.8**	sqft
Modeled Floor Area	**105220.8**	sqft

Billing Details - Electric - [B] Air-Source VAV

Project: Fall Brook ES - LCCA Model 12/13/2024
Prepared by: GGD Consulting Engineers, Inc. 3:45 PM

1. Component Charges

Billing Period	Energy Charges ($)	Demand Charges ($)	Customer Charges ($)	Taxes ($)	Total Charge ($)
Jan	13,022	5,563	223	0	18,807
Feb	10,923	5,926	223	0	17,071
Mar	9,789	3,146	223	0	13,158
Apr	7,112	2,744	223	0	10,079
May	7,904	3,211	223	0	11,338
Jun	8,777	3,539	223	0	12,539
Jul	4,578	2,084	223	0	6,885
Aug	5,171	2,379	223	0	7,773
Sep	8,155	3,432	223	0	11,810
Oct	7,500	3,037	223	0	10,760
Nov	8,345	2,909	223	0	11,476
Dec	12,038	5,598	223	0	17,858
Totals	103,312	43,566	2,676	0	149,554

2. Totals

Billing Period	Total Charges ($)	Total Consumption (kWh)	Avg Price ($/kWh)
Jan	18,807	112,218	0.1676
Feb	17,071	94,122	0.1814
Mar	13,158	84,292	0.1561
Apr	10,079	61,138	0.1649
May	11,338	67,859	0.1671
Jun	12,539	75,332	0.1665
Jul	6,885	39,364	0.1749
Aug	7,773	44,434	0.1749
Sep	11,810	70,015	0.1687
Oct	10,760	64,431	0.1670
Nov	11,476	71,714	0.1600
Dec	17,858	103,748	0.1721
Totals	149,554	888,666	0.1683

3. Consumption Totals

Billing Period	Peak (kWh)	Mid-Peak (kWh)	Normal Peak (kWh)	Off-Peak (kWh)	Overall (kWh)
Jan	60,248	0	0	51,970	112,218
Feb	51,029	0	0	43,093	94,122
Mar	49,180	0	0	35,111	84,292
Apr	41,286	0	0	19,852	61,138
May	50,587	0	0	17,272	67,859
Jun	57,408	0	0	17,924	75,332
Jul	26,126	0	0	13,237	39,364
Aug	30,970	0	0	13,464	44,434
Sep	52,224	0	0	17,791	70,015
Oct	45,667	0	0	18,765	64,431
Nov	49,485	0	0	22,229	71,714
Dec	55,195	0	0	48,553	103,748
Totals	569,407	0	0	319,259	888,666

4. Billing Demands

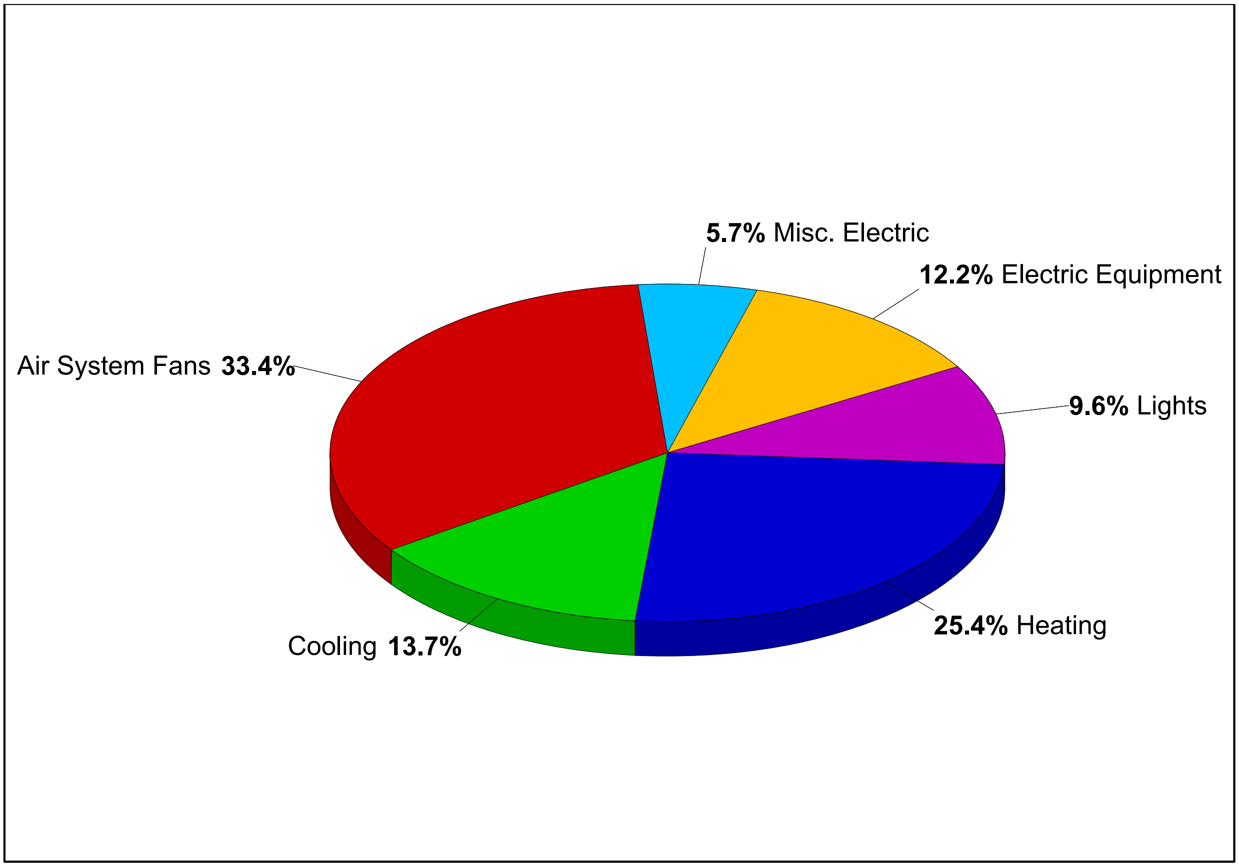
Billing Period	Peak (kW)	Mid-Peak (kW)	Normal Peak (kW)	Off-Peak (kW)	Overall (kW)
Jan	567.7	0.0	0.0	577.7	577.7
Feb	615.3	0.0	0.0	606.5	615.3
Mar	292.7	0.0	0.0	326.6	326.6
Apr	284.9	0.0	0.0	273.8	284.9
May	333.4	0.0	0.0	253.4	333.4
Jun	367.5	0.0	0.0	297.4	367.5
Jul	216.4	0.0	0.0	201.1	216.4
Aug	247.0	0.0	0.0	215.6	247.0
Sep	356.4	0.0	0.0	325.0	356.4
Oct	315.4	0.0	0.0	244.1	315.4
Nov	302.0	0.0	0.0	290.5	302.0
Dec	562.8	0.0	0.0	581.3	581.3

5. Maximum Demands

Billing Period	Peak (kW)	Mid-Peak (kW)	Normal Peak (kW)	Off-Peak (kW)	Overall (kW)
Jan	567.7	0.0	0.0	577.7	577.7
Feb	615.3	0.0	0.0	606.5	615.3
Mar	292.7	0.0	0.0	326.6	326.6
Apr	284.9	0.0	0.0	273.8	284.9
May	333.4	0.0	0.0	253.4	333.4
Jun	367.5	0.0	0.0	297.4	367.5
Jul	216.4	0.0	0.0	201.1	216.4
Aug	247.0	0.0	0.0	215.6	247.0
Sep	356.4	0.0	0.0	325.0	356.4
Oct	315.4	0.0	0.0	244.1	315.4
Nov	302.0	0.0	0.0	290.5	302.0
Dec	562.8	0.0	0.0	581.3	581.3

6. Time Of Maximum Demands (Date/Hour)

Billing Period	Peak	Mid-Peak	Normal Peak	Off-Peak	Overall
Jan	1/3 08:00	n/a	n/a	1/3 07:00	1/3 07:00
Feb	2/6 08:00	n/a	n/a	2/6 07:00	2/6 08:00
Mar	3/20 08:00	n/a	n/a	3/20 06:00	3/20 06:00
Apr	4/19 10:00	n/a	n/a	4/3 07:00	4/19 10:00
May	5/22 10:00	n/a	n/a	5/22 07:00	5/22 10:00
Jun	6/8 09:00	n/a	n/a	6/8 07:00	6/8 09:00
Jul	7/24 13:00	n/a	n/a	7/24 07:00	7/24 13:00
Aug	8/17 12:00	n/a	n/a	8/21 07:00	8/17 12:00
Sep	9/6 08:00	n/a	n/a	9/6 07:00	9/6 08:00
Oct	10/2 10:00	n/a	n/a	10/30 07:00	10/2 10:00
Nov	11/27 08:00	n/a	n/a	11/27 07:00	11/27 08:00
Dec	12/25 08:00	n/a	n/a	12/25 07:00	12/25 07:00



1. Annual Costs

Component	**Annual Cost ($)**	**($/sqft)**	**Percent of Total (%)**
Air System Fans	43,313	0.412	33.4
Cooling	17,830	0.170	13.7
Heating	32,971	0.313	25.4
Pumps	0	0.000	0.0
Heat Rejection Fans	0	0.000	0.0
HVAC Sub-Total	**94,115**	**0.895**	**72.5**
Lights	12,521	0.119	9.6
Electric Equipment	15,795	0.150	12.2
Misc. Electric	7,439	0.071	5.7
Misc. Fuel Use	0	0.000	0.0
Non-HVAC Sub-Total	**35,754**	**0.340**	**27.5**
Grand Total	**129,869**	**1.234**	**100.0**

Note: Cost per unit floor area is based on the gross building floor area.

Gross Floor Area .... **105,220.8** sqft
Modeled Floor Area .... **105,220.8** sqft

Energy Budget by System Component - [O1] VRF System

Project: Fall Brook ES - LCCA Model 12/13/2024
Prepared by: GGD Consulting Engineers, Inc. 3:45 PM

1. Annual Coil Loads

Component	Load (kBTU)	(kBTU/sqft)
Cooling Coil Loads	2,028,703	19.280
Heating Coil Loads	1,371,078	13.030
Grand Total	**3,399,781**	**32.311**

2. Energy Consumption by System Component

Component	Site Energy (kBTU)	Site Energy (kBTU/sqft)	Source Energy (kBTU)	Source Energy (kBTU/sqft)
Air System Fans	858,783	8.162	3,067,082	29.149
Cooling	350,703	3.333	1,252,510	11.904
Heating	653,177	6.208	2,332,773	22.170
Pumps	0	0.000	0	0.000
Heat Rejection Fans	0	0.000	0	0.000
HVAC Sub-Total	**1,862,662**	**17.702**	**6,652,366**	**63.223**
Lights	247,970	2.357	885,607	8.417
Electric Equipment	313,012	2.975	1,117,901	10.624
Misc. Electric	147,105	1.398	525,375	4.993
Misc. Fuel Use	0	0.000	0	0.000
Non-HVAC Sub-Total	**708,087**	**6.730**	**2,528,883**	**24.034**
Grand Total	**2,570,750**	**24.432**	**9,181,248**	**87.257**

Notes:

1. 'Cooling Coil Loads' is the sum of all air system cooling coil loads.
2. 'Heating Coil Loads' is the sum of all air system heating coil loads.
3. Site Energy is the actual energy consumed.
4. Source Energy is the site energy divided by the electric generating efficiency (28.0%).
5. Source Energy for fuels equals the site energy value.
6. Energy per unit floor area is based on the gross building floor area.

Gross Floor Area	**105220.8**	sqft
Modeled Floor Area	**105220.8**	sqft

Billing Details - Electric - [O1] VRF System

1. Component Charges

Billing Period	Energy Charges ($)	Demand Charges ($)	Customer Charges ($)	Taxes ($)	Total Charge ($)
Jan	10,622	4,843	223	0	15,688
Feb	8,987	4,667	223	0	13,877
Mar	8,735	3,531	223	0	12,489
Apr	6,365	2,948	223	0	9,536
May	7,180	2,977	223	0	10,380
Jun	7,723	3,291	223	0	11,237
Jul	3,192	1,597	223	0	5,012
Aug	3,561	1,682	223	0	5,465
Sep	7,107	3,316	223	0	10,646
Oct	6,805	3,040	223	0	10,068
Nov	7,613	3,111	223	0	10,947
Dec	9,891	4,411	223	0	14,525
Totals	87,781	39,413	2,676	0	129,870

2. Totals

Billing Period	Total Charges ($)	Total Consumption (kWh)	Avg Price ($/kWh)
Jan	15,688	91,261	0.1719
Feb	13,877	77,198	0.1798
Mar	12,489	75,054	0.1664
Apr	9,536	54,622	0.1746
May	10,380	61,566	0.1686
Jun	11,237	66,218	0.1697
Jul	5,012	27,397	0.1829
Aug	5,465	30,550	0.1789
Sep	10,646	60,938	0.1747
Oct	10,068	58,380	0.1725
Nov	10,947	65,260	0.1677
Dec	14,525	84,976	0.1709
Totals	129,870	753,420	0.1724

3. Consumption Totals

Billing Period	Peak (kWh)	Mid-Peak (kWh)	Normal Peak (kWh)	Off-Peak (kWh)	Overall (kWh)
Jan	64,519	0	0	26,742	91,261
Feb	55,489	0	0	21,709	77,198
Mar	52,683	0	0	22,371	75,054
Apr	41,967	0	0	12,655	54,622
May	50,027	0	0	11,539	61,566
Jun	54,176	0	0	12,042	66,218
Jul	20,936	0	0	6,461	27,397
Aug	23,864	0	0	6,686	30,550
Sep	49,635	0	0	11,303	60,938
Oct	46,109	0	0	12,270	58,380
Nov	54,137	0	0	11,123	65,260
Dec	60,328	0	0	24,648	84,976
Totals	573,872	0	0	179,549	753,420

4. Billing Demands

Billing Period	Peak (kW)	Mid-Peak (kW)	Normal Peak (kW)	Off-Peak (kW)	Overall (kW)
Jan	502.9	0.0	0.0	443.7	502.9
Feb	484.6	0.0	0.0	440.9	484.6
Mar	310.7	0.0	0.0	366.7	366.7
Apr	306.1	0.0	0.0	302.6	306.1
May	309.1	0.0	0.0	251.8	309.1
Jun	341.8	0.0	0.0	283.4	341.8
Jul	165.8	0.0	0.0	162.0	165.8
Aug	174.6	0.0	0.0	164.8	174.6
Sep	344.4	0.0	0.0	318.8	344.4
Oct	315.7	0.0	0.0	281.8	315.7
Nov	323.1	0.0	0.0	265.1	323.1
Dec	458.0	0.0	0.0	418.9	458.0

5. Maximum Demands

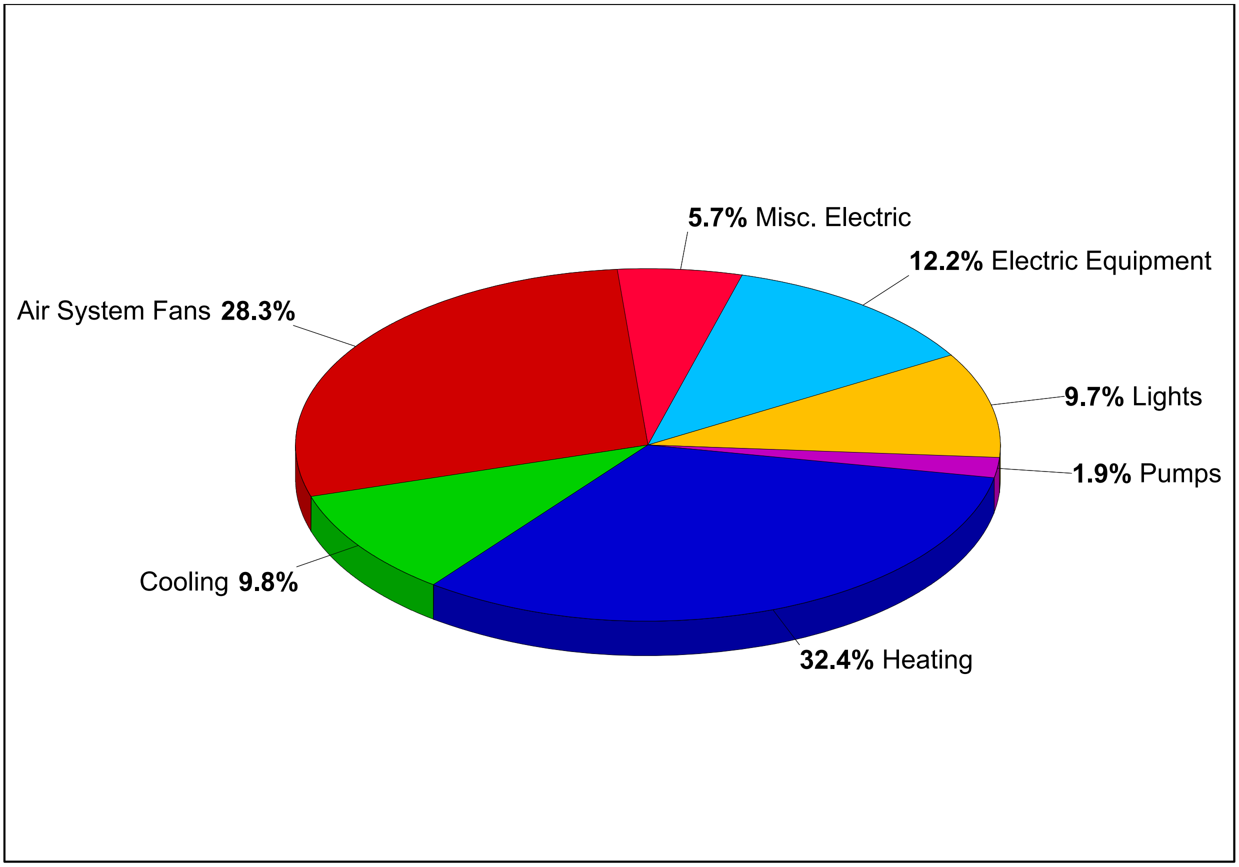
Billing Period	Peak (kW)	Mid-Peak (kW)	Normal Peak (kW)	Off-Peak (kW)	Overall (kW)
Jan	502.9	0.0	0.0	443.7	502.9
Feb	484.6	0.0	0.0	440.9	484.6
Mar	310.7	0.0	0.0	366.7	366.7
Apr	306.1	0.0	0.0	302.6	306.1
May	309.1	0.0	0.0	251.8	309.1
Jun	341.8	0.0	0.0	283.4	341.8
Jul	165.8	0.0	0.0	162.0	165.8
Aug	174.6	0.0	0.0	164.8	174.6
Sep	344.4	0.0	0.0	318.8	344.4
Oct	315.7	0.0	0.0	281.8	315.7
Nov	323.1	0.0	0.0	265.1	323.1
Dec	458.0	0.0	0.0	418.9	458.0

6. Time Of Maximum Demands (Date/Hour)

Billing Period	Peak	Mid-Peak	Normal Peak	Off-Peak	Overall
Jan	1/3 08:00	n/a	n/a	1/3 07:00	1/3 08:00
Feb	2/6 08:00	n/a	n/a	2/6 07:00	2/6 08:00
Mar	3/3 08:00	n/a	n/a	3/21 06:00	3/21 06:00
Apr	4/19 09:00	n/a	n/a	4/3 07:00	4/19 09:00
May	5/22 09:00	n/a	n/a	5/30 07:00	5/22 09:00
Jun	6/8 10:00	n/a	n/a	6/29 07:00	6/8 10:00
Jul	7/28 09:00	n/a	n/a	7/3 07:00	7/28 09:00
Aug	8/18 09:00	n/a	n/a	8/21 07:00	8/18 09:00
Sep	9/6 08:00	n/a	n/a	9/6 07:00	9/6 08:00
Oct	10/2 09:00	n/a	n/a	10/30 07:00	10/2 09:00
Nov	11/27 08:00	n/a	n/a	11/1 07:00	11/27 08:00
Dec	12/25 08:00	n/a	n/a	12/25 07:00	12/25 08:00

Annual Component Costs - [O2] Air-Source Displacement

Project: Fall Brook ES - LCCA Model 12/13/2024
Prepared by: GGD Consulting Engineers, Inc. 3:45 PM



1. Annual Costs

Component	Annual Cost ($)	($/sqft)	Percent of Total (%)
Air System Fans	36,904	0.351	28.3
Cooling	12,815	0.122	9.8
Heating	42,147	0.401	32.4
Pumps	2,415	0.023	1.9
Heat Rejection Fans	0	0.000	0.0
HVAC Sub-Total	**94,281**	**0.896**	**72.4**
Lights	12,579	0.120	9.7
Electric Equipment	15,859	0.151	12.2
Misc. Electric	7,468	0.071	5.7
Misc. Fuel Use	0	0.000	0.0
Non-HVAC Sub-Total	**35,906**	**0.341**	**27.6**
Grand Total	**130,187**	**1.237**	**100.0**

Note: Cost per unit floor area is based on the gross building floor area.

Gross Floor Area	**105,220.8**	sqft
Modeled Floor Area	**105,220.8**	sqft

Energy Budget by System Component - [O2] Air-Source Displacement

Project: Fall Brook ES - LCCA Model 12/13/2024
Prepared by: GGD Consulting Engineers, Inc. 3:45 PM

1. Annual Coil Loads

Component	Load (kBTU)	(kBTU/sqft)
Cooling Coil Loads	979,122	9.305
Heating Coil Loads	556,622	5.290
Grand Total	**1,535,744**	**14.595**

2. Energy Consumption by System Component

Component	Site Energy (kBTU)	Site Energy (kBTU/sqft)	Source Energy (kBTU)	Source Energy (kBTU/sqft)
Air System Fans	727,821	6.917	2,599,359	24.704
Cooling	256,458	2.437	915,920	8.705
Heating	818,795	7.782	2,924,269	27.792
Pumps	47,666	0.453	170,236	1.618
Heat Rejection Fans	0	0.000	0	0.000
HVAC Sub-Total	**1,850,739**	**17.589**	**6,609,783**	**62.818**
Lights	247,971	2.357	885,612	8.417
Electric Equipment	313,010	2.975	1,117,893	10.624
Misc. Electric	147,105	1.398	525,375	4.993
Misc. Fuel Use	0	0.000	0	0.000
Non-HVAC Sub-Total	**708,086**	**6.730**	**2,528,880**	**24.034**
Grand Total	**2,558,826**	**24.319**	**9,138,663**	**86.852**

Notes:
1. 'Cooling Coil Loads' is the sum of all air system cooling coil loads.
2. 'Heating Coil Loads' is the sum of all air system heating coil loads.
3. Site Energy is the actual energy consumed.
4. Source Energy is the site energy divided by the electric generating efficiency (28.0%).
5. Source Energy for fuels equals the site energy value.
6. Energy per unit floor area is based on the gross building floor area.
   Gross Floor Area .... **105220.8** sqft
   Modeled Floor Area .... **105220.8** sqft

Billing Details - Electric - [O2] Air-Source Displacement

Project: Fall Brook ES - LCCA Model 12/13/2024

Prepared by: GGD Consulting Engineers, Inc. 3:45 PM

1. Component Charges

Billing Period	Energy Charges ($)	Demand Charges ($)	Customer Charges ($)	Taxes ($)	Total Charge ($)
Jan	9,069	5,290	223	0	14,582
Feb	7,568	5,176	223	0	12,967
Mar	7,629	2,584	223	0	10,436
Apr	6,452	2,443	223	0	9,118
May	7,574	3,146	223	0	10,944
Jun	8,515	3,531	223	0	12,269
Jul	4,731	2,208	223	0	7,161
Aug	5,320	2,290	223	0	7,834
Sep	7,968	3,445	223	0	11,636
Oct	7,176	2,995	223	0	10,394
Nov	7,053	2,439	223	0	9,716
Dec	8,254	4,653	223	0	13,130
Totals	87,310	40,201	2,676	0	130,186

2. Totals

Billing Period	Total Charges ($)	Total Consumption (kWh)	Avg Price ($/kWh)
Jan	14,582	77,925	0.1871
Feb	12,967	65,018	0.1994
Mar	10,436	65,553	0.1592
Apr	9,118	55,433	0.1645
May	10,944	65,027	0.1683
Jun	12,269	73,082	0.1679
Jul	7,161	40,667	0.1761
Aug	7,834	45,710	0.1714
Sep	11,636	68,408	0.1701
Oct	10,394	61,635	0.1686
Nov	9,716	60,531	0.1605
Dec	13,130	70,931	0.1851
Totals	130,186	749,921	0.1736

3. Consumption Totals

Billing Period	Peak (kWh)	Mid-Peak (kWh)	Normal Peak (kWh)	Off-Peak (kWh)	Overall (kWh)
Jan	54,460	0	0	23,466	77,925
Feb	46,142	0	0	18,877	65,018
Mar	45,705	0	0	19,849	65,553
Apr	38,907	0	0	16,527	55,433
May	48,639	0	0	16,388	65,027
Jun	55,911	0	0	17,171	73,082
Jul	27,427	0	0	13,240	40,667
Aug	32,197	0	0	13,513	45,710
Sep	51,143	0	0	17,264	68,408
Oct	44,507	0	0	17,129	61,635
Nov	46,510	0	0	14,021	60,531
Dec	49,447	0	0	21,484	70,931
Totals	540,993	0	0	208,928	749,921

4. Billing Demands

Billing Period	Peak (kW)	Mid-Peak (kW)	Normal Peak (kW)	Off-Peak (kW)	Overall (kW)
Jan	549.3	0.0	0.0	485.4	549.3
Feb	537.5	0.0	0.0	462.2	537.5
Mar	254.2	0.0	0.0	268.4	268.4
Apr	253.7	0.0	0.0	227.5	253.7
May	326.7	0.0	0.0	251.8	326.7
Jun	366.6	0.0	0.0	289.4	366.6
Jul	229.2	0.0	0.0	199.9	229.2
Aug	237.8	0.0	0.0	213.6	237.8
Sep	357.7	0.0	0.0	332.0	357.7
Oct	311.0	0.0	0.0	216.2	311.0
Nov	253.3	0.0	0.0	207.0	253.3
Dec	483.2	0.0	0.0	431.5	483.2

5. Maximum Demands

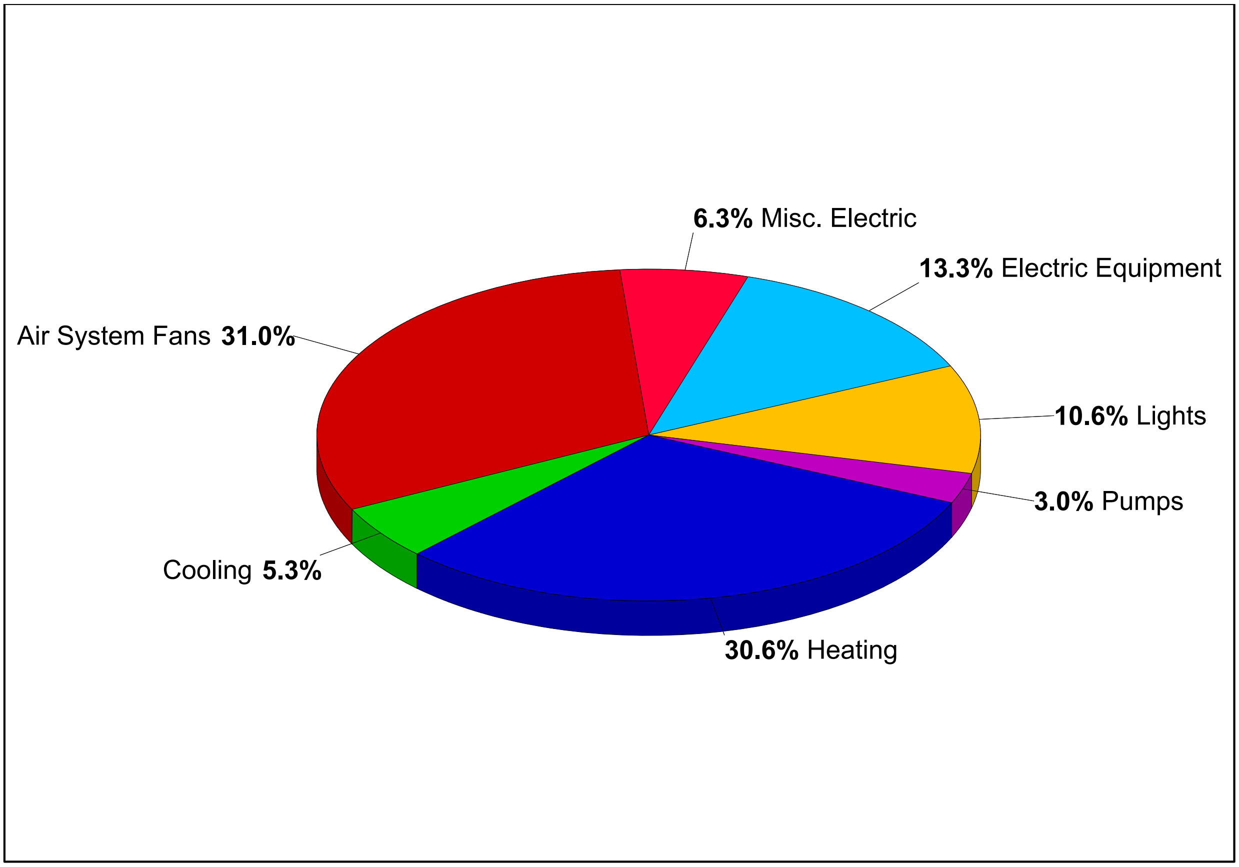
Billing Period	Peak (kW)	Mid-Peak (kW)	Normal Peak (kW)	Off-Peak (kW)	Overall (kW)
Jan	549.3	0.0	0.0	485.4	549.3
Feb	537.5	0.0	0.0	462.2	537.5
Mar	254.2	0.0	0.0	268.4	268.4
Apr	253.7	0.0	0.0	227.5	253.7
May	326.7	0.0	0.0	251.8	326.7
Jun	366.6	0.0	0.0	289.4	366.6
Jul	229.2	0.0	0.0	199.9	229.2
Aug	237.8	0.0	0.0	213.6	237.8
Sep	357.7	0.0	0.0	332.0	357.7
Oct	311.0	0.0	0.0	216.2	311.0
Nov	253.3	0.0	0.0	207.0	253.3
Dec	483.2	0.0	0.0	431.5	483.2

6. Time Of Maximum Demands (Date/Hour)

Billing Period	Peak	Mid-Peak	Normal Peak	Off-Peak	Overall
Jan	1/3 08:00	n/a	n/a	1/3 07:00	1/3 08:00
Feb	2/6 08:00	n/a	n/a	2/6 07:00	2/6 08:00
Mar	3/20 08:00	n/a	n/a	3/20 07:00	3/20 07:00
Apr	4/24 14:00	n/a	n/a	4/3 07:00	4/24 14:00
May	5/22 10:00	n/a	n/a	5/22 07:00	5/22 10:00
Jun	6/8 09:00	n/a	n/a	6/8 07:00	6/8 09:00
Jul	7/3 13:00	n/a	n/a	7/3 07:00	7/3 13:00
Aug	8/16 12:00	n/a	n/a	8/21 07:00	8/16 12:00
Sep	9/6 09:00	n/a	n/a	9/6 07:00	9/6 09:00
Oct	10/2 13:00	n/a	n/a	10/2 07:00	10/2 13:00
Nov	11/27 08:00	n/a	n/a	11/27 07:00	11/27 08:00
Dec	12/25 08:00	n/a	n/a	12/25 07:00	12/25 08:00

Annual Component Costs - [O3] Geothermal Displacement

Project: Fall Brook ES - LCCA Model 12/13/2024
Prepared by: GGD Consulting Engineers, Inc. 3:45 PM



1. Annual Costs

Component	Annual Cost ($)	($/sqft)	Percent of Total (%)
Air System Fans	34,543	0.328	31.0
Cooling	5,913	0.056	5.3
Heating	34,057	0.324	30.6
Pumps	3,314	0.032	3.0
Heat Rejection Fans	0	0.000	0.0
HVAC Sub-Total	**77,827**	**0.740**	**69.8**
Lights	11,766	0.112	10.6
Electric Equipment	14,847	0.141	13.3
Misc. Electric	6,985	0.066	6.3
Misc. Fuel Use	0	0.000	0.0
Non-HVAC Sub-Total	**33,598**	**0.319**	**30.2**
Grand Total	**111,425**	**1.059**	**100.0**

Note: Cost per unit floor area is based on the gross building floor area.

Gross Floor Area .... **105,220.8** sqft
Modeled Floor Area .... **105,220.8** sqft

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Energy Budget by System Component - [O3] Geothermal Displacement

Project: Fall Brook ES - LCCA Model 12/13/2024
Prepared by: GGD Consulting Engineers, Inc. 3:45 PM

1. Annual Coil Loads

Component	Load (kBTU)	(kBTU/sqft)
Cooling Coil Loads	979,122	9.305
Heating Coil Loads	556,622	5.290
Grand Total	**1,535,744**	**14.595**

2. Energy Consumption by System Component

Component	Site Energy (kBTU)	Site Energy (kBTU/sqft)	Source Energy (kBTU)	Source Energy (kBTU/sqft)
Air System Fans	727,821	6.917	2,599,359	24.704
Cooling	123,690	1.176	441,749	4.198
Heating	716,800	6.812	2,560,001	24.330
Pumps	69,626	0.662	248,665	2.363
Heat Rejection Fans	0	0.000	0	0.000
HVAC Sub-Total	**1,637,937**	**15.567**	**5,849,773**	**55.595**
Lights	247,971	2.357	885,612	8.417
Electric Equipment	313,010	2.975	1,117,893	10.624
Misc. Electric	147,105	1.398	525,375	4.993
Misc. Fuel Use	0	0.000	0	0.000
Non-HVAC Sub-Total	**708,086**	**6.730**	**2,528,880**	**24.034**
Grand Total	**2,346,023**	**22.296**	**8,378,653**	**79.629**

Notes:

1. 'Cooling Coil Loads' is the sum of all air system cooling coil loads.
2. 'Heating Coil Loads' is the sum of all air system heating coil loads.
3. Site Energy is the actual energy consumed.
4. Source Energy is the site energy divided by the electric generating efficiency (28.0%).
5. Source Energy for fuels equals the site energy value.
6. Energy per unit floor area is based on the gross building floor area.

Gross Floor Area	**105220.8**	sqft
Modeled Floor Area	**105220.8**	sqft

Billing Details - Electric - [O3] Geothermal Displacement

Project: Fall Brook ES - LCCA Model 12/13/2024
Prepared by: GGD Consulting Engineers, Inc. 3:45 PM

1. Component Charges

Billing Period	Energy Charges ($)	Demand Charges ($)	Customer Charges ($)	Taxes ($)	Total Charge ($)
Jan	7,857	2,796	223	0	10,876
Feb	6,858	2,797	223	0	9,878
Mar	7,291	2,312	223	0	9,826
Apr	6,261	2,219	223	0	8,703
May	7,252	2,529	223	0	10,005
Jun	7,539	2,705	223	0	10,467
Jul	4,103	1,550	223	0	5,876
Aug	4,512	1,655	223	0	6,390
Sep	7,254	2,676	223	0	10,153
Oct	6,963	2,490	223	0	9,676
Nov	6,811	2,285	223	0	9,318
Dec	7,340	2,694	223	0	10,258
Totals	80,041	28,708	2,676	0	111,425

2. Totals

Billing Period	Total Charges ($)	Total Consumption (kWh)	Avg Price ($/kWh)
Jan	10,876	67,482	0.1612
Feb	9,878	58,906	0.1677
Mar	9,826	62,660	0.1568
Apr	8,703	53,804	0.1618
May	10,005	62,270	0.1607
Jun	10,467	64,726	0.1617
Jul	5,876	35,285	0.1665
Aug	6,390	38,789	0.1647
Sep	10,153	62,295	0.1630
Oct	9,676	59,811	0.1618
Nov	9,318	58,461	0.1594
Dec	10,258	63,062	0.1627
Totals	111,425	687,554	0.1621

3. Consumption Totals

Billing Period	Peak (kWh)	Mid-Peak (kWh)	Normal Peak (kWh)	Off-Peak (kWh)	Overall (kWh)
Jan	48,804	0	0	18,678	67,482
Feb	42,629	0	0	16,277	58,906
Mar	43,004	0	0	19,657	62,660
Apr	37,374	0	0	16,430	53,804
May	46,119	0	0	16,151	62,270
Jun	48,295	0	0	16,430	64,726
Jul	22,805	0	0	12,480	35,285
Aug	26,140	0	0	12,649	38,789
Sep	45,515	0	0	16,780	62,295
Oct	42,873	0	0	16,938	59,811
Nov	44,207	0	0	14,254	58,461
Dec	44,700	0	0	18,362	63,062
Totals	492,467	0	0	195,086	687,554

Billing Details - Electric - [O3] Geothermal Displacement

Project: Fall Brook ES - LCCA Model | 12/13/2024
Prepared by: GGD Consulting Engineers, Inc. | 3:45 PM

4. Billing Demands

Billing Period	Peak (kW)	Mid-Peak (kW)	Normal Peak (kW)	Off-Peak (kW)	Overall (kW)
Jan	290.4	0.0	0.0	240.5	290.4
Feb	290.4	0.0	0.0	237.3	290.4
Mar	238.8	0.0	0.0	240.1	240.1
Apr	230.4	0.0	0.0	212.6	230.4
May	262.6	0.0	0.0	220.6	262.6
Jun	280.9	0.0	0.0	237.3	280.9
Jul	161.0	0.0	0.0	139.1	161.0
Aug	171.8	0.0	0.0	148.6	171.8
Sep	277.9	0.0	0.0	254.5	277.9
Oct	258.5	0.0	0.0	203.7	258.5
Nov	237.3	0.0	0.0	194.6	237.3
Dec	279.8	0.0	0.0	228.7	279.8

5. Maximum Demands

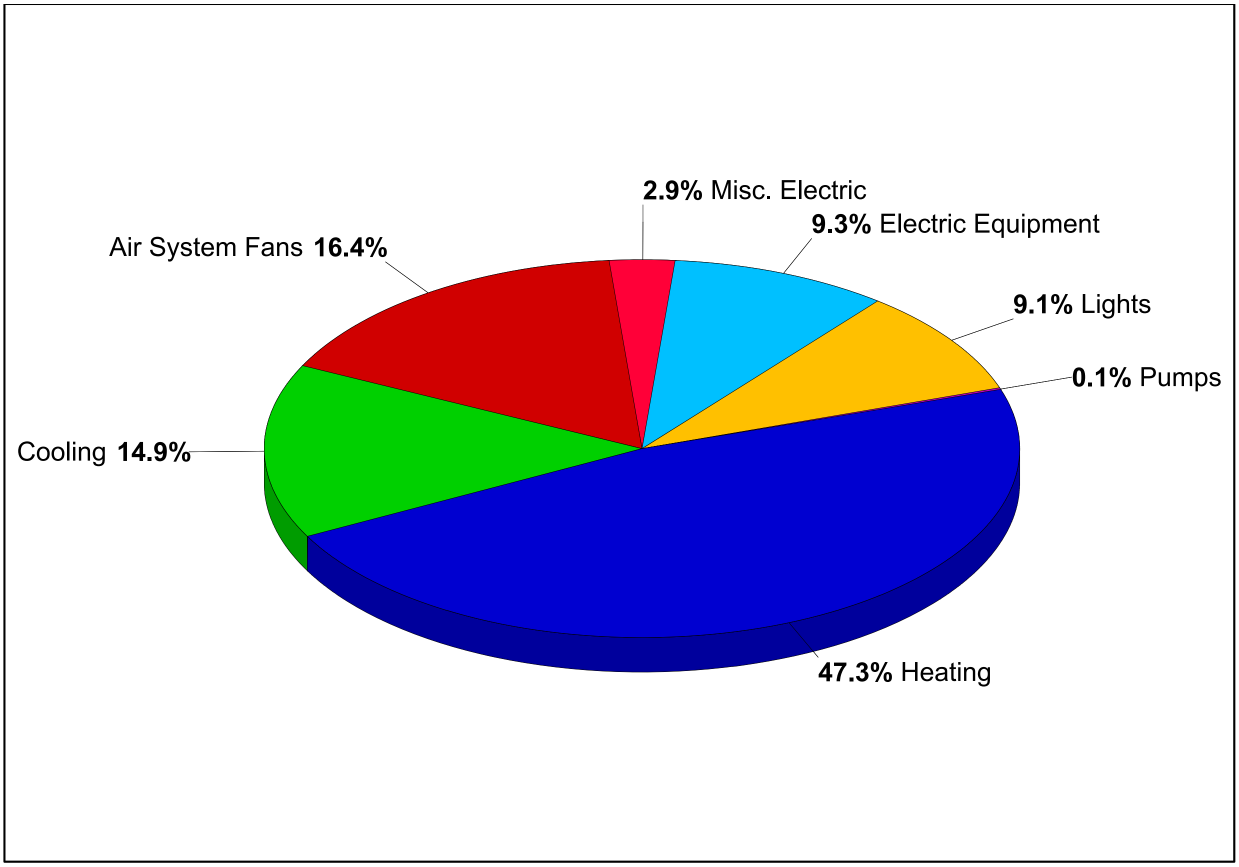
Billing Period	Peak (kW)	Mid-Peak (kW)	Normal Peak (kW)	Off-Peak (kW)	Overall (kW)
Jan	290.4	0.0	0.0	240.5	290.4
Feb	290.4	0.0	0.0	237.3	290.4
Mar	238.8	0.0	0.0	240.1	240.1
Apr	230.4	0.0	0.0	212.6	230.4
May	262.6	0.0	0.0	220.6	262.6
Jun	280.9	0.0	0.0	237.3	280.9
Jul	161.0	0.0	0.0	139.1	161.0
Aug	171.8	0.0	0.0	148.6	171.8
Sep	277.9	0.0	0.0	254.5	277.9
Oct	258.5	0.0	0.0	203.7	258.5
Nov	237.3	0.0	0.0	194.6	237.3
Dec	279.8	0.0	0.0	228.7	279.8

6. Time Of Maximum Demands (Date/Hour)

Billing Period	Peak	Mid-Peak	Normal Peak	Off-Peak	Overall
Jan	1/3 08:00	n/a	n/a	1/3 07:00	1/3 08:00
Feb	2/6 08:00	n/a	n/a	2/6 07:00	2/6 08:00
Mar	3/6 08:00	n/a	n/a	3/6 07:00	3/6 07:00
Apr	4/19 10:00	n/a	n/a	4/3 07:00	4/19 10:00
May	5/22 09:00	n/a	n/a	5/22 07:00	5/22 09:00
Jun	6/8 09:00	n/a	n/a	6/29 07:00	6/8 09:00
Jul	7/3 13:00	n/a	n/a	7/24 07:00	7/3 13:00
Aug	8/16 12:00	n/a	n/a	8/21 07:00	8/16 12:00
Sep	9/6 09:00	n/a	n/a	9/6 07:00	9/6 09:00
Oct	10/2 10:00	n/a	n/a	10/30 07:00	10/2 10:00
Nov	11/27 08:00	n/a	n/a	11/1 07:00	11/27 08:00
Dec	12/18 08:00	n/a	n/a	12/25 07:00	12/18 08:00

Annual Component Costs - [L-B] LEED Baseline

Project: Neary ES - LCCA Model 12/11/2024
Prepared by: GGD Consulting Engineers, Inc. 11:33 AM



1. Annual Costs

Component	Annual Cost ($)	($/sqft)	Percent of Total (%)
Air System Fans	58,329	0.592	16.4
Cooling	53,130	0.540	14.9
Heating	168,641	1.712	47.3
Pumps	335	0.003	0.1
Heat Rejection Fans	0	0.000	0.0
HVAC Sub-Total	**280,435**	**2.848**	**78.7**
Lights	32,280	0.328	9.1
Electric Equipment	33,146	0.337	9.3
Misc. Electric	10,305	0.105	2.9
Misc. Fuel Use	0	0.000	0.0
Non-HVAC Sub-Total	**75,730**	**0.769**	**21.3**
Grand Total	**356,166**	**3.617**	**100.0**

Note: Cost per unit floor area is based on the gross building floor area.

Gross Floor Area .... **98,479.7** sqft
Modeled Floor Area .... **98,479.7** sqft

Energy Budget by System Component - [L-B] LEED Baseline

Project: Neary ES - LCCA Model 12/11/2024
Prepared by: GGD Consulting Engineers, Inc. 11:33 AM

1. Annual Coil Loads

Component	Load (kBTU)	(kBTU/sqft)
Cooling Coil Loads	2,800,749	28.440
Heating Coil Loads	2,379,434	24.162
Grand Total	**5,180,183**	**52.602**

2. Energy Consumption by System Component

Component	Site Energy (kBTU)	Site Energy (kBTU/sqft)	Source Energy (kBTU)	Source Energy (kBTU/sqft)
Air System Fans	743,648	7.551	2,655,885	26.969
Cooling	650,736	6.608	2,324,058	23.599
Heating	2,172,951	22.065	7,760,540	78.804
Pumps	4,211	0.043	15,038	0.153
Heat Rejection Fans	0	0.000	0	0.000
HVAC Sub-Total	**3,571,545**	**36.267**	**12,755,520**	**129.525**
Lights	407,195	4.135	1,454,269	14.767
Electric Equipment	417,174	4.236	1,489,909	15.129
Misc. Electric	129,698	1.317	463,207	4.704
Misc. Fuel Use	0	0.000	0	0.000
Non-HVAC Sub-Total	**954,068**	**9.688**	**3,407,385**	**34.600**
Grand Total	**4,525,613**	**45.955**	**16,162,904**	**164.124**

Notes:
1. 'Cooling Coil Loads' is the sum of all air system cooling coil loads.
2. 'Heating Coil Loads' is the sum of all air system heating coil loads.
3. Site Energy is the actual energy consumed.
4. Source Energy is the site energy divided by the electric generating efficiency (28.0%).
5. Source Energy for fuels equals the site energy value.
6. Energy per unit floor area is based on the gross building floor area.
   Gross Floor Area .... **98479.7** sqft
   Modeled Floor Area .... **98479.7** sqft

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Billing Details - Electric - [L-B] LEED Baseline

Project: Neary ES - LCCA Model 12/11/2024
Prepared by: GGD Consulting Engineers, Inc. 11:33 AM

1. Component Charges

Billing Period	Energy Charges ($)	Demand Charges ($)	Customer Charges ($)	Taxes ($)	Total Charge ($)
Jan	32,739	10,132	30	0	42,901
Feb	28,056	8,919	30	0	37,006
Mar	26,696	8,324	30	0	35,050
Apr	16,489	7,147	30	0	23,666
May	15,719	7,175	30	0	22,924
Jun	19,149	9,578	30	0	28,757
Jul	17,219	7,155	30	0	24,404
Aug	18,530	7,861	30	0	26,421
Sep	22,554	9,413	30	0	31,996
Oct	14,968	7,342	30	0	22,340
Nov	19,768	7,090	30	0	26,888
Dec	25,874	7,910	30	0	33,814
Totals	257,760	98,046	360	0	356,166

2. Totals

Billing Period	Total Charges ($)	Total Consumption (kWh)	Avg Price ($/kWh)
Jan	42,901	168,463	0.2547
Feb	37,006	144,367	0.2563
Mar	35,050	137,368	0.2552
Apr	23,666	84,845	0.2789
May	22,924	80,883	0.2834
Jun	28,757	98,532	0.2919
Jul	24,404	88,603	0.2754
Aug	26,421	95,349	0.2771
Sep	31,996	116,052	0.2757
Oct	22,340	77,019	0.2901
Nov	26,888	101,717	0.2643
Dec	33,814	133,138	0.2540
Totals	356,166	1,326,335	0.2685

3. Consumption Totals

Billing Period	Peak (kWh)	Mid-Peak (kWh)	Normal Peak (kWh)	Off-Peak (kWh)	Overall (kWh)
Jan	0	0	0	0	168,463
Feb	0	0	0	0	144,367
Mar	0	0	0	0	137,368
Apr	0	0	0	0	84,845
May	0	0	0	0	80,883
Jun	0	0	0	0	98,532
Jul	0	0	0	0	88,603
Aug	0	0	0	0	95,349
Sep	0	0	0	0	116,052
Oct	0	0	0	0	77,019
Nov	0	0	0	0	101,717
Dec	0	0	0	0	133,138
Totals	0	0	0	0	1,326,335

Billing Details - Electric - [L-B] LEED Baseline

Project: Neary ES - LCCA Model 12/11/2024
Prepared by: GGD Consulting Engineers, Inc. 11:33 AM

4. Billing Demands

Billing Period	Peak (kW)	Mid-Peak (kW)	Normal Peak (kW)	Off-Peak (kW)	Overall (kW)
Jan	0.0	0.0	0.0	0.0	758.4
Feb	0.0	0.0	0.0	0.0	667.6
Mar	0.0	0.0	0.0	0.0	623.0
Apr	0.0	0.0	0.0	0.0	535.0
May	0.0	0.0	0.0	0.0	537.1
Jun	0.0	0.0	0.0	0.0	716.9
Jul	0.0	0.0	0.0	0.0	535.6
Aug	0.0	0.0	0.0	0.0	588.4
Sep	0.0	0.0	0.0	0.0	704.5
Oct	0.0	0.0	0.0	0.0	549.5
Nov	0.0	0.0	0.0	0.0	530.7
Dec	0.0	0.0	0.0	0.0	592.0

5. Maximum Demands

Billing Period	Peak (kW)	Mid-Peak (kW)	Normal Peak (kW)	Off-Peak (kW)	Overall (kW)
Jan	0.0	0.0	0.0	0.0	758.4
Feb	0.0	0.0	0.0	0.0	667.6
Mar	0.0	0.0	0.0	0.0	623.0
Apr	0.0	0.0	0.0	0.0	535.0
May	0.0	0.0	0.0	0.0	537.1
Jun	0.0	0.0	0.0	0.0	716.9
Jul	0.0	0.0	0.0	0.0	535.6
Aug	0.0	0.0	0.0	0.0	588.4
Sep	0.0	0.0	0.0	0.0	704.5
Oct	0.0	0.0	0.0	0.0	549.5
Nov	0.0	0.0	0.0	0.0	530.7
Dec	0.0	0.0	0.0	0.0	592.0

6. Time Of Maximum Demands (Date/Hour)

Billing Period	Peak	Mid-Peak	Normal Peak	Off-Peak	Overall
Jan	n/a	n/a	n/a	n/a	1/30 08:00
Feb	n/a	n/a	n/a	n/a	2/9 08:00
Mar	n/a	n/a	n/a	n/a	3/1 08:00
Apr	n/a	n/a	n/a	n/a	4/10 06:00
May	n/a	n/a	n/a	n/a	5/10 10:00
Jun	n/a	n/a	n/a	n/a	6/26 14:00
Jul	n/a	n/a	n/a	n/a	7/21 09:00
Aug	n/a	n/a	n/a	n/a	8/21 14:00
Sep	n/a	n/a	n/a	n/a	9/4 10:00
Oct	n/a	n/a	n/a	n/a	10/26 10:00
Nov	n/a	n/a	n/a	n/a	11/27 07:00
Dec	n/a	n/a	n/a	n/a	12/27 07:00

APPENDIX A:
MASS SAVE INCENTIVES OVERVIEW

mass save®

Commercial New Construction or Major Renovation Program Overview

Choose Your Path to Generate Energy Savings and Reduce Carbon

The Sponsors of Mass Save can help make your new construction or major renovation project a high performing, energy efficient and low carbon building. We have technical experts and financial incentives to help bring your project to the next level of energy efficiency. Whether your goal is to design an all-electric Net Zero building, or, to simply incorporate more efficient systems into the design of your building, we have a pathway for you.

The earlier you engage, the deeper the energy savings potential

Connect with the Sponsors of Mass Save early in your project's design timeline to unlock opportunities for cost savings, technical support and optimal energy efficiency. Building owner incentives are available to help cover the incremental construction and design service costs associated with including energy efficient equipment and systems in your project.

By starting with us in your project's feasibility or conceptual design phase, your project team can achieve deep energy savings, and even net zero status, minimizing future energy use and carbon. We can also help you set an energy use intensity (EUI) target – which is much like a "miles per gallon" metric. It helps keep the project on an energy budget and can be used to evaluate your building's actual or predicted performance over time or compared to other, similar buildings.

There is a pathway for every project

Mass Save Sponsors offer the highest incentives for projects with the lowest EUIs and greatest levels of decarbonization.

Path 1. Net Zero and Low EUI Buildings (10,000 sf or greater)

Receive expert net zero building technical assistance and the highest new construction/major renovation project incentives available. Set an ultra-low EUI and save. We provide support through a post occupancy period to help you make sure the building performs at the level you expect.

Path 2. Whole Building Energy Use Intensity (EUI) Reduction Approach (50,000 sf or greater)

In this path for larger, complex building projects, your incentives will be greater with the lowest design EUIs. We offer technical support and energy modeling services to help you succeed.

Path 3: High Performance Buildings

For whole building projects of any size where customers do not wish to set and pursue an EUI target, projects that are not whole buildings (e.g., tenant fit outs, open air parking garages), projects that are process-load heavy buildings (e.g., cannabis, industrial), and projects where customers are only interested in one-off measures.

Receive technical assistance and financial incentives for implementing energy efficient technology and equipment.

About Mass Save:

Mass Save® is a collaborative of Massachusetts' natural gas and electric utilities and energy efficiency service providers including Berkshire Gas, Blackstone Gas, Cape Light Compact, Columbia Gas, Eversource, Liberty Utilities, National Grid, and Unitil. We empower residents, businesses, and communities to make energy efficient upgrades by offering a wide range of services, rebates, incentives, trainings, and information.

WE ARE MASS SAVE®:

BERKSHIRE GAS
Cape Light Compact
EVERSOURCE
Liberty Utilities
nationalgrid
Unitil energy for life

SUMMARY OF PATH INCENTIVES

PATH 1: NET ZERO/LOW EUI BUILDINGS

Customer Incentives	
Construction Incentive	up to $2.00/sf
Post Occupancy Incentive	$1.50/sf
Space Heating Heat Pump Adder*	
• Air Source Heat Pumps:	$800/ton
• Variable Refrigerant Flow (VRF):	$1,200/ton
• Ground Source Heat Pumps:	$4,500/ton
ZNE Or PH Certification Incentive	$3,000
Technical Assistance For Net Zero Expert Consultant Services	50% of fee up to $10,000
Verification Incentive	50% of fee up to $10,000

PATH 2: WHOLE BUILDING EUI REDUCTION APPROACH

Customer Incentives	
Incentive rate range (based on EUI % reduction)	$0.35/sf - $1.25/sf
Space Heating Heat Pump Adder*	
• Air Source Heat Pumps:	$800/ton
• Variable Refrigerant Flow (VRF):	$1,200/ton
• Ground Source Heat Pumps:	$4,500/ton
Technical Assistance	up to 75% cost share (capped at $20,000 per Sponsor)
Verification Incentive	50% of fee up to $10,000

PATH 3: HIGH PERFORMANCE BUILDINGS

Customer Incentives	
Custom: Envelope, lighting controls, unitary HVAC (RTU, AC), high efficiency chillers, energy recovery, demand control ventilation, variable flow kitchen hoods, DHW heaters, low flow water fixtures and other custom measures	$0.35/kWh $2.00/therm
Prescriptive: variable frequency drives	Current program rate
Space Heating Heat Pump*	
• Air Source Heat Pumps:	$800/ton
• Variable Refrigerant Flow (VRF):	$1,200/ton
• Ground Source Heat Pumps:	$4,500/ton

*Refers to nominal heating capacity (btu/h) at AHRI conditions divided by 12,000. The heat pump adder is available for equipment that transfers heat from a source outside of the building (i.e., outside air or a ground loop) for space heating purposes. For ground source heat pump projects, the capacity of the ground loop is used instead of the capacity of the heat pump. Equipment must be used as a primary heating source to qualify.

Go to MassSave.com/business, to learn more about the pathways. Click on the Find Your Mass Save Sponsor tool and enter your zip code to connect with your Mass Save Sponsor(s).

About Mass Save:

Mass Save® is a collaborative of Massachusetts' natural gas and electric utilities and energy efficiency service providers including Berkshire Gas, Blackstone Gas, Cape Light Compact, Columbia Gas, Eversource, Liberty Utilities, National Grid, and Unitil. We empower residents, businesses, and communities to make energy efficient upgrades by offering a wide range of services, rebates, incentives, trainings, and information.

WE ARE MASS SAVE®:

APPENDIX B:
2022 GEOTHERMAL FEDERAL TAX CREDIT REFERENCES

CLIMATEMASTER®
A NIBE GROUP MEMBER

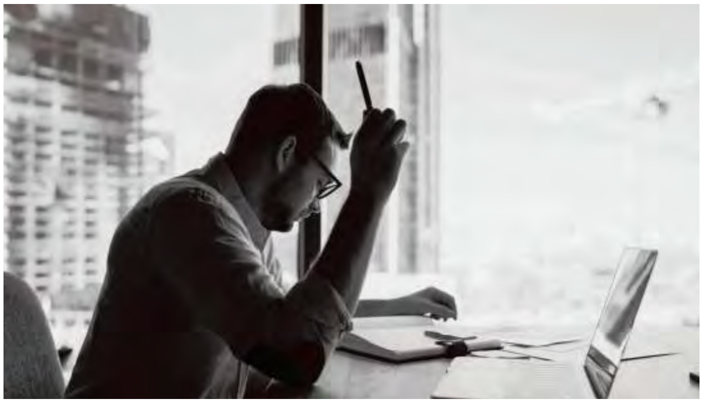
IRA 2023

COMMERCIAL GEOTHERMAL

Tax Guide 2023

INFLATION REDUCTION ACT OF 2022 (IRA)

The Inflation Reduction Act of 2022 (IRA) substantially extends and enhances the federal income tax credits and incentives available for the installation of geothermal heat pump (GHP) energy property in commercial buildings, including the introduction of a new direct payment option for non-taxable entities. For taxable businesses, there are also new carryback and transfer provisions along with a continuation of the accelerated depreciation benefits. These new incentives are unfortunately more complex in structure. This guide is designed to provide a detailed review of the new tax and depreciation incentives available for commercial GHP energy property under the IRA.



Federal Income Tax Credits:

- Investment tax credit (ITC) up to 30% of system cost basis
- Domestic content bonus tax credit up to 10% of system cost basis
- Energy community bonus tax credit up to 10% of system cost basis
- Direct-pay option for non-taxable entities
- No cap on total credit amount
- Can be used to offset AMT tax
- Can be used in more than one year
- Can be carried back up to 3 years or transferred/sold to an unrelated party
- Can be combined with solar and other clean energy tax credits

Accelerated Depreciation:

- 5-year MACRS depreciation of system cost basis (less ½ of tax credit)
- Eligible for first-year bonus depreciation

Eligibility:

- Building located in U.S.
- Original use begins with taxpayer
- Construction commenced before 1/1/2035

Business Energy Investment Tax Credit

The business ITC for geothermal heat pump property was originally enacted in the Energy Improvement and Extension Act of 2008. This legislation added geothermal heat pumps to the definition of energy property under section 48(a) of the Internal Revenue Code with a 10% tax credit. This credit was extended by Bipartisan Budget Act of 2018 and most recently enhanced and further extended by the IRA of 2022. Effective 1/1/2023, there is now a 2-tier structure in place with a base credit rate of 6% and an increased rate of 30% if any one of the following criteria are met:

1. The maximum net output capacity of the GHP project is less than 1 megawatt (3.4 million Btu/h) of thermal energy. The Geothermal Exchange Organization (GEO) has submitted analysis that equates this to a total installed system capacity of 445 tons for distributed zone-level GHPs or 285 tons for central plant GHPs. The Department of Treasury is currently developing guidance.
2. The project is installed under specific prevailing wage and apprenticeship requirements. The IRS issued guidance for these requirements in Notice 2022-61 on 11-30-2022.
3. Construction of the project was commenced prior to 1-29-2023.

The ITC for GHP energy property is effective for projects that commence construction prior to 1/1/2035. In 2033 the base rate drops to 5.2% and the increased rate to 26%, while in 2034 they decline to 4.4% and 22% respectively.

Domestic Bonus Tax Credit

The domestic content bonus requires that any steel, iron, or manufactured product that is part of the GHP project at time of completion be produced in the United States. There is a 2-tier structure in place with a base credit rate of 2% and an increased rate of 10% that is based on the same criteria as for the ITC outlined above.

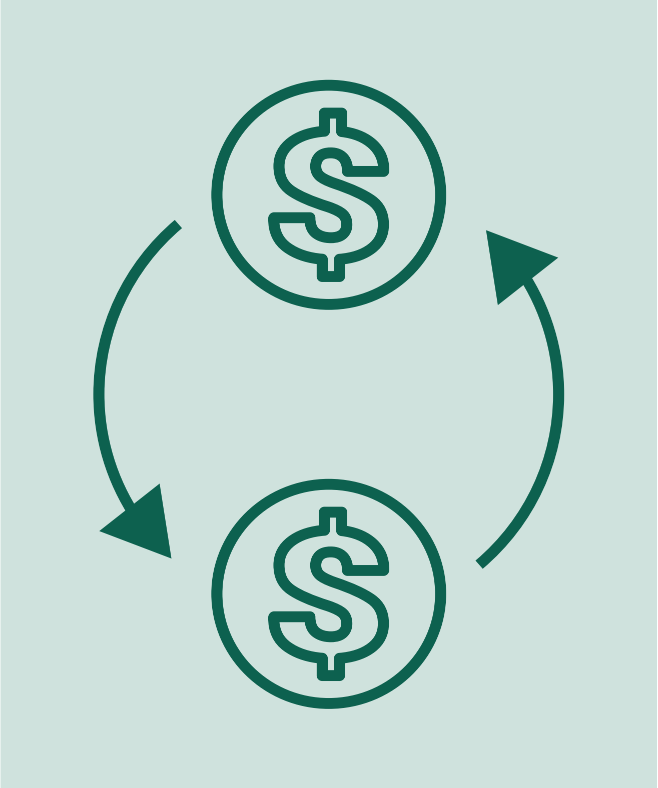
For purposes of this bonus, steel and iron used in the GHP project must be produced in the United States. This requirement applies to construction materials made primarily of steel or iron, but not to steel or iron used as components or sub-components of other manufactured products. Manufactured products are deemed to have been manufactured in the United States if at least 40% of the total cost of the incorporated components and subcomponents are mined, produced, or manufactured in the United States. The percentage of domestic content required for manufactured products increases to 45% for projects that begin construction in 2025, 50% for projects that begin construction in 2026, and 55% for projects that begin construction after 2026. GHP projects certainly appear to be able meet these requirements, however the Department of Treasury is developing necessary guidance.

The Domestic Content Bonus is not available for GHP projects completed before 1/1/2023

Direct Pay

Non-taxable entities have historically been unable to use the ITC. To address this, the IRA creates a new direct pay mechanism that, in effect, provides a refundable credit equal to the GHP project ITC with any domestic content bonus. Entities eligible include tax exempt organizations, a State or political subdivision thereof, the Tennessee Valley Authority, Indian tribal governments, Alaska Native Corporations, and rural electric cooperatives. Examples of these entities include charities, churches, foundations, state and local government buildings, schools, universities, and other nonprofits.

Direct pay is available for GHP projects that are placed in service after 12/31/2022.



Transfer or Sale of Tax Credit

Taxpayers may transfer the ITC including any domestic content bonus to an unrelated taxpayer. Consideration must be paid in cash, is not included in the income of the transferor, and is not deductible to the transferee. The transferee shall be treated as the taxpayer for all purposes with respect to the credit. For GHP energy projects held by a partnership, only the partnership can elect to transfer the eligible credits, not the individual partners. Direct pay is available for GHP projects that are placed in service after 12/31/2022.

Credit Carryback

The IRA extends the ITC carryback period to 3 years. The credit must originate in a tax year that begins after 12/31/2022. Any unused portion of the credit can also be carried forward.

Depreciation of Energy Property

Energy property is classified as a 5-year property in section 168(e) (3)(B)(vi) of the Internal Revenue Code, meaning the cost of the property can be deducted on an accelerated MACRS basis. For depreciation purposes, the system cost basis must be reduced by one half of the energy tax credit. In the example of a C-corporation in a 26% overall (federal plus state) tax bracket receiving a 40% ITC (includes the domestic content bonus), MACRS depreciation provides an additional tax savings equal to 20.8% of the energy property basis over the first 5 years, or optionally most within the first year. By comparison, conventional heating and cooling systems are generally depreciated on a 39-year straight line basis and would provide only 3.33% of the basis in tax savings over the first 5 years. The tax benefits for pass-through entities such as S-corporations could be much higher due to the higher marginal tax rates for individuals.

Energy property is eligible for first year bonus depreciation. The bonus allowance is 100% in 2022, 80% in 2023, 60% in 2024, 40% in 2025, 20% in 2026 and phases out in 2027. Refer to IRS Publication 946 for more information regarding how to depreciate property.

Eligible Geothermal Heat Pump Energy Property

The tax credit may be claimed for spending on equipment which uses the ground or ground water as a thermal energy source to heat a structure or as a thermal energy sink to cool a structure. The structure must be located in the United States. Spending includes costs of installation.

The credit cannot be claimed for spending on equipment used solely for a purpose other than heating or cooling a structure or on previously used equipment.

Construction Commenced Requirement

The credit can be claimed on spending for projects on which construction has commenced prior to January 1st, 2035. There is no time limit on when the construction must be completed for GHP energy projects. See IRS Notice 2018-59 for methods of establishing the commencement of construction.

System Cost Basis

The cost basis includes the direct costs associated with the purchase and installation of the energy property as well as any indirect costs that may be partly or fully allocable to its construction (including taxes). This includes equipment such as ground heat exchangers or wells, distribution piping and ductwork, pumps, GHPs and controls along with the associated installation labor and materials. The basis also generally includes those portions of the electrical, plumbing, design and GC fees that are specifically associated with the geothermal property. Utility rebates usually reduce the basis. See the uniform capitalization rules of IRS section 263A.

Dual Use Property Hybrid GHP Systems

If a GHP energy property contains a source of energy other than from the ground or ground water, portions of the system that carry both forms of energy may be considered dual use equipment. This would typically be equipment such as ductwork downstream of the GHP. The presence of an auxiliary energy source solely for emergency back-up purposes is not considered in this determination. Otherwise, if more than 25% of the annual energy (not peak energy) comes from the auxiliary source, any dual use equipment in the system may no longer be eligible for inclusion in the ITC cost basis. These comments are based on an interpretation of a 1979 code definition of energy property for direct use geothermal energy such as hot water for heating. There have been no further guidelines published by the IRS since that time. The IRS may not apply this language in this same way to GHP energy property and, as such, this interpretation is offered on a precautionary basis for those developing hybrid GHP energy projects. See 26 CFR 1.48-9 - Definition of energy property.

Energy Credit and AMT

The ITC can be used to offset both regular income taxes and alternative minimum taxes (AMT).

Ownership Considerations

Geothermal energy property ITC credits and depreciation deductions can only be claimed by the owner of the eligible property, including utilities that own energy property. At present, business models as used by the solar industry where a third-party owner (TPO) leases or sells energy from an energy property to a consumer are prohibited for GHP property due to IRS rules related to "limited use." The issue is the non-removable geothermal loop being dedicated to a single customer, in effect making the TPO a lender rather than a true owner. GEO is working with Treasury to develop a work around.

Energy Communities

The law includes an additional bonus credit of 10% (or 2% for projects over 1MW that don't meet prevailing wage/apprenticeship requirements) for Section 48 technologies that are installed in "energy communities." Energy communities are defined as:

- Census tract or adjoining tract with coal mine closed since 2000, or
- Census tract or adjoining tract with coal plant closed since 2010, or
- Defined as "a brownfield site" by the EPA, or
- a metropolitan or non-metropolitan statistical area where 0.17% or more direct employment, or at least 25% of local tax revenues, are related to extraction, processing, transport, or storage of coal, oil, or natural gas, and unemployment is at or above the national average in the previous year

Claiming the Credit

IRS Form 3468 is used to claim the Energy Credit. Visit www.irs.gov to download the latest tax form and instructions.

CLIMATEMASTER®
A NIBE GROUP MEMBER

7300 S.W. 44th Street
Oklahoma City, OK 73179
Phone: 405-745-6000
Fax: 405-745-6058
climatemaster.com

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Clean Energy Tax Incentives: Elective Pay Eligible Tax Credits

The Inflation Reduction Act of 2022 ("IRA") makes several clean energy tax credits available to businesses; tax-exempt organizations; state, local, and tribal governments; other entities; and individuals. The IRA also enables entities to take advantage of certain clean energy tax credits through its elective pay provision (also colloquially known as direct pay). Elective pay allows several types of entities, such as tax-exempts and governments, to treat the amount of certain credits as a payment against tax on their tax returns and as a result receive direct payments for certain clean energy tax credits.

	Tax Provision	Description
Energy Generation & Carbon Capture	**Production Tax Credit for Electricity from Renewables** (§ 45, pre-2025)	**For production of electricity from eligible renewable sources**, including wind, biomass, geothermal, solar, small irrigation, landfill and trash, hydropower, marine and hydrokinetic energy. **Credit Amount (for 2022):** 0.55 cents/kilowatt (kW); (1/2 rate for electricity produced from open loop biomass, landfill gas, and trash); 2.75 cents/kW if Prevailing Wage and Apprenticeship (PWA) rules are met [1,2,3,7]
	Clean Electricity Production Tax Credit (§ 45Y, 2025 onwards)	**Technology-neutral tax credit for production of clean electricity**. Replaces § 45 for facilities that begin construction and are placed in service after 2024. **Credit Amount:** Starts in 2025, consistent with credit amounts under section 45 [1,2,3,6,7]
	Investment Tax Credit for Energy Property (§ 48, pre-2025)	**For investment in renewable energy projects** including fuel cell, solar, geothermal, small wind, energy storage, biogas, microgrid controllers, and combined heat and power properties **Credit Amount:** 6% of qualified investment (basis); 30% if PWA requirements met [1,4,5,6,8]
	Clean Electricity Investment Tax Credit (§ 48E, 2025 onwards)	**Technology-neutral tax credit for investment in facilities that generate clean electricity** and qualified energy storage technologies. Replaces § 48 for facilities that begin construction and are placed in service after 2024 **Credit Amount:** 6% of qualified investment (basis); 30% if PWA requirements met [1,4,5,6]
	Low-Income Communities Bonus Credit (§ 48(e), 48E(h)) **Application required**	**Additional investment tax credit for small-scale solar and wind (§ 48(e)) or clean electricity (§48E(h)) facilities** (<5MW net output) on Indian land, federally subsidized housing, in low-income communities, and benefit low-income households. Allocated through an application process. **Credit Amount:** 10 or 20 percentage point increase on base investment tax credit [7]
	Credit for Carbon Oxide Sequestration (§ 45Q)	**Credit for carbon dioxide sequestration** coupled with permitted end uses in the United States. **Credit Amount:** $12-36 per metric ton of qualified carbon oxide captured and sequestered, used as a tertiary injectant, or used, depending on the specified end use; $60-$180 per metric ton if PWA requirements met.[1,7]
	Zero-Emission Nuclear Power Production Credit (§ 45U)	**For electricity from nuclear power facilities.** Facilities in operation prior to August 16, 2022. **Credit Amount (for 2023):** 0.3 cents/kWh (reduced rate for larger facilities); 1.5 cent/kWh if PW req's met [1,7]
Manufacturing	**Advanced Energy Project Credit** (§ 48C) **Application required**	**For investments in advanced energy projects.** A total of $10 billion will be allocated, not less than $4 billion of which will be allocated to projects in certain energy communities. **Credit Amount:** 6% of taxpayer's qualified investment; 30% if PWA requirements are met [1]
	Advanced Manufacturing Production Credit (§ 45X)	**Production tax credit for domestic clean energy manufacturing** of components including solar and wind energy, inverters, battery components, and critical materials. **Credit Amount:** Varies by component
Vehicles	**Credit for Qualified Commercial Clean Vehicles** (§ 45W)	**For purchasers of commercial clean vehicles**. Qualifying vehicles include passenger vehicles, buses, ambulances, and certain other vehicles for use on public streets, roads, and highways. **Credit Amount:** Up to $40,000 (max $7,500 for vehicles <14,000 lbs) [9]
	Alternative Fuel Vehicle Refueling Property Credit (§ 30C)	**For alternative fuel vehicle refueling and charging property**, located in low-income and non-urban areas. Qualified fuels include electricity, ethanol, natural gas, hydrogen, and biodiesel. **Credit Amount:** 6% of basis for businesses and can increase to 30% if PWA is met.
Fuels	**Clean Hydrogen Production Tax Credit** (§ 45V)	**For producing clean hydrogen** at a qualified, U.S.-based clean hydrogen production facility. **Credit Amount:** $0.60/kg multiplied by the applicable percentage (20% to 100%, depending on lifecycle greenhouse gas emissions), amount increases if PWA is met [1,7]
	Clean Fuel Production Credit (§ 45Z, 2025 onwards)	**Technology neutral tax credit for domestic production of clean transportation fuels**, including sustainable aviation fuels, beginning in 2025* **Credit Amount:** $0.20/gallon ($0.35/gal for aviation fuel) multiplied by CO2 "emissions factor"; $1.00/gallon ($1.75/gal for aviation fuel) multiplied by CO2 "emissions factor" if PWA is met [1,7]

Please see the notes on the next page or see **IRS.gov/cleanenergy** for more information.

Notes:

The information in this document may be subject to change as guidance is issued or finalized. For all IRA clean energy tax credits, please see **irs.gov/cleanenergy** for further details and eligibility requirements.

[1] Credit is increased by 5 times for projects that pay prevailing wages and use registered apprentices. Apprenticeship requirements do not apply for §§ 45L and 45U. Prevailing wage and apprenticeship requirements do not apply to certain projects, including certain projects of less than 1 megawatt or those that began construction prior to January 29, 2023.

[2] Credit is increased by 10% if the project meets certain domestic content requirements for steel or iron, and manufactured products.

[3] Credit is increased by 10% if located in an energy community.

[4] Credit is increased by up to 10 percentage points for projects meeting certain domestic content requirements for steel, iron, and manufactured products.

[5] Credit is increased by up to 10 percentage points if located in an energy community.

[6] Section 168(e) provides favorable depreciation treatment for facilities or property qualifying for this tax credit. These facilities or property will be treated as a 5-year property for purposes of cost recovery, leaving them with lower taxable income in the earlier years of a clean energy investment.

[7] Credit rate is adjusted annually for inflation.

[8] See section 48 for more detail and applicable exceptions to the credit rate.

[9] The entities eligible for elective pay of the commercial clean vehicle credit is a subset of the entities eligible for elective pay of other credits. In addition, starting January 1, 2024, the amount of a new clean vehicle or previously owned clean vehicle tax credit (but not a commercial clean vehicle credit) can be transferred to a dealer for an equivalent reduction in the eligible vehicle's sales price.

APPENDIX C:
MASS SAVE INCENTIVE CALCULATIONS

Mass Save Incentive - Path 2 - EUI Reduction

Project Name:	Neary Elementary -SD - VRF
Sponsor:	National Grid
Building Area (SF):	99,564

Phase Paid	Activity	Potential Incentive Amount	Project Incentive Amount
Post Construction	EUI Reduction - 25%+	$1.25	$124,455
	Technical Assistance	75% up to $20,000	$20,000
	Air Source Heat Pumps	$800/ton	$72,000
	Variable Refrigerant Flow (VRF)	$1,200/ton	$132,000
	Ground Source Heat Pumps	$4,500/ton	$0
	After Construction	**$3.50**	**$348,455**
Post Occupancy	Verification (ongoing M&V)	50% up to $10,000	$10,000
	After 12 Mo. Occupancy	**$0.10**	**$10,000**
	TOTAL	**$3.60**	**$358,455**

Path Requirements:
- Must be all electric. Exceptions for emergency use in emergency centers/shelters.
- Must be 50,000 SF or larger
- Must engage utility before 100% DD

Mass Save Incentive - Path 1 - ZNE/ZNE Ready

Project Name:	Neary Elementary - SD - GSHP
Sponsor:	National Grid
Building Area (SF):	99,564

Phase Paid	Activity	Potential Incentive Amount	Project Incentive Amount
Post Construction	EUI Reduction	$2.00	$199,128
	ZNE Tech Assistance	50% up to $10,000	$10,000
	ZNE or PH Certification	$3,000	$0
	Air Source Heat Pumps	$800/ton	$0
	Variable Refrigerant Flow (VRF)	$1,200/ton	$0
	Ground Source Heat Pumps	$4,500/ton	$900,000
	After Construction	**$11.14**	**$1,109,128**
Post Occupancy	EUI Performance Met	$1.50/SF	$99,564
	EUI Target surpassed	$0.05/sf per EUI point reduction	TBD
	Verification (ongoing M&V)	50% up to $10,000	$10,000
	After 12 Mo. Occupancy	**$1.10**	**$109,564**
	TOTAL	**$12.24**	**$1,218,692**

Path Requirements:

- Must be all electric. Exception for natural gas for emergency use for emergency centers/shelters.
- Must be 10,000 SF or larger and occupied yr round (4 summer weeks for K-12)
- Must be Zero Net Energy, Zero Net Energy Ready, or Passive House
- Must meet EUI target for building use and tier
- Must engage utility before 50% SD
- Must perform enhanced commissioning of MEP & enclosure and have separate metering for end uses and PV.

Mass Save Incentive - Path 2 - EUI Reduction

Project Name:	Neary Elementary -SD - ASHP
Sponsor:	National Grid
Building Area (SF):	99,564

Phase Paid	Activity	Potential Incentive Amount	Project Incentive Amount
Post Construction	EUI Reduction - 25%+	$1.25	$124,455
	Technical Assistance	75% up to $20,000	$20,000
	Air Source Heat Pumps	$800/ton	$160,000
	Variable Refrigerant Flow (VRF)	$1,200/ton	$0
	Ground Source Heat Pumps	$4,500/ton	$0
	After Construction	**$3.06**	**$304,455**
Post Occupancy	Verification (ongoing M&V)	50% up to $10,000	$10,000
	After 12 Mo. Occupancy	**$0.10**	**$10,000**
	TOTAL	**$3.16**	**$314,455**

Path Requirements:
- Must be all electric. Exceptions for emergency use in emergency centers/shelters.
- Must be 50,000 SF or larger
- Must engage utility before 100% DD

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O: Local Actions and Approvals

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INCORPORATED JULY 6, 1727.

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(508) 485-0710

Module 4 Local Actions and Approval Certification

February 25, 2025

Mr. Michael McGurl
Director of Capital Planning
40 Broad Street
Boston, Massachusetts 02109

Dear Mr. Gurl:

The Town of Southborough Margaret Neary Elementary School Building Committee ("NBC") has completed its review of the Feasibility Study Schematic Design Report (SD) for the Margaret Neary Elementary School project (the "Project"), and on February 20, 2024, the NBC voted to approve and recommended to the School Committee to approve and authorize the Owner's Project Manager to submit the Feasibility Study PSR related materials to the MSBA for its consideration.

A notarized copy of the NBC meeting minutes, which includes the specific language of the vote and the number of votes in favor, opposed, and abstained, are attached.

Please find below a complete list of the Margaret Neary Elementary School Building Subcommittee meetings held to discuss and/or present to the public material related to the Project. Most meetings were held Remotely with Zoom Technology and all notices posted by the Margaret Neary Elementary School NBC on their website: https://www.southboroughma.gov/AgendaCenter

Since the last submission on August 29, 2024, the NBC has held **12** meetings regarding the proposed project, in compliance with the state Open Meeting Law. These meetings include:

September 13, 2024: Remote Zoom Technology at 9:00am –MEETING #12

- Review and vote to approve submission of PSR addendum to MSBA to include supplementary information.
- Motion to accept the changes and submit to the MSBA unanimously approved.

September 16, 2024: Remote Zoom Technology at 7:30pm – MEETING #13

- Approval of Meeting Minutes from September 13, 2024.
- Approval of Executive Session Meeting Minutes from August 9, 2024.

- Neary site conditions, continued discussions from prior meetings
- MSBA Funding Allowance Update
  - Report on updated MSBA cost per square foot site allowance increase. Cost per square foot allowance increase from $55 to $59 resulting in $1.6M savings of the town share.
- Schematic Design Process – Next Steps and Schedule
  - Review of the MSBA Facilities Assessment Subcommittee Meeting, 9/25/24
  - Review of upcoming schedule for Schematic Design Submission
- Design Working Group
  - Review of working group structure for design focus meetings with the design team and school faculty

October 7, 2024: Remote Zoom Technology at 7:30pm – MEETING #14

- Approval of Meeting Minutes from September 13, 2024, and September 16, 2024
- Approval of Open and Executive Session Meeting Minutes from August 9, 2024
- Update on Design Review Space with Educators
- Special Town Meeting Logistics including date and location
  - Date in May 2025 for a Special Town Meeting vote to be coordinated with the Town
  - Ballot language to be reviewed with MSBA
- Update from Communications Subcommittee on next steps in educating the community
  - Communications subcommittee to hold office hours at the Senior Center and other Town locations for project education
  - Open houses and website updates discussed
- Update on Project Budget
  - Review of project cashflow and MSBA reimbursements
- Design, Bid, Build versus Construction Manager at Risk Presentation with vote on preferred path
  - Skanska presentation on CM-at-Risk (CMR) vs. Design-Bid-Build (DBB) construction methodology
  - The Committee agreed that the Finance Subcommittee would review in further detail and make a recommendation to the full Committee

November 21, 2024: Remote Zoom Technology at 7:30pm – MEETING #15

- Approval of Meeting Minutes from October 7, 2024
- Update from Communications Subcommittee on and review of recent and upcoming community engagement events
- Skanska/Arrowstreet Updates
  - Project budget overview
  - Sustainability subcommittee updates
  - Review of geotech borings results
  - Design review updates
- The committee discussed and voted unanimously to proceed with Construction Manager at Risk for the project.
- Committee discussed zoning and landfill management for upcoming town meeting.

December 5, 2024: Remote Zoom Technology at 7:00pm – MEETING #16

- Approval of Meeting Minutes from November 21, 2024
- Approval of Open and Executive Session Meeting Minutes from August 9, 2024
- Community Feedback and outreach plan
- Skanska/Arrowstreet Updates

    - Design review updates
    - Gym size comparison
    - Sustainability Subcommittee Update

December 16, 2024: Remote Zoom Technology at 7:00pm – MEETING #17
- Approval of Meeting Minutes from December 5, 2024
- Approval of Open and Executive Session Meeting Minutes from August 9, 2024
- Community Feedback and outreach plan
- Skanska/Arrowstreet Updates
    - Design review updates
    - Exterior of building and site circulation
    - Review of Finn School existing conditions and potential capital/future projects
    - Preparation and review of slide deck for Select Board/Advisory Meeting (12/17/24)
    - Review of project schedule

December 17, 2024: Remote Zoom Technology at 7:00pm – MEETING #18
- Joint Meeting with Select Board, Advisory, and Capital to provide project update presentation
- Overview of process, site selection and considerations, educational program, proposed design, construction logistics, project cost and fnding, impact of a yes and no vote, next steps

January 6, 2025: Remote Zoom Technology at 7:00pm – MEETING #19
- Approval of Meeting Minutes from December 16, 2024, and December 17, 2024
- Approval of Open and Executive Session Meeting Minutes from August 9, 2024
- Community Feedback and outreach plan
- Skanska/Arrowstreet Updates
    - a. HVAC System Recommendation from Sustainability Subcommittee
    - b. Design Review Update –Exterior
- Open Discussion on Feedback from Select Board/Advisory Meeting VII.

January 8, 2025: Remote Zoom Technology at 7:00pm – MEETING #20
- Project Update Presentation to Southborough School Committee
    - Overview of schedule, process, design considerations, project communications strategies, and new building operational costs.

February 10, 2025 – MEETING #21
- Approval of Meeting Minutes from December 16, 2024, December 17, 2024, January 6, 2025,
- and January 8, 2025
- Approval of Outstanding Sustainability Subcommittee Meeting Minutes
- Community Feedback and outreach plan
- Skanska/Arrowstreet Updates
    - Schematic Design Report – Review and possible vote to approve
    - Financial Update –
        - Review of latest project cost estimates
        - Committee discussed plan for value engineering at the next NBC meeting

February 13, 2025: Remote Zoom Technology at 7:00pm – MEETING #22

- Skanska/Arrowstreet Updates
  - a. Schematic Design Report – Review and authorize OPM to submit to MSBA
  - b. Financial Update – Review of latest project cost estimates, discussion of value engineering, and vote on updated cost projections
    - Review of tax impact analysis
    - Review of VE items and add alternate items
    - Review of contingencies
- Community Feedback and outreach plan

February 20, 2025: Remote Zoom Technology at 8:30am – *MEETING #22*
- Approval of Meeting Minutes from February 13, 2025
- Approval of outstanding subcommittee meeting minutes
- Schematic Design Report – Review and authorize OPM to submit to MSBA
- Review and approval of project update release

In addition to the NBC meetings listed above, the district held additional public subcommittee and community meetings, which were posted in compliance with the state Open Meeting Law, at which the Project was discussed. These meetings include:

Finance Subcommittee on September 11, 2024, at 1:00pm: Remote Zoom Technology
- Approval of August 8, 2024, meeting minutes
- Approval of outstanding project invoices
- Discussion of MSBA reimbursement rate increase
- Discussion of project cost considerations

Communications Subcommittee on October 4, 2024, at 9:00am: Remote Zoom Technology
- Approval of Meeting Minutes for August 12, 2024
- Review of public outreach plans for remainder of calendar year 2024
  - a. School Tours
  - b. Office Hours at various locations
  - c. Faculty/Staff
  - d. Social Media and Website

Sustainability Subcommittee on November 6, 2024, at 11:00am: Remote Zoom Technology
- Discussion with Mass Saves regarding available incentives for HVAC systems
- Review of HVAC system options

Mary E. Finn Elementary School Community Presentation, November 8, 2024, 9:30am, 60 Richards Road, Southborough, MA 01772
- Project overview presentation for Mary E. Finn Elementary School

Margaret Neary Elementary School Community Tour, November 12, 2024, 6:30pm - 8:30pm, Margaret Neary Elementary School, 53 Parkerville Rd, Southborough, MA 01772
- Open community tour of the existing Margaret Neary Elementary School

Margaret Neary Elementary School Community Tour, November 16, 2024, 10:00am – 12:00pm, Margaret Neary Elementary School, 53 Parkerville Rd, Southborough, MA 01772
- Open community tour of the existing Margaret Neary Elementary School

Finance Subcommittee on November 14, 2024, at 1:30pm: Remote Zoom Technology
- Approval of Meeting Minutes for September 11, 2024

- Approval of all outstanding project invoices
- Discussion of any and all financial aspects of proposed Neary project
- Discussion of two building contract options: CMR and DBB
    - Subcommittee discussed pros and cons of both methods
    - Subcommittee concluded with a recommendation to propose the CMR approach at the upcoming building committee meeting, highlighting its transparency, flexibility, and alignment with project goals

Communications Subcommittee on November 21, 2024, at 8:00pm: Remote Zoom Technology
- Approval of Meeting Minutes for October 18, 2024
- Review of FAQs
- Communication plan update

Communications Subcommittee on December 5, 2024, at 8:00pm: Remote Zoom Technology
- Approval of Meeting Minutes for November 21, 2024
- Communication plan update
- Review and release of FAQs

Finance Subcommittee on December 30, 2024, at 9:00am: Remote Zoom Technology
- Approval of Meeting Minutes for November 14, 2024
- Approval of all outstanding project invoices

Sustainability Subcommittee on January 2, 2025, at 11:00am: Remote Zoom Technology
- Review the LCCA (Life Cycle Cost Analysis) from the HVAC engineers
- Subcommittee agreed to recommend geothermal-based HVAC system to the Neary Building Committee

Southborough Kindergroup Presentation, January 5, 2025
- Project overview presentation to Southborough Kindergroup – non-profit membership-based community group for infants, toddlers, preschool children, and their parents and caregivers.

Southborough Kindergroup Presentation, January 9, 2025
- Project overview presentation to Southborough Kindergroup – non-profit membership-based community group for infants, toddlers, preschool children, and their parents and caregivers.

Neary Building Committee Community Office Hours, January 10, 2025, 8:30 – 9:30 am, Public Safety Building-Training Room, 32 Cordaville Road, Southborough, MA 01772
- Building committee held open office hours for community members to attend and learn about the project

Communications Subcommittee on January 17, 2025, at 9:00am: Remote Zoom Technology
- Approval of Meeting Minutes for December 16, 2024
- Communication plan update
- Review and release of FAQs

Finance Subcommittee on January 24, 2025, at 1:00pm: Remote Zoom Technology

- Approval of Meeting Minutes for December 30, 2024
- Approval of all outstanding project invoices
- Discussion of upcoming schedule

Communications Subcommittee on January 31, 2025, at 9:00am: Remote Zoom Technology

- Approval of Outstanding Meeting Minutes
- Debrief of feedback received to date
- Discussion of website updates
- Communication plan update
- Review and release of FAQs

Neary Building Committee Community Office Hours, February 1, 2025, 8:30am – 9:30am, Public Safety Building-Training Room, 32 Cordaville Road, Southborough, MA 01772

- Building committee held open office hours for community members to attend and learn about the project

Neary Building Committee Community Office Hours, February 24, 2025, 8:00pm – 9:00pm, Public Safety Building-Training Room, 32 Cordaville Road, Southborough, MA 01772

- Building committee held open office hours for community members to attend and learn about the project

Future Event: Neary Building Committee Community Office Hours, March 1, 2025, 9:00am – 10:00am, Public Safety Building-Training Room, 32 Cordaville Road, Southborough, MA 01772

- *Building committee to hold open office hours for community members to attend and learn about the project*

To the best of my knowledge and belief, each of the meetings listed above complied with the requirements of the Open Meeting Law, M.G.L. c. 30A, §§ 18-25 and 940 CMR 29 *et seq*.

If you have any questions or require any additional information, please contact Jason Malinowski, Chair of Neary School Building Committee jmalinowski@southboroughma.com

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.

DocuSigned by:
44F9F9E903914D9...

By: Mark Purple

Title: Chief Executive Officer

Date: 2/25/2025

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.

Signed by:
Gregory L. Martineau
AAC5793BD270441...

By: Gregory Martineau

Title: Superintendent of Schools

Date: 2/25/2025

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.

DocuSigned by:
7831CFA648B34A2...

By: Chelsea Malinowski

Title: Chair of the School Committee

Date: 2/25/2025

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(508) 485-0710

February 24, 2025

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

Dear Ms. Caprigno,

At its meeting on Thursday, February 20, 2025, the Margaret A. Neary Elementary School Building Committee voted the following:

The Margaret A. Neary Elementary School Building Committee votes to approve the Schematic Design (SD) Submission and authorize Skanska USA Building as Owner Project Manager to submit to the Massachusetts School Building Authority on behalf of the district. Mr. Jason Malinowski made the motion. Ms. Kathryn Cook seconded the motion.

7 voted in the affirmative, Roger Challen, Kathryn Cook, Mark Davis, Denise Eddy, Christopher Evers, Jason Malinowski, and Andrew Pfaff.
0 opposed.
0 abstained.
0 absent
The motion passed unanimously.

Respectfully submitted by:

Gregory J Martineau

Gregory L. Martineau
Superintendent of Schools

Acknowledgment Certificate

Commonwealth of Massachusetts
County of Worcester

On this 24th of february 20 25, before me, Sheila Hana the undersigned notary public, personally appeared G. Martineau (name of document signer) proved to me through satisfactory evidence of identification, which were ma license, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

Sheila A Hana
(seal) Notary Public Signature

SHEILA A HANA
NOTARY PUBLIC
Commonwealth of Massachusetts
My Commission Expires On
07/19/2030

TOWN OF SOUTHBOROUGH

JULY 6, 1727.

TOWN HOUSE · 17 COMMON STREET · SOUTHBOROUGH, MASSACHUSETTS 01772-1662
(508) 485-0710

February 24, 2025

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

Dear Ms. Caprigno,

At its meeting on Thursday, February 13, 2025, the Margaret A. Neary Elementary School Building Committee voted the following:

Mr. Jason Malinowski made the following motion: The Margaret A. Neary Elementary School Building Committee completed its review of the Schematic Design Total Project Budget of $108,517,025 for the Margaret A. Neary Elementary School and approves the submission to the MSBA for its consideration. Mr. Roger Challen seconded the Motion.

6 voted in the affirmative, Roger Challen, Kathryn Cook, Mark Davis, Denise Eddy, Jason Malinowski, and Andrew Pfaff.
0 opposed.
0 abstained.
1 absent, Christopher Evers

The motion passed unanimously.

Respectfully submitted by:

Gregory L Martineau

Gregory L. Martineau
Superintendent of Schools

Acknowledgment Certificate

Commonwealth of Massachusetts
County of Worcester

On this 24th of February, 2025, before me, Sheila Hana the undersigned notary public, personally appeared G. Martineau (name of document signer) proved to me through satisfactory evidence of identification, which were MA license, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

Sheila A Hana
(seal) Notary Public Signature

SHEILA A HANA
NOTARY PUBLIC
Commonwealth of Massachusetts
My Commission Expires On
07/19/2030

RECEIVED
By Town Clerk/jfh at 3:59 pm, Sep 10, 2024

Town of Southborough, Massachusetts

Neary Building Committee

September 13, 2024

9:00 AM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order

II. Review and vote to approve submission of PSR addendum to MSBA

III. Other business that may properly come before the Committee

IV. Adjournment

Jason W. Malinowski, Chair

Town of Southborough, Massachusetts

Neary Building Committee

September 13, 2024

9:00 AM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Mark Davis, Denise Eddy, Kathryn Cook, Andrew Pfaff, Chris Evers, and Jason Malinowski

Members Absent: None

Ex-Officio

Members Present: Rebecca Pellegrino, Assistant Superintendent of Finance, Keith Lavoie Assistant Superintendent of Operations (arrived at 9:03 am), and Kathleen Valenti, Neary School Principal

Members Absent: Gregory Martineau Superintendent of Schools, Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, Steven Mucci, Principal of Woodward School, Mark Purple, Town Administrator, and Brian Ballantine Town Treasurer/ Finance Director

I. Call Meeting to Order

Jason Malinowski called the Neary Building Committee into order at 9:01 am.

II. Review and vote to approve submission of PSR addendum to MSBA

Jim Burrows, Project Manager at Skanska USA Building Inc., received some initial feedback from the Massachusetts School Building Authority (MSBA) after submitting the Preferred Schematic Design (PSR). Jim clarified that the feedback is supplementary to the original submission, the review of the PSR is still ongoing, and they are on schedule for the October 30th board meeting. The MSBA is requesting additional information, specifically asking Skanska to include the cost of all options within the preliminary design price, including the two base repair options and the 450 three-grade option.

Jason Malinowski asked for a discussion and a vote.

Denise Eddy moved, Roger Challen seconded, "To accept the changes and submit them to the MSBA."

Denise Eddy withdrew her motion.

MOTION TO
AUTHORIZE PSR
ADDENDUM

Denise Eddy moved, Roger Challen seconded, and it was unanimously voted by roll call, "To authorize Skanska to submit the PSR addendum based on the additional request of the MSBA."

Roll Call

For: Chris Evers, Denise Eddy, Kathryn Cook, Mark Davis, Roger Challen, Andrew Pfaff, and Jason Malinowski

Opposed: None

Abstained: None

III. Other business that may properly come before the Committee (None at this time)

IV. Adjournment

Jason Malinowski requested a motion to adjourn.

MOTION TO
ADJOURN

Denise Eddy moved, Mark Davis seconded, and it was unanimously voted by roll call, "To adjourn."

Roll Call

For: Denise Eddy, Kathryn Cook, Mark Davis, Roger Challen, Andrew Pfaff, Chris Evers, and Jason Malinowski

Opposed: None

Abstained: None

Jason Malinowski adjourned the meeting at 9:05 am.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. Neary Building Committee Agenda dated September 13, 2024
2. Evaluation Alternatives Supplemental
3. Neary Preliminary Design Pricing Table
4. Table of Contents With Supplemental Information

ARROWSTREET

MARGARET A. NEARY ELEMENTARY SCHOOL

Preferred Schematic Report
August 29, 2024

Table of Contents

* Added supplemental information as requested by the MSBA

ALTERNATIVE C.2 - NEW CONSTRUCTION

Like alternative C.4, alternative C.2 is an all-new construction scheme placed over as much of the existing building's footprint as possible. This alternative responds to all of the same programmatic needs outlined by the district, but is designed to accommodate three grade levels instead of two. Like alternative C.4, the building layout is split between public and shared program spaced as part of the main, 1-story portion of the building and the classroom wings to the west. One single-story wing accommodates grade 3 while the other, 2-story wing is used by grade 4 at the first floor, and grade 5 at the second.

Schedule & Phasing

Enabling Phase: Approximately 1 month

- Site preparation, construction lay down and fencing.
- Demolition of existing building.

Construction Phase: Approximately 30 Months

- Construct new building
- Site work for parking lots and landscape

Potential Construction Impact

The potential construction impact for this alternative is the same as for B.4. Please refer to the B.4 narrative.

Structural & MEP Systems

Please refer to page 50 for the structural systems narrative. Refer to page 55 through page 127 for the MEP system narratives.

Utilities

Please refer to page 128 for the civil narrative of the anticipated storm water scope and utility capacity analysis. Refer to the Existing Conditions section for a description of utility work planned to be undertaken by the Town prior to the start of this project.

Project Budget & Construction Cost

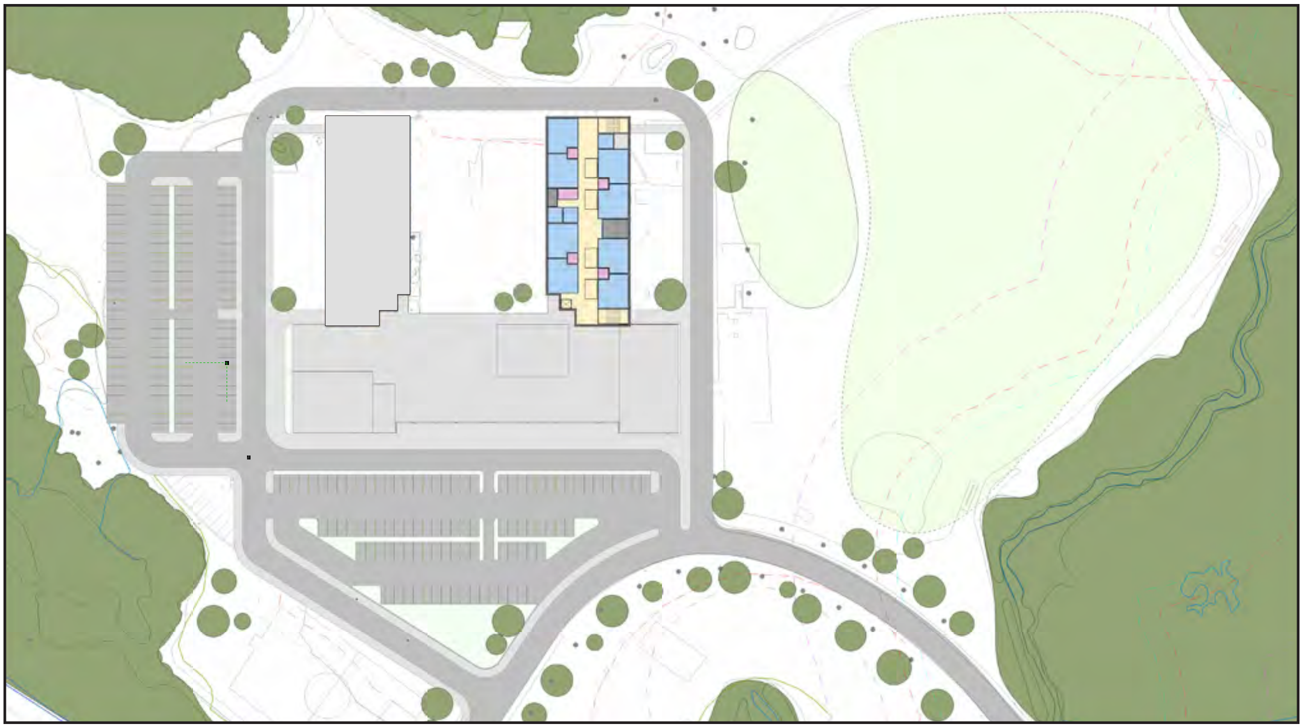
The estimated cost for this alternative was updated in the Cost Estimate update for this phase. Please refer to Appendix H. PSR Cost Estimates for document dated August 12, 2024.

The construction cost is estimated at $85 million. The total project cost for this alternative is estimated at $105 million.

Permitting Requirements

The anticipated permitting requirements for this alternative are the same as for B.4 Please refer to the Alternative B.4 narrative.

Alternative C.2 - New Construction - Level 1



Alternative C.2 - New Construction - Level 2

ALTERNATIVE A.1 - BASE REPAIR AT NEARY

This alternative upgrades the existing Neary building and repairs the systems with no additional space added. This alternative would require modulars for phasing and though the building would be larger than required, the layout would be inefficient.

Scope of Work

The scope of work required under a Base Repair includes the entire 62,756 square foot building, including 5,645 square feet of space currently occupied by the District Administration Offices.

- Code Upgrades
    - Fire suppression system
    - New addressable Fire Alarm system
    - New illuminated exit and code signage
    - New life safety lighting, interior and exterior
- Accessibility upgrades
    - Entry ramps
    - Accessible pathways
    - New door hardware throughout and reconfiguration as required for clearances
    - New drinking fountains
    - Toilet room upgrades, including new partitions and all new accessible, high efficiency fixtures
    - Casework corrections for height, knee clearance, etc.
- Asbestos remediation at the following:
    - Sealant at all exterior windows and doors
    - Sealant at gypsum board
    - Original floor tiles and mastic
    - Mastic at replaced floor tiles
- Replacement of the existing mechanical system. Ventilation and distribution system to local units would mirror recommendations for a major renovation. Central plant assumed to be code minimum energy performance air source heat pump heat recovery chiller under Base Repair in lieu of ground source heat pumps.
- In addition to all new plumbing fixtures and drinking fountain as covered under accessibility upgrades, replace all domestic water piping and provide new shut off valves
- New hot water heaters
- New security system, including door contacts
- New exterior doors, hardware, and weather stripping - including card readers to tie into new security system
- New master time clock system
- New speaker and public address system
- New electrical systems, including new panels, distribution, lighting & controls with automatic dimming, and devices
- New automatic transfer switches and panel boards for life safety systems
- Install additional power outlets to serve the needs of modern school technology and alleviate unsafe conditions with power strips
- Install additional data outlets
- Repair and cleaning of exterior walls, including re-pointing, new fascia, and flashing repairs
- Abatement of hazardous materials
- New interior finishes, including new flooring, wall tile, paint, and ACT ceilings
- New roofing throughout, including new insulation to bring assembly up to current code requirements
- It is anticipated that additional insulation would not trigger a load in excess of 5% of the existing load
- New smart vapor retarder, insulation, and interior finish on existing to remain exterior walls to meet current Energy Code
- New triple glazed thermally broken aluminum windows in existing rough openings
- Resurfacing of bus loops, parking areas and sidewalks, including accessibility upgrades as described in Accessibility Report.

Educational Program Analysis

A Base Repair will not be able to address the educational challenges imposed by the existing building. These challenges include but may not be limited to:

- Gym space is undersized.
- Existing classrooms are slightly undersized. When breakout spaces are added they become extremely undersized.
- The Educational Plan suggests grouping classrooms into neighborhoods by grade and including a Learning Commons space to be shared by neighborhood. In order to have an open area for the Learning Commons it would require structural reinforcing to remove a bearing wall.

Space Summary Analysis

While this option provides the required square footage, it is inefficiently laid out and does not adequately meet some of the Educational Goals.

Phasing

Students would be required to move to modulars or another space while renovation takes place.

Preliminary Costs

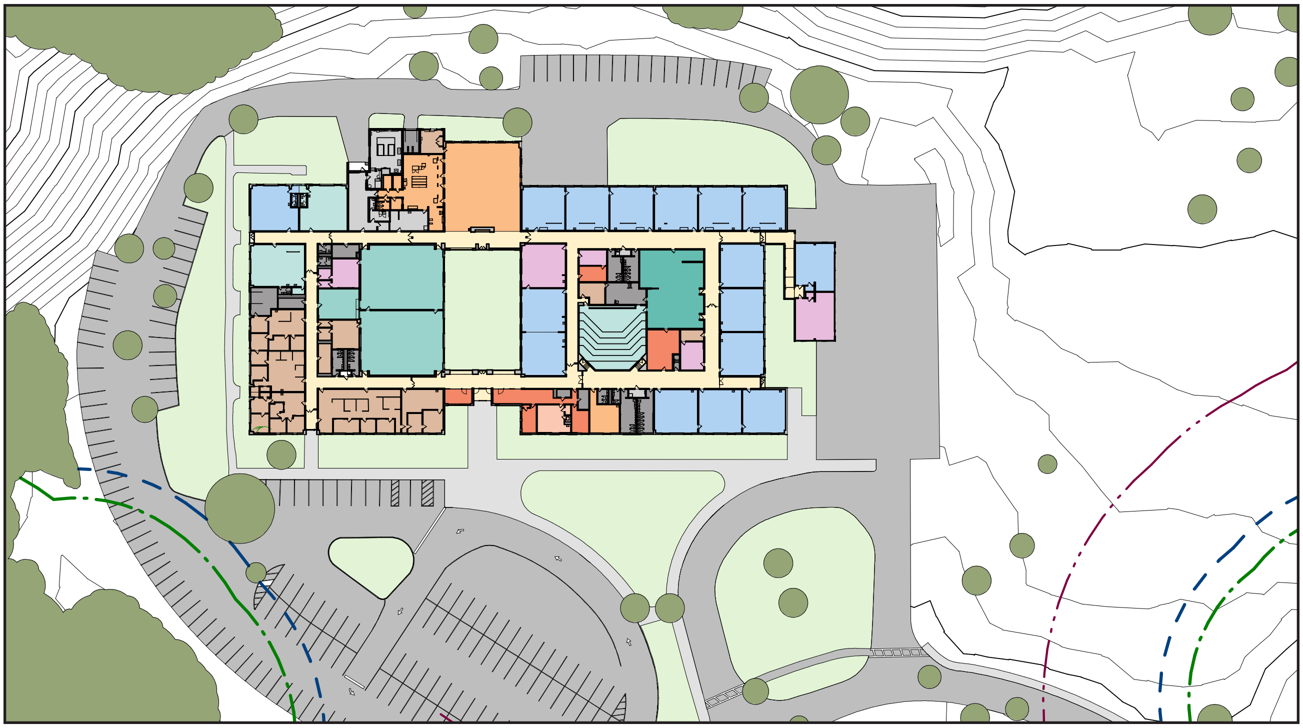
Preliminary pricing from PM&C estimates a construction cost of $45.6 million for the Base Repair option. This is approximately $725/ sf. Total project costs are estimated to be approximately $63 million.

Advantages

Reuse of existing structure.

Disadvantages

- The geometry of the existing building, with bearing walls along most corridor walls, doesn't lend itself to the Learning Commons approach.
- Spatial needs are not met according to Educational Plan.
- Some Special Education spaces are not co-located with their neighborhood.



Alternative A.1 - Base Repair - Neary

OPTION A.2 - BASE REPAIR @ WOODWARD

Scope of Work

The Woodward school was constructed in 2002 as new construction, so it is in relatively good repair. The scope of work required under a renovation would likely be classified as a Level 2 alteration, but would not increase the enrollment beyond the current enrollment of approximately 250 students.

Scope of work would include all of the work under the Base Repair, plus the following:

- Demolition of the select areas including existing non structural partitions and doors and installation of new partitions and doors to accommodate the new program layout. See plans for locations and extent.
- New smart vapor retarder, insulation, and interior finish on existing to remain exterior walls to meet current Energy Code
- New triple glazed thermally broken aluminum windows in existing rough openings
- Upgrade of the mechanical system to meet the current code (stretch code). Provide alternate pricing for Ground Source Heat Exchange (GSHE) system.
- Complete reworking of all electrical, controls, data, and security systems

Educational Program Analysis

A Base Repair will not be able to address the educational challenges imposed by the existing building. These challenges include but may not be limited to:

- The Educational Plan suggests grouping classrooms into neighborhoods by grade and including a Learning Commons space to be shared by neighborhood. In order to have an open area for the Learning Commons it would require structural reinforcing to remove a bearing wall.

Space Summary Analysis

While this option provides the required square footage, it is inefficiently laid out and does not adequately meet some of the Educational Goals.

Phasing

Students could remain in place during construction of the classroom wing.

Preliminary Costs

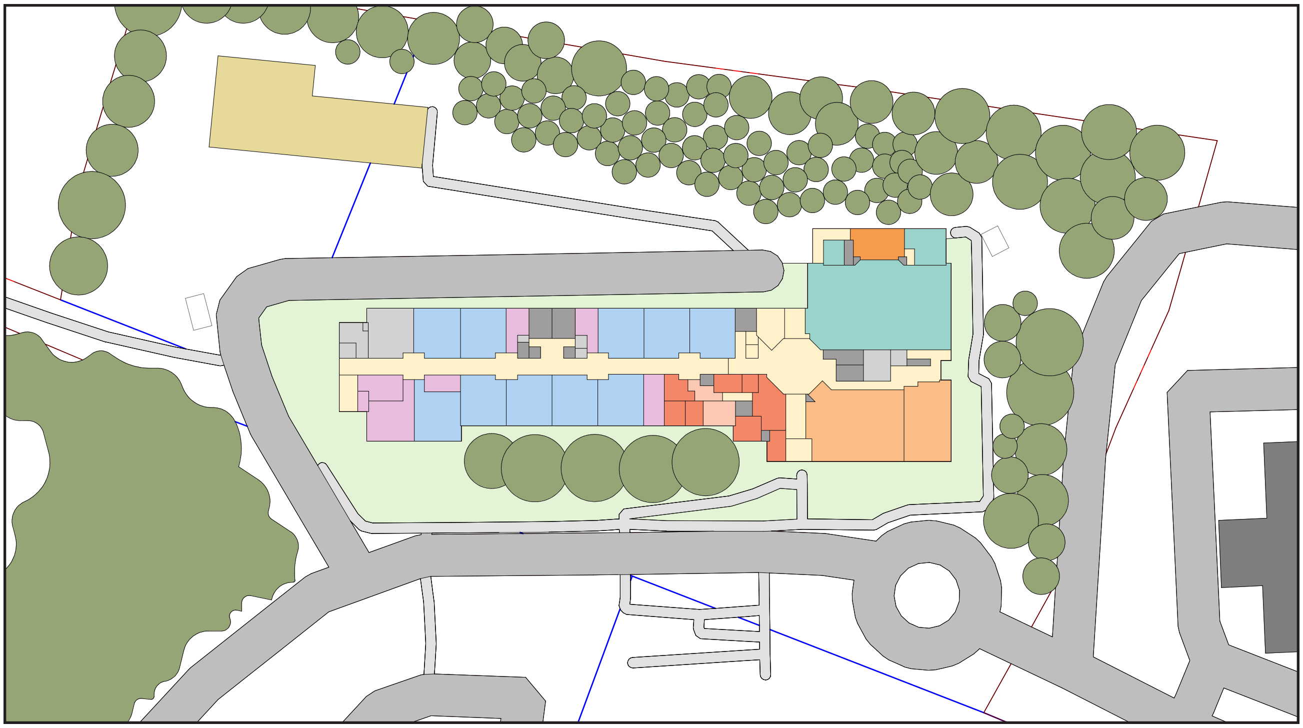
Preliminary pricing from PM&C estimates a construction cost of $46 million for the Base Repair option. This is approximately $673/ sf. Total project costs are estimated to be approximately $52 million.

Advantages

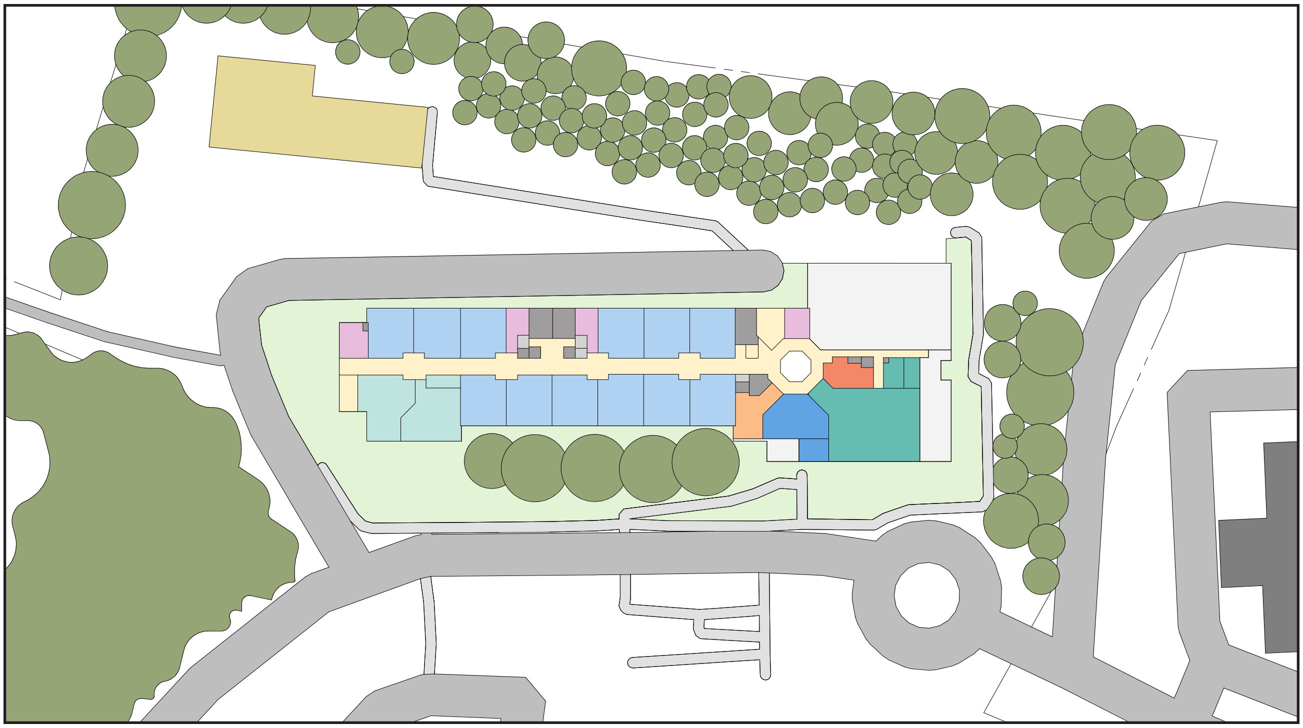
- Reuse of existing structure.

Disadvantages

- The projected occupancy of students plus staff exceeds the allowed occupancy of the building per the Building Permit. Therefore, a Base Repair with no additional space is not viable.
- The geometry of the existing building doesn’t lend itself to the Learning Commons approach.
- Spatial needs are not met according to Educational Plan.
- Some Special Education spaces are not co-located with their neighborhood.



Alternative A.2 - Base Repair - Woodward - Level 1



Alternative A.2 - Base Repair - Woodward - Level 2

Preliminary Design Pricing Table - Margaret A. Neary Elementary School

🟦 = Formula do not edit

Option (Description)	Total Gross Square Feet	Square Feet of Renovated Space ($*/SF)	Square Feet of New Construction ($*/SF)	Site, Building Takedown, Haz Mat Etc. ($*)	Estimated Total Construction** ($*)	Estimated Total Project Costs ($)
A.1 - Base Repair/Code Upgrade (Neary) (305 Enrollment)	62,756 sf	62,756 sf	- sf	$ 5,890,915	$ 45,556,472	$ 63,000,000
		$ 632.06 $/sf	$ - $/sf		$ 725.93 $/sf	
A.2 - Base Repair/Code Upgrade (Woodward) (450 Enrollment)	68,400 sf	68,400 sf	sf	$ 3,176,866	$ 46,029,731	$ 58,000,000
		$ 626.50 $/sf	$/sf		$ 672.95 $/sf	
B.4 - Add/Reno (610 Enrollment)	103,392 sf	60,285 sf	43,107 sf	$ 18,850,617	$ 89,533,224	$ 113,600,000
		$ 683.64 $/sf	$ 683.64 $/sf		$ 865.96 $/sf	
C.1 - New Construction (305 Enrollment)	63,305 sf	- sf	63,305 sf	$ 17,043,041	$ 66,259,233	$ 83,100,000
		$ - $/sf	$ 777.45 $/sf		$ 1,046.67 $/sf	
C.2 - New Construction (450 Enrollment)	85,574 sf	- sf	85,574 sf	$ 17,893,329	$ 85,187,701	$ 105,376,038
		$ - $/sf	$ 786.39 $/sf		$ 995.49 $/sf	
*****C.4 - New Construction (610 Enrollment)**	99,564 sf	- sf	99,564 sf	$ 17,893,329	$ 91,836,569	$ 113,400,000
		$ - $/sf	$ 742.67 $/sf		$ 922.39 $/sf	

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* Marked Up Construction Costs

** Does not include Construction Contingency

***** District's Preferred Schematic**

Decembrer 2023

Town of Southborough, Massachusetts

Neary Building Committee

September 16, 2024

7:30 PM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order
II. Approval of Meeting Minutes from September 13, 2024
III. Approval of Executive Session Meeting Minutes from August 9, 2024
IV. Neary site conditions, continued discussions from prior meetings
V. MSBA Funding Allowance Update
VI. Schematic Design Process – Next Steps and Schedule
VII. Design Working Group
VIII. Public Comment
IX. Meeting Schedule
X. Other business that may properly come before the Committee
XI. Adjournment

Jason W. Malinowski, Chair

RECEIVED
By Town Clerk/ksb at 10:25 am, Oct 10, 2024

Town of Southborough, Massachusetts

Neary Building Committee

September 16, 2024

7:30 PM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Mark Davis, Denise Eddy, Kathryn Cook, Andrew Pfaff, and Jason Malinowski

Members Absent: Chris Evers

Ex-Officio

Members Present: Gregory Martineau Superintendent of Schools, Rebecca Pellegrino, Assistant Superintendent of Finance, and Mark Purple, Town Administrator (arrived at 7:36 pm)

Members Absent: Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, Keith Lavoie Assistant Superintendent of Operations, Kathleen Valenti, Neary School Principal, Steven Mucci, Principal of Woodward School, and Brian Ballantine Town Treasurer/ Finance Director

I. Call Meeting to Order

Jason Malinowski called the Neary Building Committee into order at 7:34 pm.

II. Approval of Meeting Minutes from September 13, 2024

The Neary Building Committee will vote on the meeting minutes at a later time because these minutes are not yet available.

III. Approval of Executive Session Meeting Minutes from August 9, 2024

The Neary Building Committee will vote on the meeting minutes at a later time because these minutes are not yet available.

IV. Neary site conditions, continued discussions from prior meetings

Kathryn Cook inquired about the results of the soil testing that was conducted. Katy Lillich, from Arrowstreet, informed the Committee that she does have the results but has not had a chance to review them yet. She mentioned that she will provide comments to the Committee soon. The Committee members did not have any new information to add regarding the site conditions at Neary School.

V. MSBA Funding Allowance Update

Jim Burrows, Project Manager at Skanska, shared that during the Massachusetts School Building Authority August board meeting, they increased their cost per square foot and site allowance. The cost per square foot has been raised from $550 to $586, and the site allowance has been increased from $55 to $59 per square foot. As a result, the estimated town share has decreased from $83.4 million to $81.8 million. Jim will send the revised 3011 form to Kathryn Cook for her to review.

VI. Schematic Design Process – Next Steps and Schedule

Jim Burrows shared that on September 25, 2024, the MSBA will hold a Facilities Assessment Subcommittee meeting to review the Neary Building Committee's preferred option and overall project. Then, on October 30, 2024, the MSBA will have a Board of Directors meeting to grant formal approval for the Neary Building Committee to proceed with the schematic design. From November 2024 to February 2025, Arrowstreet will work on the schematic design and other related tasks. However, per the direction of the working group, Arrowstreet understands that the Committee wants to begin the design process sooner. The schematic design will be submitted to the MSBA on February 27, 2025, and the MSBA will formally approve the design on April 30, 2025. Subsequently, the Committee will have 120 calendar days for the Town of Southborough to approve the project scope and budget agreement. During the Town Meeting presentation, the Committee will disclose the total amount of the MSBA grant and the estimated maximum total facilities grant to clarify the town's share. Jason Malinowski recommended that he, Kathryn Cook, Mark Purple, the Town Administrator, Superintendent Martineau, and the moderator start discussing logistics for the town meeting vote. Finally, Jim reviewed the schematic design submission requirements, emphasizing the importance of the Department of Elementary and Secondary Education (DESE) submittal, as it will significantly impact the administration and the school. DESE will provide feedback, and the team will need to address the comments or make adjustments. In the submission, both Skanska's estimator and Arrowstreet's estimator will conduct independent estimates, which will then be reconciled to produce a fully reconciled budget estimate based on two independent estimates. The Committee will not see the estimates until the schematic design is completed.

VII. Design Working Group

Jason Malinowski suggested that a working group should not be set up and that Arrowstreet should meet with Superintendent Martineau and his team as needed for educational input on design matters. He also mentioned that the Committee can appoint one member to attend the meetings, but it's important to note that decisions should not be made during these meetings. Instead, options should be discussed and a summarized version can be presented to the full Neary Building Committee. The Committee agreed with the recommendation and decided to have Denise Eddy participate in those meetings.

VIII. Public Comment (None at this time)

IX. Meeting Schedule – October 7, 2024

X. Other business that may properly come before the Committee (None at this time)

XI. Adjournment

Jason Malinowski requested a motion to adjourn.

MOTION TO ADJOURN

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "To adjourn."

Roll Call
For: Denise Eddy, Kathryn Cook, Roger Challen, Mark Davis, Andrew Pfaff, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 8:23 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. Neary Building Committee Agenda of September 16, 2024
2. NBC Materials from Arrowstreet and Skanska dated September 16, 2024

SKANSKA

ARROWSTREET
ARCHITECTURE & DESIGN

Neary Elementary School Building Project

School Building Committee
September 16, 2024 Meeting

MSBA Cost Per Square Foot and Site Allowance Increase

	Previous	Per 8/28 BOD Vote
Cost Per SF	$550/SF	$586/SF
Site	$55/SF	$59/SF

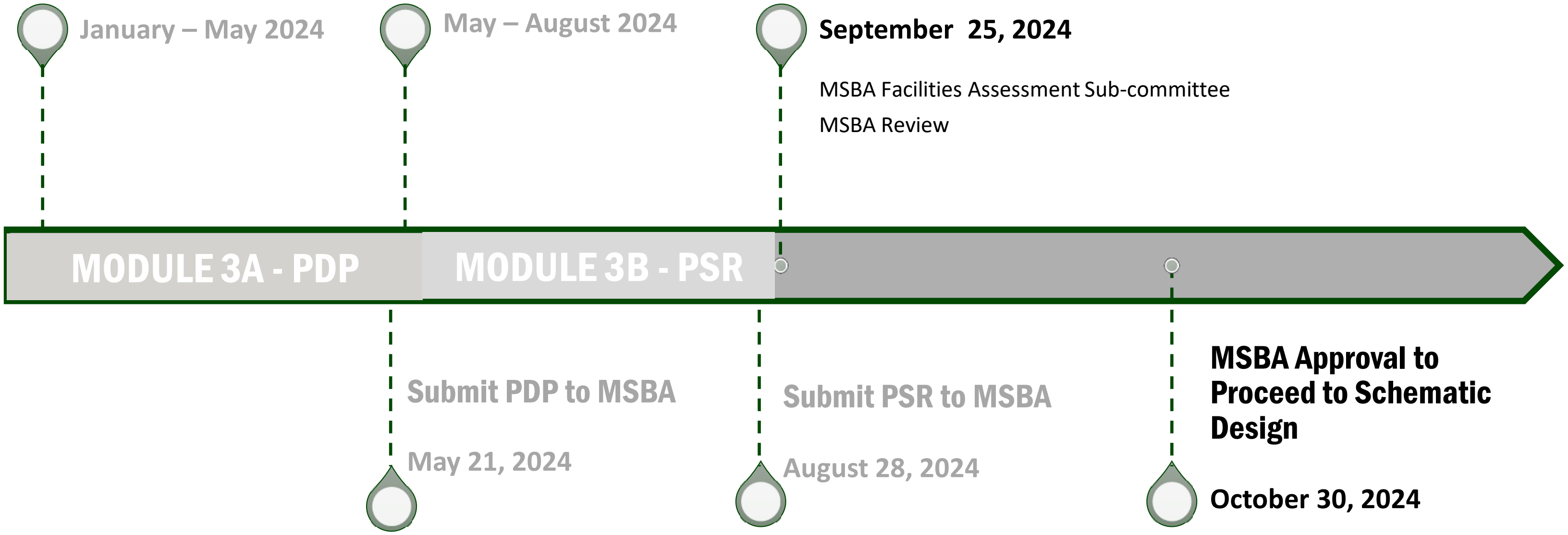
	Previous	Per 8/28 BOD Increase
Town Share (Estimated)	$83.4 M	$81.8 M
	Delta	-$1.6 M

MSBA Process

Massachusetts School
Building Authority

- Module 3 – Feasibility Study
  - Module 3A – Preliminary Design Program
  - Module 3B – Preferred Schematic
- **Module 4 – Schematic Design**
- **Module 5 – Funding the Project**
- Module 6 – Detailed Design
- Module 7 – Construction
- Module 8 – Completing the Project

Module 3 – Feasibility Study



January – May 2024

May – August 2024

September 25, 2024

MSBA Facilities Assessment Sub-committee

MSBA Review

MODULE 3A - PDP

MODULE 3B - PSR

Submit PDP to MSBA

May 21, 2024

Submit PSR to MSBA

August 28, 2024

MSBA Approval to Proceed to Schematic Design

October 30, 2024

Module 4 – Schematic Design

November 2024 – February 2025

Development of a Single Design Option

Establish Budget for Final Project

Educational Space Planning

Selection of Building Systems

Submit SD to MSBA

February 27, 2025

February – April 2025

MSBA Review

MSBA Board Approval

April 23, 2025

Tentative

April 2025

Project Scope & Budget Agreement (PS&B)

120 Calendar days for Town ‘s approval of PS&B.

Vote

Seek Project Funding

April 26, 2025

Tentative

Module 4 - Schematic Design (SD)

SD Submission Includes:

- Department of Elementary and Secondary Education (DESE) Submittal
- Schematic Design Report
- Schematic Design Project Manual
- Schematic Design Drawings

Module 4 - Schematic Design (SD) Submission

Department of Elementary and Secondary Education (DESE) Submittal includes:

- Cover Letter
- Special Education Delivery Methodology Letter
- Signed Educations Space Summary and Narrative
- Floor Plans
- Adjacency Table

Module 4 - Schematic Design (SD) Submission

Schematic Design Report includes:

- Introduction
  - Preferred Solution Description
  - Process Undertaken
  - Total Project Budget and process for securing local funding
  - PSR Review comments and responses

- Final Design Program
  - Space summary and supporting documentation of how the design meets the ed program
  - Security and visual access requirements
    - Confirmation of persons responsible for implementation of Districts emergency procedures
    - Confirmation Main entrance design, classroom locksets, Classroom/ Instructional space visibility
    - Optimal surveillance of building and site

Module 4 - Schematic Design (SD) Submission

Schematic Design Report includes:

- State Site Permit Tracking
    - ConCom, MA-DOT, MA-DEP, NHESP, MEPA
- Site Vulnerability Risk Assessment
- Environmental and existing building Assessment
- Geo-technical/Environmental Assessment
- Code, ADA and Utility Analysis
- Massing Study
- Building Systems Descriptions
- MSBA Green Schools Program Documents
- Room Data Sheets

Module 4 - Schematic Design (SD) Submission

Schematic Design Report includes:

- Proposed Construction Methodology – CM at Risk vs. D/B/B
- Budget:
  - Anticipated Reimbursement Rate
  - MSBA 3011 Budget
  - Design and OPM Reconciled Estimates
- Updated Project Work Plan Including Schedule

Required Meetings (After Submittal)

- Project Scope and Budget Conference – Finalize Estimated Basis for Total Facilities Grant
- MSBA Board Meeting

Upcoming Meeting Schedule

SEPTEMBER

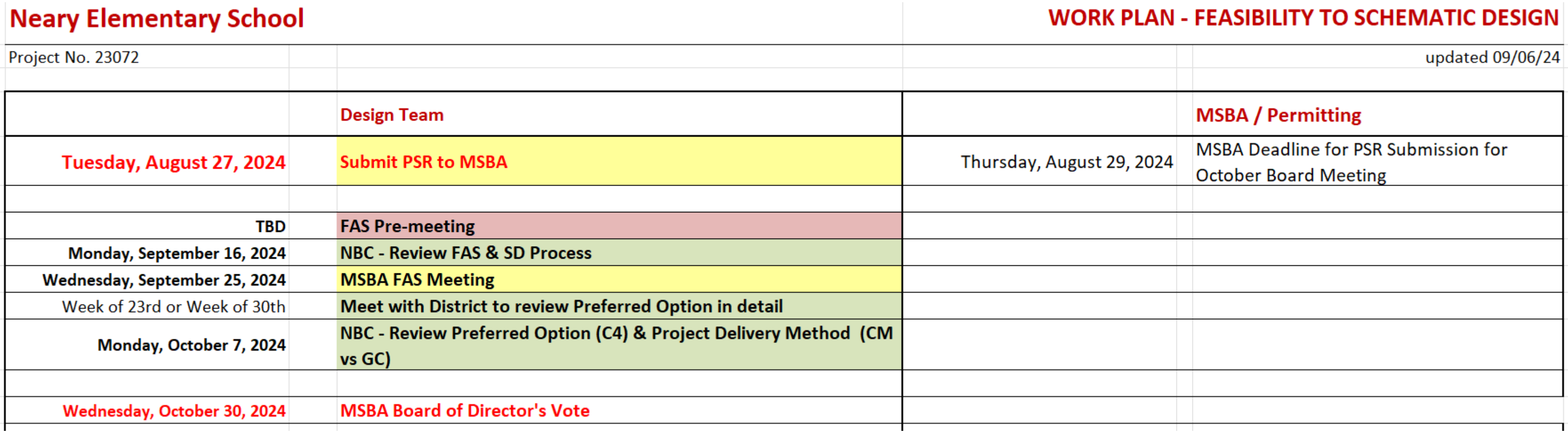
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 Labor Day	3	4	5	6	7
8	9	10	11	12	13	14
15	16 NBC SD Processes	17 FAS Pre-Meeting	18	19	20	21
22	23 Meet w/ District to review C4 in detail Week of 23rd or 30th	24	25 FAS meeting w/MSBA	26	27	28
29	30					

Upcoming Meeting Schedule

OCTOBER

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7 NBC Review Option & Project Delivery Method	8	9	10	11	12
13	14 Columbus Day	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30 MSBA Board Meeting	31 Working Group		

SD Work Plan



Neary Elementary School

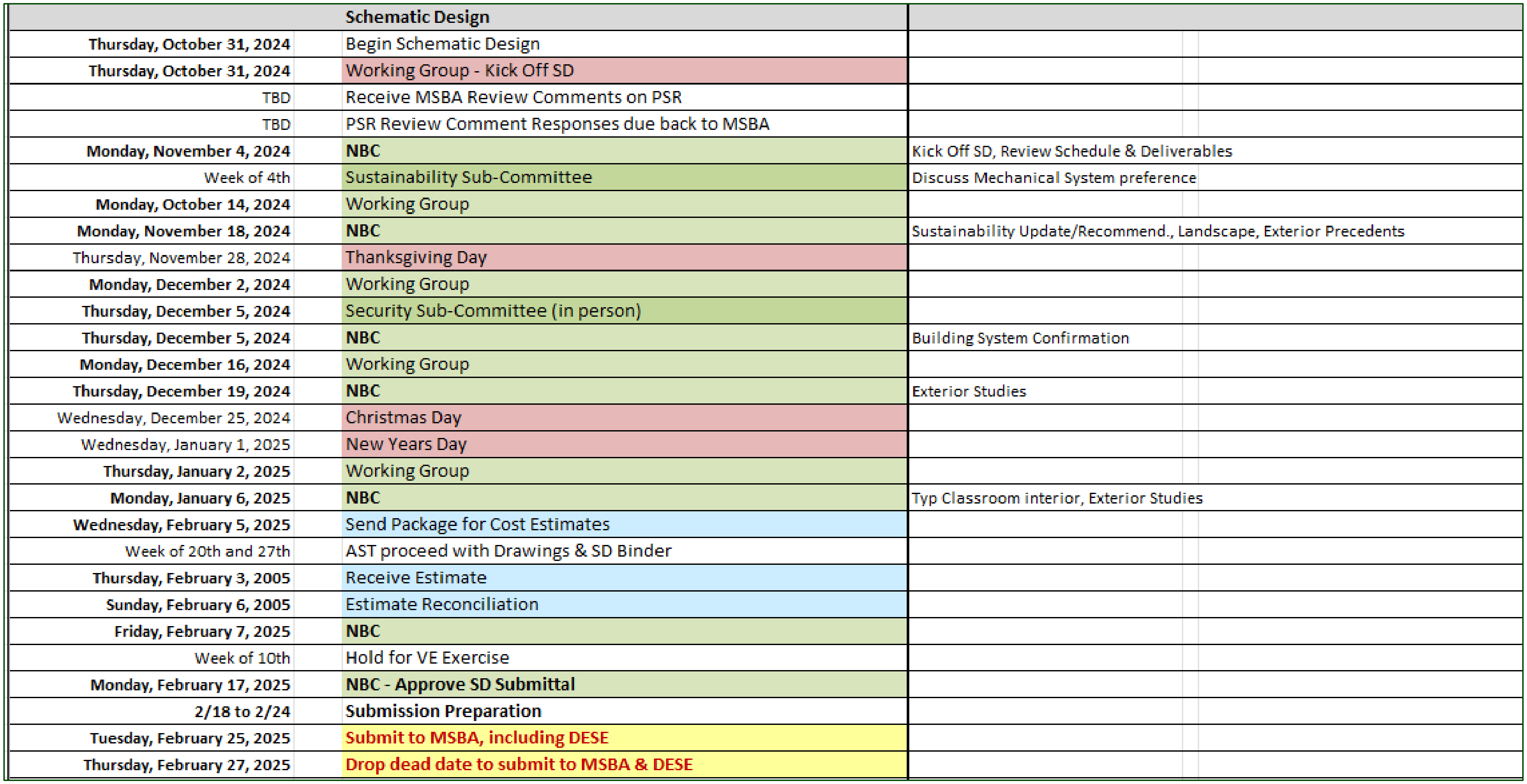
WORK PLAN - FEASIBILITY TO SCHEMATIC DESIGN

Project No. 23072

updated 09/06/24

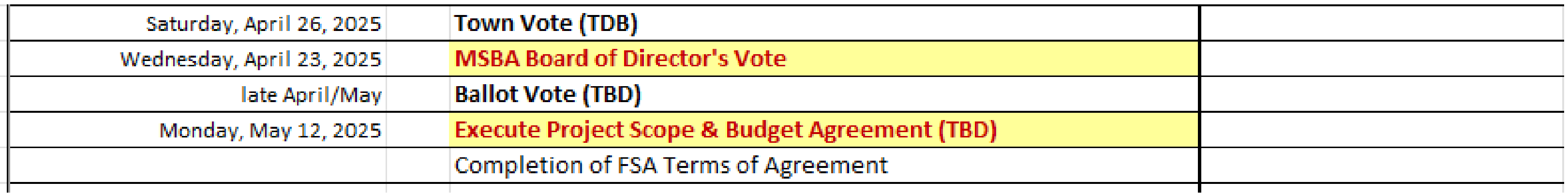
	Design Team		**MSBA / Permitting**
Tuesday, August 27, 2024	**Submit PSR to MSBA**	Thursday, August 29, 2024	MSBA Deadline for PSR Submission for October Board Meeting
TBD	**FAS Pre-meeting**		
Monday, September 16, 2024	**NBC - Review FAS & SD Process**		
Wednesday, September 25, 2024	**MSBA FAS Meeting**		
Week of 23rd or Week of 30th	**Meet with District to review Preferred Option in detail**		
Monday, October 7, 2024	**NBC - Review Preferred Option (C4) & Project Delivery Method (CM vs GC)**		
Wednesday, October 30, 2024	**MSBA Board of Director's Vote**		

SD Work Plan



	Schematic Design	
Thursday, October 31, 2024	Begin Schematic Design	
Thursday, October 31, 2024	Working Group - Kick Off SD	
TBD	Receive MSBA Review Comments on PSR	
TBD	PSR Review Comment Responses due back to MSBA	
Monday, November 4, 2024	**NBC**	Kick Off SD, Review Schedule & Deliverables
Week of 4th	Sustainability Sub-Committee	Discuss Mechanical System preference
Monday, October 14, 2024	Working Group	
Monday, November 18, 2024	**NBC**	Sustainability Update/Recommend., Landscape, Exterior Precedents
Thursday, November 28, 2024	Thanksgiving Day	
Monday, December 2, 2024	Working Group	
Thursday, December 5, 2024	Security Sub-Committee (in person)	
Thursday, December 5, 2024	**NBC**	Building System Confirmation
Monday, December 16, 2024	Working Group	
Thursday, December 19, 2024	**NBC**	Exterior Studies
Wednesday, December 25, 2024	Christmas Day	
Wednesday, January 1, 2025	New Years Day	
Thursday, January 2, 2025	Working Group	
Monday, January 6, 2025	**NBC**	Typ Classroom interior, Exterior Studies
Wednesday, February 5, 2025	Send Package for Cost Estimates	
Week of 20th and 27th	AST proceed with Drawings & SD Binder	
Thursday, February 3, 2005	Receive Estimate	
Sunday, February 6, 2005	Estimate Reconciliation	
Friday, February 7, 2025	**NBC**	
Week of 10th	Hold for VE Exercise	
Monday, February 17, 2025	**NBC - Approve SD Submittal**	
2/18 to 2/24	**Submission Preparation**	
Tuesday, February 25, 2025	**Submit to MSBA, including DESE**	
Thursday, February 27, 2025	**Drop dead date to submit to MSBA & DESE**	

SD Work Plan



Saturday, April 26, 2025	**Town Vote (TDB)**	
Wednesday, April 23, 2025	**MSBA Board of Director's Vote**	
late April/May	**Ballot Vote (TBD)**	
Monday, May 12, 2025	**Execute Project Scope & Budget Agreement (TBD)**	
	Completion of FSA Terms of Agreement	

RECEIVED
By Town Clerk/amb at 7:55 am, Oct 04, 2024

Town of Southborough, Massachusetts

Neary Building Committee

October 7, 2024

7:30 PM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Revised Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order
II. Approval of Meeting Minutes from September 13, 2024 and September 16, 2024
III. Approval of Open and Executive Session Meeting Minutes from August 9, 2024
IV. Update on Design Review Space with Educators
V. Special Town Meeting Logistics including date and location
VI. Update from Communications Subcommittee on next steps in educating the community
VII. Update on Project Budget
VIII. Design, Bid, Build versus Construction Manager at Risk Presentation with vote on preferred path
IX. Public Comment
X. Meeting Schedule
XI. Other business that may properly come before the Committee
XII. Adjournment

Jason W. Malinowski, Chair

RECEIVED
By Town Clerk/amb at 2:58 pm, Nov 26, 2024

Town of Southborough, Massachusetts

Neary Building Committee

October 7, 2024

7:30 PM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Mark Davis, Denise Eddy, Andrew Pfaff, Kathryn Cook (arrived at 7:39 pm), Chris Evers (arrived at 7:41 pm), and Jason Malinowski

Members Absent: None

Ex-Officio

Members Present: Gregory Martineau Superintendent of Schools, Keith Lavoie Assistant Superintendent of Operations, Rebecca Pellegrino, Assistant Superintendent of Finance, and Mark Purple, Town Administrator

Members Absent: Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, Kathleen Valenti, Neary School Principal, Steven Mucci, Principal of Woodward School, and Brian Ballantine Town Treasurer/ Finance Director

I. Call Meeting to Order

Jason Malinowski called the Neary Building Committee into order at 7:33 pm.

II. Approval of Meeting Minutes from September 13, 2024 and September 16, 2024

Jason Malinowski asked for a discussion and a vote.

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "To approve both minutes as presented."

MOTION TO
APPROVE MEETING
MINUTES

Roll Call
For: Denise Eddy, Mark Davis, Andrew Pfaff, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

III. Approval of Open and Executive Session Meeting Minutes from August 9, 2024

The Committee has decided to vote on the minutes of the Executive Session during their next meeting.

IV. Update on Design Review Space with Educators

Katy Lillich from Arrowstreet shared that in their FAS submission to the Massachusetts School Building Authority, they provided a diagram of the Neary School building with color-coded spaces and a legend. The MSBA requested that Arrowstreet label each space so they could understand each small space. Katy also shared that they have started their design review meetings with Superintendent Martineau and his team.

V. Special Town Meeting Logistics including date and location

Jason Malinowski shared that a group consisting of the moderator, Town Clerk, Chair of the Select Board (Kathryn Cook), Jason Malinowski, and Mark Purple, met to discuss the initial steps for scheduling a Special Town Meeting. The decision on the date for the meeting rests with the Select Board. The group considered various date options between May 1, 2025, and May 12, 2025. Kathryn Cook will present these options to the Select Board to determine if they agree on scheduling the Special Town Meeting for May 10, 2025, at Algonquin Regional High School. Jason emphasized the need for a discussion with the MSBA regarding the necessary language for the ballot vote to be provided to the Town Clerk.

VI. Update from Communications Subcommittee on next steps in educating the community

Jason Malinowski shared that the Communications Subcommittee met on October 4, 2024. They have realized that now that the Special Town Meeting has passed on other items, there is a need for significant design work to be done, which will inform an updated cost. The Subcommittee believes that they have valuable information and they need to ensure that they start educating the community in various ways. As a result, the Subcommittee has agreed to begin office hours at the Senior Center and at various times in other locations. Another idea is to host open house sessions to allow those who have not had a chance to visit the school. They also discussed the possibility of providing regular updates after each Neary Building Committee meeting, which will be posted on the website.

VII. Update on Project Budget

Jim Burrows, Project Manager at Skanska, has reviewed the project budget. The project is currently 47% billed moving into the Schematic Design phase. He believes that they are on track with their cash flow. The overall committed amount is $947,683, leaving $2,317 remaining. They have submitted five reimbursement payment requests to the MSBA and have been reimbursed for four of them, totaling $6,307 in reimbursements from the MSBA.

VIII. Design, Bid, Build versus Construction Manager at Risk Presentation with vote on preferred path

Jim Burrows has reviewed the Construction Delivery Methods options and they are between the Design Bid-Build (DBB) versus Construction Management at Risk (CM@R). DBB involves Skanska and Arrowstreet bringing the design documents up to

100%, sending them out to bid, and choosing a general contractor and subcontractor based on the received bids. The cost is fixed and determined by the bids. On the other hand, CM@R involves bringing a service firm on at the start of detailed design, which is right after the town vote. Skanska will need to submit this to the State Inspector General's office for approval, and the approval period is 60 days if they go with CM@R.

DBB is a lump sum, fixed-cost contract, based on the cost of the work, general conditions, and the general contractor's profit. CM@R is a Guaranteed Maximum Price (GMP) contract type, which includes bids of work, work packages, General Conditions (GM), and a set fee by the Construction Manager (CM). It is a Cost Plus contract where the final price is based on the actual bids received. Any savings within the GMP will go back to the District at the end of the project. The CM@R includes allowances to cover any financial risk in the GMP.

In terms of quality control, in the DBB method, bids are strictly based on plans and specs, meaning if it is not shown on the drawings, the contractor does not own it, and there is no opportunity to review the drawings prior to them going out to bid. In CM@R, the CM has early involvement throughout the design, doing numerous construction building, logistics, and specifications reviews of the drawings prior to the bid so that any comments can be incorporated into the drawings and specs.

In the DBB method, it is a highly competitive market, so it will likely yield a lower upfront cost. It involves hard prices, drawings, and specs, and it does not involve open-book accounting. With CM@R, there is a line of sight to all of their budget lines. Kathryn Cook would like the Finance Subcommittee to meet first to discuss the financial aspect of each method before voting on which would be a better fit for the Neary School Project. However, Jason Malinowski also shared that it should be brought back to the full Committee for further discussion.

IX. Public Comment (None at this time)

X. Meeting Schedule – TBD

XI. Other business that may properly come before the Committee (None at this time)

XII. Adjournment

Jason Malinowski requested a motion to adjourn.

Jason Malinowski moved, Andrew Pfaff seconded, and it was unanimously voted by roll call, "To adjourn."

MOTION TO ADJOURN

Roll Call
For: Kathryn Cook, Andrew Pfaff, Denise Eddy, Mark Davis, Chris Evers, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 9:03 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. Neary Building Committee Agenda of October 7, 2024
2. Neary Building Committee Meeting Minutes of September 13, 2024
3. Neary Building Committee Meeting Minutes of September 16, 2024
4. Neary Elementary School Building Project Presentation dated October 7, 2024

SKANSKA

ARROWSTREET
ARCHITECTURE & DESIGN

Neary Elementary School Building Project

School Building Committee
October 7, 2024 Meeting

Budget Update

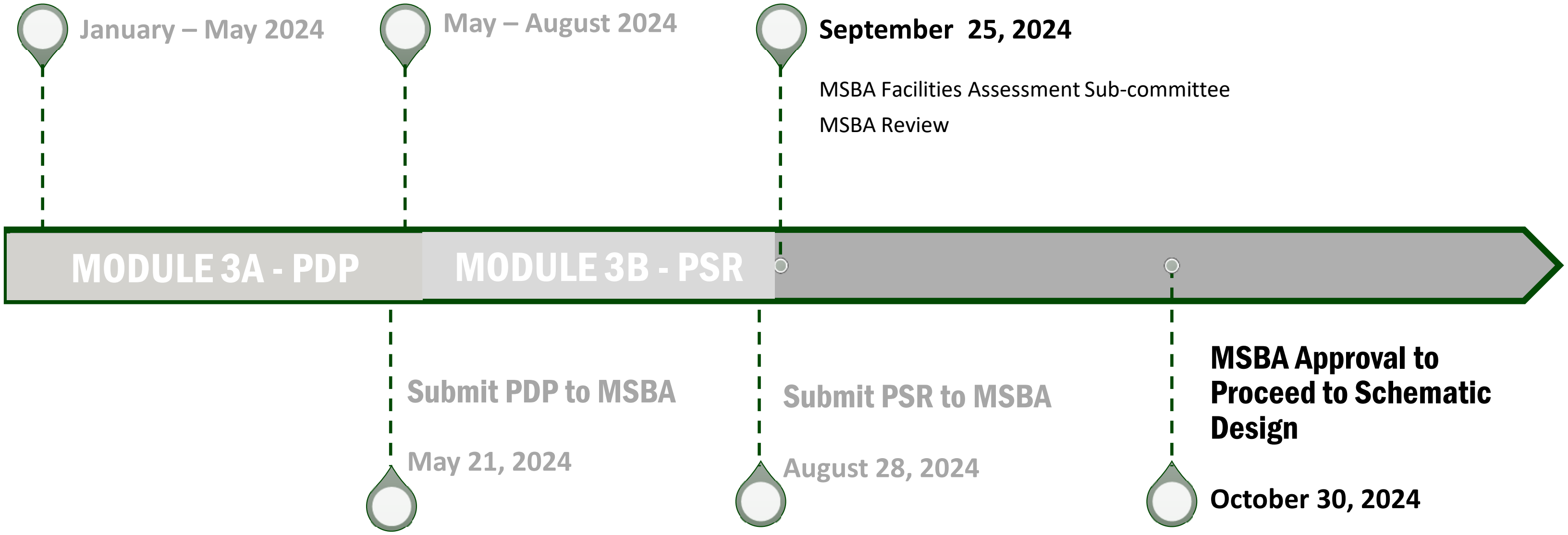
PROJECT BUDGET - CATEGORY	MSBA Cost Code	Feasibility Budget	Budget Revision Request (BRR)	Revised Budget	Committed (A)	Expended (B)	Balance Remaining Committed (A)	Balance Remaining Expended (B)
Feasibility Study Agreement								
OPM Feasibility Study	*0001-0000*	200,000	38,120	238,120	238,120	131,180	0	106,940
A&E Feasibility Study	*0002-0000*	600,000	(3,200)	596,800	596,000	260,608	800	336,192
Environmental & Site	*0003-0000*	100,000	4,898	104,898	104,898	45,755	0	59,143
Other	*0004-0000*	50,000	(39,818)	10,182	8,665	6,395	1,517	3,787
Feasibility Study Agreement Subtotal		**$950,000**	**$0**	**$950,000**	**$947,683**	**$443,938**	**$2,317**	**$506,062**
		Percentage			**100%**	**47%**		

MSBA Reimbursement Summary	
No. of Payment Request Submitted to date	5
Amount Submitted to date	**$414,780**
No. of Payment Request Reviewed by MSBA to date	4
Amount Reimbursed by MSBA to date	**$106,307**

Contracts Summary	
Skanska	**$238,120**
Arrowstreet	**$702,168**
Basic Services	$596,000
Amendment 1	$101,698
Amendment 2: Green International Affiliates	$3,200
Amendment 2: Peer Associates Add Services	$1,270
Two by Sixteen (website design)	**$7,000**

Budget Revision Request (BRR)			
BRR No. 1 (forthcoming)			
From Category	**Amount**	**To Category**	**Amount**
Other	($38,120)	OPM Feasibility Study	$38,120
Other	($1,698)	Environmental & Site	$1,698
A&E Feasibility Study	($3,200)	Environmental & Site	$3,200
Total	($43,018)		$43,018

Module 3 – Feasibility Study



January – May 2024

MODULE 3A - PDP

Submit PDP to MSBA

May 21, 2024

May – August 2024

MODULE 3B - PSR

Submit PSR to MSBA

August 28, 2024

September 25, 2024

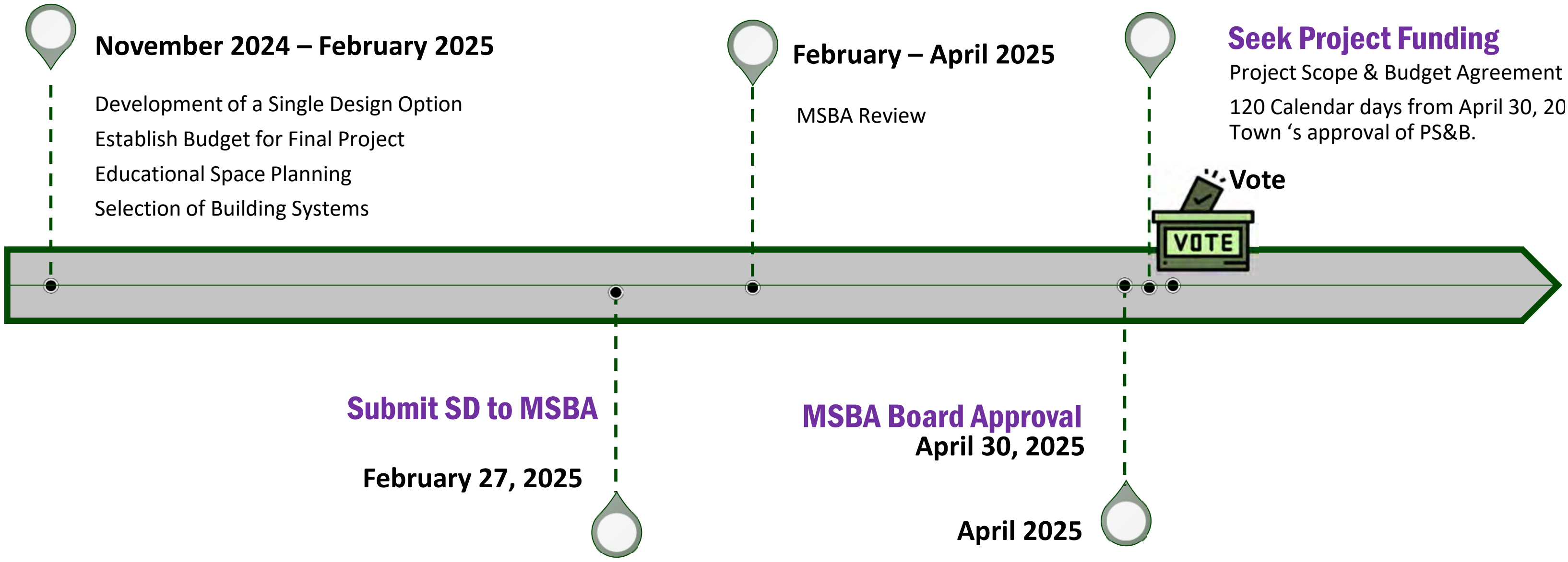
MSBA Facilities Assessment Sub-committee

MSBA Review

MSBA Approval to Proceed to Schematic Design

October 30, 2024

Module 4 – Schematic Design



November 2024 – February 2025

Development of a Single Design Option

Establish Budget for Final Project

Educational Space Planning

Selection of Building Systems

February – April 2025

MSBA Review

Seek Project Funding

Project Scope & Budget Agreement (PS&B)

120 Calendar days from April 30, 2025 for
Town 's approval of PS&B.

Vote

Submit SD to MSBA

February 27, 2025

MSBA Board Approval

April 30, 2025

April 2025

NBC Meetings Schedule

October

		1	2	3	4	5
6	7	8	9	10	11	12
	NBC Design Review Recap & Project Delivery Method					
13	14	15	16	17	18	19
	Holiday					
20	21	22	23	24	25	26
27	28	29	30	31		
			MSBA Board Meeting			

NBC Meetings Schedule

November

					1	2
3	4	5	6	7	8	9
	NBC	**FAS Recap (MSBA)**				
10	11	12	13	14	15	16
	Veteran's Day					
17	18	19	20	21	22	23
	NBC Sustainability Update / Recommend					
24	25	26	27	28	29	30
				Thanksgiving		

NBC Meetings Schedule

December						
1	2	3	4	5	6	7
				NBC		
8	9	10	11	12	13	14
15	16	17	18	19	20	21
				NBC		
22	23	24	25	26	27	28
			Christmas			
29	30	31				

Construction Delivery Methods

Design-Bid-Build (DBB)

Chapter 149

You are purchasing a building in accordance with plans and specifications

vs

Construction Management at Risk (CM@R)

Chapter 149A

You are hiring a professional service firm which manages the construction of buildings

Construction Delivery Methods

General Project Risks Regardless of Delivery Used

Unforeseen Site / Existing Building Conditions
Future Construction Cost Escalation
Sub-contractor or Trade Contractor Under-Performing
Working on and Around Occupied Facilities
Complex Site Logistics
Incomplete Documents
Adversarial Team Environment
Potential Bid Protests

Construction Delivery Methods: Contract Type

Design-Bid-Build

Lump Sum

Based on cost of the work, general conditions and desired profit of GC

Price fixed at lump sum bid amount with additions for change orders

Price based on "plans and specs", or exactly what is indicated on contract documents. GCs look at documents as "black and white"

Savings on actual costs below the bid "lump sum" amount become contractor profit

No opportunity for negotiation

CM@R

Guaranteed Maximum Price (GMP)

Based on bids for work packages, general conditions, contingency and set fee

Essentially a 'cost-plus' contract with guaranteed maximum
Final price is based on actual bids received, amount of contingency used, and agreed upon general conditions/fee

Any savings on actual costs revert to the owner

Ability to negotiate GMP with the exception of the CM fee and Filed Sub-Trades Contractor Bids

Can include allowances for work that is unclear or undefined to minimize the risk of financial surprises

Construction Delivery Methods: Quality Control

Design-Bid-Build

GC bids are based on "plans and specs" with no opportunity for scope clarification

CM@R

CM Selection process is based on qualifications, experience, proposed team and success on past projects

CM early involvement in project leads to greater understanding of complex logistics and design details

CM's involvement in the review of constructability during design phase utilizes builder's knowledge of means and methods and subcontractor abilities to ensure a design that will result in a "buildable" high quality product

Engage in a positive and collaborative design and construction process

Construction Delivery Methods: Subcontractors

Design-Bid-Build

With GC process, Filed Sub-Bidders do not know who GC is at time of bidding

No ability to vet, except through the DCAMM prequalification process, and select subcontractors

CM@R

CM leads subcontractor bidding and manages bid process

CM involvement in prequalification of Trade Contractors

Allows owner "screening" of subcontractors through review of bid lists and qualifications

Have a greater opportunity to select and prequalify subcontractors for the project

Significant bid coverage for all trades due to CM relationships in marketplace

Ability for CM to create specific scopes of work for subcontractors as basis for bidding

Early involvement and knowledge of project helps CM mitigate gaps in purchased scope

Ability to perform "scope debriefs" to ensure subcontractors understanding of documents and expectations

Construction Delivery Methods: Cost Implications

Design-Bid-Build

Aside from the 18 Filed Sub-Trades , the DBB cost of the work is highly competitive and will likely yield a lower cost up front than CM@R however, greater incentive to seek change orders for under bidding

“Hard” price not established until bids are received; may require redesign and rebid if bids exceed budget.

Direct subcontractors are the Contractor’s choice

No “open book” accounting

The Contractor’s contingency is not transparent

Simple accounting – any savings stays with GC

CM@R

The Owner and project team work together with the CM to establish the GMP

Direct subs may be selected to bid

Profit (or fee) and general conditions are fixed
CM involvement in preconstruction to assist design team in maintaining budget and optimizing value/constructability

Continuous budget feedback and control, open book accounting and purchasing
Ability to work with CM during “Buy-out”

Any unused funds in project requirements, allowances, scope and CM contingency is returned to the owner

Includes contingency within the GMP to cover work reasonably non-inferable from the design documents

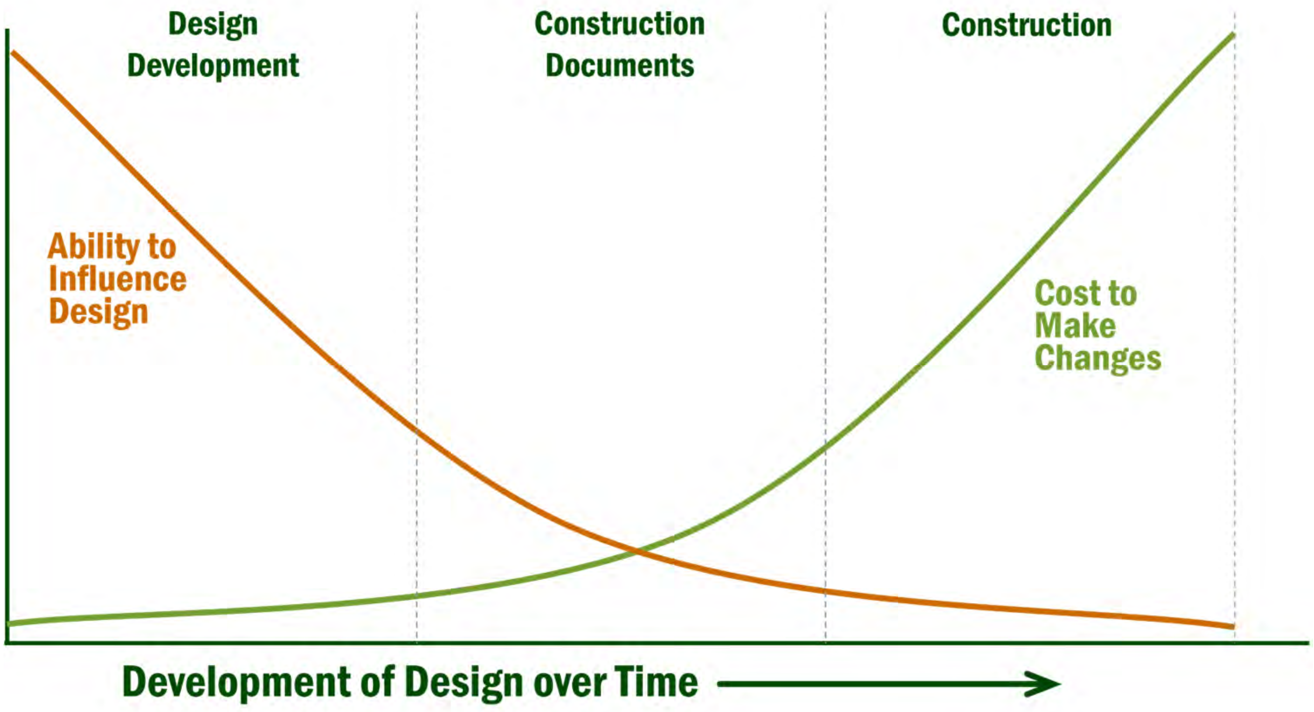
The CM contingency is transparent

CM@R Design & Construction Collaboration Considerations

Builder's viewpoint on "how to build" for planning and logistics integration into design

Opportunity for fast-tracking and prepurchase of equipment

Schedule Risk Mitigation



Steps in CM Procurement Process if Selected

1 **Establish Prequalification Committee**
(OPM, Designer, at least two public representatives)

2 **Prepare and Advertise Request for Qualifications (RFQ)**

3 **Evaluate Responses and Prequalify *at least* Three (3) Construction Managers**

4 **Establish a Selection Committee**
(can be same as Prequalification Committee)

5 **Prepare Request for Proposals (RFP) and Distribute to Prequalified Firms**

6 **Receive, Evaluate and Rank Proposals**
(interviews are permitted if conducted with all proposers)

7 **Negotiate Non-fee Terms with Selected Proposer and Award Contract**

RECEIVED
By Town Clerk/jfh at 1:22 pm, Nov 18, 2024

Town of Southborough, Massachusetts

Neary Building Committee

November 21, 2024

7:30 PM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order

II. Approval of Meeting Minutes from October 7, 2024

III. Approval of Open and Executive Session Meeting Minutes from August 9, 2024

IV. Update from Communications Subcommittee on next steps in educating the community including feedback on October/November events

V. Skanska/Arrowstreet Updates

   a. Update on Project Budget
   b. Sustainability Updates
   c. Recap on Geotech borings
   d. Design Review Updates

VI. Design, Bid, Build versus Construction Manager at Risk with vote on preferred path

VII. Public Comment

VIII. Meeting Schedule

IX. Other business that may properly come before the Committee

X. Adjournment

Jason W. Malinowski, Chair

Town of Southborough, Massachusetts

Neary Building Committee

November 21, 2024

7:30 PM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Mark Davis, Denise Eddy, Chris Evers, and Jason Malinowski

Members Absent: Andrew Pfaff, and Kathryn Cook

Ex-Officio

Members Present: Gregory Martineau Superintendent of Schools, Keith Lavoie Assistant Superintendent of Operations, Rebecca Pellegrino, Assistant Superintendent of Finance, and Kathleen Valenti, Neary School Principal

Members Absent: Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, Steven Mucci, Principal of Woodward School, Mark Purple, Town Administrator, and Brian Ballantine Town Treasurer/ Finance Director

I. Call Meeting to Order
Jason Malinowski called the Neary Building Committee meeting to order at 7:31 pm.

II. Approval of Meeting Minutes from October 7, 2024
Jason Malinowski asked for a discussion and a vote.

MOTION TO
MEETING MINUTES

Jason Malinowski moved, Denise Eddy seconded, and it was unanimously voted by roll call, "To approve the minutes as presented."

Roll Call
For: Denise Eddy, Mark Davis, Roger Challen, Chris Evers, and Jason Malinowski
Opposed: None
Abstained: None

III. Approval of Open and Executive Session Meeting Minutes from August 9, 2024
The Committee will approve these items in their next meeting, as Jason Malinowski did not include them in the meeting packet.

IV. Update from Communications Subcommittee on next steps in educating the community including feedback on October/November events

Jason Malinowski highlighted community engagement efforts, including events like the Principal's coffee, two open house tours of the Neary School, and a visit to the senior center, which focused on design, safety, and cost concerns. Feedback received emphasized recurring concerns about building costs, site safety, and repurposing older school facilities. Future plans include hosting open office hours to answer community questions and publishing clarifications to counter misinformation circulating on social media.

V. Skanska/Arrowstreet Updates

a. Update on Project Budget

Jim Burrows, Project Manager at Skanska, reported that approximately 50% of the budget has been billed and outlined the current status with the budget timeline. There are just over $2,300 remaining in uncommitted funds from the feasibility study. Skanska also received $66,000 from the Massachusetts School Building Authority as part of the latest Propay request. On October 30, 2024, they presented to the MSBA board, which formally approved their progression into the schematic design phase. Following this, there was a follow-up meeting with the Facilities Assessment Subcommittee on November 13, 2024, and they are pleased with the progress of the design.

b. Sustainability Updates

Katy Lillich, from Arrowstreet, shared the Sustainability Subcommittee reported progress on HVAC system selection, narrowing options to three energy-efficient systems under consideration. A life cycle cost analysis is underway, with results expected in early January. All proposed systems will be fully electric, in line with updated building regulations prohibiting gas connections. Discussions also included plans for a propane or diesel generator to ensure uninterrupted utility service. Federal tax credits and IRA incentives are being explored for further financial efficiency.

c. Recap on Geotech borings

Katy Lillich reported that additional soil borings were conducted following a discussion about soil removal on the field in August 2024. These soil borings revealed the presence of swamp deposits, which influence decisions regarding the placement of buildings in order to minimize soil removal costs.

d. Design Review Updates

Design discussions included updates to the building layout, focusing on accessibility and functionality. Adjustments were made to classroom proportions, special education distribution, and restroom placements. Plans for the Learning Commons include two design options, emphasizing landscape views and gathering spaces.

VI. Design, Bid, Build versus Construction Manager at Risk with vote on preferred path

Discussions also addressed projected electricity usage, operating costs, and the anticipated increase in community programming in the new facility. The Committee endorsed the Construction Manager at Risk (CM at Risk) model, citing its advantages in managing budget and schedule risks. Early involvement of the construction manager allows for constructability reviews and minimizes potential delays. Transitioning to this model requires additional costs, but savings would be returned to the town.

Jason Malinowski asked for a discussion and a vote.

MOTION TO CHOOSE CONSTRUCTION DELIVERY METHOD

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "To accept the recommendation to use Construction Manager at Risk and authorize Skanska to complete any paperwork with the Inspector General's Office as required by Massachusetts General Law."

<u>Roll Call</u>
For: Denise Eddy, Roger Challen, Mark Davis, Chris Evers, and Jason Malinowski
Opposed: None
Abstained: None

VII. Public Comment (None at this time)

VIII. Meeting Schedule – December 5, 2024 and December 16, 2024

IX. Other business that may properly come before the Committee

Mark Davis reported that he presented to the selectman about creating a 40R zoning district at the train station and discussed zoning and landfill management proposals for the upcoming town meeting.

X. Adjournment

Jason Malinowski requested a motion to adjourn.

MOTION TO ADJOURN

Jason Malinowski moved, Mark Davis seconded, and it was unanimously voted by roll call, "To adjourn."

Roll Call
For: Mark Davis, Denise Eddy, Roger Challen, Chris Evers, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 8:49 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. Neary Building Committee Agenda November 21, 2024
2. Neary Building Committee Meeting Minutes of October 7, 2024
3. Neary Elementary School Building Project – Skanska and Arrowstreet Presentation dated November 21, 2024

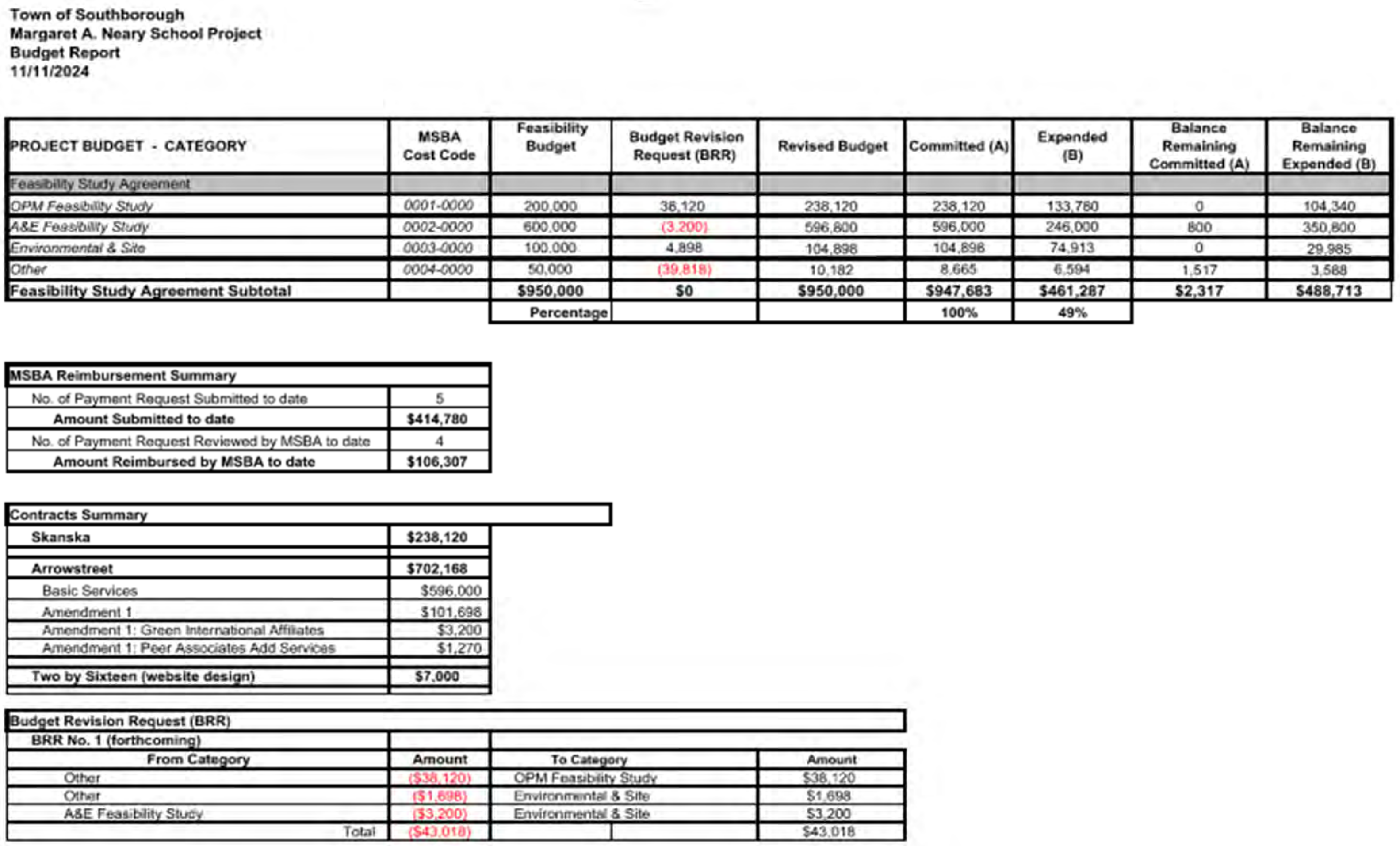
SKANSKA

ARROWSTREET
ARCHITECTURE & DESIGN

Neary Elementary School Building Project

School Building Committee
November 21, 2024 Meeting

Budget Update



Town of Southborough
Margaret A. Neary School Project
Budget Report
11/11/2024

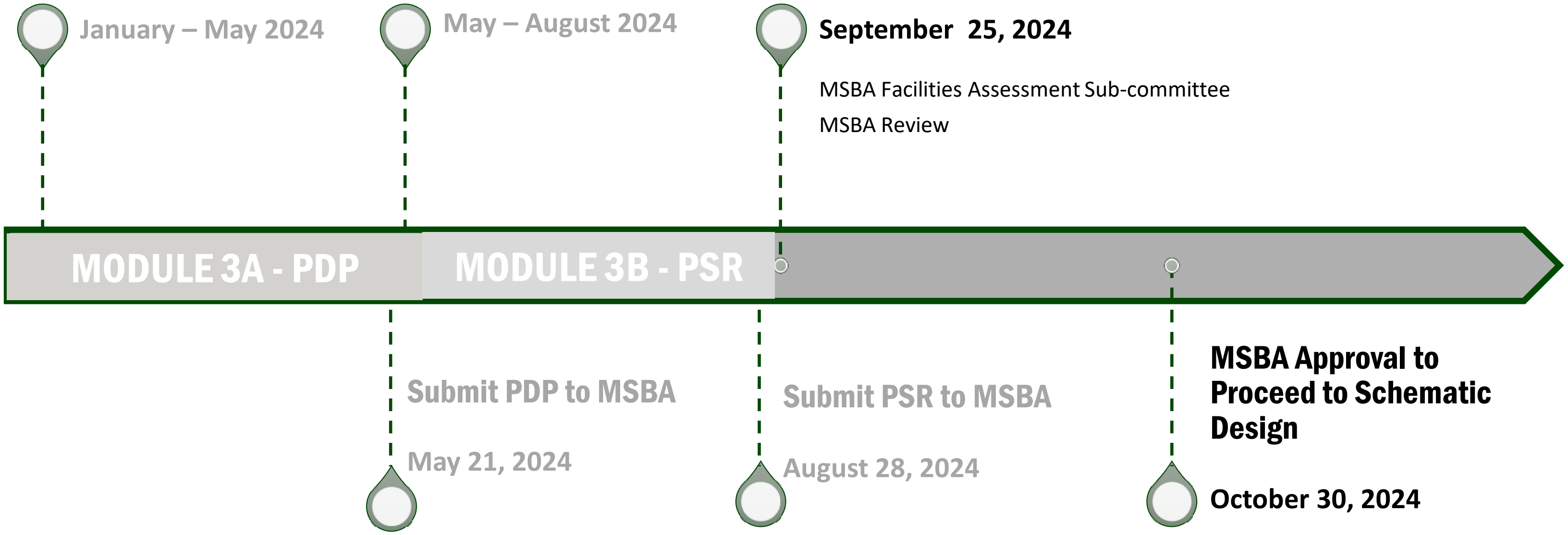
PROJECT BUDGET - CATEGORY	**MSBA Cost Code**	**Feasibility Budget**	**Budget Revision Request (BRR)**	**Revised Budget**	**Committed (A)**	**Expended (B)**	**Balance Remaining Committed (A)**	**Balance Remaining Expended (B)**
Feasibility Study Agreement								
OPM Feasibility Study	*0001-0000*	200,000	38,120	238,120	238,120	133,780	0	104,340
A&E Feasibility Study	*0002-0000*	600,000	(3,200)	596,800	596,000	246,000	800	350,800
Environmental & Site	*0003-0000*	100,000	4,898	104,898	104,898	74,913	0	29,985
Other	*0004-0000*	50,000	(39,818)	10,182	8,665	6,594	1,517	3,588
Feasibility Study Agreement Subtotal		**$950,000**	**$0**	**$950,000**	**$947,683**	**$461,287**	**$2,317**	**$488,713**
		Percentage			**100%**	**49%**		

MSBA Reimbursement Summary	
No. of Payment Request Submitted to date	5
Amount Submitted to date	**$414,780**
No. of Payment Request Reviewed by MSBA to date	4
Amount Reimbursed by MSBA to date	**$106,307**

Contracts Summary	
Skanska	**$238,120**
Arrowstreet	**$702,168**
Basic Services	$596,000
Amendment 1	$101,698
Amendment 1: Green International Affiliates	$3,200
Amendment 1: Peer Associates Add Services	$1,270
Two by Sixteen (website design)	**$7,000**

Budget Revision Request (BRR)			
BRR No. 1 (forthcoming)			
From Category	**Amount**	**To Category**	**Amount**
Other	($38,120)	OPM Feasibility Study	$38,120
Other	($1,698)	Environmental & Site	$1,698
A&E Feasibility Study	($3,200)	Environmental & Site	$3,200
Total	($43,018)		$43,018

Module 3 – Feasibility Study



January – May 2024

May – August 2024

September 25, 2024

MSBA Facilities Assessment Sub-committee

MSBA Review

MODULE 3A - PDP

MODULE 3B - PSR

Submit PDP to MSBA

May 21, 2024

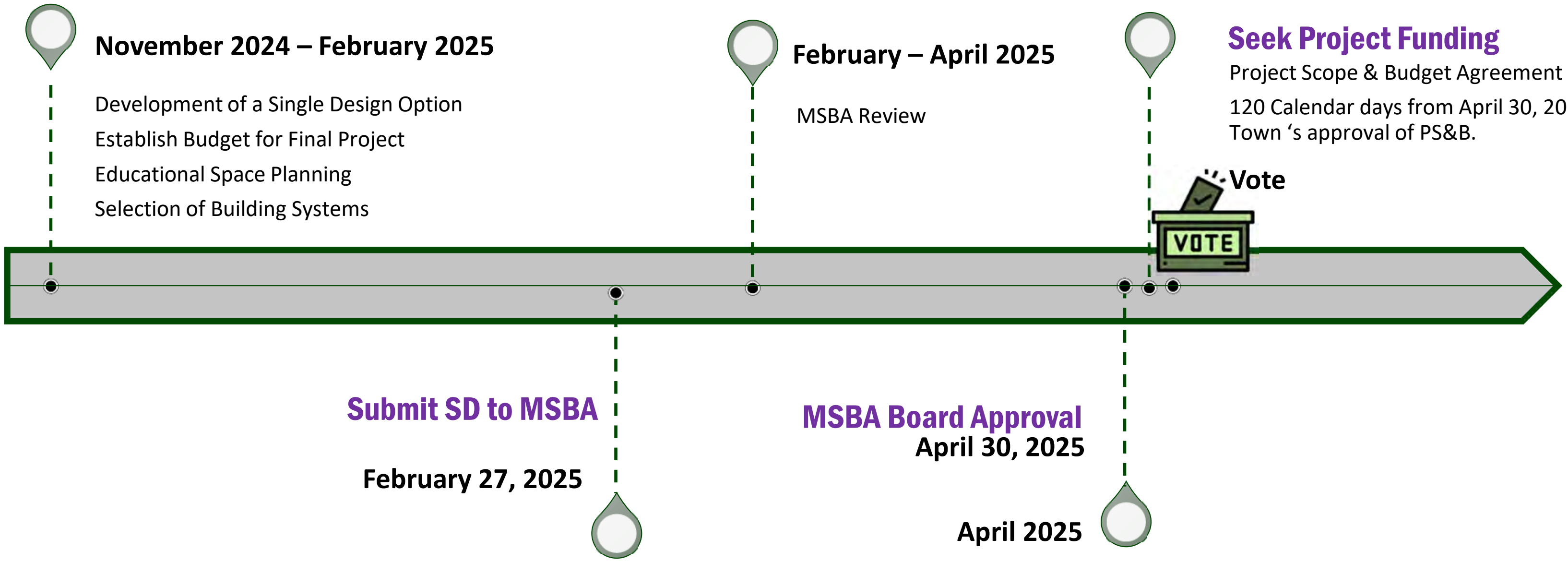
Submit PSR to MSBA

August 28, 2024

MSBA Approval to Proceed to Schematic Design

October 30, 2024

Module 4 – Schematic Design



November 2024 – February 2025

Development of a Single Design Option
Establish Budget for Final Project
Educational Space Planning
Selection of Building Systems

February – April 2025

MSBA Review

Seek Project Funding

Project Scope & Budget Agreement (PS&B)
120 Calendar days from April 30, 2024 for Town ‘s approval of PS&B.

Vote

Submit SD to MSBA

February 27, 2025

MSBA Board Approval
April 30, 2025

April 2025

HVAC SYSTEMS

ALL-ELECTRIC OPTIONS FOR SCHOOLS

OPTION 1	OPTION 2	OPTION 3
NET ZERO	**MAYBE NET ZERO**	
Ground - Water Heat Pump Chiller/ Heating Plant	VRF	Air - Water Heat Pump Chiller / Heating Plant
Displacement Ventilation	Overhead Ventilation	Displacement Ventilation

NET ZERO IS DEFINED AS ACHIEVING AN EUI OF 25 OR LESS

HVAC SYSTEMS

ALL-ELECTRIC OPTIONS FOR SCHOOLS

	Pros	Cons
Ground Source Heat Pump Chiller/Heating	Most efficient. Lowest operational cost. Lowest first cost after incentives. Full cooling.	Requires site area for wellfield.
Ground Source Heat Pump HW Generator	Most efficient. Lowest operational cost. Lowest first cost after incentives.	Requires site area for wellfield. No full cooling.
VRF	Do not need site area for well field. Lowest first cost before incentives.	More rooftop and indoor equip. More maintenance. May not get to net zero.

LEARNING COMMONS STUDIES

SPACE PLAN UPDATES

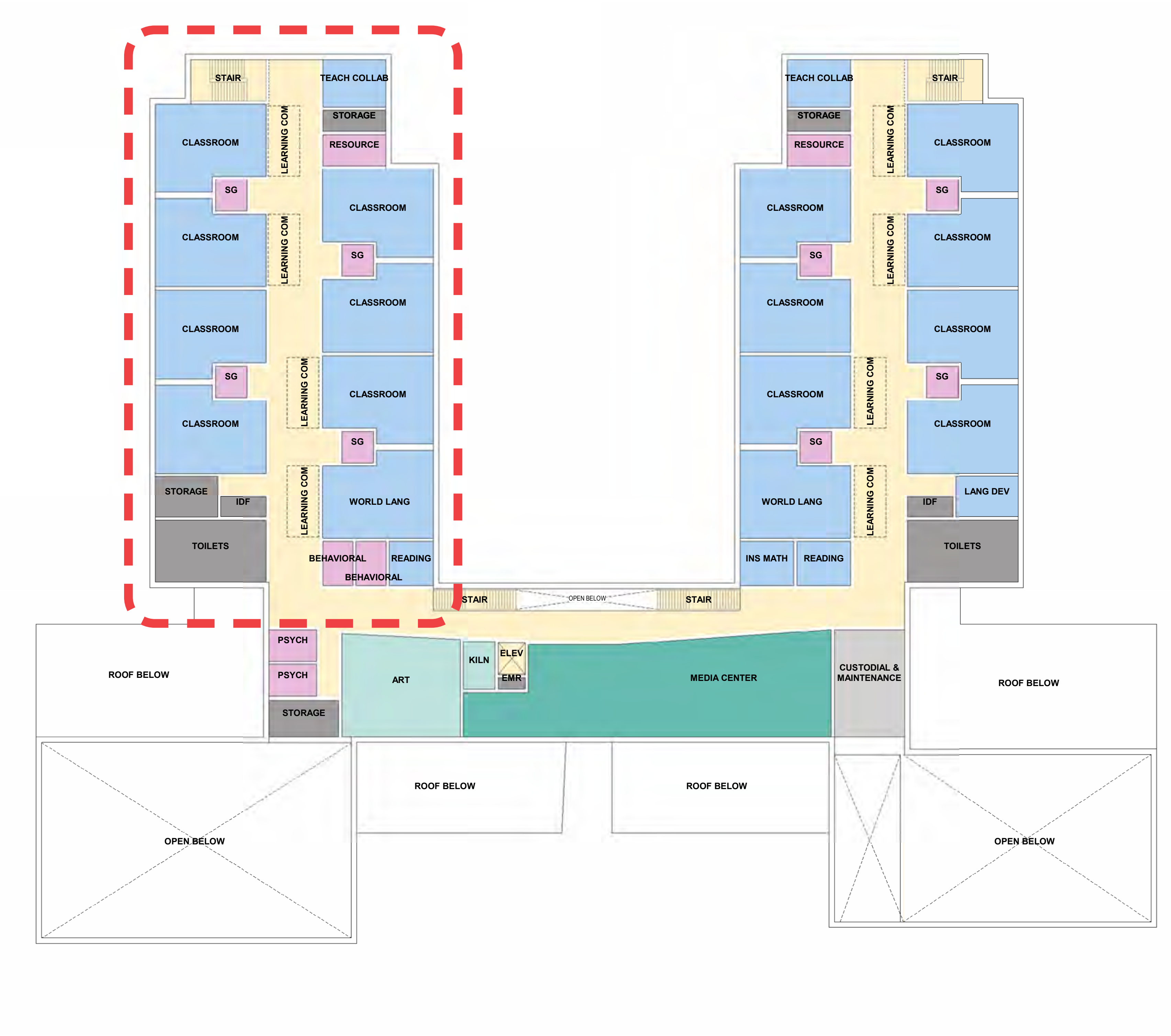
FIRST FLOOR

- CLASSROOM PROPORTION
- BATHROOMS MOVED TO NORTH END & HAVE CAPACITY TO SERVE BOTH THE CLASSROOMS AND THE GYM
- RESOURCE ROOM MOVED TO SOUTH END
- SPED CONFERENCE MOVED ADJACENT TO ADMINISTRATION

LEARNING COMMONS STUDIES

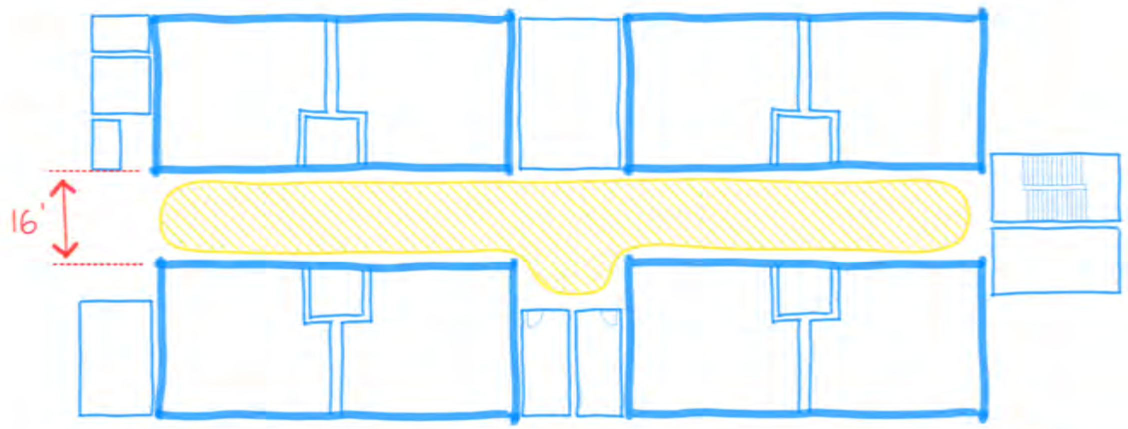
SPACE PLAN UPDATES

SECOND FLOOR

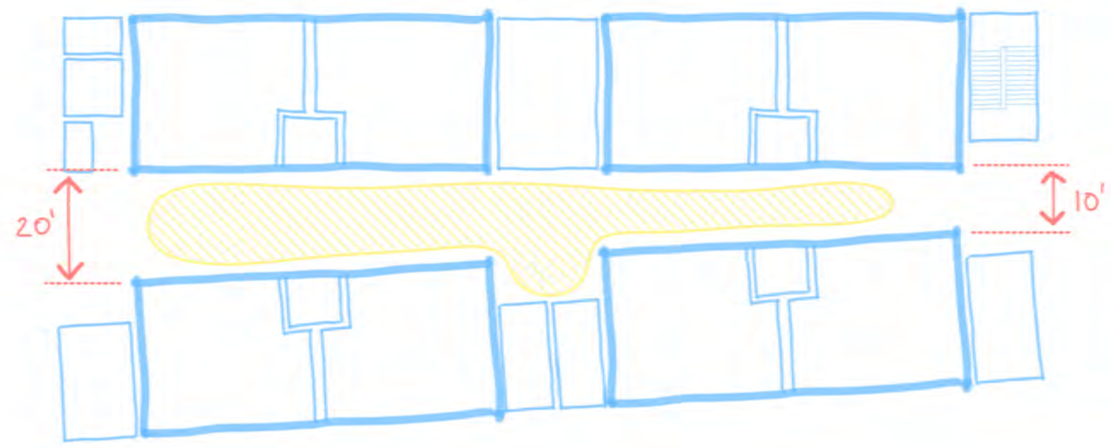


- CLASSROOM PROPORTION
- BATHROOMS MOVED TO NORTH END
- RESOURCE ROOM MOVED TO SOUTH END
- (1) INSTRUCTIONAL MATH ROOM WAS CHANGED TO (2) BEHAVIORAL SPECIALIST OFFICES
- (2) PSYCHOLOGIST OFFICES

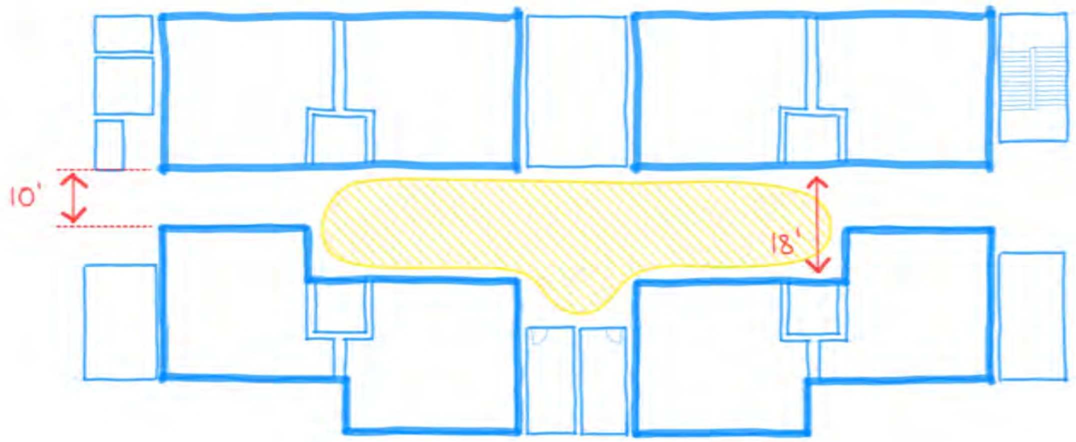
LEARNING COMMONS STUDIES



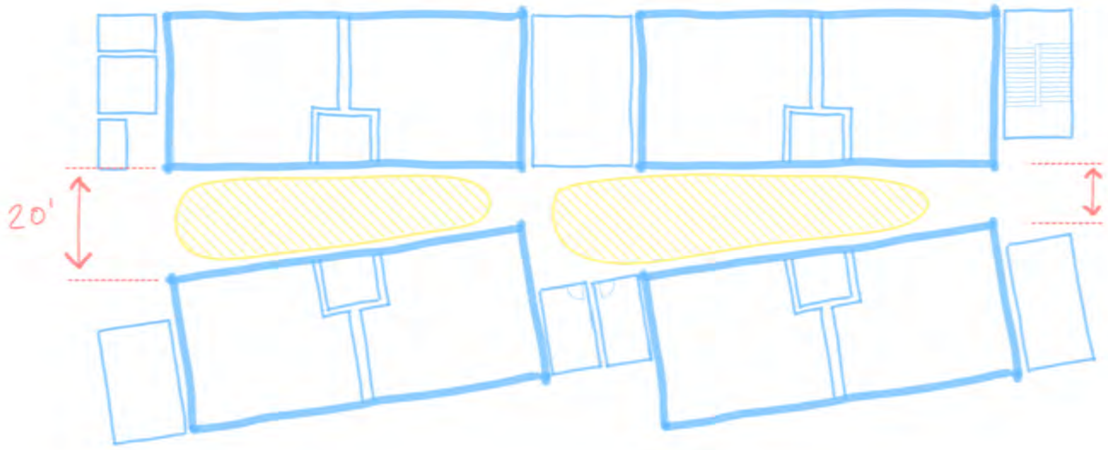
CONTINUOUS WIDTH - CURRENT DESIGN



TAPERED WIDTH



CENTERED

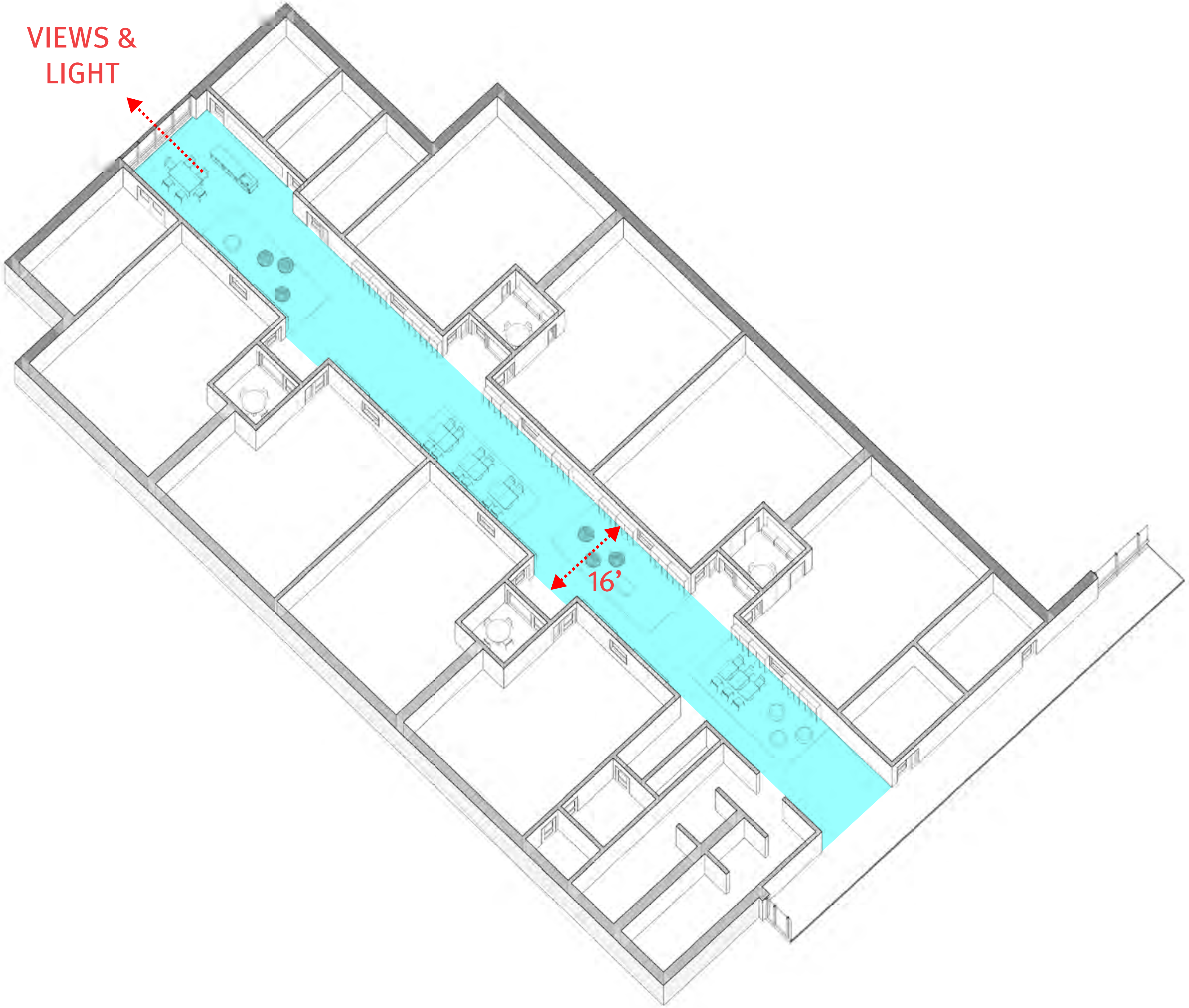


TAPERED AND STEPPED

LEARNING COMMONS STUDIES

CONTINUOUS WIDTH

LEARNING COMMONS CONFIGURATION



- 16 FOOT WIDE LEARNING COMMONS ZONE
- FULL HEIGHT WINDOWS AT END WITH VIEWS TO LANDSCAPE

LEARNING COMMONS STUDIES

CONTINUOUS WIDTH

INTERIOR PERSPECTIVE STUDY

LEARNING COMMONS STUDIES

CONTINUOUS WIDTH

INTERIOR PERSPECTIVE STUDY

LEARNING COMMONS STUDIES

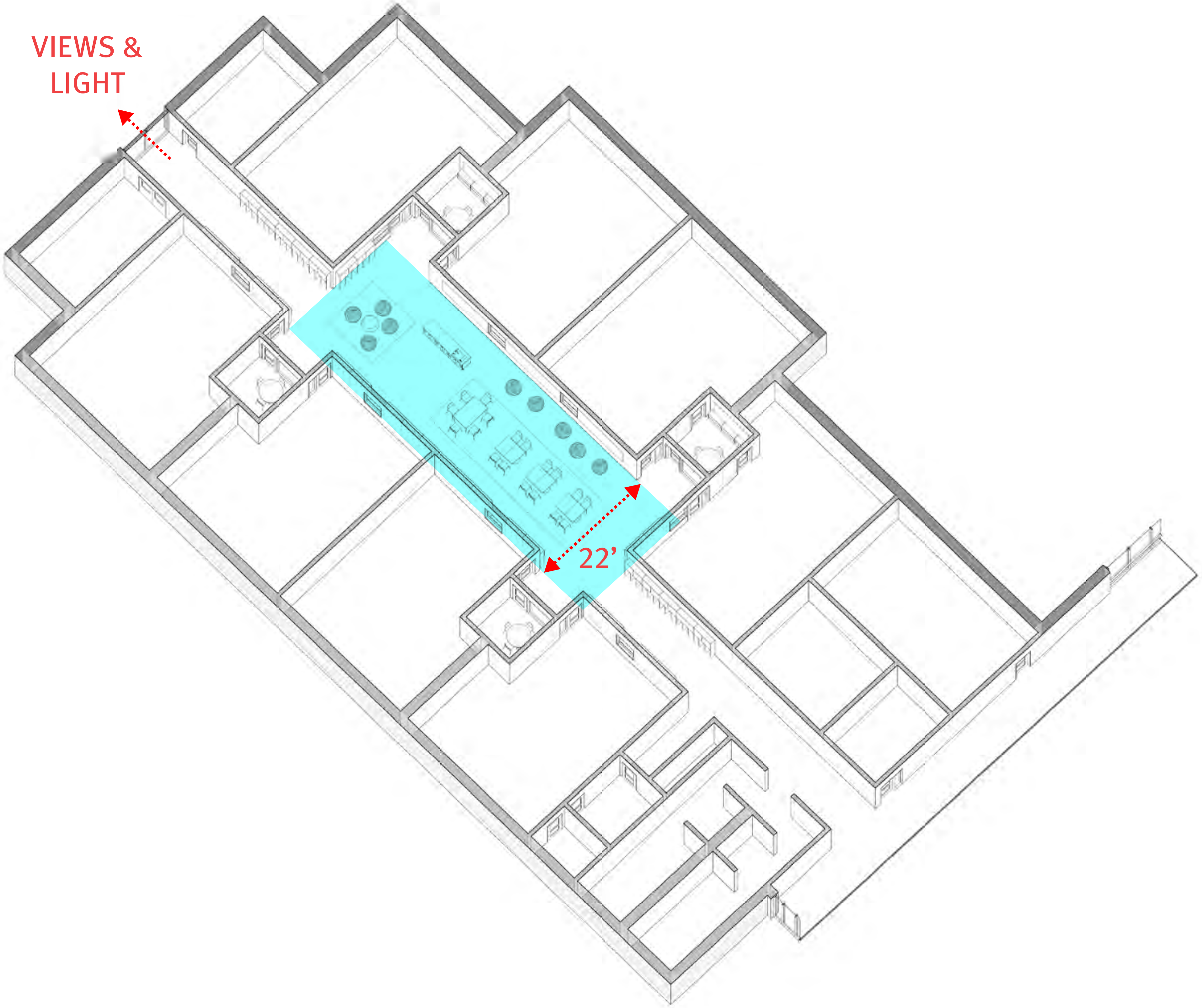
CONTINUOUS WIDTH

INTERIOR PERSPECTIVE STUDY

LEARNING COMMONS STUDIES

CENTERED

LEARNING COMMONS CONFIGURATION



- 22 FOOT WIDE LEARNING COMMONS ZONE
- FULL HEIGHT WINDOWS AT END WITH VIEWS TO LANDSCAPE

LEARNING COMMONS STUDIES

CENTERED

INTERIOR PERSPECTIVE STUDY

CENTERED

INTERIOR PERSPECTIVE STUDY

CENTERED

INTERIOR PERSPECTIVE STUDY

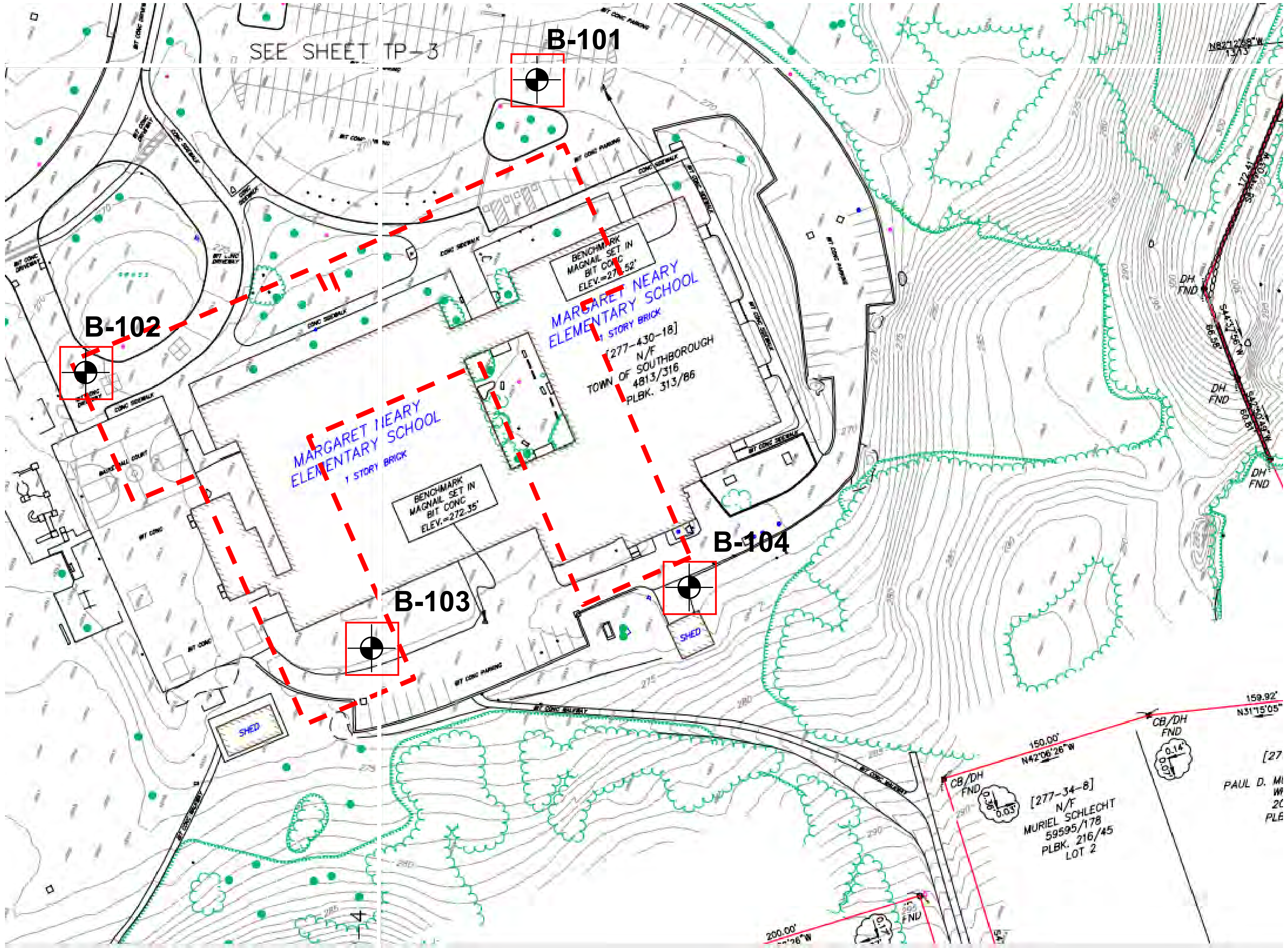
GEOTECHNICAL BORINGS

Legend

Approximate location of borings advanced by Soil X Corporation of Leominster, MA on August 22, 2024, and observed by Lahlaf Geotechnical Consulting, Inc. (LGCI).

0 40 80 120

Approximate Scale (ft.)



Note:
Figure based on drawing TP-5 (Sheet 5 of 5) titled: "Topographic Plan, Neary Elementary School, Southborough, MA," prepared by Beals and Thomas, Inc. (B&T), dated March 22, 2024, and provided to LGCI by Arrowstreet via e-mail on September 3, 2024.

Client:
Arrowstreet

Project:
Proposed Neary Elementary School

Figure 3A – Boring Location Plan

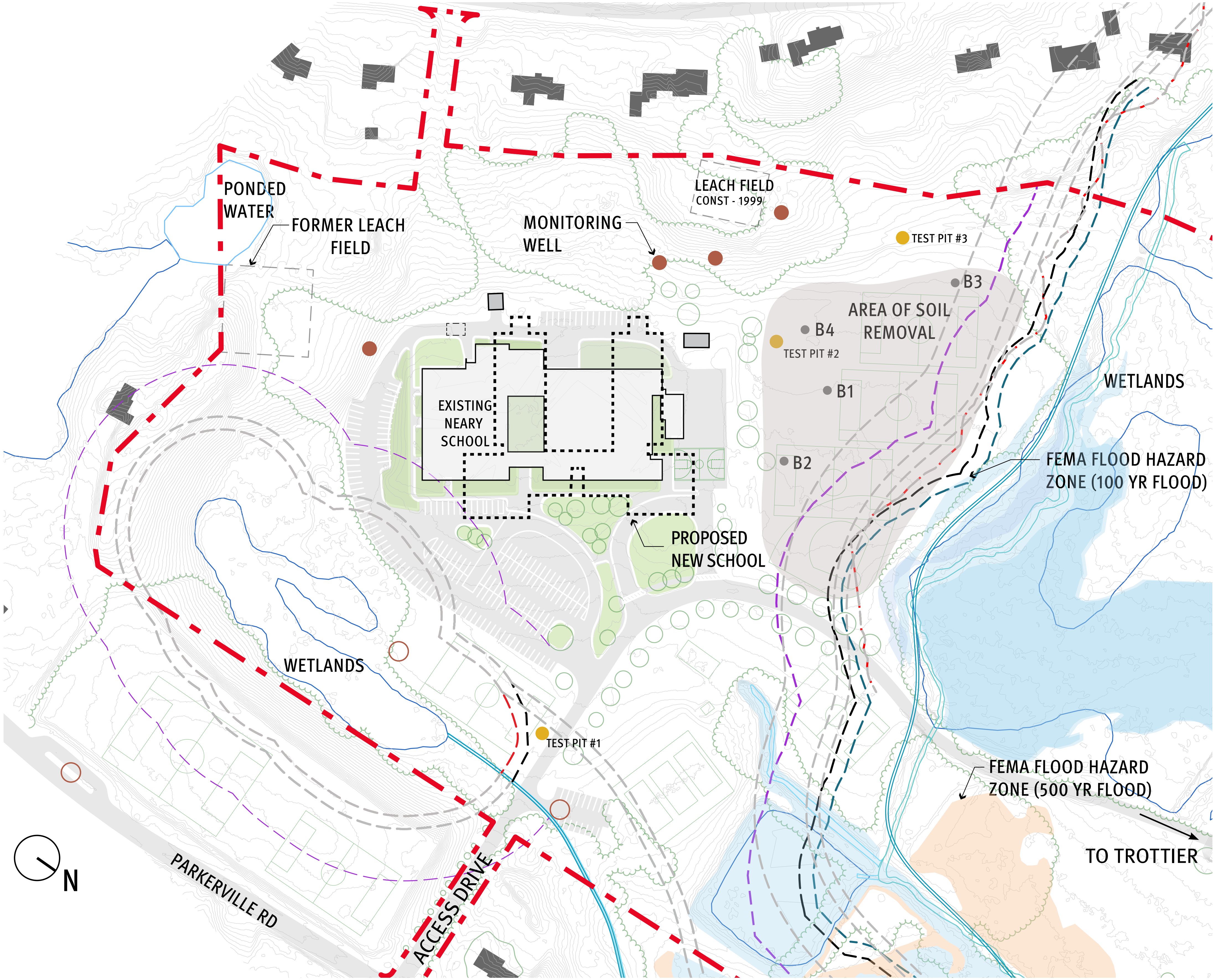
LGCI
Lahlaf Geotechnical Consulting, Inc.

Project Location:
Southborough, MA

LGCI Project No.:
2404

Date:
Sept. 2024

SITE CONSTRAINTS



EXISTING SITE CONSTRAINTS

- Riverfront and wetlands setbacks along northern and southeast boundaries
- 100 Yr Flood Hazard Zone along stream at northern boundary of the site
- Existing landfill (capped 1999-2002) adjacent to southeast corner of the site
- Existing and former septic system and leaching fields along western site boundary
- High Groundwater Table

FACTORS IN LOCATING BUILDING

- Existing access road is shared with Trottier Middle School and needs to be maintained
- Borings on existing fields indicate 6’ of soil would need to be removed and replaced in order to meet the necessary bearing capacity
- Riverfront and wetlands setbacks along northern and southeast boundaries. Construction within area of the 200 foot Riverfront Buffer requires DEP and ConsComm ‘Alternatives Analysis’
- Site slopes steeply on South and West sides of the site so construction in these areas would require additional earth moving

Construction Delivery Methods

Design-Bid-Build (DBB)

Chapter 149

You are purchasing a building in accordance with plans and specifications

VS

Construction Management at Risk (CM@R)

Chapter 149A

You are hiring a professional service firm which manages the construction of buildings

Construction Delivery Methods

General Project Risks Regardless of Delivery Used

Unforeseen Site / Existing Building Conditions
Future Construction Cost Escalation
Sub-contractor or Trade Contractor Under-Performing
Working on and Around Occupied Facilities
Complex Site Logistics
Incomplete Documents
Adversarial Team Environment
Potential Bid Protests

Construction Delivery Methods: Contract Type

Design-Bid-Build

Lump Sum

Based on cost of the work, general conditions and desired profit of GC

Price fixed at lump sum bid amount with additions for change orders

Price based on "plans and specs", or exactly what is indicated on contract documents. GCs look at documents as "black and white"

Savings on actual costs below the bid "lump sum" amount become contractor profit

No opportunity for negotiation

CM@R

Guaranteed Maximum Price (GMP)

Based on bids for work packages, general conditions, contingency and set fee

Essentially a 'cost-plus' contract with guaranteed maximum
Final price is based on actual bids received, amount of contingency used, and agreed upon general conditions/fee

Any savings on actual costs revert to the owner

Ability to negotiate GMP with the exception of the CM fee and Filed Sub-Trades Contractor Bids

Can include allowances for work that is unclear or undefined to minimize the risk of financial surprises

Construction Delivery Methods: Quality Control

Design-Bid-Build

GC bids are based on "plans and specs" with no opportunity for scope clarification

CM@R

CM Selection process is based on qualifications, experience, proposed team and success on past projects

CM early involvement in project leads to greater understanding of complex logistics and design details

CM's involvement in the review of constructability during design phase utilizes builder's knowledge of means and methods and subcontractor abilities to ensure a design that will result in a "buildable" high quality product

Engage in a positive and collaborative design and construction process

Construction Delivery Methods: Subcontractors

Design-Bid-Build

With GC process, Filed Sub-Bidders do not know who GC is at time of bidding

No ability to vet, except through the DCAMM prequalification process, and select subcontractors

CM@R

CM leads subcontractor bidding and manages bid process

CM involvement in prequalification of Trade Contractors

Allows owner "screening" of subcontractors through review of bid lists and qualifications

Have a greater opportunity to select and prequalify subcontractors for the project

Significant bid coverage for all trades due to CM relationships in marketplace

Ability for CM to create specific scopes of work for subcontractors as basis for bidding

Early involvement and knowledge of project helps CM mitigate gaps in purchased scope

Ability to perform "scope debriefs" to ensure subcontractors understanding of documents and expectations

Construction Delivery Methods: Cost Implications

Design-Bid-Build

Aside from the 18 Filed Sub-Trades , the DBB cost of the work is highly competitive and will likely yield a lower cost up front than CM@R however, greater incentive to seek change orders for under bidding

“Hard” price not established until bids are received; may require redesign and rebid if bids exceed budget.

Direct subcontractors are the Contractor’s choice

No “open book” accounting

The Contractor’s contingency is not transparent

Simple accounting – any savings stays with GC

CM@R

The Owner and project team work together with the CM to establish the GMP

Direct subs may be selected to bid

Profit (or fee) and general conditions are fixed
CM involvement in preconstruction to assist design team in maintaining budget and optimizing value/constructability

Continuous budget feedback and control, open book accounting and purchasing
Ability to work with CM during “Buy-out”

Any unused funds in project requirements, allowances, scope and CM contingency is returned to the owner

Includes contingency within the GMP to cover work reasonably non-inferable from the design documents

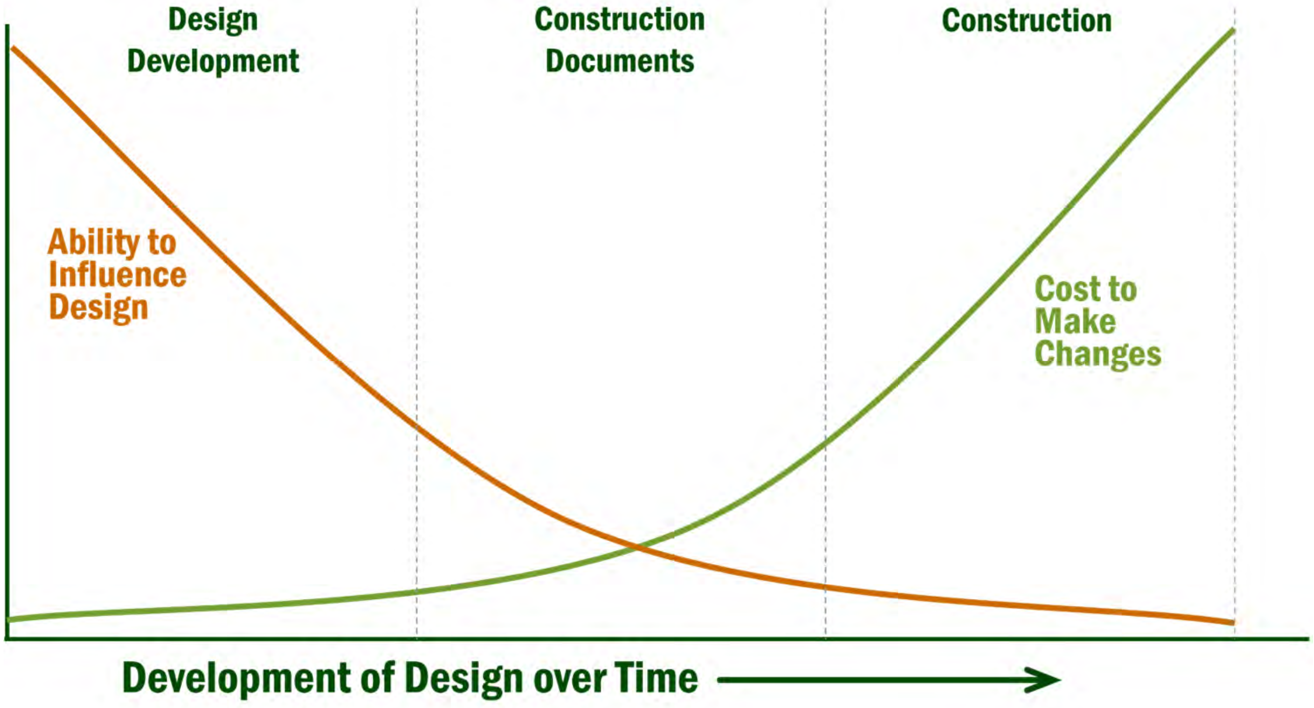
The CM contingency is transparent

CM@R Design & Construction Collaboration Considerations

Builder's viewpoint on "how to build" for planning and logistics integration into design

Opportunity for fast-tracking and prepurchase of equipment

Schedule Risk Mitigation



Steps in CM Procurement Process if Selected

1 **Establish Prequalification Committee**
(OPM, Designer, at least two public representatives)

2 **Prepare and Advertise Request for Qualifications (RFQ)**

3 **Evaluate Responses and Prequalify *at least* Three (3) Construction Managers**

4 **Establish a Selection Committee**
(can be same as Prequalification Committee)

5 **Prepare Request for Proposals (RFP) and Distribute to Prequalified Firms**

6 **Receive, Evaluate and Rank Proposals**
(interviews are permitted if conducted with all proposers)

7 **Negotiate Non-fee Terms with Selected Proposer and Award Contract**

RECEIVED
By Town Clerk/amb at 2:42 pm, Dec 02, 2024

Town of Southborough, Massachusetts

Neary Building Committee

December 5, 2024

7:00 PM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order
II. Approval of Meeting Minutes from November 21, 2024
III. Approval of Open and Executive Session Meeting Minutes from August 9, 2024
IV. Community Feedback and outreach plan
V. Skanska/Arrowstreet Updates
    a. Design Review Updates
    b. Gym Size comparison
    c. Sustainability Subcommittee Update
VI. Public Comment
VII. Meeting Schedule
VIII. Other business that may properly come before the Committee
IX. Adjournment

Jason W. Malinowski, Chair

RECEIVED
By Town Clerk/amb at 2:04 pm, Jan 14, 2025

Town of Southborough, Massachusetts

Neary Building Committee

December 5, 2024

7:00 PM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Mark Davis, Denise Eddy, Andrew Pfaff, Kathryn Cook, Chris Evers, and Jason Malinowski

Members Absent: None

Ex-Officio

Members Present: Gregory Martineau Superintendent of Schools, Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, Keith Lavoie Assistant Superintendent of Operations, Rebecca Pellegrino, Assistant Superintendent of Finance, and Kathleen Valenti, Neary School Principal

Members Absent: Steven Mucci, Principal of Woodward School, Mark Purple, Town Administrator, and Brian Ballantine Town Treasurer/ Finance Director

I. Call Meeting to Order

Jason Malinowski called the Neary Building Committee meeting to order at 7:02 pm.

II. Approval of Meeting Minutes from November 21, 2024

Jason Malinowski asked for a discussion and a vote.

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "To approve the minutes as presented."

MOTION TO APPROVE MEETING MINUTES

Roll Call
For: Andrew Pfaff, Mark Davis, Denise Eddy, Roger Challen, Chris Evers, Kathryn Cook, and Jason Malinowski
Opposed: None
Abstained: None

III. Approval of Open and Executive Session Meeting Minutes from August 9, 2024

Jason Malinowski skipped this action item.

IV. Community Feedback and outreach plan

Jason Malinowski reported that the Communications Subcommittee met on November 21, 2024, to advance their community engagement initiatives. In the coming weeks, they will hold sessions with various groups that have requested updated presentations. The Neary Building Committee has also been invited to present a project update at the Select Board and Joint Advisory meeting.

V. Skanska/Arrowstreet Updates

a. Design Review Updates

The design review focused on refining plans for the school's layout and functionality, emphasizing flexibility, accessibility, and efficient use of space. Key updates included adjustments to classroom configurations, learning commons layouts, and entry areas, with a preference for continuous-width designs and improved connectivity between classrooms and small group rooms through operable walls. Other features, such as large windows for natural light, STEM desk areas with sinks, and recessed presentation screens, were integrated to support diverse educational activities. Feedback from faculty and working groups informed these changes, ensuring the design aligns with user needs and educational goals.

b. Gym Size comparison

The meeting included an in-depth discussion on gym size, prompted by community feedback rather than school administration requests. Gym comparisons were made, with options ranging from the smaller Woodward gym to larger, high school-sized gyms like Finn School and Trottier Middle School, considering current utilization and seating needs. MSBA's reimbursement cap on gym square footage and potential costs for increasing size were highlighted, with estimates suggesting an additional $1 million for larger designs. Suggestions included exploring a middle-ground gym size to accommodate spectators while balancing costs and site risks. The feasibility of renting the facility to private organizations was also discussed, emphasizing the need for a cost-benefit analysis. The Committee aims to refine plans incrementally, incorporating feedback and maintaining alignment with community needs.

c. Sustainability Subcommittee Update

Kate Bubriski from Arrowstreet reviewed the various potential incentives to support energy-efficient technologies and ensure compliance with codes. Key incentives include state programs like Mass Save, which offers rebates for ground-source heat pumps and other qualifying systems, and federal incentives under the Inflation Reduction Act, such as tax credits for solar PV, energy storage, and HVAC upgrades, contingent on meeting apprenticeship and wage requirements. The Massachusetts School Building Authority (MSBA) also provides additional energy efficiency and stretch-code compliance reimbursements. For state incentives through Mass Save, the process begins with signing a Memorandum of Understanding (MOU) and submitting energy models to demonstrate alignment with the chosen energy use pathways. Final model submissions occur at the end of construction, with post-occupancy verification measuring energy use intensity to confirm rebate eligibility. Federal incentives require adherence to prevailing wage and apprenticeship standards during construction. Applications for tax credits are submitted post-construction, with incentives like the Investment Tax Credit (ITC) tied to specific system choices, such as ground-source heat pumps.

VI. Public Comment (None at this time)

VII. Meeting Schedule – December 16, 2024

VIII. Other business that may properly come before the Committee (None at this time)

IX. Adjournment

Jason Malinowski requested a motion to adjourn.

MOTION TO ADJOURN

Jason Malinowski moved, Denise Eddy seconded, and it was unanimously voted by roll call, "To adjourn."

Roll Call
For: Andrew Pfaff, Mark Davis, Denise Eddy, Kathryn Cook, Roger Challen, Chris Evers, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 8:21 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. Neary Building Committee Agenda December 5, 2024
2. Neary Building Committee Meeting Minutes of November 21, 2024
3. NBC Arrowstreet Presentation dated December 6, 2024

INCENTIVES

	Technology	Estimated Construction Cost	Rate [1]	Estimated Incentive
Sec 48 Alternative Energy Investment Tax Credit	**Solar, Wind**	TBD	25.5%	TBD
	Ground Source Heat Pump	$12,895,529	34%	$4,384,480
Mass Save	**Path 1**			$1,334,192
Utility EV Program [2]	**EV charging**	TBD	TBD	TBD
MA EVIP Public Access [2]	**EV charging** (max $50,000)	$200,000	100%	$50,000

$13,095,529

Construction Cost Total

$5,768,672

Potential Incentive Total

$7,326,857

w/ Incentive

1. Assumed using tax-exempt bonds

2. Assumes supplying 10 EVSE

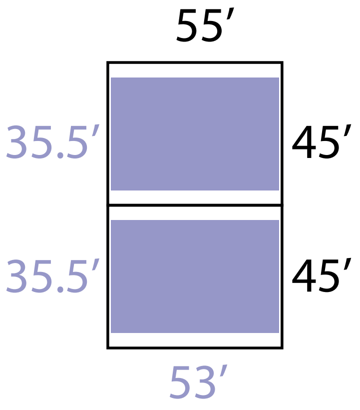
Notes: Cost of GSHP and EV updated to PM&C 8/6/24 estimate. Mass Save updated to reflect tonnage in GGD narrative.

GYM SIZE COMPARISON

Neary School

Area
2,500 sqft
2,500 sqft

Dimension
Space: 55’ x 45’
Court: 53’ x 35.5’
Bleacher: None

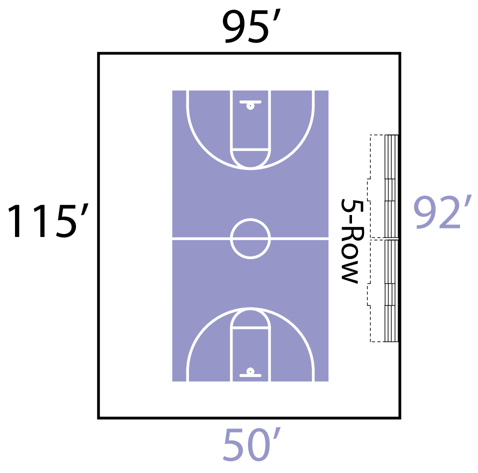


(Proposed)

Finn School

Area
11,000 sqft

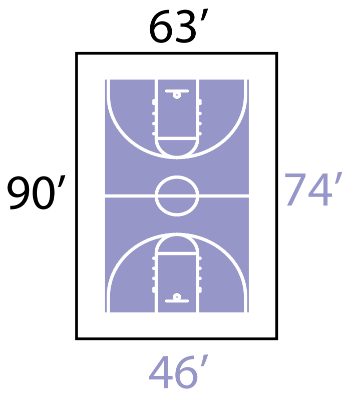
Dimension
Space: 115’ x 95’
Court: 92’x 50’
Bleacher: 5 Rows



Woodward School

Area
5,700 sqft

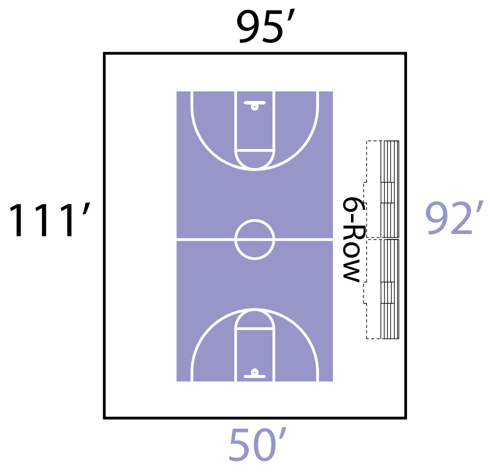
Dimension
Space: 90’ x 63’
Court: 74’ x 46’
Bleacher: None



Trottier School

Area
10,500 sqft

Dimension
Space: 111’ x 95’
Court: 92’ x 50’
Bleacher: 6 Rows



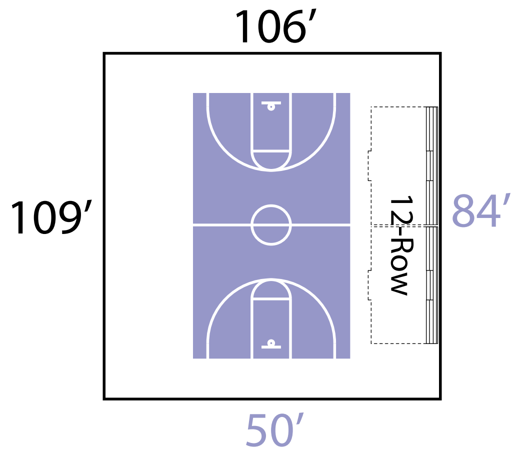
Algonquin

Area
Gym A: 11,550 sqft
Gym B: 11,550 sqft

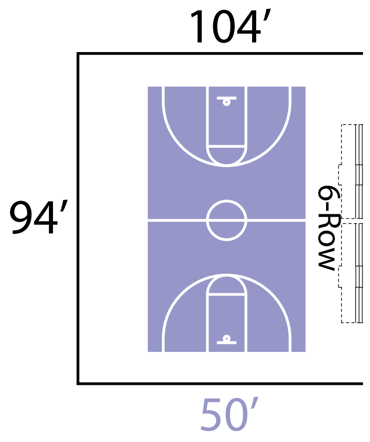
Dimension
Space: 109’ x 106’
Court: 84’ x 50’
Bleacher: 12 Rows

Area
Gym C: 9,775 sqft

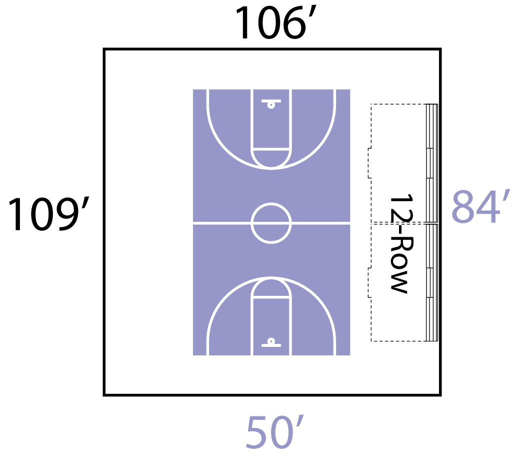
Dimension
Space: 104’ x 94’
Court: 84’ x 50’
Bleacher: 6 Rows



Gym A



Gym C



Gym B

FLOOR PLAN UPDATES

FIRST FLOOR

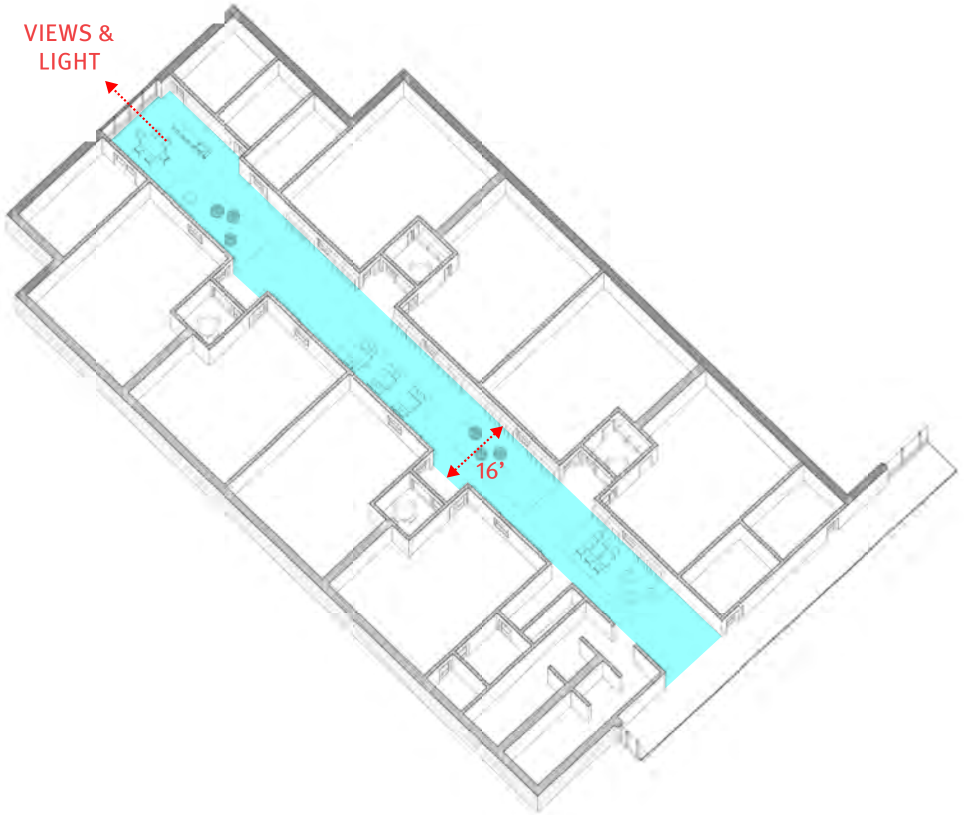
- FLOOR PLAN DEVELOPMENT
- ELEVATOR LOCATION
- DISCUSS OFFICE FOR SPEECH & LANGUAGE
- FRONT ENTRY LAYOUT IS ONGOING

FLOOR PLAN UPDATES

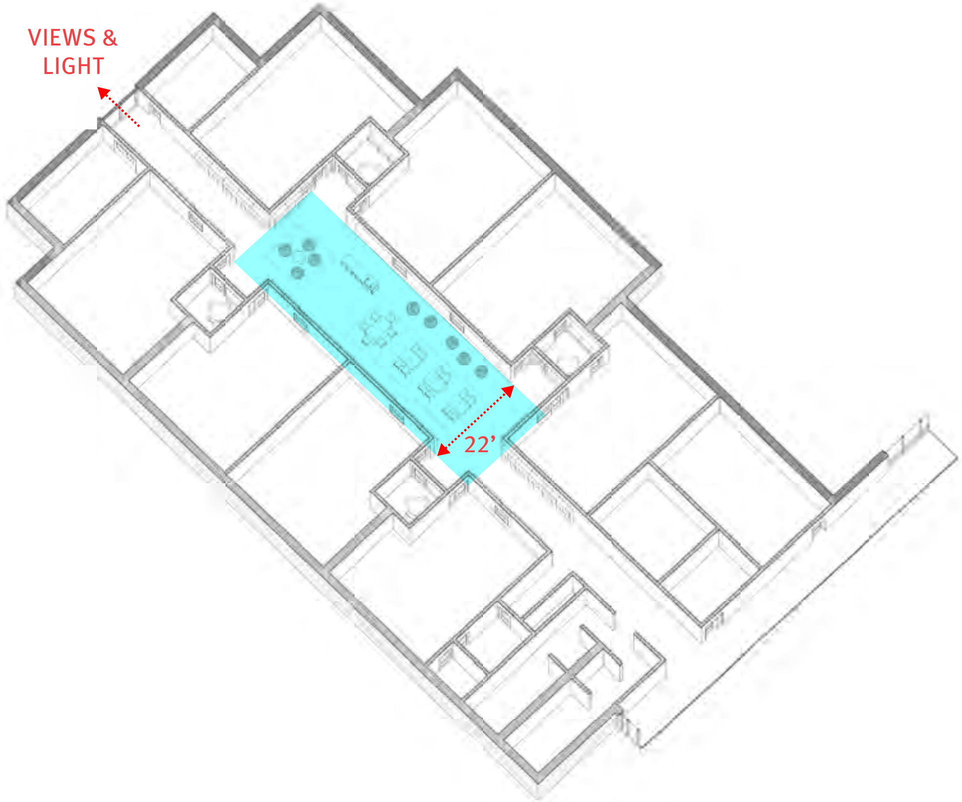
SECOND FLOOR

- FLOOR PLAN DEVELOPMENT
- ELEVATOR LOCATION

LEARNING COMMONS STUDIES



CONTINUOUS WIDTH



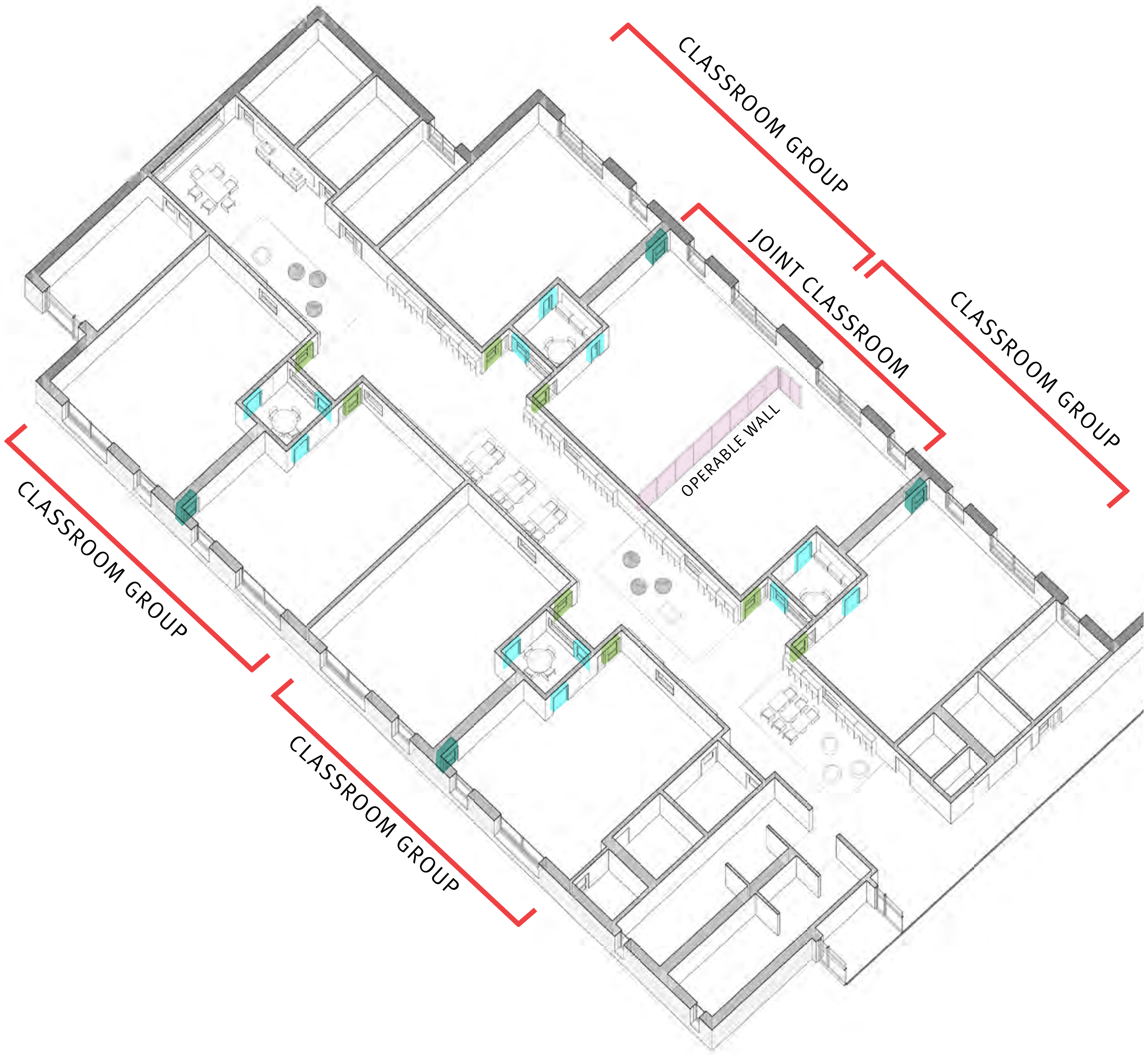
CENTERED

- **77.1% PREFER** THE CONTINUOUS WIDTH LAYOUT OF THE LEARNING COMMONS
- **54% PREFER** THE CUBBIES TO BE LOCATED IN THE LEARNING COMMONS

TYPICAL CLASSROOM STUDIES

DOORS & ACCESS

CLASSROOM CONNECTING DOORS AND OPERABLE WALLS



🟩 CLASSROOM DOORS

🟩 CONNECTING CLASSROOM DOORS

🟦 SMALL GROUP DOORS

LEARNING COMMONS STUDIES

CONTINUOUS WIDTH

INTERIOR PERSPECTIVE STUDY

LEARNING COMMONS STUDIES

CONTINUOUS WIDTH

INTERIOR PERSPECTIVE STUDY

RECEIVED
By Town Clerk/jfh at 1:30 pm, Dec 12, 2024

Town of Southborough, Massachusetts

Neary Building Committee

December 16th, 2024

7:00 PM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

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III. Approval of Open and Executive Session Meeting Minutes from August 9, 2024
IV. Community Feedback and outreach plan
V. Skanska/Arrowstreet Updates
    a. Design Review Updates
    b. Exterior of Building and Site Circulation
    c. Review of Finn School Existing Conditions and Potential Capital/Future Projects
VI. Preparation and review of slide deck for Select Board/Advisory Meeting
VII. Public Comment
VIII. Meeting Schedule
IX. Other business that may properly come before the Committee
X. Adjournment

Jason W. Malinowski, Chair

RECEIVED
By Town Clerk/amb at 4:02 pm, Feb 19, 2025

Town of Southborough, Massachusetts

Neary Building Committee

December 16th, 2024

7:00 PM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Denise Eddy, Kathryn Cook, Andrew Pfaff, Mark Davis, and Jason Malinowski

Members Absent: Chris Evers

Ex-Officio

Members Present: Gregory Martineau Superintendent of Schools, Keith Lavoie Assistant Superintendent of Operations, Rebecca Pellegrino, Assistant Superintendent of Finance, and Mark Purple, Town Administrator

Members Absent: Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, Kathleen Valenti, Neary School Principal, Steven Mucci, Principal of Woodward School, and Brian Ballantine Town Treasurer/ Finance Director

I. Call Meeting to Order

Jason Malinowski called the Neary Building Committee meeting to order at 7:02 pm.

II. Approval of Meeting Minutes from December 5, 2024

Jason Malinowski asked for a discussion and a vote.

MOTION TO APPROVE MEETING MINUTES

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "To approve the December 5th meeting minutes as presented."

Roll Call
For: Mark Davis, Roger Challen, Andrew Pfaff, and Jason Malinowski
Opposed: None
Abstained: None

III. Approval of Open and Executive Session Meeting Minutes from August 9, 2024

The Committee did not take a vote on the Open and Executive Session Meeting Minutes from August 9, 2024.

IV. Community Feedback and outreach plan

The Communications Subcommittee has been meeting after each full Neary Building Committee meeting. They will convene again tonight, primarily clarifying the project's purpose (the why) and improving the messaging surrounding it and its details. Jason Malinowski and Superintendent Martineau are organizing a film series with SAM, and they will hold their first session during the upcoming week, focusing on topics related to frequently asked questions. Additionally, the Subcommittee plans to schedule open office hours and specific user group meetings starting in January.

V. Skanska/Arrowstreet Updates

a. Design Review Updates

Katy Lillich from Arrowstreet shared the site plan developed by Arrowstreet's landscape architects. They met with the Design Committee on December 12, 2024, to gather faculty and administration feedback on the site plan. Key updates included relocating the entry drive due to the town-owned soccer field, adding parking near the soccer field, redesigning the parent drop-off area for improved safety, and creating informal play spaces.

The administrative offices were adjusted to create a more welcoming entrance, and the nurse’s office was placed near the gym for easy access during student pickups and administration needs. The gym design features standard courts, bleachers for 225 people, and cross-court practice areas. Katy noted that most mechanical and electrical spaces have been moved to the second floor, with the sprinkler room remaining on the first floor. This change helps reduce the overall footprint of the building.

A second art room was added to accommodate scheduling needs, and this addition is the only incremental change being considered, as all other spaces have been thoroughly reviewed with no further due diligence required. Having an additional art room of 1,000 square feet puts a $921,000 cost increase and then tacking on 20% for soft cost, totaling between $1.25 million. Since it is Massachusetts School Building Authority reimbursable, Southborough’s share would be 28%. The Committee has agreed to hold off on the additional art room until they have a better understanding of the cost increase and total.

The total square footage of the project is currently 99,564 square feet. The Committee plans to conduct a new cost estimation process in January and February.

b. Exterior of Building and Site Circulation

Katy Lillich mentioned that the Arrowstreet team, after discussing with the educators, is considering masonry as a durable and cost-effective material. Katy also noted that during the construction period, the soccer field will be fenced off to keep it usable. Additionally, there will need to be a conversation with the contractor regarding parking arrangements. Mark Davis expressed his ongoing concerns about the proximity of the soccer field to the landfill and believes it should be relocated.

c. Review of Finn School's Existing Conditions and Potential Capital/Future Projects

Jason Malinowski wants to ensure there is general agreement on any presentations related to the items that need to be addressed for Finn School, regardless of its future use. He believes this should be part of the overall capital planning process, including identifying the incremental items necessary to maintain the building as a school into the future.

Katy Lillich and the Arrowstreet team conducted a walkthrough to identify the necessary items for Finn School, focusing on both maintenance needs for municipal use and other non-school purposes. Finn School, which is 24 years old, has significant leaks and moisture issues in the floor slabs that are affecting air quality and contributing to mold growth.

Repairing or replacing the roof is essential. Additionally, necessary accessibility upgrades must be made, particularly in the bathrooms, which require proper turning radiuses, grab bars, and adequate door clearances. Fire extinguisher cabinets should also be mounted at appropriate heights.

Exterior upgrades to the building include insulating the walls and roof in accordance with the new energy codes, as well as repairing the paving and sidewalks. Superintendent Martineau mentioned that the District has cost estimates for replacing the flooring and installing the proper vapor barrier, and he will provide these estimates to Jason. The estimated cost for the roof, which is part of the town's Capital Plan regardless of its future use, is as follows: a restoration option at $2.1 million with a 20-year warranty, and a replacement option at $4.2 million, which includes a 30-year watertight warranty and a 40-year watertight warranty as well.

VI. Preparation and review of slide deck for Select Board/Advisory Meeting

Mark Davis has been appointed as the spokesperson for the Neary Building Committee regarding landfill issues related to the current and upcoming building project, during the Select Board and Advisory Meeting on December 17, 2024. The Finance Subcommittee will lead the discussion on costs and their implications. The School Administration will discuss the educational benefits of the projects. Additionally, Jason Malinowski will explain the process, including the timeline provided by the Massachusetts School Building Authority.

VII. Public Comment (None at this time)

VIII. Meeting Schedule

Jim Burrows, Project Manager at Skanska, shared the meeting schedule for January and February with the Committee. The final NBC meeting is set for January 6, 2025, just before the information is sent to the estimators on January 13, 2025. After that, there will be a waiting period for the results. Jim will also work on a tentative calendar for February to provide to the Committee.

IX. Other business that may properly come before the Committee (None at this time)

X. Adjournment

Jason Malinowski requested a motion to adjourn.

MOTION TO ADJOURN

Jason Malinowski moved, Denise Eddy seconded, and it was unanimously voted by roll call, "To adjourn."

<u>Roll Call</u>
For: Denise Eddy, Kathryn Cook, Mark Davis, Andrew Pfaff, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 8:47 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. Neary Building Committee Agenda December 16, 2024
2. Neary Building Committee Meeting Minutes of December 5, 2024
3. NBC Meeting Materials dated December 16, 2024
4. 240812 Finn Existing Conditions
5. Finn Elementary School Summary
6. NBC Presentation to Southborough and Advisory Committee for November 17, 2024

SKANSKA

ARROWSTREET
ARCHITECTURE & DESIGN

Neary Elementary School Building Project

School Building Committee
December 16, 2024 Meeting

Town of Southborough
Margaret A. Neary School Project
Budget Report
12/10/2024

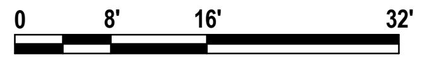
PROJECT BUDGET - CATEGORY	MSBA Cost Code	Feasibility Budget	Budget Revision Request (BRR)	Revised Budget	Committed (A)	Expended (B)	Balance Remaining Committed (A)	Balance Remaining Expended (B)
Feasibility Study Agreement								
OPM Feasibility Study	*0001-0000*	200,000	38,120	238,120	238,120	141,900	0	96,220
A&E Feasibility Study	*0002-0000*	600,000	(3,200)	596,800	596,000	333,500	800	263,300
Environmental & Site	*0003-0000*	100,000	4,898	104,898	104,898	74,913	0	29,985
Other	*0004-0000*	50,000	(39,818)	10,182	8,665	6,594	1,517	3,588
Feasibility Study Agreement Subtotal		**$950,000**	**$0**	**$950,000**	**$947,683**	**$556,907**	**$2,317**	**$393,093**
		Percentage			**100%**	**59%**		

MSBA Reimbursement Summary	
No. of Payment Request Submitted to date	5
Amount Submitted to date	**$414,780**
No. of Payment Request Reviewed by MSBA to date	4
Amount Reimbursed by MSBA to date	**$106,307**

Contracts Summary	
Skanska	**$238,120**
Arrowstreet	**$702,168**
Basic Services	$596,000
Amendment 1	$101,698
Amendment 1: Green International Affiliates	$3,200
Amendment 1: Peer Associates Add Services	$1,270
Two by Sixteen (website design)	**$7,000**

Budget Revision Request (BRR)

BRR No. 1 (forthcoming)			
From Category	**Amount**	**To Category**	**Amount**
Other	($38,120)	OPM Feasibility Study	$38,120
Other	($1,698)	Environmental & Site	$1,698
A&E Feasibility Study	($3,200)	Environmental & Site	$3,200
Total	($43,018)		$43,018



ARROWSTREET NEARY ELEMENTARY SCHOOL 53 PARKERVILLE RD, SOUTHBOROUGH, MA, 01772 // 23072.00

LEVEL 1 PLAN - Option 2 // 12/11/24

0 8' 16' 32'

1 LEVEL 2 FLOOR PLAN

1/16" = 1'-0"

EXTERIOR MATERIALS

PRECEDENT IMAGES

CONNECT MAJOR SPACES (CAFETERIA), TO OUTDOOR LEARNING AREAS

GLAZED CIRCULATION SPINE ACTIVATES COURTYARD

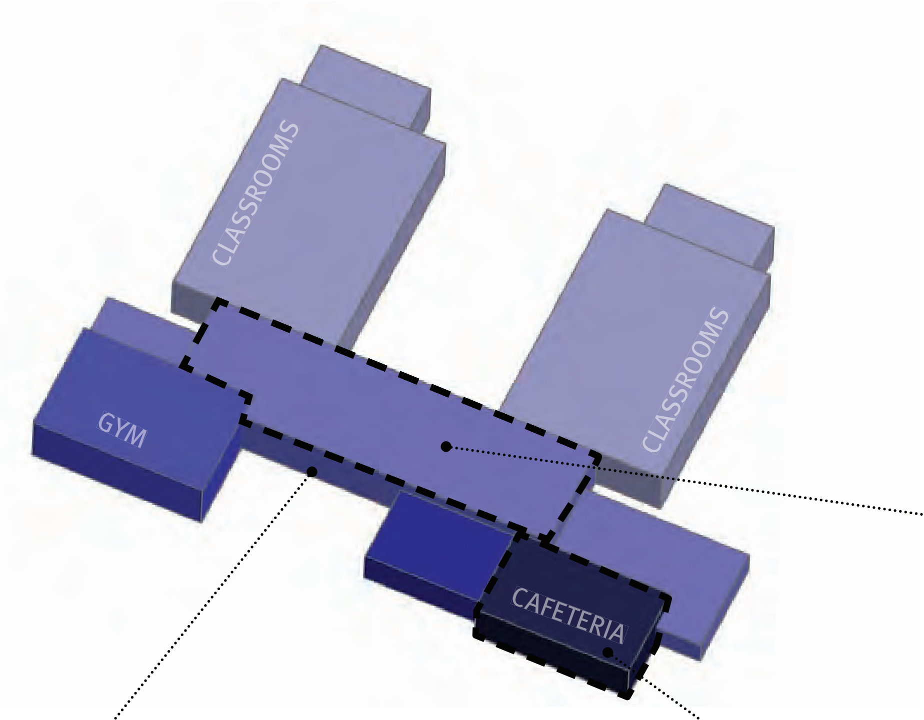
MASONRY DETAIL & A VARIETY OF MATERIALS ADD VISUAL INTEREST

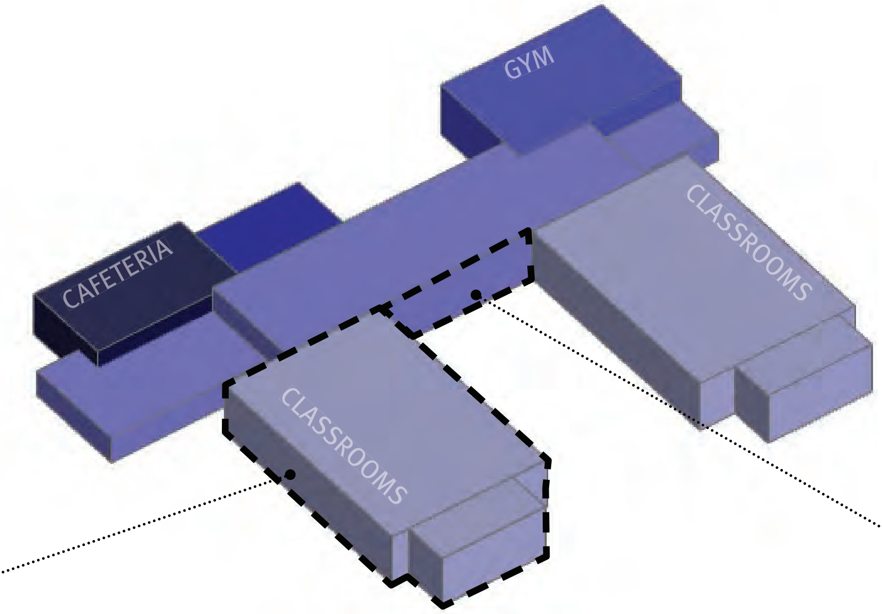
SIMPLE BUILDING MASSING

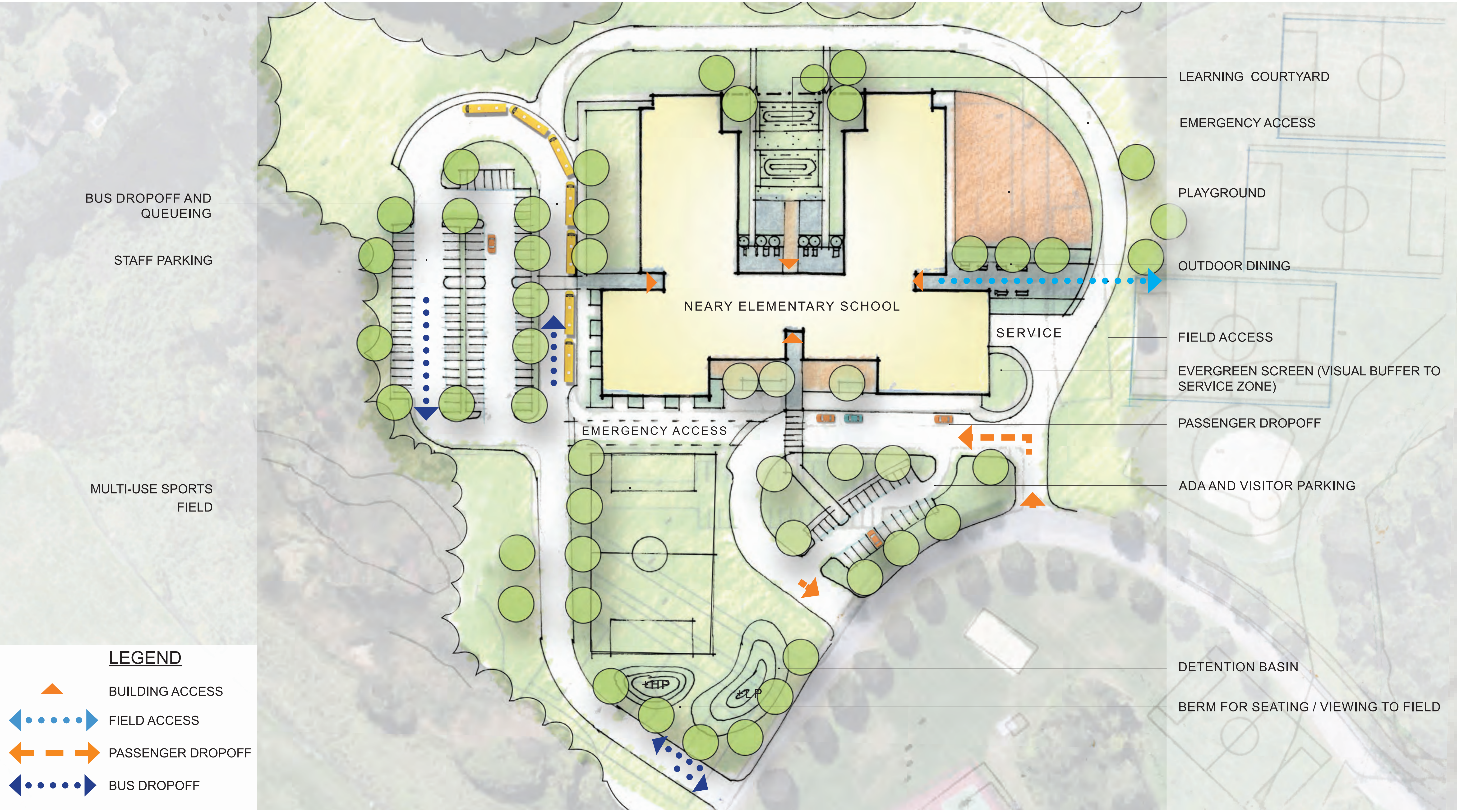
MASONRY DETAILS & PATTERNS ENLIVEN FACADE

EXTERIOR MATERIALS

PRECEDENT MATERIALS & WINDOW TYPES







terraink
landscape architecture

MARGARET A. NEARY ELEMENTARY SCHOOL | SITE CONCEPT

OPTION A

NOT TO SCALE. ILLUSTRATIVE IMAGERY FOR TEAM COORDINATION . NOT FOR CONSTRUCTION

NORTH

Southborough . Massachusetts
Schematic Design
December 2024

Mary E Finn Elementary

Base Repair Improvements

At a minimum, future improvements to the Finn School would entail bringing the building up to current building, energy and accessibility codes. For the purposes of this evaluation, no educational program changes are included, similar to the Base Repair scenario studied in greater detail for the Neary School.

Anticipated Scope of Work

The scope of work required for a Base Repair scenario would include the following:

- Code Upgrades
    - Fire suppression (sprinkler) system
    - New addressable Fire Alarm system
    - New illuminated exit signage and code signage
    - New life safety lighting, interior and exterior
- Accessibility upgrades
    - Entry ramps
    - Accessible pathways
    - New door hardware throughout and reconfiguration as required for clearances
    - New drinking fountains
    - Toilet room upgrades, including new partitions and all new accessible, high efficiency fixtures
    - Casework corrections for height, knee clearance, etc.
- Asbestos remediation at the following (per 2023 AHERA Report for NSBoro Public Schools):
    - Sealant at all exterior windows and doors
    - Sealant at gypsum board
    - Original ceramic floor tile grout and thin set.
    - Mastic at replaced floor tiles
    - Vibration dampers at ductwork.
    - Transite panels at classroom radiators.
    - Tectum panels in gymnasium.
    - Mastic on ductwork.
    - Flue packing in boiler room.
    - Caulking / sealant at back of boilers
    - Firestopping at walls, above ceilings.
- Energy code upgrades
    - New roofing throughout, including new insulation to meet current energy code. It is anticipated that additional insulation would not trigger a load in excess of 5% of the existing load, subject to further evaluation
    - New insulated exterior walls, including smart vapor retarder, insulation, and interior finish on existing to remain walls to meet current Energy Code
    - New triple-glazed thermally broken aluminum windows in existing rough openings
- Replace existing mechanical system to provide improved efficiency, distribution and ventilation to all educational spaces. System to be energy performance air source heat pumps with heat recovery chiller.
- In addition to all new plumbing fixtures and drinking fountains for accessibility upgrades, replace all domestic water piping and provide new shut off valves (Note, this may not be required pending further investigation of the condition of existing piping)
- New hot water heaters
- New security system, including door contacts
- New exterior doors, hardware, and weather stripping - including card readers to tie into new security system
- New master time clock system
- New speaker and public address system
- New electrical system, including new panels, distribution, lighting & controls with automatic dimming, and devices

Gymnasium

Library

- New automatic transfer switches and panel boards for life safety systems
- Install additional power outlets to serve the needs of modern school technology and alleviate unsafe conditions with power strips
- Install additional data outlets
- Repair and cleaning of exterior walls, including re-pointing, new fascia, and flashing repairs
- Abatement of hazardous materials
- New interior finishes, including new flooring, wall tile, paint, and ACT ceilings
- Resurfacing of bus loops, parking areas and sidewalks, including accessibility upgrades as described in Accessibility Report.

Kitchen

Typical corridor

Cafeteria

Stage

Ceiling damaged by roof leak

Window a/c units recently added to address moisture issues

Floor tiles curling from moisture below

Exterior doors in need of repair

Exterior at Library/Media Center

Play area

Images (clockwise from upper left): Exterior doors, entry vestibule at gymnasium, loading dock, typical brick wall with damaged vent to crawl space, and downspout.

Finn Elementary School

Constructed in 1965.

Renovated in 2000 (funds were approved in 1996, construction began 1998)

- windows
- roof
- doors (exterior) rusting at threshold
- Kitchen equipment (funded through the State)
- 4 Air Handlers

Recent repairs:

- Boilers replaced within the past 4 years.   (Previously fuel oil, with original tank underground).
- New RTU at Admin area.

Current repair needs:

- Code upgrades
- Accessibility upgrades
- Asbestos remediation
- Energy code upgrades
- Roof requires constant patching (leaking at lap seams)
- Moisture is coming up through the floor slab and wicking into interior walls, creating mold. Window ac's were installed in April to combat moisture.
- Upgrade mechanical system (Building Systems hardware updated 12-13 years ago)
- Replace
    - Hot water heaters
    - Security system (incl door contacts)
    - Exterior doors, electronic hardware
    - Master clock system
    - Electrical system
- Update finishes, flooring and lighting
- Repair and clean exterior masonry
- Resurface bus loop, parking areas, sidewalks (including accessibility upgrades)

December

1	2	3	4	5	6	7
				NBC		
8	9	10	11	12	13	14
15	16	17	18	19	20	21
	NBC					
22	23	24	25	26	27	28
			Christmas			
29	30	31				

January

			1	2	3	4
			New Years Day			
5	6	7	8	9	10	11
	NBC					
12	13	14	15	16	17	18
	Send Package to Estimator					
19	20	21	22	23	24	25
26	27	28	29	30	31	

February

						1
2	3	4	5	6	7	8
					NBC	
9	10	11	12	13	14	15
16	17	18	19	20	21	22
	NBC Approve SD Submittal					
23	24	25	26	27	28	
		Submit to MSBA & DESE				

Mary E Finn Elementary

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- Replace
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    - Security system (incl door contacts)
    - Exterior doors, electronic hardware
    - Master clock system
    - Electrical system
- Update finishes, flooring and lighting
- Repair and clean exterior masonry
- Resurface bus loop, parking areas, sidewalks (including accessibility upgrades)

RECEIVED
By Town Clerk/jfh at 11:15 am, Dec 13, 2024

Town of Southborough, Massachusetts

Neary Building Committee

December 17, 2024 7:00 PM

McAuliffe Hearing Room Town House, 17 Common Street, Southborough, MA

Those wishing to watch or participate remotely can do so by accessing the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order
II. Joint Meeting with Select Board, Advisory, and Capital to provide project update presentation
III. Other business that may properly come before the Committee
IV. Adjournment

Jason W. Malinowski, Chair

RECEIVED
By Town Clerk/amb at 4:38 pm, Feb 19, 2025

Town of Southborough, Massachusetts

Neary Building Committee

December 17, 2024 7:00 PM

McAuliffe Hearing Room Town House, 17 Common Street, Southborough, MA

Neary Building Committee:

Members Present: Roger Challen, Mark Davis, Denise Eddy, Andrew Pfaff, Kathryn Cook, and Jason Malinowski

Members Absent: Chris Evers

Ex-Officio

Members Present: Gregory Martineau Superintendent of Schools, Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, Keith Lavoie Assistant Superintendent of Operations, Rebecca Pellegrino, Assistant Superintendent of Finance, Mark Purple, Town Administrator, and Brian Ballantine Town Treasurer/ Finance Director

Members Absent: Kathleen Valenti, Neary School Principal, and Steven Mucci, Principal of Woodward School

I. Call Meeting to Order

Jason Malinowski called the Neary Building Committee meeting to order at 7:07 pm.

II. Joint Meeting with Select Board, Advisory, and Capital to provide project update presentation

This excerpt of the Select Board-approved meeting minutes from December 17, 2024, is fully credited to Bridgid Rubin, Recording Secretary.

"Mr. Andrew Pfaff called the Advisory Committee meeting to order at 7:07 PM. Members present: Andrew Pfaff, Marci Jones Salow, Howard Rose, Barry Rubenstein and Larry Samberg. Present via ZOOM: Tim Martel and Adam Nodiff.

Mr. Jason Malinowski, Chair of the Neary Building Committee (NBC), called the NBC meeting to order at 7:07 PM. Members present: Jason Malinowski, Roger Challen, Denise Eddy, Kathy Cook, Andrew Pfaff and Mark Davis. Absent: Chris Evers. Ex-Officio members present: Brian Ballantine, Keith LaVoie, Greg Martineau, Rebecca Pellegrino, Mark Purple and Stephanie Reinhorn. Absent: Steve Mucci and Kathleen Valenti. Also present was Jim Burrows from Skanska, as Owner's Project Manager (OPM) and Kate Bubriski, Larry Spang and Katy Lillich, all from Arrowstreet, as Project Designer.

Ms. Chelsea Malinowski, Chair of the School Committee, called the School Committee meeting to order at 7:09 PM. Members present: Roger Challen. Members present via ZOOM: Chelsea Malinowski and Laura Kauffmann.

Ms. Cook explained that tonight's discussion would cover four areas: 1) the process; 2) the site; 3) educational benefits; and 4) finances. Additionally, she stated that DPW Superintendent Bill Cundiff and Tim Thies from Pare Engineering, the Town's water consultant, were present. She also stated that public comment would take place after the project presentation and the Capital Improvement & Planning Committee's presentation, as they are interrelated.

Neary Building Committee – Project presentation
The Process: Mr. Malinowski shared the Neary Building Project Overview with the Board, Advisory Committee and public. He described the Massachusetts School Building Authority (MSBA) process and stated that the NBC considered a base repair of the current building, along with twelve other options. Mr. Malinowski shared that the NBC focused its efforts on three options: Option 1: Base repair of current building; $64 million dollars – grades 4 and 5; Option 2: Addition/renovation – grades 2-5; and Option 3: New Construction – grades 2-5. He stated the NBC is recommending Option 3. Mr. Rubenstein asked what the greatest unknown is with Option 3. Mr. Spang stated that the soil/site is the greatest unknown for option 3. Ms. Jones Salow asked what the reimbursement rate would be for Option 1. Mr. Burrows stated the State reimbursement number would be approximately 27%. She asked if enrollment projections support building a new school. Superintendent Martineau stated that, for the next ten years, Southborough's enrollment numbers plateau but do not decrease. The Site: Mr. Theis, whose firm has been monitoring the landfill for the last five years, described the history and current status of the landfill. He stated that, at this time, the landfill appears to be very stable. Ms. Cook asked how Neary School came to be built near the landfill. Mr. Mark Davis stated that the site was donated to the Town. Mr. Malinowski clarified that the soil in the landfill is not structurally stable and so it was determined that the school should be built on the site of the current Neary School. Mr. Spang stated that a vapor remediation system would be part of the project design for mitigation. Mr. Davis stated he was comfortable with the project design relative to the landfill and soil mitigation. He suggested that three additional testing wells be installed next to the school to provide comparison monitoring with existing wells around the site. Superintendent Cundiff stated that he believes the gas issue has been addressed. Additionally, he believes the ground water issue has been addressed, as the new school's water is supplied from the MWRA. Mr. Hamilton asked about the extent of the groundwater contamination. Mr. Theis stated that mapping has not occurred beyond the landfill wells. Ms. Landry asked about the life span of a vapor barrier. Mr. Spang stated that he would investigate and provide an answer to the question. Ms. Jones Salow asked if the current school is built on a slab and has there been any evidence of groundwater infiltration. Mr. Spang stated that the current school is built on a slab and the proposed school would be, as well. He stated that there has been no evidence of groundwater infiltration. Mr. Samberg asked if there was any data on the long-term behavior of capped landfills. Mr. Theis stated that the practice of capping has been used for approximately 30 years, the age of the landfill being discussed. He added that decomposition slows over time.

Educational Benefits: Superintendent Martineau stated that the proposed building is designed for 50 years of use. He also stated that district educators worked with stakeholders to develop the educational plan during the feasibility phase and noted that *the educational plan drives the design of the proposed new building. Superintendent Martineau, Dr. Reinhorn, Ms. Pellegrino and Mr. LaVoie presented the educational plan and its benefits. Superintendent Martineau shared the design plan of the building. Mr. LaVoie shared the preliminary relocation plan while the new building is under construction. Mr. Hamilton challenged the NBC to provide clear data related to the cost savings to the Town. Ms. Jones Salow asked what spaces would be available for public use during evenings and weekends. Superintendent Martineau stated that the gymnasium and cafetorium would be available for public use during evenings and weekends. Mr. Rose asked that opportunities for reconfiguration be considered in the design process. Mr. Samberg echoed Mr. Hamilton's comments on costs. Mr. Samberg also asked about the square foot/per student cost and how it compares to schools of similar size built in the State. Mr. Pfaff stated he would share that information with Mr. Samberg and noted that while the cost is on the higher side, it is not the highest in the State. Mr. Nodiff recommended that the NBC provide greater detail on the sustainability aspects of the project. Mr. Nodiff also asked why there was no auditorium in the proposed project. Mr. Pfaff stated that auditoriums are not reimbursable by the MSBA program.*

The Board recessed at 8:57 PM and resumed meeting at 9:08 PM.

Finances: Ms. Cook stated that the total project cost is estimated to be $113.6 million dollars. She stated the State reimbursement is expected to be $31.8 million dollars, leaving the total cost to Southborough at $81.8 million dollars. She stated that the cost per square foot to build the school is $1,140 dollars and the tax increase for a home valued at $900,000 is expected to be $1,207 dollars per year. Ms. Cook stated that on April 30, 2025 the MSBA would make its decision to approve the project. Ms. Cook stated that two votes are required: May 10, 2025 (Special Town Meeting vote) and May 13, 2025 (Town ballot question vote). Mr. Burrows stated that costs would be re-evaluated to see if any further savings could be achieved prior to the final submission to the MSBA. Mr. Pfaff added that the Committee continues to research any available grants to further reduce the cost of the project. Mr. Samberg asked if this amount of debt could affect the Town's bond rating. Mr. Pfaff replied that it could. Mr. Rose asked about the percentage of contingency costs in the project. Mr. Burrows stated that the contingency for construction costs is 2.5% and the contingency for soft costs is 1.5%. Mr. Rose asked about LEED certification. Ms. Bubriski stated that the project is being designed to capture the maximum reimbursement from the State regarding LEED certification, net-zero design and air quality. Ms. Jones Salow asked about the reimbursement rate for Option #2. Mr. Burrows stated that Option 2 does not have a 39% reimbursement rate, adding that all project costs would need to be evaluated to determine the reimbursement rate. Mr. Hamilton stated that his primary concerns are the following: the impact of the project on seniors, the impact to the Town's finances and the risks associated with interest rates and potential tariff rates. Mr. Dennington asked what would happen if Town Meeting does not approve the project. Mr. Malinowski stated that funding must be secured within 180 days of the MSBA approval on April 30, 2025 and he described the Town approval process.

Capital Improvement & Planning Committee – FY26 Capital recommendations Mr. Malinowski did not call a meeting to order, as a quorum was not present. He shared the

FY26 list of Capital Requests for Appropriation and stated that, for the next five years, the Town has previously approved capital debt-funded expenditures of $2-2.9 million dollars. He then shared a slide of total debt service for the next ten years, which included previously approved projects and proposed capital projects at full cost (assuming no reimbursements or other funding sources), noting the proposed list had not yet been vetted.

Ms. Betsy Rosenbloom, 5 Strawberry 159 Hill Road, asked if any additional monies are needed for Finn, other than the roof. Mr. Malinowski stated that more public input is needed to make that determination.

Ms. Patricia Burns-Fiore, 10 Winter Street, asked a series of clarifying questions about the project and the debt service information. Ms. Burns-Fiore stated that she feels her tax bracket is underrepresented in the decision-making process and she cannot afford the tax implications of this project, or other future capital projects, without an increase in the tax base.

Mr. Eric Glaser, 13 Skylar Drive, asked about the dollar per square foot for Option 2. Ms. Cook clarified that the NBC looked at both a base repair and renovation of the school. She stated that the renovation was slightly more expensive than the proposed project. Mr. Glaser asked if an application for a base repair of approximately $64 million dollars could be submitted to the MSBA. Mr. Malinowski stated that the MSBA process dictates that the current application process runs its course and stated that if the Town wanted to submit another application for the Neary School, it would be considered after other projects currently before the MSBA. Mr. Malinowski also stated that, as part of the MSBA process, several iterations of configurations were considered.

Ms. Joanne Pierson, 101 Newton Street, stated that she believes the essential question for decision-making should have been "what can people in Town afford?" She stated that she believes teachers are more important than buildings to the educational experience and she would like to see the Town pursue a school that everyone in Town can afford.

Mr. Rob Laurenson, 132 Marlborough Road, asked what happens if nothing is done. Mr. Malinowski stated that safety issues would need to be funded immediately (roof, windows, fire suppression). Ms. Cook added that the building would need to be made ADA compliant. Mr. Dennington asked about the timeline for a new MSBA application, should the Town not approve the current proposal. Mr. Malinowski stated that the timeline is approximately four years. Ms. Cook clarified that in order to receive the MSBA grant, only one project could be considered.

Mr. Tim Fling, 18 Main Street, asked if numbers could be provided for a phased approach to the necessary upgrades, should the Town vote no on the project. Mr. Malinowski stated that phasing the base repair would not address the immediate safety concerns, would ignore the educational plan and would not allow for economies of scale in savings. He stated he believes the $64 million figure is accurate for the base repair. Mr. Fling stated that he would like to see the Town increase its tax base prior to undertaking this project. Mr. Fling asked what contingencies are in place if there is an *increase in student population and how many students could be accommodated. Mr. Spang stated that classrooms could be added to the rear of the building and that the MSBA process requires that the design accommodate this possibility. He stated he would obtain the data on the number of students that could be accommodated. Mr. Malinowski stated that the contingency plan includes Woodward School.*

Ms. Kristin LaVault, 12 Southwood Drive, requested that the School Committee address teacher salaries and pay rates for substitute teachers prior to addressing building concerns.

Mr. Malinowski moved to adjourn the NBC at 10:33 PM. Mr. Challen seconded the motion. The motion was unanimously approved (6-0-0). Ms. Malinowski moved to adjourn the Southborough School Committee at 10:32 PM. Mr. Challen seconded the motion. The motion was unanimously approved (3-0-0). "

III. Other business that may properly come before the Committee (None at this time)

IV. Adjournment

Jason Malinowski requested a motion to adjourn.

MOTION TO ADJOURN

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "To adjourn."

Roll Call
For: Denise Eddy, Kathryn Cook, Mark Davis, Andrew Pfaff, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 10:33 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. Neary Building Committee Agenda of December 17, 2024
2. Neary Building Project Overview – Select Board and Advisory Update dated December 17, 2024

Neary Building Project Overview

Select Board and Advisory Update
December 17, 2024

Ivan G. Smith Elementary by Tappe Architects

Agenda


Hildreth Elementary by ARROWSTREET Architects

Process Overview to Date

Site Selection and Considerations

Benefits of a new Gr. 2-5 elementary school meets the future educational needs.

Share how the proposed design of the new school meets these needs.

Lay out our plan for consolidating the two schools in a way that's least disruptive to our community and our students.

Project Cost and Funding

Impact of Yes and No Votes

How to Stay Informed

Process

The Town of Southborough:

Embarked on the Massachusetts School Building Association's (MSBA) Core Building Program process in September of 2021, to evaluate the needs of the aging Margaret A. Neary Elementary School.

Submitted SOI to MSBA

Submitted a Statement of Interest (SOI) to MSBA in **June of 2021.**

Accepted Invitation

Accepted the MSBA Board of Directors invitation to its Core Building Program in the **spring of 2022**

Process Commenced

Began the MSBA process on **August 1, 2022.**

MSBA Overview

MSBA is a state agency that accepts a limited number of applications through a **highly competitive process each year to provide grants for the construction and renovation of public schools.**

By entering this process, the Town of Southborough stands to receive state money to help pay for the new school's construction.

For the **past 17 months**, the Neary Building Committee has been engaged in the feasibility study, preliminary design, and schematics of the plan.

Eligibility	Completed
Feasibility	Completed
Schematic Design	In Process
Funding	May 10 and May 13, 2025
Construction	2026 - 2027

Margaret A. Neary Elementary School

Existing Conditions

The current Neary facility does not have the capacity to deliver the type of programming that grants students an excellent educational experience.

Base Repair

To meet the educational programming requirements and to bring the current building to code the Base Repair cost is estimated to be $63,000,000, prior to state reimbursement.

Additional photos - Found here - Neary Existing Conditions Photos

Reviewed Options

Option 1:
New Construction
Grades 4-5 (305)

Option 2:
Add / Reno
(Grades 2-5 610)

Option 3:
New Construction
(Grades 2 -5 610)

After extensive work by the Neary Building Committee, the preferred option is a new elementary school be built to house grades two through five.

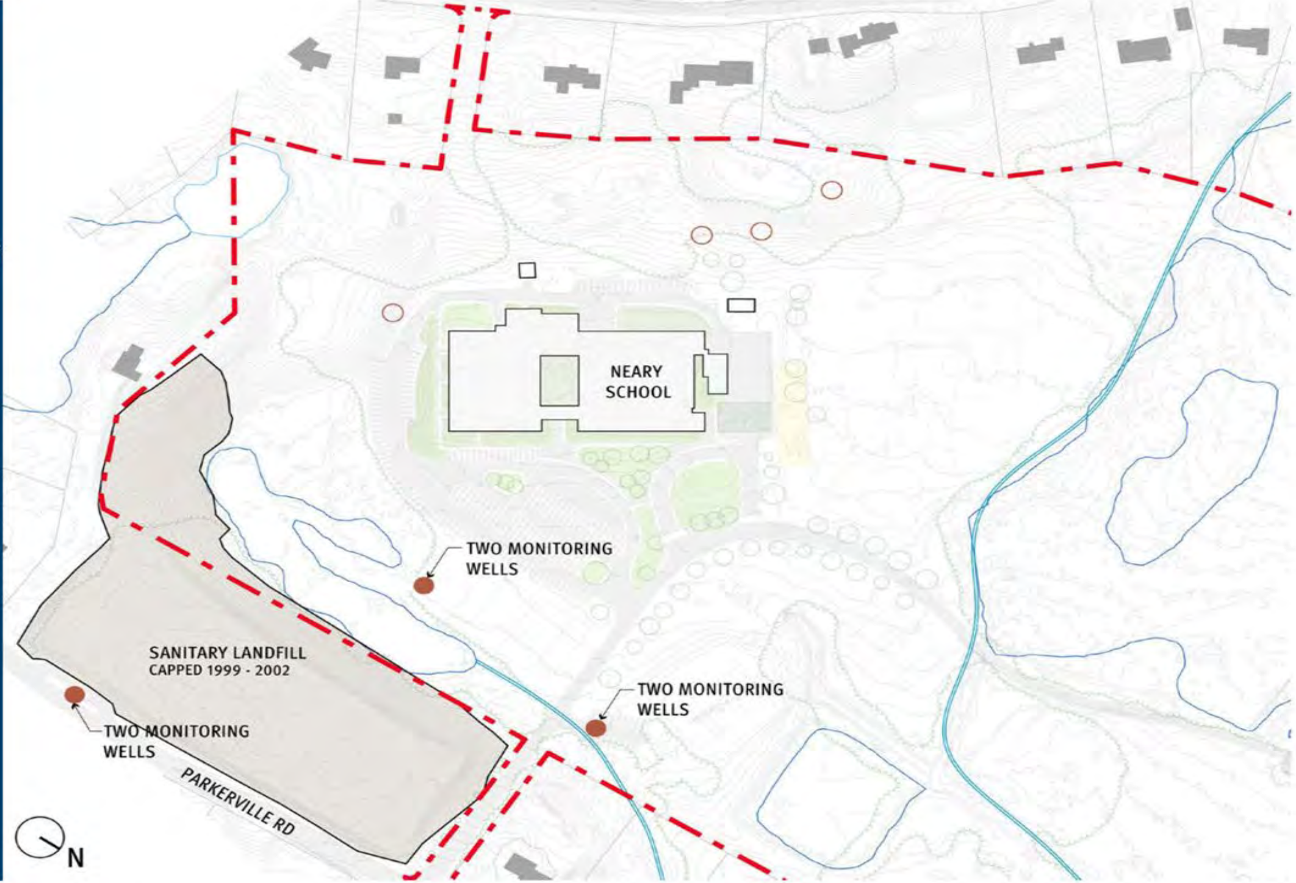
Site Selection and Considerations

LANDFILL

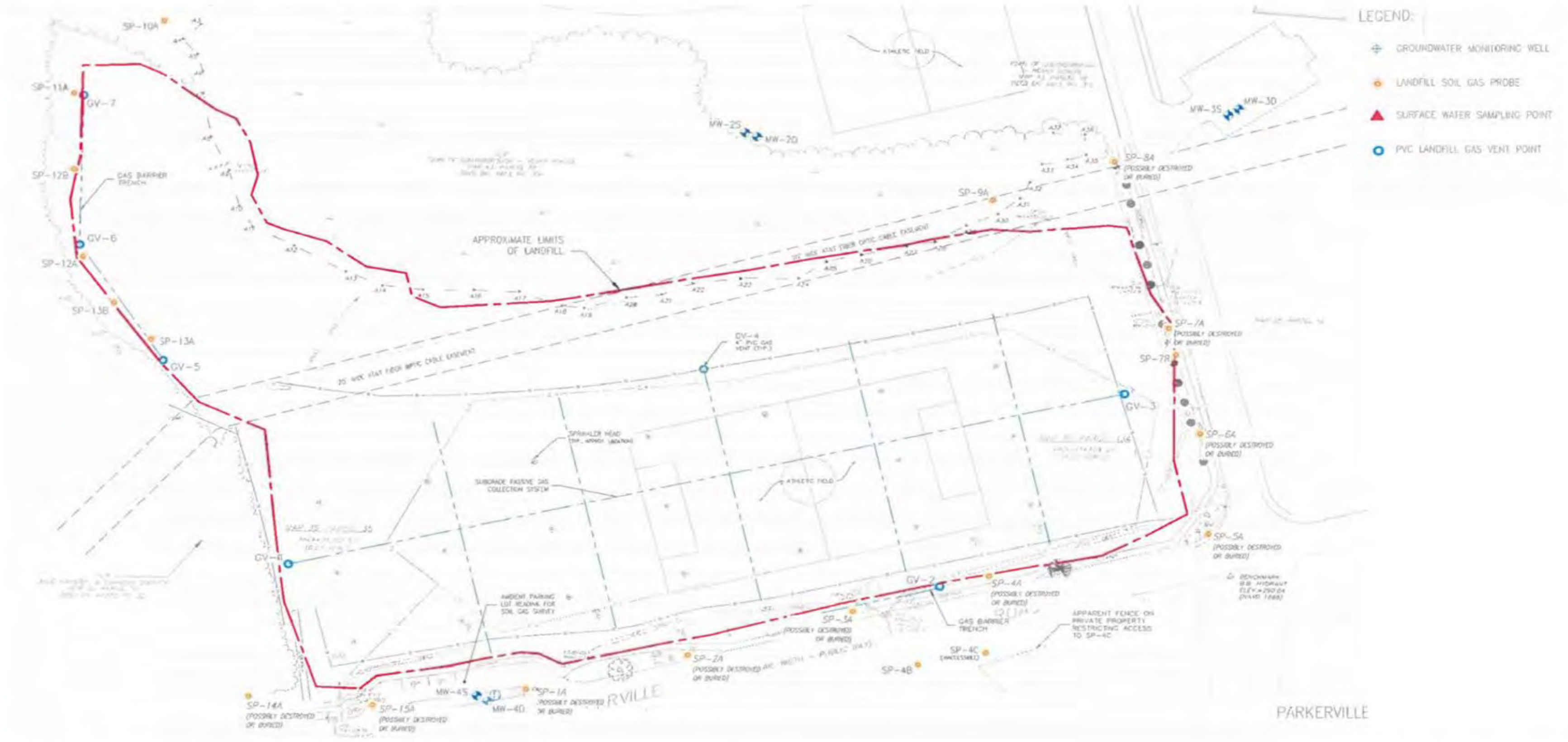
Landfill operated from the late 1930's through the mid-1970's.

The site was closed and capped between 1999 and 2002.

MassDEP performs annual sampling of surface water, groundwater, and soil gas.



LANDFILL PLAN



Benefits of a New School (Grades 2- 5)

The design is centered on the educational program vision, which aligns with the District’s strategic plan, *Vision 2026: Educate, Inspire, and Challenge*.

- Community Building
- Academic
- Social Emotional
- Operational and Leadership

Benefits of a New School (Grades 2- 5)

Community Building

Community Building
Family engagement
Multi -year relationship building
Consistent communication platforms
Established parent volunteer programs
Cultural celebrations
Parent education workshops
Reduce school transitions
School -wide positive behavior support
Common values and expectations
Traditional annual events

Staff Collaboration
Regular grade -level team meetings
Cross-grade curriculum planning
Shared best practices
Mentoring relationships between teachers
Collaborative problem -solving
Joint parent conference planning

Benefits of a New School (Grades 2- 5)

Academic

Academic Benefits

Teachers can create seamless transitions between grade levels
Easier implementation of STEM and project-based learning
Coordinated use of educational technology across grades
More flexible and inclusive learning spaces
Greater opportunities for flexible groupings and collaboration
Increased educator collaboration across grade levels
Enhanced music spaces for practice and performance

Student Growth

Long-term relationships with support staff and specialists
Consistent academic expectations
Coordinated intervention programs
Better tracking of individual student progress over multiple years
Earlier identification of learning challenges
Smoother transitions between grade levels

Benefits of a New School (Grades 2- 5)

Social Emotional

Social - Emotional Benefits

Reduced transitions for students
Greater connections and sense of belonging
Increased continuity of services and supports
Reduced Anxiety
Greater Behavioral expectations
Age-appropriate assemblies and presentations
Greater focused counseling programs
Individually tailored social skills curriculum
Appropriate peer groupings
Targeted conflict resolution strategies

Student Leadership Development

Student council opportunities
Cross-grade mentors -reading buddies, etc.

Benefits of a New School (Grades 2- 5)

Operational & Leadership

Operational

Resource management
Shared instructional materials
Maximize technology resources
Custodial resources
Simplified transportation system
Designed for energy efficiencies

Leadership Benefits

Consistent procedures for responding to student behaviors
Streamlined communication channels
Targeted professional development
Coordinated school safety
Unified school improvement planning
Focused budget allocation
Coordinated scheduling of specialists and support staff
Aligned enrichment programs
Greater flexibility in special education programming

Design

First Floor

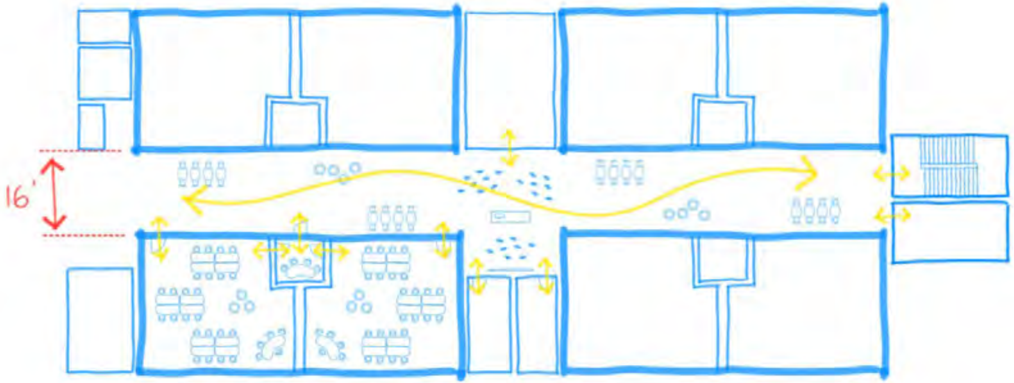
Design

Second Floor

Design

LEARNING COMMONS STUDIES

CONTINUOUS WIDTH



Relocation Plan During Construction

The goals are to ensure:

- the integrity of the grade-level experience for all students
- student safety and minimize the direct impact of construction on students, faculty, and staff
- continuity for families and students

2026-2027
Finn: Grades PreK (Sboro), Kindergarten, One, and Two
Woodward: Grades Three, Four, and Five

2027-2028
Finn: Grades PreK (Sboro), Kindergarten, One, and Two
Woodward: Grades Three, Four, and Five

2028-2029
Woodward: Grades PreK, Kindergarten, and One
New School: Grades Two - Five

Project Funding

Total Estimated Project Cost	$113.6 M
Estimated MSBA Reimbursement	($31.8 M)
Total Cost Paid by Southborough Taxpayers	$81.8 M

All amounts are estimates at this time and subject to further design modifications and additional cost estimating.

Estimated Homeowner Tax Impact

	$900K Assessed Value	**$600K Assessed Value**
Estimated Cost per Household Starting in FY 29	$1,207 annually	$811 annually

Key Votes

May 10, 2025 - 9 AM
Special Town Meeting
Two-Thirds Required for Approval

May 13, 2025
Ballot Question
Majority Vote

Impact of a Yes Vote

If voters approve the project in the town election, the MSBA project team would move forward with final design of a new elementary school, then construction with the goal of cutting the ribbon and occupying the new school in fall of 2028.

Impact of a No Vote

- Still need to immediately address the base repairs for Neary to continue to operate as a school, which have been deferred during this current process
- Educational plan would not be met
- Escalating construction costs annually far exceed cost of borrowing
- MSBA involvement would cease and any future MSBA involvement on a future project would require the filing of a new Statement of Interest by the town. 100% of these expenses would likely have to be paid with local tax dollars.

Stay Informed

- Neary Building Project Website
- Facebook
- ParentSquare
- Neary Building Committee Meetings
- Building Tours and Open Office Hours

Thank You

Questions

RECEIVED
By Town Clerk/jfh at 1:37 pm, Jan 02, 2025

Town of Southborough, Massachusetts

Neary Building Committee

January 6, 2025

7:00 PM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order
II. Approval of Meeting Minutes from December 16, 2024 and December 17, 2024
III. Approval of Open and Executive Session Meeting Minutes from August 9, 2024
IV. Community Feedback and outreach plan
V. Skanska/Arrowstreet Updates
    a. HVAC System Recommendation from Sustainability Subcommittee
    b. Design Review Update - Exterior
VI. Open Discussion on Feedback from Select Board/Advisory Meeting
VII. Public Comment
VIII. Meeting Schedule
IX. Other business that may properly come before the Committee
X. Adjournment

Jason W. Malinowski, Chair

Town of Southborough, Massachusetts

Neary Building Committee

January 6, 2025

7:00 PM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Kathryn Cook, Andrew Pfaff, Chris Evers and Jason Malinowski

Members Absent: Mark Davis, and Denise Eddy

Ex-Officio

Members Present: Keith Lavoie Assistant Superintendent of Operations, Steven Mucci, Principal of Woodward School, and Mark Purple, Town Administrator

Members Absent: Gregory Martineau Superintendent of Schools, Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, Rebecca Pellegrino, Assistant Superintendent of Finance, Kathleen Valenti, Neary School Principal, and Brian Ballantine Town Treasurer/ Finance Director

I. Call Meeting to Order
   Jason Malinowski called the Neary Building Committee meeting to order at 7:08 pm.

II. Approval of Meeting Minutes from December 16, 2024 and December 17, 2024
   The Committee will vote on the meeting minutes at a later meeting.

III. Approval of Open and Executive Session Meeting Minutes from August 9, 2024
   Jason Malinowski asked for a discussion and a vote.

Jason Malinowski moved, Denise Eddy seconded, and it was unanimously voted by roll call, "To approve and release the open session meeting minutes from August 9, 2024 AM meeting and to approve the executive session minutes to retain."

MOTION TO APPROVE OPEN AND EXECUTIVE MEETING MINUTES

Roll Call
For: Kathryn Cook, Roger Challen, Andrew Pfaff, and Jason Malinowski
Opposed: None
Abstained: None

IV. Community Feedback and outreach plan

Jason Malinowski mentioned that over the past couple of weeks, they have conducted a series of tapings in collaboration with Southborough Access Media (SAM) at their studio. This includes segments of the NBC presentations along with a voiceover by Jason and the school administration team for the presentation made to the Select Board and Advisory during the meeting on December 17, 2024. Superintendent Martineau is currently fine-tuning that recording, and it is expected to be released to the public soon.

Moving forward, the plan is to continue recording detailed segments focusing on the key issues of the project. Jason has also scheduled office hours for January 10, 2025. The Committee has agreed to host these office hours biweekly, offering morning, evening, and weekend options.

Jason and Andrew Pfaff held a virtual meeting on January 5, 2025, for the Kinder Group and will hold a similar session on January 9, 2025.

V. Skanska/Arrowstreet Updates

a. HVAC System Recommendation from Sustainability Subcommittee

Roger Challen shared that the Sustainability Subcommittee carefully discussed options and has decided to adopt the ground source heat pump approach. This decision was based on the available incentives, anticipated future utility costs, and maintenance requirements.

Kate Bubriski from Arrowstreet reviewed the evaluation of three system options: VRF systems, ground-source heat pumps, and air-to-water heat pump chillers. The focus was on assessing energy use, costs, maintenance, and overall performance to determine the best long-term solution. Ground source and air source systems, utilizing displacement ventilation, provided superior air quality and quieter operation compared to the overhead system of the VRF option. Maintenance needs varied, with ground source systems requiring less frequent servicing, than air source systems, due to their design and indoor components. The analysis compared systems based on energy use, indoor air quality, thermal comfort, acoustics, service life, and maintenance needs.

Cost analysis indicated that ground source systems provide annual savings in operations and maintenance, and overall capital costs are lower when incentives are applied. It is the most energy-efficient option, particularly because of the energy savings and state and federal incentives that offer immediate payback.

Jason Malinowski asked for a discussion and a vote.

MOTION TO RECOMMEND A HVAC SYSTEM

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "To support option two, the ground source heat pump system."

Roll Call
For: Roger Challen, Kathryn Cook, Andrew Pfaff, Chris Evers, and Jason Malinowski
Opposed: None
Abstained: None

b. Design Review Update – Exterior

Andrew Plumb from Arrowstreet presented the updated design review to the Committee. The team focused on clarifying the relationships between the cafeteria, kitchen, stage, and music room to create an efficient and functional layout on the first floor. Following questions about the practice courts during the last NBC meeting, they added dashed lines to indicate how the gym would appear with the bleachers both pulled out and retracted. Concerns remain regarding seating space on either side of the court, and there are suggestions to compare the design with the gym plan from Marathon Elementary School for better insights.

On the second floor, there was a proposal for a second art room at the request of the District. The two art rooms would share a common space and be located on the left side of the media center. Discussion ensued about whether to proceed with one or two art rooms. Jim Burrow, Project Manager at Skanska, suggested considering the second art room as a deduct alternate when the design plan is sent to estimators.

Regarding exterior materials, the majority of the building is proposed to be masonry, with classrooms, the gym, the music room, and the cafeteria featuring a brick color palette. The design would incorporate a range of darker to lighter tones to distinguish different areas of the school. In contrast, the art and media rooms will utilize different materials, such as metal panels, to provide visual contrast with the masonry.

VI. Open Discussion on Feedback from Select Board/Advisory Meeting

Kathryn Cook expressed that, overall, she thought the Committee, consultants, and school administration did a commendable job and that the presentation was effective. The next Neary Building Committee presentation should focus on providing an update regarding the current status of the cost phase. Jason Malinowski noted that parents and guardians of school-aged students are eager to learn as much as possible about the educational benefits involved.

VII. Public Comment (None at this time)

VIII. Meeting Schedule – January 8, 2025

IX. Other business that may properly come before the Committee (None at this time)

X. Adjournment

Jason Malinowski requested a motion to adjourn.

Jason Malinowski moved, Andrew Pfaff seconded, and it was unanimously voted by roll call, "To adjourn."

MOTION TO ADJOURN

Roll Call
For: Kathryn Cook, Andrew Pfaff, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 8:33 pm.

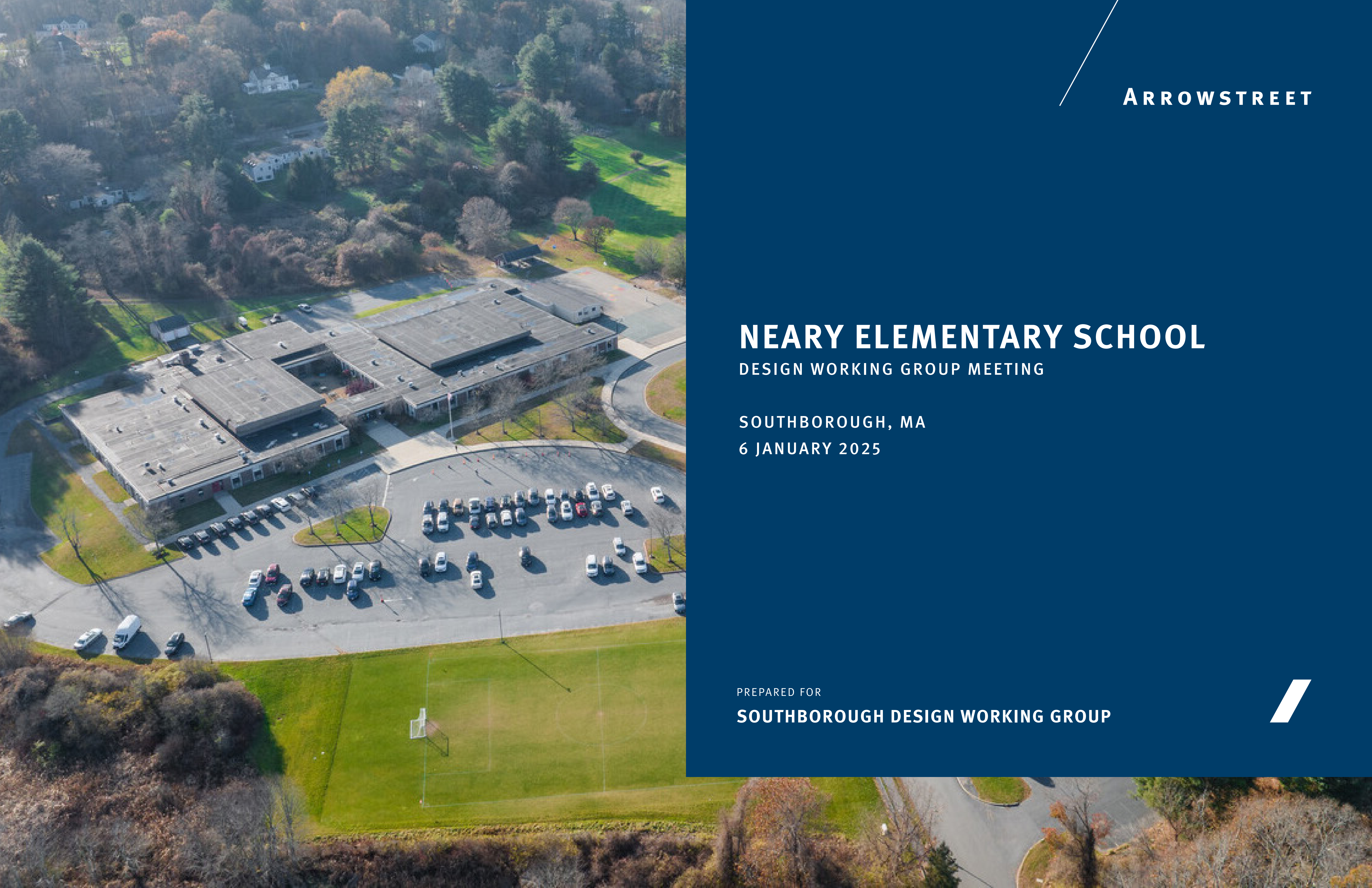
Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. Neary Building Committee Agenda January 6, 2025
2. NBC Materials – Arrowstreet



ARROWSTREET

NEARY ELEMENTARY SCHOOL

DESIGN WORKING GROUP MEETING

SOUTHBOROUGH, MA
6 JANUARY 2025

PREPARED FOR
SOUTHBOROUGH DESIGN WORKING GROUP

AGENDA

1 SUSTAINABILITY SUBCOMMITTEE UPDATE

2 DESIGN UPDATES - FLOOR PLANS & EXTERIOR MATERIALS

SUSTAINABILITY SUBCOM UPDATE

HVAC SYSTEMS STUDIED

OPTION 1

VRF

Overhead Ventilation

OPTION 2

NET ZERO

Ground - Water Heat Pump Chiller / Heating Plant

Displacement Ventilation

OPTION 3

Air - Water Heat Pump Chiller / Heating Plant

Displacement Ventilation

NET ZERO IS DEFINED AS ACHIEVING AN EUI OF 25 OR LESS

LCCA SUMMARY

	QUALITIES							COSTS				ROI					
	Net Zero	EUI	Indoor Air Quality	Thermal Comfort	Acoustics	Service Life	Ease to Maintain	Annual Energy	Annual Maintenance	Annual Savings	Lifetime Replacement	Capital Investment	Payback	w/ Mass Save Incentive	Payback	w/ All Incentives	Payback
								$	$	$	$	$		$		$	
VRF		27.6	○	◌	◌	◌	◌	$215,295	$63,443	-	$3,877,500	$8,308,330	-	$7,959,875	-	$7,959,875	-
Ground Source Heat Pump	✓	24	●	●	●	●	●	$174,545	$53,880	$50,313	$3,007,500	$11,931,368	no	$10,822,240	no	$7,779,741	0 yr
ASHP		26	●	○	○	◌	○	$198,514	$53,891	$26,333	$4,533,500	$9,767,368	no	$9,462,913	no	$9,462,913	no

Scale

● ○ ◌

Best ←→ Good

POTENTIAL INCENTIVES
SUMMARY

GSHP

	Technology	Estimated Construction Cost	Rate [1]	Estimated Incentive
Sec 48 Alternative Energy	Ground Source Heat Pump	$11,931,368	34%	$4,056,665
Mass Save	Path 1			$1,268,474

$11,931,368
Construction Cost Total

$5,325,139
Potential Incentive Total

$6,606,229
w/ Incentive

VRF

Estimated Construction Cost	Rate [1]	Estimated Incentive
$8,308,330 but does not qualify	34%	$0
		$358,455

$8,308,330
Construction Cost Total

$408,455
Potential Incentive Total

$7,899,875
w/ Incentive

[1] *Assumed using tax-exempt bonds*

Notes: Cost of GSHP and EV updated to PM&C 12/6/24 estimate.
Mass Save updated to reflect tonnage in GGD SD.

FLOOR PLAN UPDATES


TEACHER COLLAB
RESOURCE
LEARNING COMMONS
STAFF TOILET
CLASSROOM
SG
CLASSROOM
LEARNING COMMONS
CLASSROOM
SG
CLASSROOM
OPERABLE PARTITION
LEARNING COMMONS
CLASSROOM
CLASSROOM
SG
SG
CLASSROOM
LEARNING COMMONS
TLP
TOILET ROOM
TOILET ROOM
SECURITY GRILLE
CALMING
T
STUDENT TOILET
BEHAVIORAL
PSYCH.
ELEC.
JC
VEST.
UP
MAIN STAIR
STAFF TOILET
STAIR
LEARNING COMMONS
RESOURCE
TEACHER COLLAB
CLASSROOM
SG
CLASSROOM
LEARNING COMMONS
CLASSROOM
OPERABLE PARTITION
SG
CLASSROOM
CLASSROOM
LEARNING COMMONS
SG
SG
CASTLE
LEARNING COMMONS
CLASSROOM
T
CALMING
SECURITY GRILLE
JC
STUDENT TOILET
TOILET ROOM
STAFF LUNCH
LANGUAGE DEV.
ELEC.
STAFF TOILET
TOILET ROOM
VEST.
ADAPTIVE PE / PT
OT
GYM OFF.
GYM STOR.
OT/PT STOR.
DIVIDER CURTAIN
GYMNASIUM
SEATING CAPACITY: 225
IDF
SPED CONFERENCE
PRINCIPAL
MAIN OFFICE
MED. TOILET
OFF. TOILET
ASST. PRINCIPAL
SECRETARY
MAIL
EXAM
MEDICAL SUITE
EXAM AREA
RECORDS
COPY
CONFERENCE
OVERHANG ABOVE
MAIN ENTRY
ELEV.
INSTRUMENT STORAGE
MUSIC ENSEMBLE
MUSIC ENSEMBLE
DN
RAMP
A/V CLO.
MUSIC / LG GROUP
PLATFORM
OPERABLE PARTITION
DN
DN
RAMP
DN
EXT. DAY STOR.
TABLE STORAGE
TRASH & RECYCLING
STORE RM / WORKSHOP
CUSTODIAN
RECEIVING
WASH / PREP
SERVING LINE
WARMING / PREP
COOKING
WALK-IN REFRIG. & FREEZER
CAFETERIA
LOCKERS / LAUNDRY
KITCHEN / SERVERY
DRY STORAGE
CUSTODIAN STORAGE
KITCHEN OFFICE
SPRINKLER
STUDENT TOILET
KITCHEN TOILET
QUIET LUNCH


ROOF BELOW
RESOURCE
LEARNING COMMONS
STAIR 1-2
ELEC.
IDF
CLASSROOM
LEARNING COMMONS
CLASSROOM
SG
SG
CLASSROOM
LEARNING COMMONS
CLASSROOM
OPPERABLE PARTITION
CLASSROOM
LEARNING COMMONS
CLASSROOM
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SG
CLASSROOM
LEARNING COMMONS
WORLD LANGUAGE
TOILET ROOM
STUDENT TOILET
JC
TOILET ROOM
ELEC.
SPEECH
LANGUAGE DEV.
INST. MATH
SPEECH
DN
MAIN STAIR
OPEN TO BELOW
SECURITY GRILLE
ROOF BELOW
ART
STAFF TOILET
STAFF TOILET
KILN
ART
MEDIA CENTER
ELEV.
EMR
MC OFFICE
MECHANICAL
MAIN ELEC.
EM. ELEC
MDF
OPEN TO BELOW
OPEN TO BELOW
OPEN TO BELOW
ROOF BELOW
STAIR 2-2
LEARNING COMMONS
RESOURCE
ROOF BELOW
IDF
ELEC.
CLASSROOM
LEARNING COMMONS
CLASSROOM
SG
SG
CLASSROOM
OPPERABLE PARTITION
LEARNING COMMONS
CLASSROOM
CLASSROOM
LEARNING COMMONS
CLASSROOM
SG
SG
WORLD LANGUAGE
LEARNING COMMONS
CLASSROOM
BEHAVIORAL
READING
READING
PSYCH.
JC
STUDENT TOILET
TOILET ROOM
ELEC.
TOILET ROOM
SECURITY GRILLE

EXTERIOR MATERIALS

EXTERIOR MATERIALS

PRECEDENT IMAGES

CONNECT MAJOR SPACES (CAFETERIA), TO OUTDOOR LEARNING AREAS

GLAZED CIRCULATION SPINE ACTIVATES COURTYARD

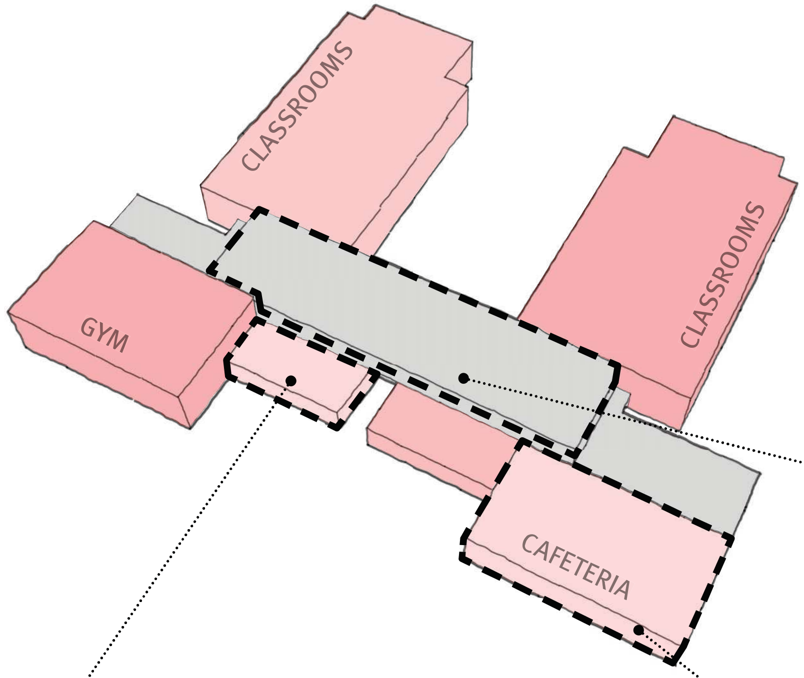
MASONRY DETAIL & A VARIETY OF MATERIALS ADD VISUAL INTEREST

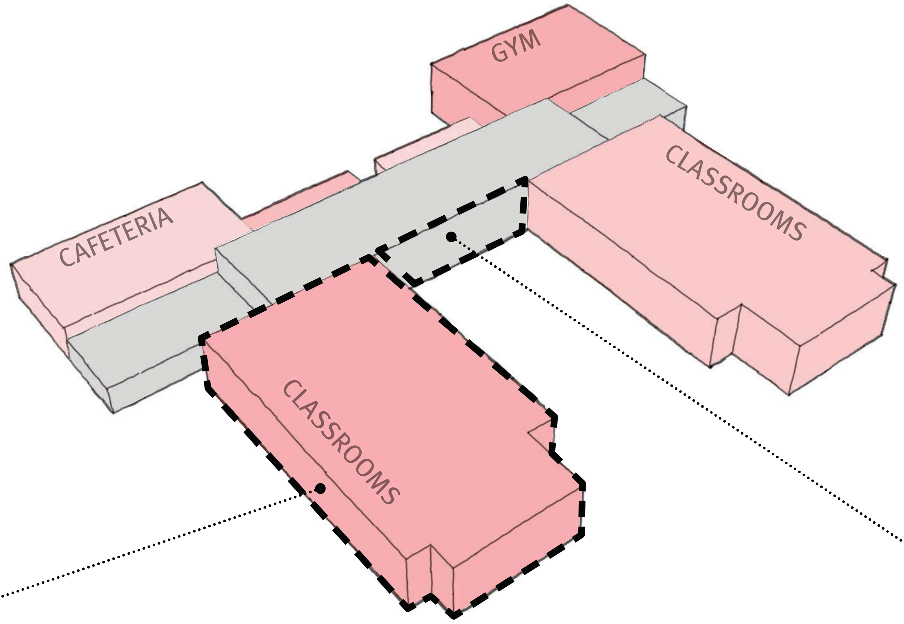
SIMPLE BUILDING MASSING

MASONRY DETAILS & PATTERNS ENLIVEN FACADE

EXTERIOR MATERIALS

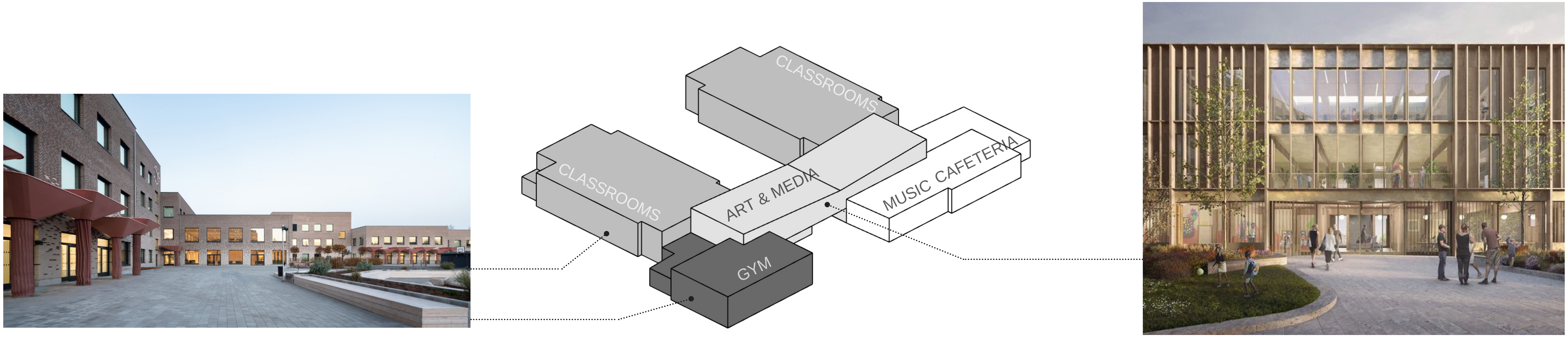
PRECEDENT MATERIALS & WINDOW TYPES

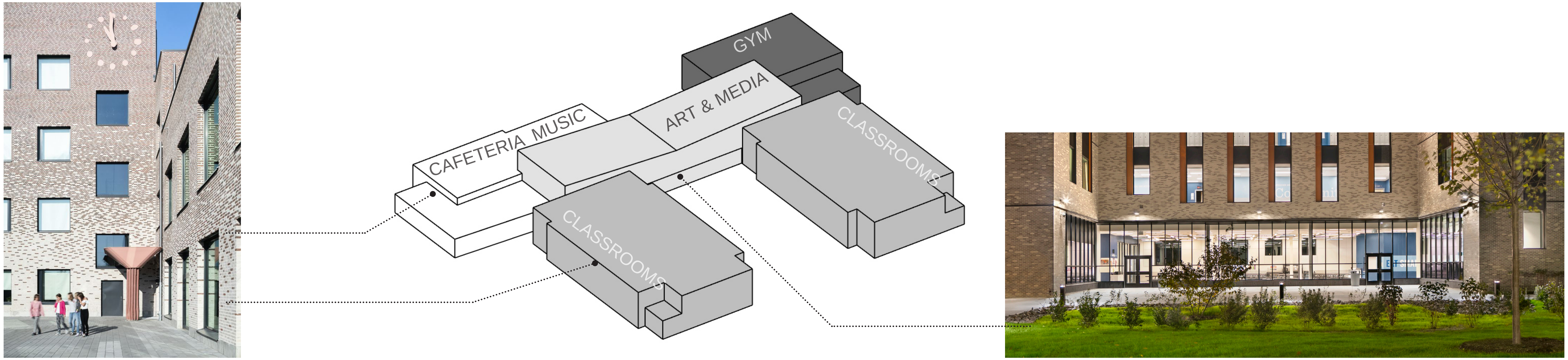




EXTERIOR MATERIALS

UPDATED PRECEDENT MATERIALS & WINDOW TYPES

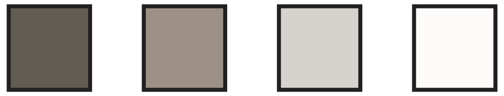




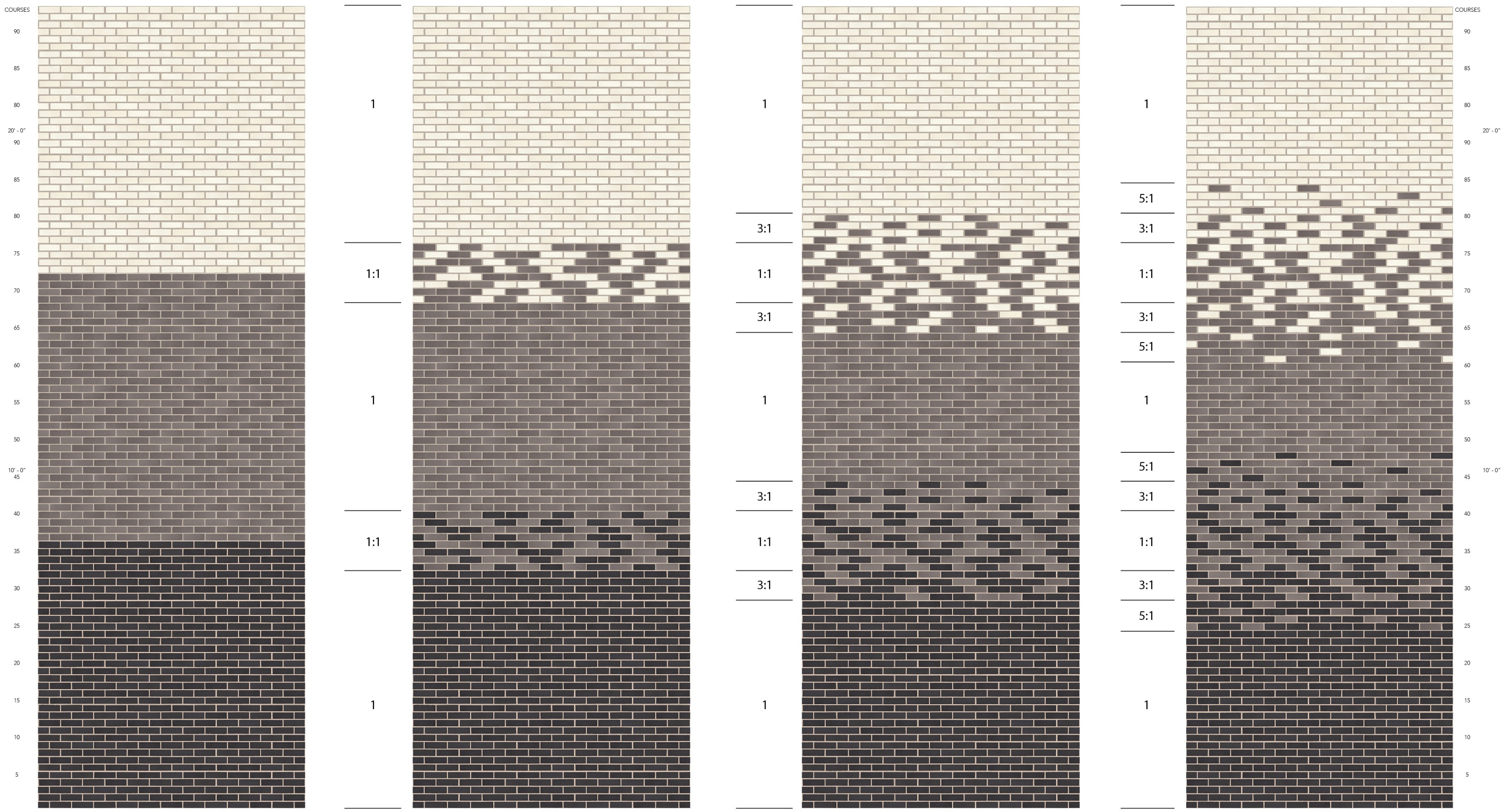
EXTERIOR MATERIALS

BRICK COLOR PALETTE AND MATERIALS

COLOR PALETTE INSPIRATION



Calcareous Gneiss
Indigenous stone to Southborough



3 PRIMARY PRODUCTS
0 BLENDS

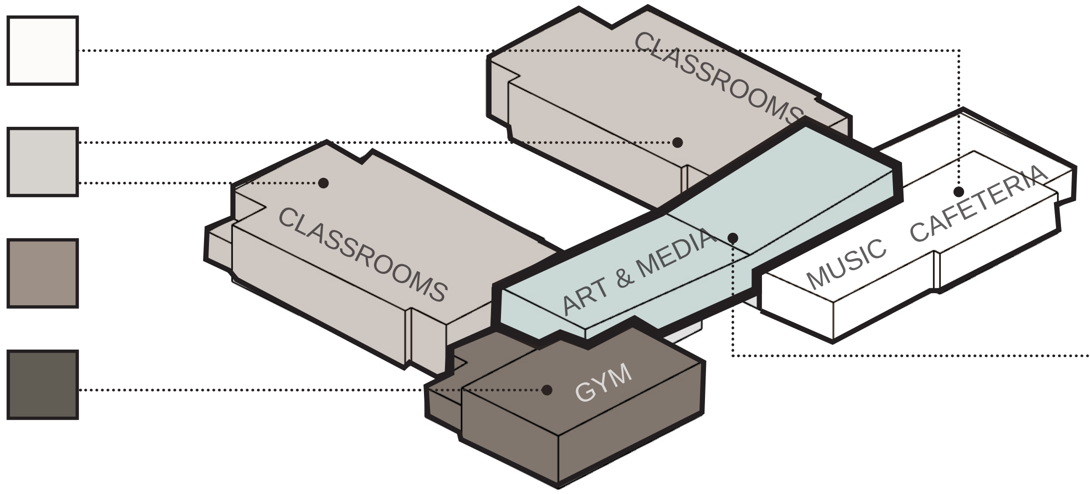
3 PRIMARY PRODUCTS
2 BLEND ZONES

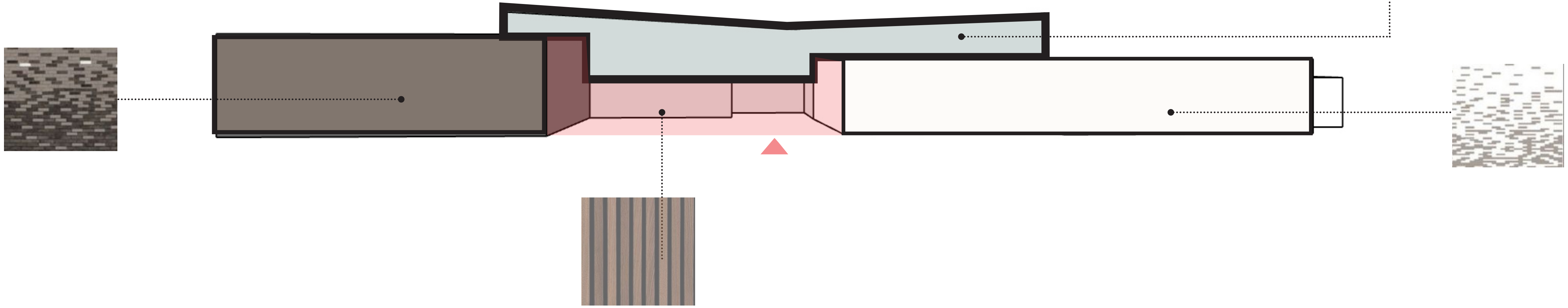
3 PRIMARY PRODUCTS
6 BLEND ZONES

3 PRIMARY PRODUCTS
10 BLEND ZONES

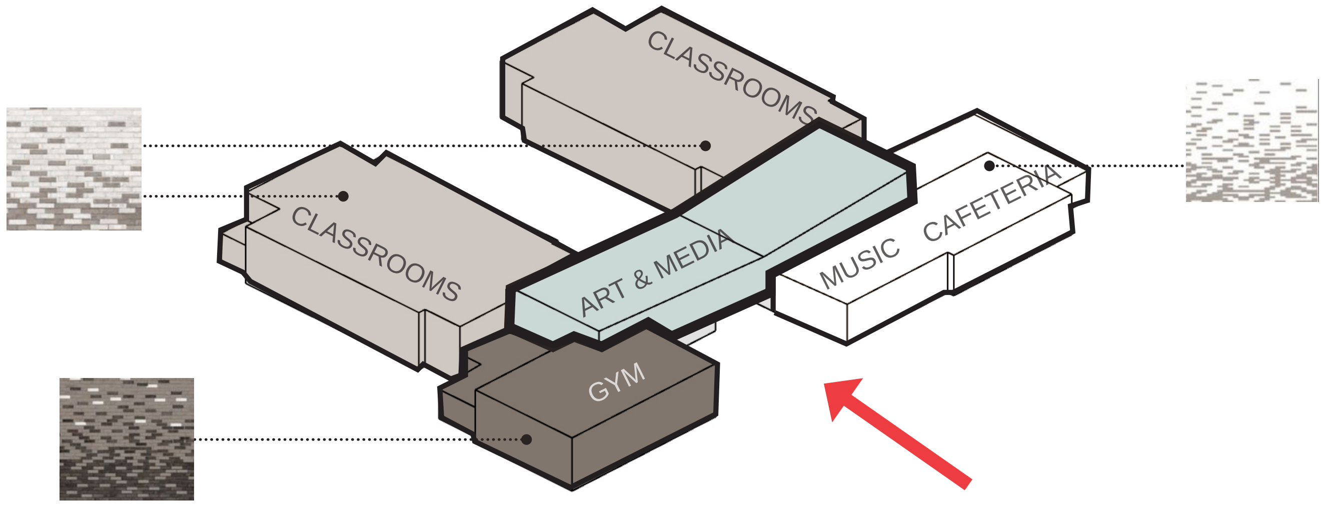
BRICK BLEND STUDY

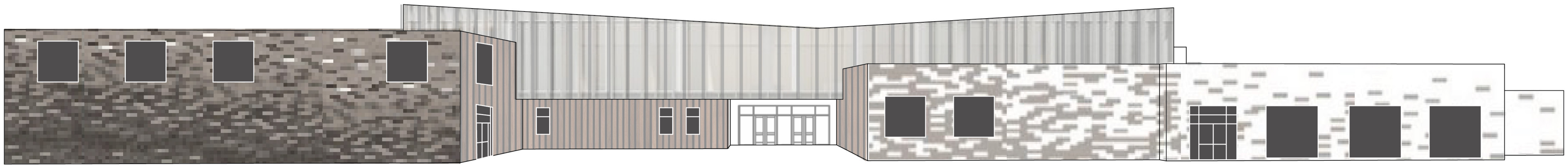
EXTERIOR MATERIALS



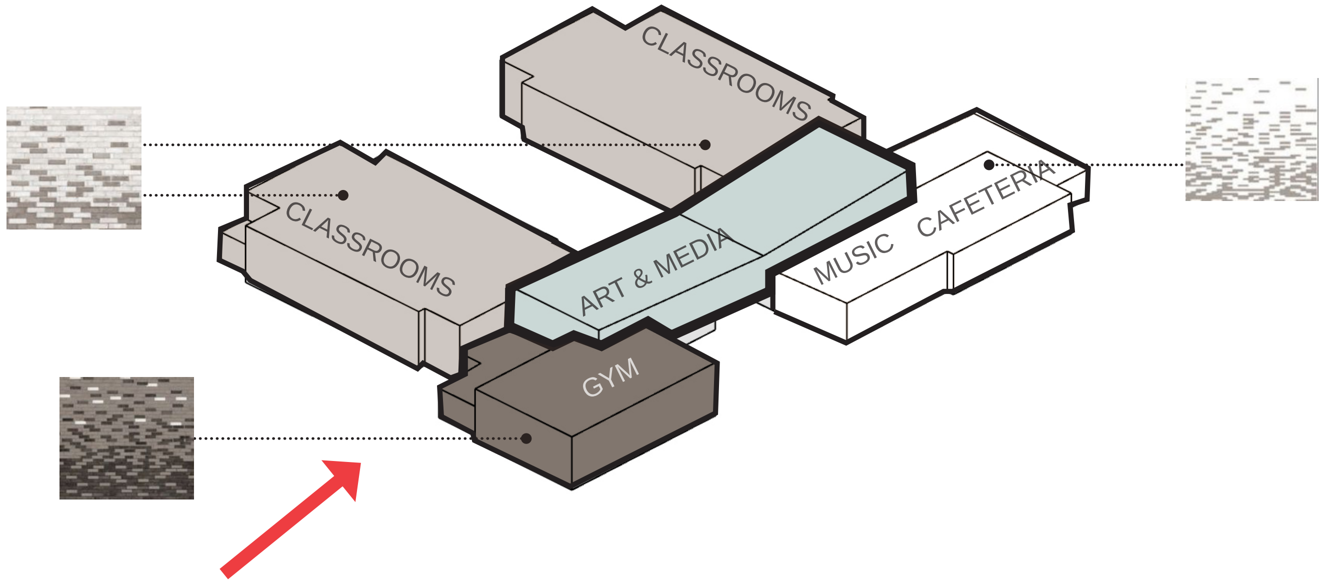


EXTERIOR MATERIALS





EXTERIOR MATERIALS



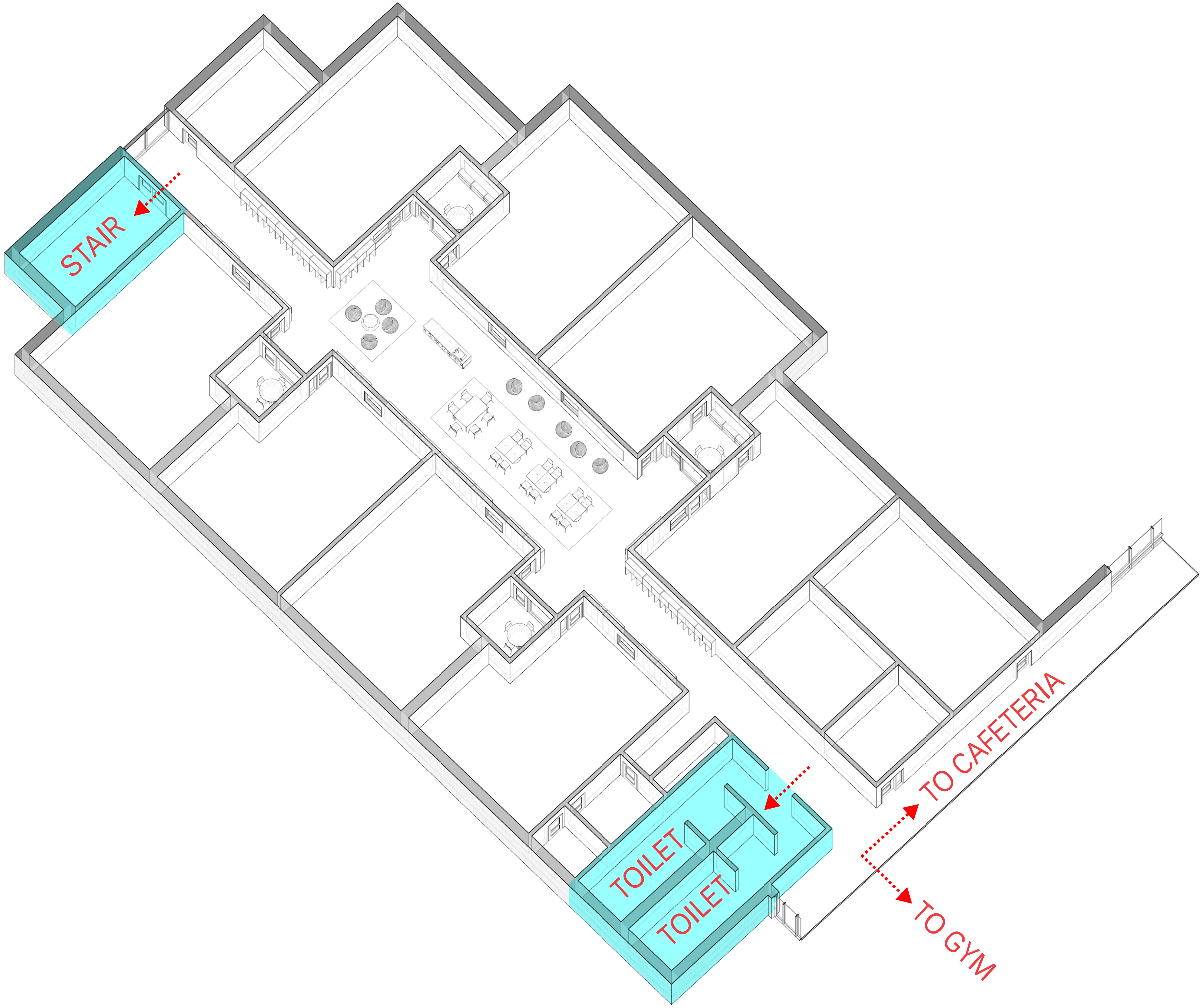
NEXT STEPS

APPENDIX

LEARNING COMMONS STUDIES

CENTERED

STAIRS & BATHROOMS

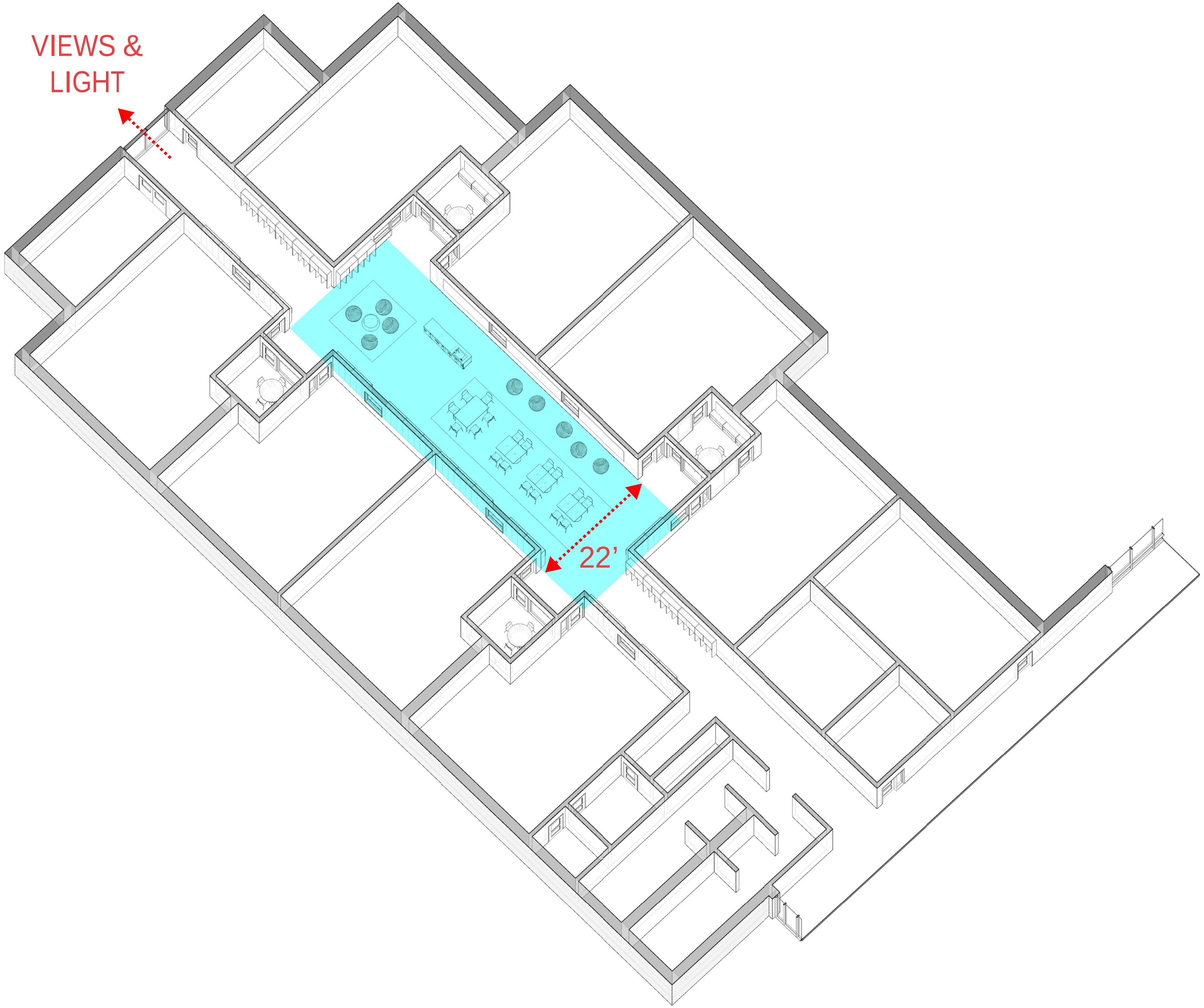


- STAIRS LOCATED AT SOUTH END OF WING
- BATHROOMS LOCATED AT NORTH END OF WING

LEARNING COMMONS STUDIES

CENTERED

LEARNING COMMONS CONFIGURATION

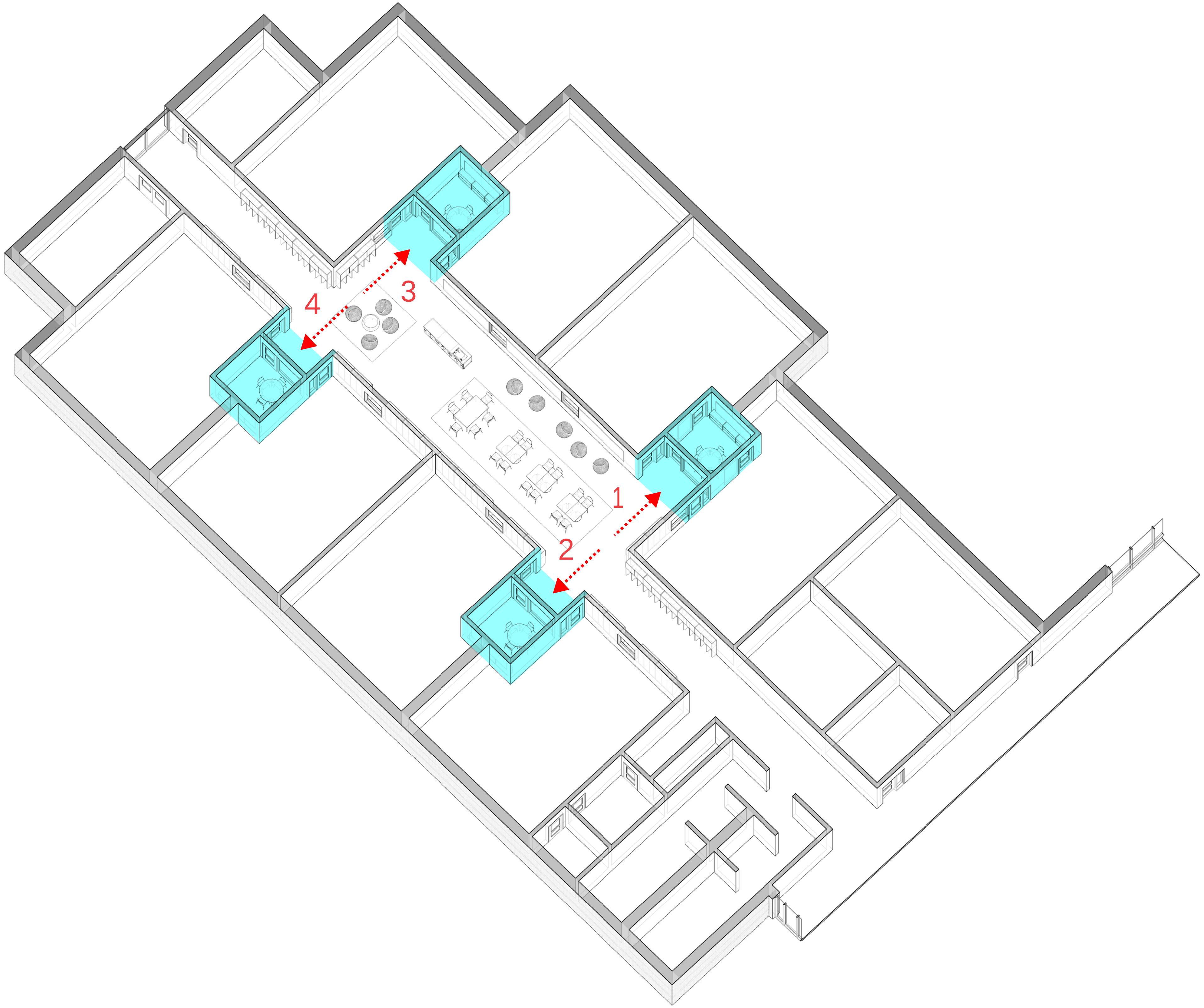


- 22 FOOT WIDE LEARNING COMMONS ZONE
- FULL HEIGHT WINDOWS AT END WITH VIEWS TO LANDSCAPE

LEARNING COMMONS STUDIES

CENTERED

CLASSROOM & SMALL GROUP ENTRY

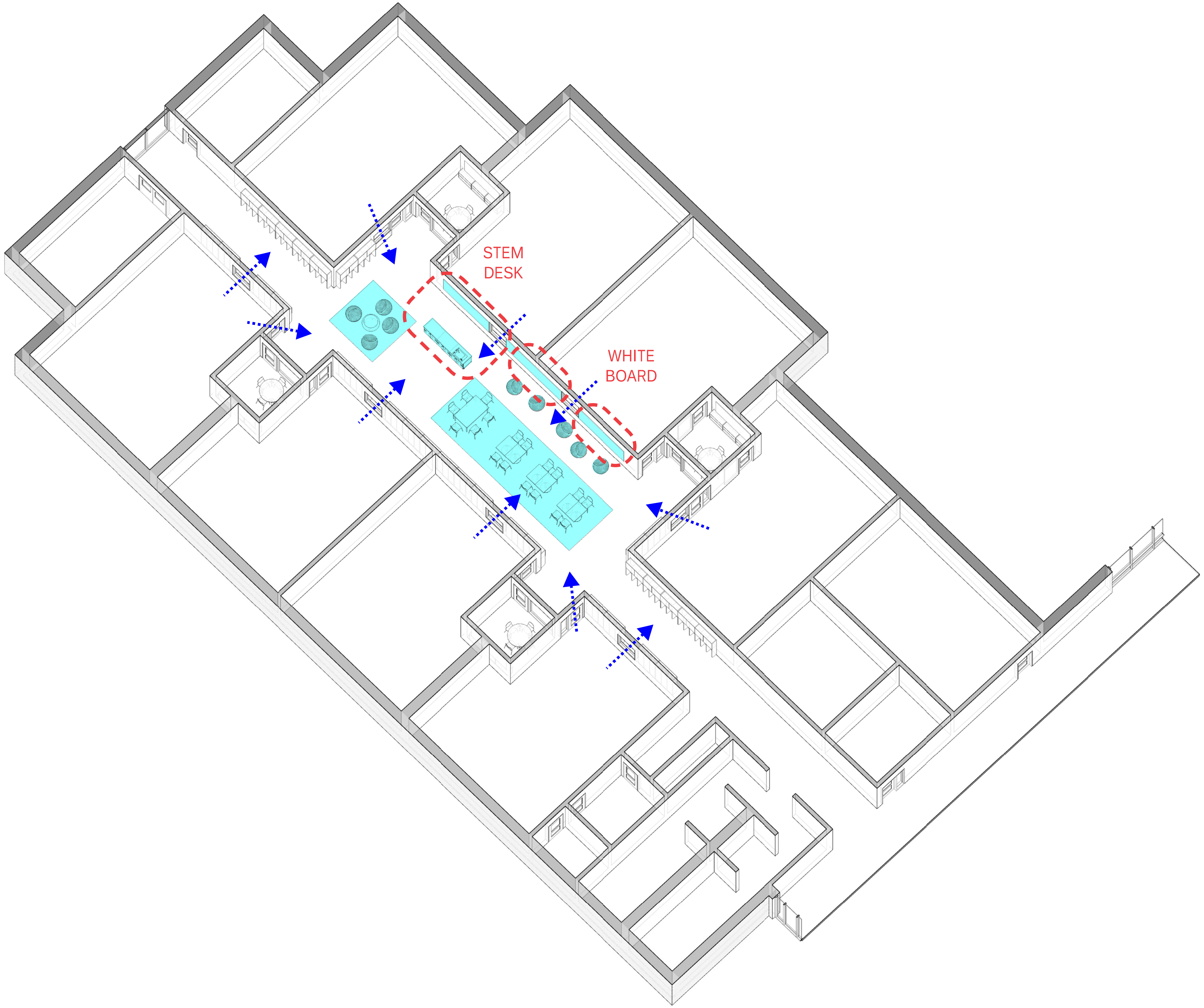


- SMALL GROUP ROOMS AND CLASSROOM ENTRIES ARE GROUPED TOGETHER IN RECESSES OFF OF THE MAIN LEARNING COMMONS SPACE
- FOUR ENTRY POINTS TO CLASSROOMS
- MORE WALL SPACE IN LEARNING COMMONS AVAILABLE FOR CUBBIES, DISPLAY, WHITE BOARDS, ETC

LEARNING COMMONS STUDIES

CENTERED

LEARNING CLUSTERS

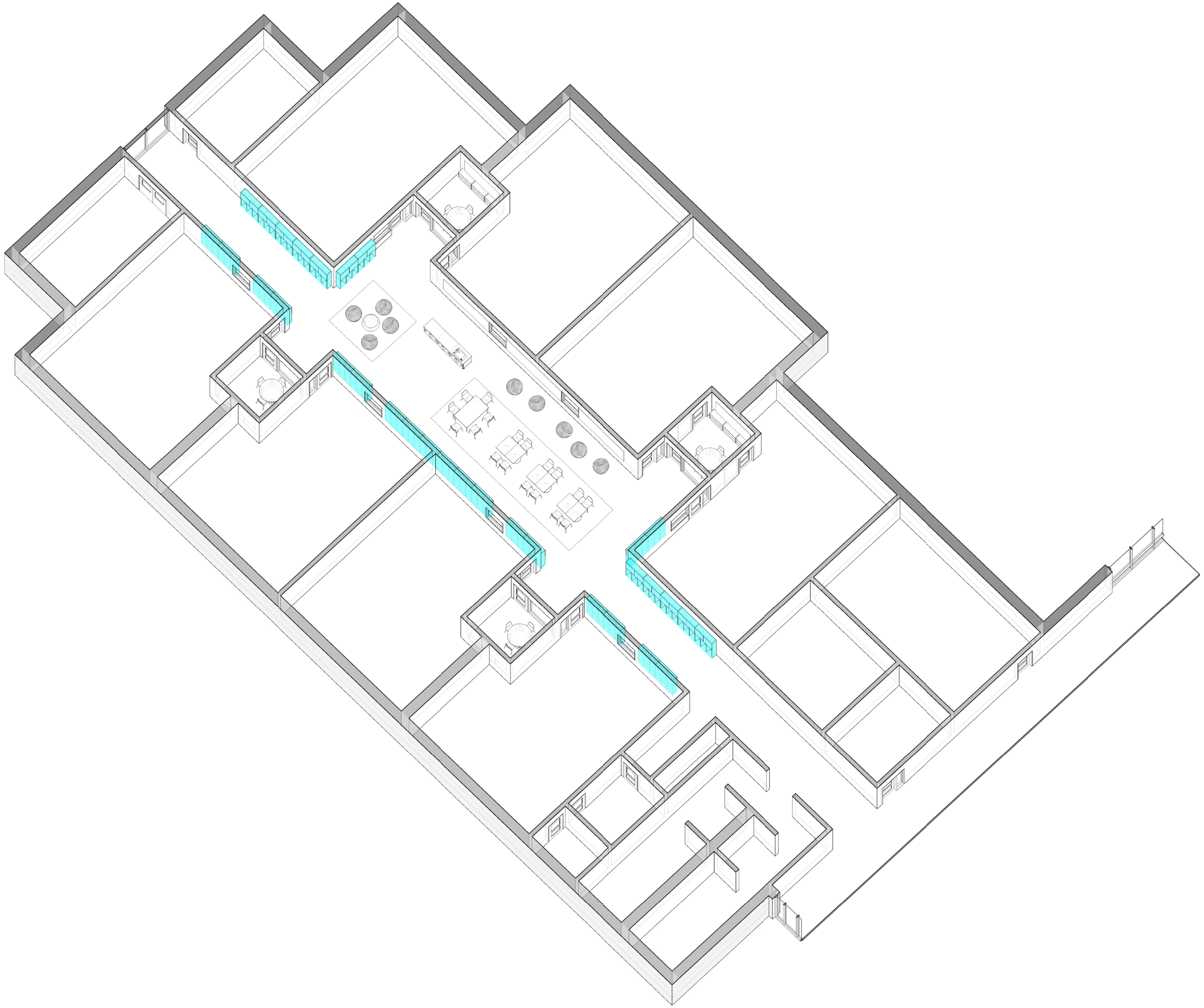


- VISUAL CONNECTION FROM EACH CLASSROOM TO LEARNING COMMONS
- MOVEABLE FURNITURE CLUSTERS
- LARGE CENTRAL LOCATION FOR WHITE BOARDS & SMART SCREENS
- STEM DESK LOCATED WITHIN CENTER ZONE

LEARNING COMMONS STUDIES

CENTERED

CUBBIE LOCATIONS



- CUBBIES LOCATED IN HALLWAY
- FIVE STUDENTS PER CUBBY ASSUMED
- LOCKED CLOSED STORAGE ABOVE WITH TACKABLE SURFACE FOR DISPLAY

EXAMPLE CUBBY DESIGN FROM THE PINE HILL SCHOOL IN WESTWOOD

LEARNING COMMONS STUDIES

CENTERED

INTERIOR PERSPECTIVE STUDY

LEARNING COMMONS STUDIES

CENTERED

INTERIOR PERSPECTIVE STUDY

LEARNING COMMONS STUDIES

CENTERED

INTERIOR PERSPECTIVE STUDY

RECEIVED
By Town Clerk/jfh at 2:38 pm, Jan 03, 2025

Town of Southborough, Massachusetts

Neary Building Committee

January 8, 2025

7:00 PM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://nsboro-k12-ma-us.zoom.us/j/88374099858

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order

II. Project Update Presentation to Southborough School Committee

III. Other business that may properly come before the Committee

IV. Adjournment

Jason W. Malinowski, Chair

Town of Southborough, Massachusetts

Neary Building Committee

January 8, 2025

7:00 PM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Mark Davis (virtually), Andrew Pfaff (virtually arrived at 8:10 pm), and Jason Malinowski (virtually)

Members Absent: Denise Eddy, Kathryn Cook, and Chris Evers

Ex-Officio

Members Present: Gregory Martineau Superintendent of Schools, Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, Keith Lavoie Assistant Superintendent of Operations, and Rebecca Pellegrino, Assistant Superintendent of Finance

Members Absent: Kathleen Valenti, Neary School Principal, Steven Mucci, Principal of Woodward School, Mark Purple, Town Administrator, and Brian Ballantine Town Treasurer/ Finance Director

I. Call Meeting to Order

The Neary Building Committee began its presentation at 7:55 PM; however, Jason Malinowski did not call the meeting to order as there was no quorum. Once Andrew Pfaff arrived, Jason Malinowski officially called the Neary Building Committee meeting to order at 8:10 PM.

II. Project Update Presentation to Southborough School Committee

Jason Malinowski shared that the Neary School project is progressing through the schematic design phase, focusing on optimizing school flow, room sizes, and the addition of key spaces such as art rooms and gymnasiums. Cost estimations and operational savings are underway, with preliminary reviews expected in February. The District has been asked to provide detailed analyses, focusing on both short-term savings during construction and long-term operational efficiencies. The project team is also addressing concerns about overall costs, the impact on individual taxpayers, and the adjacent landfill.

The design considerations for the Neary Project include adding an additional art room to meet educational needs and addressing the size of the gymnasium to accommodate both school activities and community user groups. A balance has been achieved by designing the gym with both large and small courts, as well as collapsible bleachers to optimize space and functionality. These adjustments reflect ongoing discussions with school administration and educators to ensure the building supports both academic and extracurricular activities effectively.

The communication strategies for the Neary School project emphasize clear, consistent messaging to educate the community on the project's benefits and address concerns. Open office hours are planned to engage with residents and answer questions, with special attention on voter education ahead of critical town meeting, which is on May 10, 2025. Suggestions include incorporating student voices, particularly sixth graders, to highlight the improvements the project will bring, and refining the messaging, and create a one-page summary of educational advantages for a building project. Additionally, frequently asked questions will be addressed to ensure transparency and clarity in communication.

Superintendent Martineau emphasizes that operational savings are not intended to reduce staff but rather to maintain current staffing levels while enhancing resources. Supporting teachers with professional development, improved facilities, and additional tools.

Chelsea Malinowski will collaborate with Superintendent Martineau to compile the top three frequently asked questions and ensure they have standardized answers. This will help the School Committee provide consistent responses, as sending out mixed messages is the last thing they want. Jason mentioned that the Communications Subcommittee has developed a list of frequently asked questions, which can be found on the Neary Building Project website. They are currently working on reorganizing these questions based on their priority and the frequency with which they are asked.

III. Other business that may properly come before the Committee (None at this time)

IV. Adjournment

Jason Malinowski requested a motion to adjourn.

MOTION TO ADJOURN

Jason Malinowski moved, Andrew Pfaff seconded, and it was unanimously voted by roll call, "To adjourn the Neary Building Committee."

Roll Call
For: Andrew Pfaff, Mark Davis, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 8:22 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. Neary Building Committee Agenda of January 8, 2025

RECEIVED
By Town Clerk/amb at 8:29 am, Feb 05, 2025

Town of Southborough, Massachusetts

Neary Building Committee

February 10, 2025

7:00 PM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order
II. Approval of Meeting Minutes from December 16, 2024, December 17, 2024, January 6, 2025, and January 8, 2025
III. Approval of Outstanding Sustainability Subcommittee Meeting Minutes
IV. Dissolve Sustainability Subcommittee
V. Community Feedback and outreach plan
VI. Skanska/Arrowstreet Updates
    a. Schematic Design Report – Review and possible vote to approve
    b. Financial Update – Review of latest project cost estimates, discussion and possible vote to continue with Schematic Design submission
VII. Public Comment
VIII. Meeting Schedule
IX. Other business that may properly come before the Committee
X. Adjournment

Jason W. Malinowski, Chair

RECEIVED
By Town Clerk/amb at 4:14 pm, Feb 19, 2025

Town of Southborough, Massachusetts

Neary Building Committee

February 10, 2025

7:00 PM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Mark Davis, Denise Eddy, Andrew Pfaff, Kathryn Cook, Chris Evers and Jason Malinowski

Members Absent: None

Ex-Officio

Members Present: Gregory Martineau Superintendent of Schools, Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, Keith Lavoie Assistant Superintendent of Operations, Rebecca Pellegrino, Assistant Superintendent of Finance, Kathleen Valenti, Neary School Principal, Mark Purple, Town Administrator, and Brian Ballantine, Town Treasurer/ Finance Director

Members Absent: Steven Mucci, Principal of Woodward School

I. Call Meeting to Order

Jason Malinowski called the Neary Building Committee meeting to order at 7:07 pm.

II. Approval of Meeting Minutes from December 16, 2024, December 17, 2024, January 6, 2025, and January 8, 2025

Jason Malinowski asked for a discussion and a vote.

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "To approve the meeting minutes for December 16, 2024, December 17, 2024, January 6, 2025, and January 8, 2025, as presented."

MOTION TO APPROVE MEETING MINUTES

Roll Call
For: Kathryn Cook, Andrew Pfaff, Chris Evers, Mark Davis, Denise Eddy, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

III. Approval of Outstanding Sustainability Subcommittee Meeting Minutes

MOTION TO APPROVE MEETING MINUTES

Roger Challen moved, Mark Davis seconded, and it was voted 3-0-4 (Jason Malinowski, Kathryn Cook, Denise Eddy, and Andrew Pfaff abstained), "To approve the meeting minutes of the NBC – Sustainability Subcommittee for November 6, 2024 and January 2, 2025."

Roll Call
For: Chris Evers, Mark Davis, and Roger Challen
Opposed: None
Abstained: Jason Malinowski, Kathryn Cook, Denise Eddy, and Andrew Pfaff

IV. Dissolve Sustainability Subcommittee (Not at this time)

V. Community Feedback and outreach plan

Jason Malinowski mentioned that they continue to hold open office hours. During their last session, the focus was on why the Committee did not consider the Finn School as a viable option, as well as questions surrounding the Neary School site compared to the Finn School site. Jason also shared that the Council on Aging has voted that, when discussions about repurposing the Finn School take place, they prefer to have full access to Cordaville Hall. They suggest that the departments currently occupying the building should be relocated so that the Finn School can be repurposed as a senior center. Lastly, Jason reminded the Committee about the upcoming ballot question in the spring and cautioned everyone to ensure compliance with campaign finance rules when sending out materials related to the project.

VI. Skanska/Arrowstreet Updates

a. Schematic Design Report – Review and possible vote to approve

Katy Lillich from Arrowstreet shared they submitted the narrative portion of the report to the Committee, Arrowstreet received approximately 20 comments, which they will incorporate into the revised report. A set of construction documents, consisting of about 17 pages of drawings, was also distributed. Project updates include the exterior and landscape plans, which show the bus entry, drop-off area, and emergency access at the back of the building. The building's massing indicates that the gym is located at the front, with the music room and cafeteria to the right. The central section consists of the media center and art rooms, while the classroom wings are positioned behind, and the fields remain unchanged. There will be no drastic changes to the floor plan, which will also be included in the schematic design report. Katy plans to send an email responding to each question received and will issue a new version of the report. She intends to have the updated report ready before the February 13, 2025, meeting, incorporating all the feedback.

b. Financial Update – Review of latest project cost estimates, discussion and possible vote to continue with Schematic Design submission

Kathryn Cook reported that the town's share of the total project cost is approximately $78 million, a decrease of $6 million from the August estimate of $84 million. The goal is to finalize these cost projections for submission to the Massachusetts School Building Authority by early next week. The approved article for the town meeting scheduled for May 10, 2025, must include the full project cost, which is currently estimated to be around $110 million.

The Finance Subcommittee has asked Arrowstreet to provide an accurate estimate of the federal and state geothermal system credits, which could total between $3 million and $4 million. There are also discussions about removing the contingency of $1.25 million that was added for the potential cost of removing contaminated soil from the site, assuming that half of the soil needs to be transported out of state. Additionally, they are considering whether the current gross-up factor for non-classroom spaces can be reduced from 1.50 to 1.45, which could save around $3 million in additional costs. Brian Ballantine, the Town Treasurer/Finance Director, is collaborating with a bond consulting firm to project the debt service and update the five-year town budget projection, which will be presented on February 13, 2025.

Jim Burrows, Project Manager at Skanska, noted that if the contingency is not retained and soil removal is needed later, it would draw from the construction contingency, potentially using over 50% of it. He emphasized that change order pricing typically exceeds base bid pricing. Mark Davis believes the site is manageable, but still feels a contingency is necessary. Larry Spang from Arrowstreet indicated that the current estimate includes 18,000 cubic yards of soil that must be removed offsite, which is categorized as clean soil. He recommended that instead of including this in the construction cost, it should be allocated to a larger contingency fund. This approach ensures that adequate funds are prepared in case of delays, as funding allocations can lead to expensive schedule overruns. For further analysis, they can explore onsite disposal options.

Larry Spang added that the grossing factor encompasses everything that is not designated for educational purposes. He explained that adjusting the multiplier is not straightforward, as it would require eliminating square footage of non-programmed areas, and currently, they do not believe there is sufficient space to eliminate. They would have done so otherwise. The objective is to reduce the factor below 1.50, and Arrowstreet will provide updates as the project progresses. They plan to evaluate not only square footage but other aspects of the building for potential reductions. A list of value engineering (VE) items will be compiled and distributed to the Committee for discussion. More information will be provided to the Committee during their February 13, 2025, meeting to take a vote.

VII. Public Comment (None at this time)

VIII. Meeting Schedule – February 13, 2025

IX. Other business that may properly come before the Committee (None at this time)

X. Adjournment

Jason Malinowski requested a motion to adjourn.

MOTION TO ADJOURN

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "To adjourn."

<u>Roll Call</u>
For: Kathryn Cook, Andrew Pfaff, Chris Evers, Mark Davis, Roger Challen, Denise Eddy, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 8:32 pm.

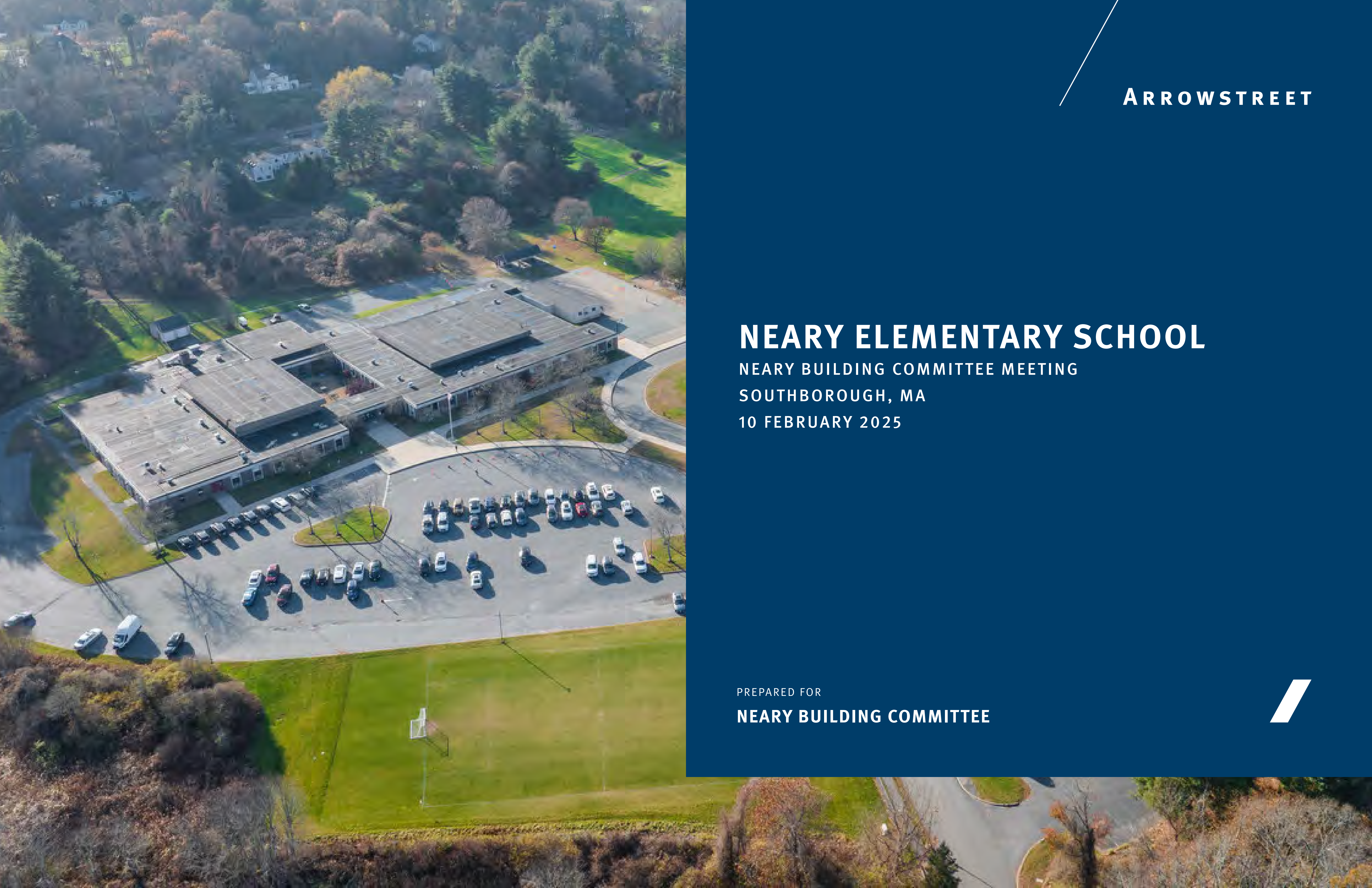
Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. Neary Building Committee Agenda of February 10, 2025
2. Neary Building Committee Meeting Minutes of December 16, 2024
3. Neary Building Committee Meeting Minutes of December 17, 2024
4. Neary Building Committee Meeting Minutes of January 6, 2025
5. Neary Building Committee Meeting Minutes of January 8, 2025
6. NBC – Sustainability Subcommittee Meeting Minutes of November 6, 2024
7. NBC – Sustainability Subcommittee Meeting Minutes of January 2, 2025
8. DRAFT Schematic Design Report dated February 25, 2025
9. DESE Special Education Submittal dated February 2025
10. NBC Presentation Materials dated February 10, 2025



ARROWSTREET

NEARY ELEMENTARY SCHOOL

NEARY BUILDING COMMITTEE MEETING
SOUTHBOROUGH, MA
10 FEBRUARY 2025

PREPARED FOR

NEARY BUILDING COMMITTEE

SCHEMATIC DESIGN UPDATE

SITE PLAN


LEARNING COURTYARD
EMERGENCY ACCESS
INFORMAL PLAY SPACE
EXISTING FIELDS TO REMAIN
PROTECT EXISTING PLAYGROUND TO REMAIN
SERVICE (ACCESS TO BE DETERMINED)
GRANITE MONOLITHIC BENCH
EVERGREEN SCREEN (VISUAL BUFFER TO SERVICE ZONE)
BUS AND SHUTTLE DROPOFF
ADA SHUTTLE AND VISITOR PARKING
PASSENGER DROPOFF
STAFF PARKING
NEARY ELEMENTARY SCHOOL
EMERGENCY ACCESS
PROTECT EXISTING TO REMAIN
ACCESS DRIVE
LEGEND
BUILDING ACCESS
FIELD ACCESS
BUS DROPOFF
PASSENGER DROPOFF

SITE PLAN

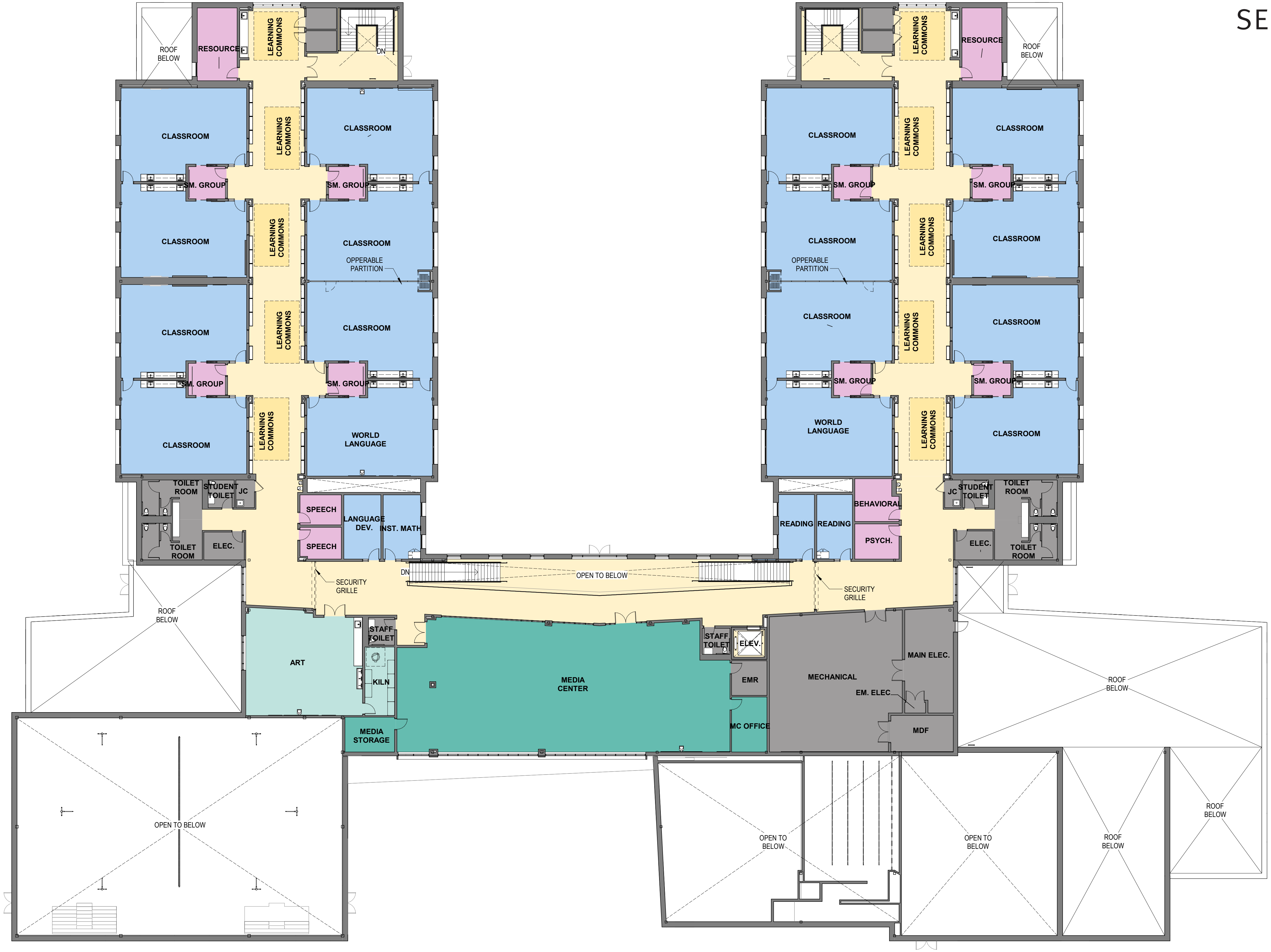
BUILDING MASSING

FLOOR PLAN

FIRST FLOOR

FLOOR PLAN

SECOND FLOOR



EXTERIOR RENDERING

FRONT ENTRY COURT

INTERIOR RENDERING

LEARNING COMMONS

RECEIVED
By Town Clerk/amb at 8:41 am, Feb 11, 2025

Town of Southborough, Massachusetts

Neary Building Committee

February 13, 2025

7:30 PM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order
II. Approval of Meeting Minutes from February 10, 2025
III. Skanska/Arrowstreet Updates
    a. Schematic Design Report – Review and authorize OPM to submit to MSBA
    b. Financial Update – Review of latest project cost estimates, discussion of value engineering, and vote on updated cost projections
IV. Community Feedback and outreach plan
V. Public Comment
VI. Meeting Schedule
VII. Other business that may properly come before the Committee
VIII. Adjournment

Jason W. Malinowski, Chair

Town of Southborough, Massachusetts

Neary Building Committee

February 13, 2025

7:30 PM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Mark Davis, Denise Eddy, Andrew Pfaff, Kathryn Cook, and Jason Malinowski

Members Absent: Chris Evers

Ex-Officio

Members Present: Gregory Martineau Superintendent of Schools, Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, Keith Lavoie Assistant Superintendent of Operations, Rebecca Pellegrino, Assistant Superintendent of Finance, Steven Mucci, Principal of Woodward School, Mark Purple, Town Administrator, and Brian Ballantine Town Treasurer/ Finance Director

Members Absent: Kathleen Valenti, Neary School Principal

I. Call Meeting to Order

Jason Malinowski called the Neary Building Committee meeting to order at 7:31 pm.

II. Approval of Meeting Minutes from February 10, 2025

Jason Malinowski asked for a discussion and a vote.

Jason Malinowski moved, Denise Eddy seconded, and it was voted 5-0-1 (Kathryn Cook abstained), "To approve the minutes as presented."

MOTION TO APPROVE MEETING MINUTES

Roll Call
For: Andrew Pfaff, Denise Eddy, Roger Challen, Mark Davis, and Jason Malinowski
Opposed: None
Abstained: Kathryn Cook

III. Skanska/Arrowstreet Updates

a. Schematic Design Report – Review and authorize OPM to submit to MSBA

Katy Lillich from Arrowstreet stated that the schematic design report consists of three parts: the narrative, the drawings, and the budget. The revised narrative report, incorporating the changes, will be sent out.

b. Financial Update – Review of latest project cost estimates, discussion of value engineering, and vote on updated cost projections

Kathryn Cook presented financial data regarding cost implications for taxpayers. She explained that for every million dollars reduced from the current $78 million debt, homeowners with an average house value of approximately $1 million would save $14.20 annually.

Jim Burrows, Project Manager at Skanska, introduced various cost reduction options categorized into building elements and scope groups. Several proposed reductions in the building exterior include decreasing acoustical roof screens ($360,000 savings), changing brick to CMU at the gym ($66,528 savings), and eliminating curtain walls and storefronts at the front entrance to masonry ($24,600 savings). Additional savings could be achieved by implementing a uniform brick masonry ($85,728 savings) and replacing ACM panels with aluminum corrugated panels. Interior cost-cutting measures include eliminating gym bleachers and reallocating them within the FF&E budget ($70,200 savings), reducing the gym size ($163,200 savings), and decreasing the number of movable partitions in classroom wings ($48,600 savings). Further savings would result from removing adjoining classroom doors ($27,072 savings), eliminating borrowed light from classrooms ($29,376 savings), and omitting tile behind classroom sinks ($49,613 savings). Proposed changes to the HVAC system could yield significant savings. Switching to a VRF system without geothermal would save $4,081,417 while opting for air-source heat pumps instead of ground-source systems would save $2,669,712. Kathryn Cook noted that state and federal rebates, expected to exceed $5 million, were not included in this estimate but would be reflected in future calculations. Moving the soil allowance from the construction budget to construction contingency would shift $750,000 while reducing the state soil allowance to $500,000 would save $900,000. Further reducing the allowance to $250,000 could result in $1.2 million in savings. Proposals to replace concrete sidewalks with bituminous or asphalt sidewalks would save $90,000 while switching the emergency drive from asphalt to crushed stone would yield an additional $108,000 in savings. Eliminating planting in the courtyard between classroom wings and replacing it with grass could save $306,000.

Mark Davis raised concerns about acoustical roof screens, particularly regarding the noise impact on nearby residential areas. He suggested utilizing a secondary roof structure to mitigate sound. Denise Eddy requested visual examples to assess the impact on aesthetics. For the interior, Stephanie Reinhorn, Assistant Superintendent of Teaching and Learning, advocated for keeping movable partitions in classroom wings to support flexible learning environments. Discussions also covered the potential swap of borrowed light windows for sliding storefront doors and exploring cost-effective alternatives for sink backsplash materials.

The Committee discussed soil contingencies, balancing risks while ensuring adequate funding. Jason emphasized the importance of not depleting contingency funds too early in the project. If soil work exceeds estimates, a Value Engineering (VE) exercise may be required to maintain full contingency when setting the budget with the MSBA. If the soil work comes in under budget, the unused funds would return to the town. Keith Lavoie opted to retain concrete sidewalks due to their durability and lower maintenance costs compared to asphalt. He raised concerns about high maintenance costs associated with crushed stone pathways. For the courtyard, the preference leaned toward a simplified design with functional grassy areas, artificial grass mounds, and potential outdoor seating while keeping costs at $153,000.

The existing playground will be approximately 30 years old when the new building is completed. The current add/alternate estimate for a new playground is $1,053,506. The design team stated that the estimate is based on the number of students, equipment, and area preparation. They will revisit the estimate as well. Some Committee members suggested seeking alternative funding, such as CPC or SOS funds, or handling the playground as a separate bid outside the CM's oversight. Jason proposed including it in the town's capital plan. The estimated cost for 10 sliding doors is $207,000, with a potential reduction to $170,000 if windows are removed. Jason suggest the construction contingency related to soil should be $350,000.

Discussions focused on accurately communicating project costs to taxpayers. Based on the latest calculations, the town share is $74,972,490, when including the incentives of $5,035,897, the final bond is $69,936,593. The Mass Save program has confirmed $1.268 million in funding, while an additional $4 million remains uncertain. The cost to a house valued in five years will be $1,150,000 in Southborough would be $981 annually. Jim emphasized the importance of setting the budget for submission to the MSBA. The Committee will continue refining details related to grossing factor, soil contingency, and playground scope while awaiting further financial updates.

Jason Malinowski asked for a discussion and a vote.

MOTION TO APPROVE SUBMISSION TO THE MSBA

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "The Margaret E. Neary Elementary School Building Committee has completed its review of the schematic design for a total project budget of $108,517,025 and approves submission to the MSBA for its consideration."

Roll Call
For: Roger Challen, Andrew Pfaff, Kathryn Cook, Mark Davis, Denise Eddy, and Jason Malinowski
Opposed: None
Abstained: None

IV. Community Feedback and outreach plan

Mark Davis believes that one crucial aspect missing from the outreach efforts is the perception of a "no" vote as unacceptable. He argues that the issues currently facing the Neary School building should not be ignored in the future. The website fails to highlight that the school is not equipped with sprinklers, does not address some of the materials used in the building, and does not mention the lack of handicap accessibility. Mark emphasizes that no one should feel comfortable attending the town meeting and voting "no."

Jason Malinowski expressed his greatest disappointment with the project so far, noting that public outreach has not been effective in encouraging community participation. He believes the best way for residents to form their own opinions is by visiting the building in person. However, despite opening the building twice for community observation, the attendance has been dismal.

Kathryn Cook suggested that the spreadsheet updated by Jim Burrows, which includes information on B1, C1, C4, and base repair, should be made available to the public. She believes this would provide a clearer understanding of why a new four-grade school is the better option. Additionally, she highlighted two key concerns among the senior population: cost and the comparison between Finn School and Neary School.

V. Public Comment (None at this time)

VI. Meeting Schedule – February 20, 2025

VII. Other business that may properly come before the Committee (None at this time)

VIII. Adjournment

Jason Malinowski requested a motion to adjourn.

MOTION TO ADJOURN

Jason Malinowski moved, Andrew Pfaff seconded, and it was unanimously voted by roll call, "To adjourn."

Roll Call
For: Andrew Pfaff, Kathryn Cook, Mark Davis, Denise Eddy, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 10:08 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. Neary Building Committee Agenda of February 13, 2025
2. Neary Building Committee Meeting Minutes of February 10, 2025
3. Skanska/ Arrowstreet VE/VM Draft Items dated February 11, 2025
4. Updated Cost Incentives Summary
5. Skanska/ Arrowstreet VE/VM Scenarios dated February 11, 2025

RECEIVED
By Town Clerk/amb at 9:44 am, Feb 14, 2025

Town of Southborough, Massachusetts

Neary Building Committee

February 20, 2025

8:30 AM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order
II. Approval of Meeting Minutes from February 13, 2025 and February 20, 2025
III. Schematic Design Report – Review and authorize OPM to submit to MSBA
IV. Review and approval of project update release
V. Meeting Schedule
VI. Other business that may properly come before the Committee
VII. Adjournment

Jason W. Malinowski, Chair

Draft

Town of Southborough, Massachusetts

Neary Building Committee

February 20, 2025

8:30 AM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Mark Davis, Denise Eddy, Kathryn Cook, Andrew Pfaff, Chris Evers, and Jason Malinowski

Members Absent:

Ex-Officio

Members Present: None

Members Absent: Gregory Martineau Superintendent of Schools, Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, Keith Lavoie Assistant Superintendent of Operations, Rebecca Pellegrino, Assistant Superintendent of Finance, Kathleen Valenti, Neary School Principal, Steven Mucci, Principal of Woodward School, Mark Purple, Town Administrator, and Brian Ballantine Town Treasurer/ Finance Director

I. Call Meeting to Order

Jason Malinowski called the Neary Building Committee meeting to order at 8:42 am.

II. Approval of Meeting Minutes from February 13, 2025 and February 20, 2025 (not at this time)

Jason Malinowski asked for a discussion and a vote.

Jason Malinowski moved, Denise Eddy seconded, and it was unanimously voted by roll call, "To accept the February 13, 2025 meeting minutes as presented."

MOTION TO APPROVE MEETING MINUTES

Roll Call
For: Kathryn Cook, Mark Davis, Chris Evers, Denise Eddy, Roger Challen, Andrew Pfaff, and Jason Malinowski
Opposed: None
Abstained: None

III. Approval of Outstanding Finance and Communications Subcommittee Meeting Minutes

The Finance Subcommittee and Communications Subcommittee will review and approve the minutes from their previous meeting during their next scheduled meeting.

IV. Schematic Design Report – Review and authorize OPM to submit to MSBA

Jason Malinowski asked for a discussion and a vote.

Jason Malinowski moved, Kathryn Cook seconded, and it was unanimously voted by roll call, "The Margaret A. Neary School Building Committee vote to approve the schematic design submission and authorize Skanska USA Building, as Owner's Project Manager, to submit to the MSBA (Massachusetts School Building Authority) on behalf of the District."

MOTION TO APPROVE SCHEMATIC DESIGN REPORT

Roll Call
For: Kathryn Cook, Mark Davis, Chris Evers, Roger Challen, Denise Eddy, Andrew Pfaff, and Jason Malinowski
Opposed: None
Abstained: None

V. Review and approval of project update release

Jason Malinowski suggested that the chairs of the Finance Subcommittee and the Communications Subcommittee work together on a release that includes financial metrics for the community. However, they are open to the idea of holding a separate meeting to review the release if necessary. The Committee has agreed that the first option is more efficient. They will draft a communication, and if any Committee members have significant feedback, a meeting will be scheduled to discuss it.

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "The Committee authorize the Communications and Finance Subcommittee chairs through a project update release based on the latest schematic design and estimated project funding."

MOTION TO APPROVE PROJECT UPDATE RELEASE

Roll Call
For: Kathryn Cook, Mark Davis, Chris Evers, Roger Challen, Denise Eddy, Andrew Pfaff, and Jason Malinowski
Opposed: None
Abstained: None

VI. Meeting Schedule – To be determined based on communication planning.

VII. Other business that may properly come before the Committee (None at this time)

VIII. Adjournment

Jason Malinowski requested a motion to adjourn.

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "To adjourn."

MOTION TO ADJOURN

Roll Call
For: Kathryn Cook, Mark Davis, Chris Evers, Roger Challen, Denise Eddy, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 8:51 am.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. Neary Building Committee Agenda of February 20, 2025
2. Neary Building Committee Meeting Minutes of February 13, 2025
3. Schematic Design Report

Gregory L Martineau

Gregory L. Martineau, Superintendent of Schools

2/24/25

Date

Acknowledgment Certificate

Commonwealth of Massachusetts
County of Worcester

On this 24th of February, 2025, before me, Sheila Hana the undersigned notary public, personally appeared G. Martineau (name of document signer) proved to me through satisfactory evidence of identification, which were MA license, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

Sheila A Hana
(seal) Notary Public Signature

SHEILA A HANA
NOTARY PUBLIC
Commonwealth of Massachusetts
My Commission Expires On
07/19/2030

RECEIVED
By Town Clerk/jfh at 11:59 am, Sep 09, 2024

Town of Southborough, MA

Neary Building Committee Finance Subcommittee

Neary Building Committee

Wednesday, September 11, 2024 1:00 P.M.

Virtual Zoom Meeting

This meeting may be watched and/or participated in remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings.

Agenda

1. Call Meeting to Order
2. Approve minutes from 8-9-24
3. Approve all outstanding invoices
4. Next meeting date – TBD as needed
5. Discussion of any and all financial aspects of proposed Neary project including current estimated project costs for C.4. Discussion will also potentially include ongoing discussion of estimated impact of the estimated cost of C.4 on all aspects of the Town budget including the projected impact on the real estate levies for the next five fiscal years.
6. Other business that may properly be brought forth
7. Public Comment
8. Adjournment

Submitted by: Kathryn M. Cook, Chair

RECEIVED
By Town Clerk/amb at 4:09 pm, Nov 20, 2024

Town of Southborough, MA

Neary Building Committee Finance Subcommittee

Neary Building Committee

Minutes

Wednesday, September 11, 2024

1:00 P.M.

Virtual Zoom Meeting

<u>Neary Building Committee – Finance Subcommittee</u>

Members Present: Kathryn Cook, Andrew Pfaff, and Mark Davis

Members Absent: None

<u>Ex-Officio</u>

Members Present: Rebecca Pellegrino, Assistant Superintendent of Finance, and Brian Ballantine, Town Treasurer/ Finance Director

Members Absent: Keith Lavoie, Assistant Superintendent of Operations

1. Call Meeting to Order Agenda

   Kathryn Cook called the Neary Building Committee - Finance Subcommittee meeting into order at 1:03 pm.

2. Approve minutes from 8-9-24

   Kathryn Cook asked for a discussion and a vote.

MOTION TO APPROVE MEETING MINUTES

Andrew Pfaff moved, Mark Davis seconded, and it was unanimously voted by roll call, "To approve the meeting minutes as amended."

<u>Roll Call</u>
For: Andrew Pfaff, Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

3. Approve all outstanding invoices

   The Subcommittee has agreed to hold the invoice from Skanska USA Building Inc. as they have questions about the timesheet.

   Kathryn Cook asked for a discussion and a vote.

MOTION TO APPROVE OUSTANDING INVOICES

Andrew Pfaff moved, Mark Davis seconded, and it was unanimously voted by roll call, "To approve the Arrowstreet Inc. invoice #729715, in the amount of $19,680."

Roll Call
For: Andrew Pfaff, Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

4. Next meeting date – TBD as needed

5. Discussion of any and all financial aspects of proposed Neary project including current estimated project costs for C.4. Discussion will also potentially include ongoing discussion of estimated impact of the estimated cost of C.4 on all aspects of the Town budget including the projected impact on the real estate levies for the next five fiscal years.

   Kathryn Cook shared that the Massachusetts School Building Authority has voted to increase reimbursement rates. The building costs will go from $550 to $586 per square foot, and the site costs will increase from $55 to $59 per square foot. This will decrease the town's share from $84 million to $81.8 million. Kathryn emphasized that the Finance Subcommittee's key role between now and the town meeting is to push on the costs. In the meeting, she hopes to get a list of things that they think they can reduce the costs on.

   The Finance Subcommittee has gone through a list of things that might happen between now and the submittal of the schematic design. As for the grossing factor, it is pushing Arrowstreet to design an efficient building so the grossing factor can be as low as possible. Kathryn wants to make it clear to Arrowstreet that the Finance Subcommittee wants them to design as efficiently as possible by reducing closet sizes, storage spaces, etc.
   As for the soil testing, Jim Burrows said he could check with Arrowstreet to see if the soil testing has been completed, and analyzed, and if the results are available for the Subcommittee to review and determine if what they came up with will impact the estimated site costs. Other business that may properly be brought forth (None at this time)

6. Public Comment (None at this time)

7. Adjournment
   Kathryn Cook requested a motion to adjourn.

MOTION TO ADJOURN

Andrew Pfaff moved, Mark Davis seconded, and it was unanimously voted by roll call, "To adjourn."

Roll Call
For: Andrew Pfaff, Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

Kathryn Cook adjourned the meeting at 2:05 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. NBC – Finance Subcommittee Agenda of September 11, 2024
2. NBC – Finance Subcommittee Meeting Minutes of August 9, 2024

RECEIVED
By Town Clerk/amb at 9:30 am, Oct 01, 2024

Town of Southborough, Massachusetts

Neary Building Committee – Communications Subcommittee

Friday October 4th, 2024

9:00 AM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order
II. Approval of Meeting Minutes for August 12, 2024
III. Review of public outreach plans for remainder of calendar year 2024
    a. School Tours
    b. Office Hours at various locations
    c. Faculty/Staff
    d. Social Media and Website
IV. Public Comment
V. Meeting Schedule
VI. Other business that may properly come before the Committee
VII. Adjournment

Jason W. Malinowski, NBC Chair

RECEIVED
By Town Clerk/ksb at 10:58 am, Oct 24, 2024

Town of Southborough, Massachusetts

Neary Building Committee – Communications Subcommittee

Friday, October 4th, 2024

9:00 AM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Neary Building Committee – Communications Subcommittee

Members Present: Denise Eddy, Roger Challen, and Jason Malinowski

Members Absent: None

Ex-Officio

Members Present: Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning (arrived at 9:22 am)

Members Absent: Kathleen Valenti, Principal of Neary School

Also Present: Gregory Martineau, Superintendent of Schools

I. Call Meeting to Order

Jason Malinowski called the Neary Building Committee - Communication Subcommittee into order at 9:05 AM.

II. Approval of Meeting Minutes for August 12, 2024
Jason Malinowski asked for a discussion and a vote.

MOTION TO APPROVE MEETING MINUTES

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted, "To approve the minutes as presented."

Roll Call
For: Denise Eddy, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

III. Review of public outreach plans for remainder of calendar year 2024
a. School Tours
Jason Malinowski and Superintendent Martineau have been discussing the possibility of organizing a school tour to allow the community to visit the school, as requested by

community members. Keith Lavoie, Assistant Superintendent of Operations, is collaborating with Bryan Fantony, Facilities Manager, to schedule two tour dates - one during the weekend and one in the evening. Additionally, Superintendent Martineau is coordinating with SAM Cable to arrange for a video to be available for those who are unable to attend the tour in person.

b. Office Hours at various locations

Superintendent Martineau suggested that during one of the principal's coffee hours, they could focus on the relocation plan, share information about the project, and answer questions. Jason Malinowski recommended that one of the Neary Building Committee members should attend a public building meeting to capture the full population, as other boards and Committees do. Roger Challen mentioned that he will need to provide the Senior Center with a newsletter to encourage people to come and learn about the project, and to set dates for discussions and updates. Superintendent Martineau suggested contacting the Community Advocate to arrange a monthly series leading up to the project and to proactively collaborate with My Southborough to provide accurate information. Jason will reach out to My Southborough to discuss how they plan to cover the project and what information they can provide in the future. Superintendent Martineau also recommended discussing with Mark Purple, Town Administrator, the potential plans for the Finn School and how it can benefit the community if the project passes. The Committee also agrees on the importance of reaching out to families who do not currently have students in the school system, as they would benefit from this project. Denise Eddy will include Neary Project updates in the Algonquin Regional High School Parent-Teacher Organization newsletter.

c. Faculty/Staff

d. Social Media and Website

Jason Malinowski reminded the Subcommittee that they only use Facebook as their only social media platform and have only used it to post announcements. Jason believes that after every Neary Building Committee meeting, they should put together a paragraph written of what the Committee discussed regarding design-build versus construction manager at risk, how it will impact the project, etc. Superintendent Martineau shared that he and his team have spent a lot of time with the current website, seeing what it can do, and how to make it work, and he concludes that it is not user-friendly, will not serve them well, and would take a tremendous amount of effort to maintain the website. He recommends that they move in a different direction and will present it to the full Committee on October 7th.

IV. Public Comment (None at this time)

V. Meeting Schedule – To be determined

VI. Other business that may properly come before the Committee (None at this time)

VII. Adjournment

Jason Malinowski requested a motion to adjourn.

MOTION TO ADJOURN

Jason Malinowski moved, Roger Challen seconded and it was unanimously voted by roll call, "To adjourn."

Roll Call
For: Denise Eddy, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 9:54 am.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

Documents used during the meeting:

1. NBC – Communications Subcommittee Agenda of October 4, 2024
2. NBC – Communications Subcommittee Meeting Minutes of August 12, 2024

RECEIVED
By Town Clerk/amb at 12:39 pm, Nov 01, 2024

Town of Southborough, Massachusetts

Neary Building Committee – Sustainability Subcommittee

Wednesday, November 6th, 2024

11:00 AM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at:

https://www.southboroughma.gov/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order

II. Discussion with Mass Saves regarding available incentives for HVAC systems

III. Review of HVAC system options

IV. Public Comment

V. Other business that may properly come before the Committee

VI. Adjournment

Roger Challen, Chair

RECEIVED
By Town Clerk/amb at 3:02 pm, Feb 19, 2025

Town of Southborough, Massachusetts

Neary Building Committee – Sustainability Subcommittee Meeting Minutes

Wednesday, November 6th, 2024

11:00 AM

Virtual Zoom Meeting

Neary Building Committee – Sustainability Subcommittee

Members Present: Roger Challen, Mark Davis, and Chris Evers

Members Absent: None

Ex-Officio

Members Present: Keith Lavoie, Assistant Superintendent of Operations

Members Absent: None

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

I. Call Meeting to Order

Roger Challen called the NBC - Sustainability Subcommittee Meeting to order at 11:10 am.

II. Discussion with Mass Saves regarding available incentives for HVAC systems

National Grid representatives Eileen Barrett and Olivia Kubaska presented on the New Construction and Major Renovation Program. HVAC incentive programs are focused on encouraging low-energy, all-electric construction and renovations. They outlined two primary incentive pathways: Pathway 1, which requires post-occupancy monitoring and meeting low energy use intensity (EUI) targets, and is $3.50 per square foot, and Pathway 2, which provides incentives based on design specifications for larger commercial buildings, labs, and schools without requiring post-occupancy performance and it is $1.25 per square foot. For new construction, all-electric systems are mandatory except for emergency shelters that can use fossil-fuel backup systems. Renovations with existing natural gas connections may retain them but will not qualify for incentives. Ground source heat pumps were highlighted for their ability to meet strict EUl targets despite higher upfront costs, while air source systems have lower incentives. Specific incentives tailored to schools include a target EUl of 25 for elementary schools, with slightly higher allowances for high schools. Post-construction monitoring supports these targets, and incentives are issued based on square footage if goals are achieved. Additional discussions covered dual-fuel systems for emergency shelters, solar energy considerations, and electric vehicle charging infrastructure. Solar incentives, including federal support for solar installations, are available and encourage net-zero readiness without impacting HVAC incentive processes.

III. Review of HVAC system options

The Subcommittee also evaluated HVAC options, including ground source heat pumps, air source variable refrigerant flow (VRF) systems, and air-to-water heat pump chiller plants, with cost considerations including investment tax credits for ground source systems. LEED certification updates were reviewed, along with plans to finalize system selections in a Subcommittee meeting on the week of December 16th, and a full Neary Building Committee decision. Solar readiness, potential power purchase agreements (PPAs), and emergency shelter capacity are scheduled for further review in the coming months.

IV. Public Comment (None at this time)

V. Other business that may properly come before the Committee (None at this time)

VI. Adjournment

Roger Challen requested a motion to adjourn.

Mark Davis moved, Chris Evers seconded, and it was unanimously voted by roll call, "To adjourn."

MOTION TO ADJOURN

Roll Call
For: Mark Davis, Chris Evers, and Roger Challen
Opposed: None
Abstained: None

Roger Challen adjourned the meeting at 12:10 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

Documents used during the meeting:

1. NBC – Sustainability Subcommittee Agenda of November 6, 2024

Neary Building Project Overview

Ivan G. Smith Elementary by Tappe Architects

Mary E. Finn Elementary School Community Presentation, November 8, 2024, 9:30am, 60 Richards Road, Southborough

Goals

Hildreth Elementary by ARROWSTREET Architects

Provide an overview of the process.

Explain how a new Gr. 2-5 elementary school meets the future educational needs.

Share how the proposed design of the new school meets these needs.

Lay out our plan for consolidating the two schools in a way that's least disruptive to our community and our students.

Provide detailed numbers on what the project will cost, what situate share of the expenses, how the Town plans to finance this expense, and the impact it will have on our tax assessments.

Explain what a yes and no vote mean for the project, which our district will present to our town's voters or approval at a special town meeting on May 10, 2025, and on the town election ballot on May 13, 2025.

Process

The Town of Southborough:

Embarked on the Massachusetts School Building Association's (MSBA) Core Building Program process in September of 2021, to evaluate the needs of the aging Margaret A. Neary Elementary School.

Submitted SOI to MSBA

Submitted a Statement of Interest (SOI) to MSBA in **June of 2021.**

Accepted Invitation

Accepted the MSBA Board of Directors invitation to its Core Building Program in the **spring of 2022**

Process Commenced

Began the MSBA process on **August 1, 2022.**

Margaret A. Neary Elementary School

Existing Conditions

The current Neary facility does not have the capacity to deliver the type of programming that grants students an excellent educational experience.

Base Repair

To meet the educational programming requirements and to bring the current building to code the Base Repair cost is estimated to be $63,000,000.

MSBA Overview

MSBA is a state agency that accepts a limited number of applications through a **highly competitive process each year to provide grants for the construction and renovation of public schools.**

By entering this process, the Town of Southborough stands to receive state money to help pay for the new school's construction.

For the **past 17 months**, the Neary Building Committee has been engaged in the feasibility study, preliminary design, and schematics of the plan.

Eligibility	**Completed**
Feasibility	**Completed**
Schematic Design	**In Process**
Funding	**May 10 and May 13, 2025**
Construction	**2026 - 2027**

Reviewed Options

Option 1:
New Construction
Grades 4-5 (305)

Option 2:
Add / Reno
Grades 2-5 (610)

Option 3:
New Construction
Grades 2 - 5 (610)

After extensive work by the Neary Building Committee, the preferred option is a new elementary school to house grades two through five.

Benefits of a New School (Grades 2- 5)

The design is centered on the educational program vision, which aligns with the District's strategic plan, ***Vision 2026: Educate, Inspire, and Challenge***.

Community Building

Academic

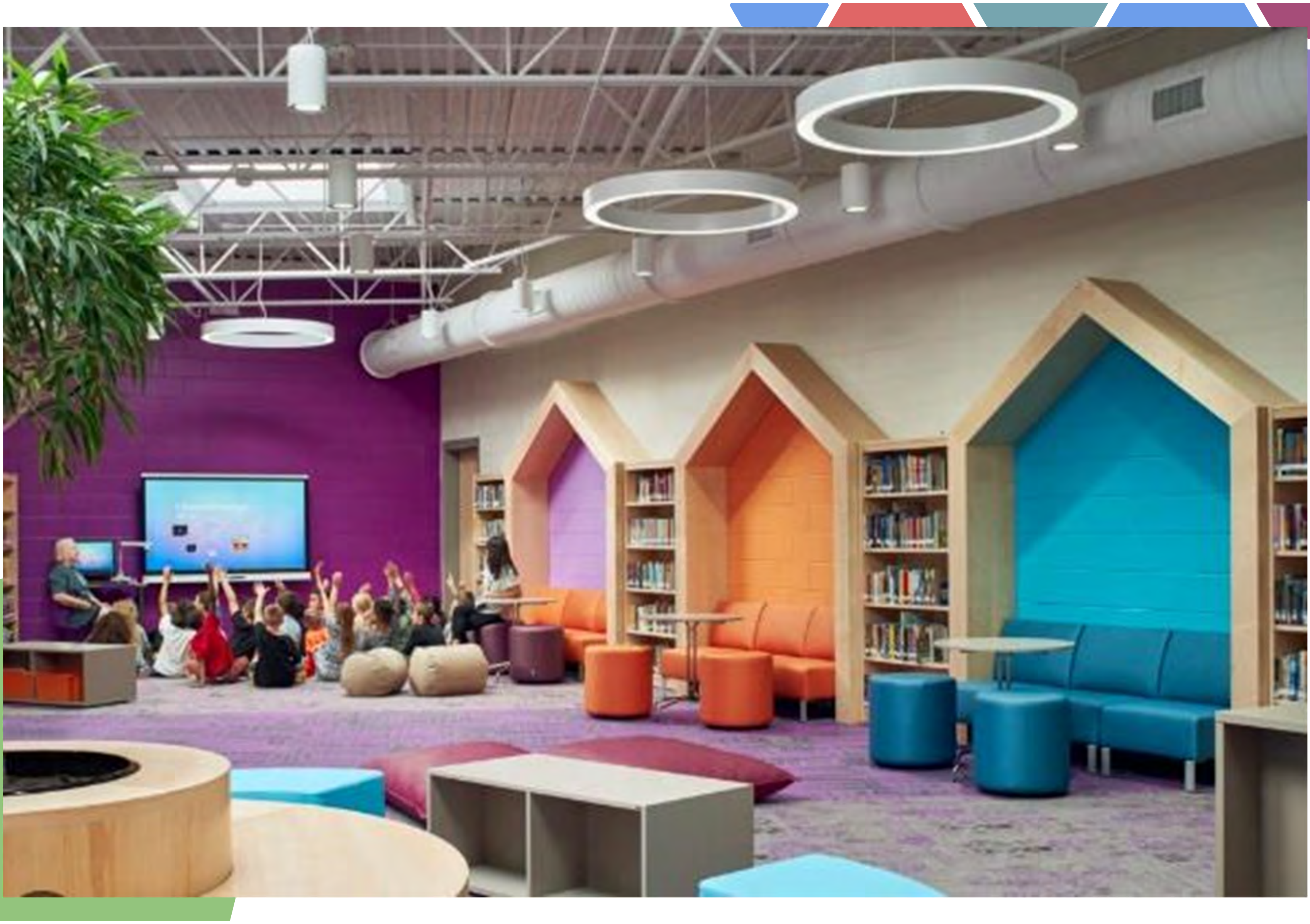
Operational Efficiency

LEARNING COMMONS EXAMPLE - SMITH (DANVERS)

CONTINUOUS WIDTH SPACE

Ivan G Smith Elementary by Tappe Architects

- 16 FOOT WIDE SPACE
- SMALL GROUP WORK TABLES
- SOFT SEATING AROUND WHITE BOARD
- MOBILE SMART SCREEN



Benefits of a New School (Grades 2- 5)

The design is centered on the educational program vision, which aligns with the District's strategic plan, ***Vision 2026: Educate, Inspire, and Challenge***.

Community Building

Academic

Operational Efficiency

Benefits of a New School (Grades 2- 5)

Community Building

Community Building

Family engagement
Multi-year relationship building
Consistent communication platforms
Established parent volunteer programs
Cultural celebrations
Parent education workshops
Reduce school transitions
School-wide positive behavior support
Common values and expectations
Traditional annual events

Staff Collaboration

Regular grade-level team meetings
Cross-grade curriculum planning
Shared best practices
Mentoring relationships between teachers
Collaborative problem-solving
Joint parent conference planning

Benefits of a New School (Grades 2- 5)

Academic

Academic Benefits

Teachers can create seamless transitions between grade levels
Easier implementation of STEM and project-based learning
Coordinated use of educational technology across grades
More flexible and inclusive learning spaces
Greater opportunities for flexible groupings and collaboration
Increased educator collaboration across grade levels
Enhanced music spaces for practice and performance

Student Growth

Long-term relationships with support staff and specialists
Consistent academic expectations
Coordinated intervention programs
Better tracking of individual student progress over multiple years
Earlier identification of learning challenges
Smoother transitions between grade levels

Benefits of a New School (Grades 2- 5)

Social
Emotional

Social-Emotional Benefits
Reduced transitions for students
Greater connections and sense of belonging
Increased continuity of services and supports
Reduced Anxiety
Greater Behavioral expectations
Age-appropriate assemblies and presentations
Greater focused counseling programs
Individually tailored social skills curriculum
Appropriate peer groupings
Targeted conflict resolution strategies

Student Leadership Development
Student council opportunities
Cross-grade mentors-reading buddies, etc.

Benefits of a New School (Grades 2- 5)

Operational & Leadership

Operational

Resource management
Shared instructional materials
Maximize technology resources
Custodial resources
Simplified transportation system
Designed for energy efficiencies

Leadership Benefits

Consistent procedures for responding to student behaviors
Streamlined communication channels
Targeted professional development
Coordinated school safety
Unified school improvement planning
Focused budget allocation
Coordinated scheduling of specialists and support staff
Aligned enrichment programs
Greater flexibility in special education programming

Design

First Floor

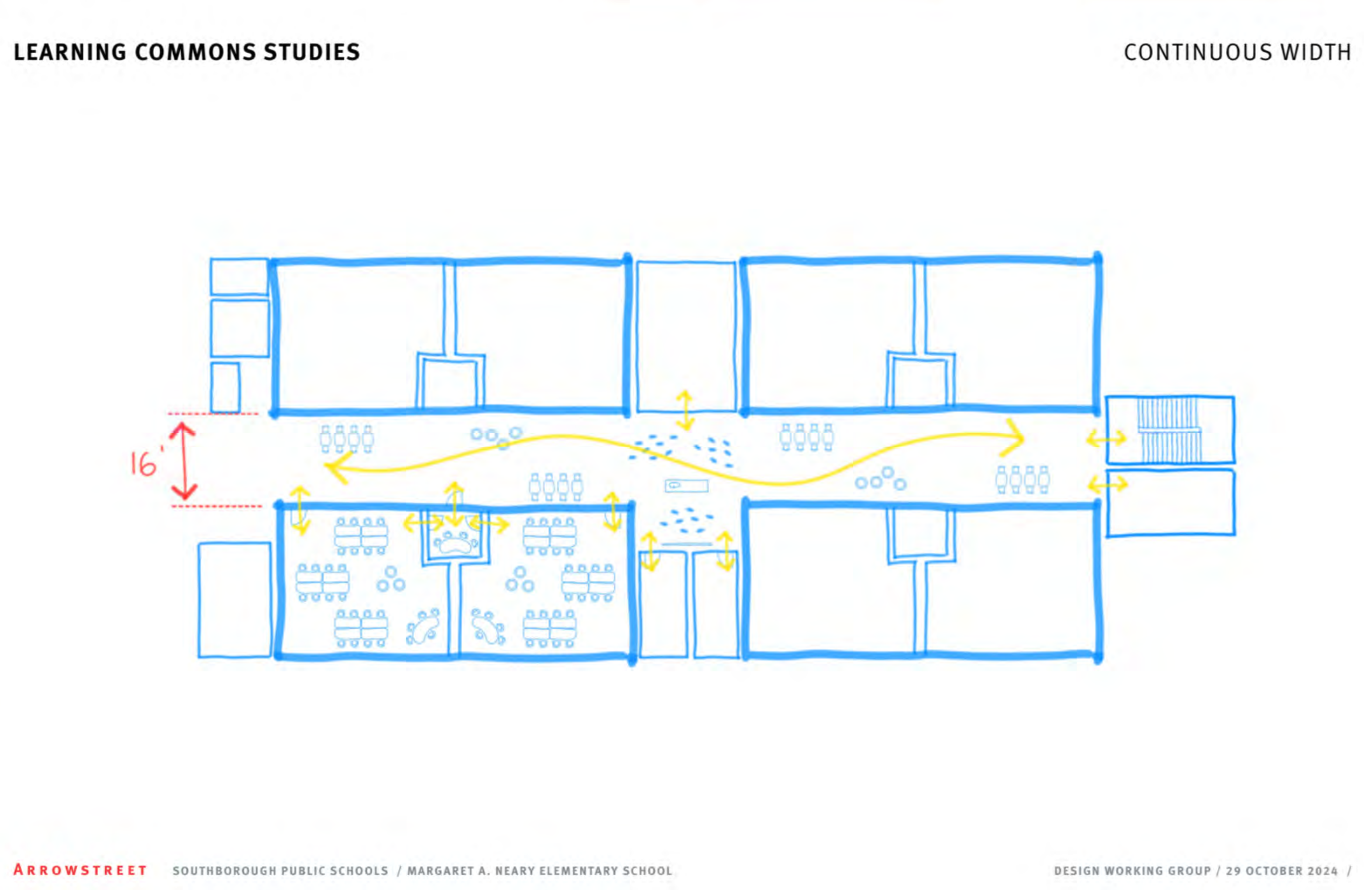
Design

Second Floor

Design

DORE + WHITTIER
Architecture · Project Management

Design



LEARNING COMMONS STUDIES

CONTINUOUS WIDTH

ARROWSTREET SOUTHBOROUGH PUBLIC SCHOOLS / MARGARET A. NEARY ELEMENTARY SCHOOL

DESIGN WORKING GROUP / 29 OCTOBER 2024 /

Design

DORE + WHITTIER
Architecture · Project Management

Design

DORE + WHITTIER
Architecture · Project Management

Relocation Plan During Construction

The goals are to ensure:

- the integrity of the grade-level experience for all students,
- student safety and minimize the direct impact of construction on students, faculty, and staff, and
- continuity for families and students.

2026-2027
Finn: Grades PreK (Sboro), Kindergarten, One, and Two
Woodward: Grades Three, Four, and Five

2027-2028
Finn: Grades PreK (Sboro), Kindergarten, One, and Two
Woodward: Grades Three, Four, and Five

2028-2029
Woodward: Grades PreK, Kindergarten, and One
New School: Grades Two - Five

Project Funding

Total Estimated Project Cost	$113.6 M
Estimated MSBA Reimbursement	($31.8 M)
Total Cost Paid by Southborough Taxpayers	$81.8 M

All amounts are estimates at this time and subject to further design modifications and additional cost estimating.

Estimated Homeowner Tax Impact

	$900K Assessed Value	**$600K Assessed Value**
Estimated Cost per Household Starting in FY 29	$1,207 annually	$811 annually

MSBA Overview

MSBA is a state agency that accepts a limited number of applications through a **highly competitive process each year to provide grants for the construction and renovation of public schools.**

By entering this process, the Town of Southborough stands to receive state money to help pay for the new school's construction.

For the **past 17 months**, the Neary Building Committee has been engaged in the feasibility study, preliminary design, and schematics of the plan.

Eligibility	**Completed**
Feasibility	**Completed**
Schematic Design	**In Process**
Funding	**May 10 and May 13, 2025**
Construction	**2026 - 2028**

Key Votes

May 10, 2025 - 9 AM
Special Town Meeting
Two-Thirds Required for Approval

May 13, 2025
Ballot Question
Majority Vote

Impact of a Yes Vote

If voters approve the project in the town election, the MSBA project team would move forward with final design of a new elementary school, then construction with the goal of cutting the ribbon and occupying the new school in fall of 2028.

Impact of a No Vote

- Still need to immediately address the base repairs for Neary to continue to operate as a school, which have been deferred during this current process
- Educational plan would not be met
- Escalating construction costs annually far exceed cost of borrowing
- MSBA involvement would cease and any future MSBA involvement on a future project would require the filing of a new Statement of Interest by the town. 100% of these expenses would likely have to be paid with local tax dollars.

Stay Informed

- Neary Building Project Website
- Facebook
- ParentSquare
- Neary Building Committee Meetings
- Building Tours

RECEIVED
By Town Clerk/jfh at 11:46 am, Nov 12, 2024

Town of Southborough, MA

Neary Building Committee Finance Subcommittee

Neary Building Committee

Thursday, November 14, 2024   1:30 P.M.

Virtual Zoom Meeting

This meeting may be watched and/or participated in remotely with the meeting link at: [https://ma-southborough.civicplus.com/674/Virtual-Meetings.](https://ma-southborough.civicplus.com/674/Virtual-Meetings)

Agenda

1. Call Meeting to Order
2. Approve minutes from 9-11-24
3. Approve all outstanding invoices
4. Next meeting date – TBD as needed
5. Discussion of any and all financial aspects of proposed Neary project including current estimated project costs for C.4. Discussion will also potentially include ongoing discussion of estimated impact of the estimated cost of C.4 on all aspects of the Town budget including the projected impact on the real estate levies for the next five fiscal years. Discussion will include the pros and cons of using the two types of building contracts – CMR and DBB.
6. Other business that may properly be brought forth
7. Public Comment
8. Adjournment

Submitted by: Kathryn M. Cook, Chair

RECEIVED
By Town Clerk/amb at 2:45 pm, Jan 07, 2025

Town of Southborough, MA

Neary Building Committee Finance Subcommittee

Neary Building Committee

Thursday, November 14, 2024

1:30 P.M.

Virtual Zoom Meeting

Neary Building Committee – Finance Subcommittee

Members Present: Kathryn Cook, Andrew Pfaff, and Mark Davis (left at 2:14 pm)

Members Absent: None

Ex-Officio

Members Present: Rebecca Pellegrino, Assistant Superintendent of Finance, and Brian Ballantine, Town Treasurer/ Finance Director

Members Absent: None

1. Call Meeting to Order Agenda

   Kathryn Cook called the Neary Building Committee - Finance Subcommittee meeting into order at 1:32 pm.

2. Approve minutes from 9-11-24

   Kathryn Cook asked for a discussion and a vote.

MOTION TO APPROVE MEETING MINUTES

Andrew Pfaf moved, Mark Davis seconded, and it was unanimously voted by roll call, "To approve the September 11th minutes as sent."

Roll Call
For: Andrew Pfaf , Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

3. Approve all outstanding invoices

   Kathryn Cook asked for a discussion and a vote.

MOTION TO APPROVE OUSTANDING INVOICES

Andrew Pfaf moved, Mark Davis seconded, and it was unanimously voted by roll call, "To approve invoice #729782 in the amount of $7,700."

Roll Call
For: Andrew Pfaf , Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

MOTION TO APPROVE OUSTANDING INVOICES

Andrew Pfaf moved, Mark Davis seconded, and it was unanimously voted by roll call, "To approve the Arrowstreet invoice #729819 in the amount of $8,120."

Roll Call
For: Andrew Pfaf , Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

MOTION TO APPROVE OUSTANDING INVOICES

Andrew Pfaf moved, Mark Davis seconded, and it was unanimously voted by roll call, "To approve the invoice #1323833-1554-11 in the amount of $2,600."

Roll Call
For: Andrew Pfaf , Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

4. Next meeting date – TBD as needed

5. Discussion of any and all financial aspects of proposed Neary project including current estimated project costs for C.4. Discussion will also potentially include ongoing discussion of estimated impact of the estimated cost of C.4 on all aspects of the Town budget including the projected impact on the real estate levies for the next five fiscal years. Discussion will include the pros and cons of using the two types of building contracts – CMR and DBB.

The Finance Subcommittee explored the benefits of the Construction Manager at Risk (CMR) model compared to the Design-Bid-Build (DBB) method. The CMR model has early involvement in managing complexity, budget, and schedule. Jim Burrows, Project Manager at Skanska, discussed the advantages which include better preconstruction planning, subcontractor oversight, and cost control through the Guaranteed Maximum Price (GMP) structure, where unspent funds are returned to the client. Although CMR incurs higher upfront costs, typically resulting in a 1% increase in general conditions staffing, its benefits include robust oversight, effective agency planning, and flexibility. Additionally, general requirements such as site safety and site logistics contribute to an overall increase of about 2%. Therefore, CMR is often considered a preferred option. Contingencies, including design, GMP, and construction, were discussed, with specific percentages allocated to manage unforeseen costs.

The Design-Bid-Build (DBB) method selects the lowest bidder without considering subcontractors. If they choose the DBB approach, they will then discuss increasing the construction contingency and do not have line of sight to approve where the funds are going.

The meeting highlighted the importance of financial oversight, with all GMP contingency expenditures requiring approval and regular budget reviews. The estimating process involves three reconciled estimates, with the construction manager hired after schematic design. A design contingency is carried out until the GMP is finalized, while soft cost contingencies cover additional services and technology expenses.

The meeting concluded with a recommendation to propose the CMR approach in an upcoming meeting, highlighting its transparency, flexibility, and alignment with project goals.

6. Other business that may properly be brought forth (None at this time)

7. Public Comment (None at this time)

8. Adjournment

Kathryn Cook requested a motion to adjourn.

MOTION TO ADJOURN

Andrew Pfaf moved, Kathryn Cook seconded, and it was unanimously voted by roll call, "To adjourn."

Roll Call
For: Andrew Pfaf , and Kathryn Cook
Opposed: None
Abstained: None

Kathryn Cook adjourned the meeting at 2:25 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. NBC – Finance Subcommittee Agenda of November 14, 2024
2. NBC – Finance Subcommittee Meeting Minutes of September 11, 2024

Town of Southborough, Massachusetts

Neary Building Committee – Communications Subcommittee

Thursday November 21st, 2024

8:00 PM (or upon conclusion of full NBC Meeting)

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order
II. Approval of Meeting Minutes for October 18, 2024
III. Review and release of FAQs
IV. Communication Plan Update
V. Public Comment
VI. Meeting Schedule
VII. Other business that may properly come before the Committee
VIII. Adjournment

Jason W. Malinowski, NBC Chair

RECEIVED
By Town Clerk/amb at 1:26 pm, Dec 11, 2024

Town of Southborough, Massachusetts

Neary Building Committee – Communications Subcommittee

Thursday November 21st, 2024

8:00 PM (or upon conclusion of full NBC Meeting)

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Denise Eddy, and Jason Malinowski

Members Absent: None

Ex-Officio

Members Present: Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, and Kathleen Valenti, Neary School Principal

Members Absent: None

Also Present: Gregory Martineau, Superintendent of Schools

I. Call Meeting to Order

Jason Malinowski called the NBC – Communications Subcommittee to order at 8:55 pm.

II. Approval of Meeting Minutes for October 18, 2024

Jason Malinowski asked for a discussion and a vote.

MOTION TO APPROVE MEETING MINUTES

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted, "To approve the minutes as presented."

Roll Call
For: Denise Eddy, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

III. Review and release of FAQs

Roger Challen hosted a session at the Senior Center, which Superintendent Martineau also attended. During this session, a list of questions was summarized for the Subcommittee to review. They discussed how to address these questions and who else would need to be involved in the process. The primary focus was particularly on site safety, septic system assessments, and fifth-grade placement at Trottier Middle School.

It was noted that input from various stakeholders, including Skanska, Arrowstreet, and the Department of Public Works, is essential for resolving safety concerns. The discussions also covered project costs, potential funding options, the educational benefits of the new school, and plans for repurposing Finn School and other capital projects. Additionally, they highlighted the tax impact, enhancements to special education, and operational savings. There is a need for further analysis regarding wetlands issues as well.

IV. Communication Plan Update

The Subcommittee planned follow-up tapings, additional senior center office hours, and continued progress updates.

V. Public Comment (None at this time)

VI. Meeting Schedule – every other week as people's schedules allow.

VII. Other business that may properly come before the Committee (None at this time)

VIII. Adjournment

Jason Malinowski requested a motion to adjourn.

Jason Malinowski moved, Denise Eddy seconded, and it was unanimously voted, "To adjourn."

MOTION TO APPROVE MEETING MINUTES

Roll Call
For: Denise Eddy, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 9:19 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

Documents used during the meeting:

1. NBC – Communications Subcommittee Agenda November 21, 2024
2. NBC – Communications Subcommittee Meeting Minutes of October 18, 2024

Town of Southborough, Massachusetts

Neary Building Committee – Communications Subcommittee

Thursday December 5th, 2024

8:00 PM (or upon conclusion of full NBC Meeting)

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order
II. Approval of Meeting Minutes for November 21, 2024
III. Communication Plan Update
IV. Review and release of FAQs and project statement on the why project is needed
V. Public Comment
VI. Meeting Schedule
VII. Other business that may properly come before the Committee
VIII. Adjournment

Jason W. Malinowski, NBC Chair

Town of Southborough, Massachusetts

Neary Building Committee – Communications Subcommittee

Thursday December 5th, 2024

8:00 PM (or upon conclusion of full NBC Meeting)

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Denise Eddy, and Jason Malinowski

Members Absent: None

Ex-Officio

Members Present: Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning, and Kathleen Valenti, Neary School Principal

Members Absent: None

Also Present: Gregory Martineau Superintendent of Schools

I. Call Meeting to Order

Jason Malinowski called the NBC – Communications Subcommittee meeting to order at 8:24 pm.

II. Approval of Meeting Minutes for November 21, 2024

Jason Malinowski asked for a discussion and a vote.

Jason Malinowski moved, Denise Eddy seconded, and it was unanimously voted by roll call, "To approve the minutes as presented."

MOTION TO APPROVE MEETING MINUTES

Roll Call
For: Denise Eddy, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

III. Communication Plan Update

The communication plan update highlighted progress in meeting October milestones, with a key issue being the distribution of flyers to community spaces. Jason Malinowski and Superintendent Martineau are set to record the first video series next week, while timing for the My Southborough article remains under discussion. Monthly updates are proposed to begin in January, emphasizing engagement with visuals. Website updates from November will be reviewed for community feedback, with suggestions for a Chabot and improved visibility measures like a scrolling TV display. Office hours are planned for January to address various project aspects, alongside updating FAQs and coordinating communication efforts. Plans also include drafting a project justification document, fostering community engagement and integrating expert involvement at key meetings.

IV. Review and release of FAQs and project statement on the why project is needed

A project justification document is being developed to outline the need for the project, categorized into facility, educational, and safety reasons. Denise Eddy will lead the effort, with input from the group to ensure the document is comprehensive and addresses community concerns effectively.

V. Public Comment (None at this time)

VI. Meeting Schedule – December 16, 2024

VII. Other business that may properly come before the Committee (None at this time)

VIII. Adjournment

Jason Malinowski requested a motion to adjourn.

MOTION TO ADJOURN

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "To adjourn."

Roll Call
For: Denise Eddy, Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 8:54 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. NBC – Communications Subcommittee Agenda December 5, 2024
2. NBC – Communications Subcommittee Meeting Minutes of November 21, 2024

RECEIVED
By Town Clerk/amb at 3:24 pm, Dec 23, 2024

Town of Southborough, MA

Neary Building Committee Finance Subcommittee

Neary Building Committee

Monday, December 30, 2024 9 A.M.

Virtual Zoom Meeting

This meeting may be watched and/or participated in remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings.

Agenda

1. Call Meeting to Order
2. Approve minutes from 11-14-24
3. Approve all outstanding invoices
4. Next meeting date – TBD as needed
5. Other business that may properly be brought forth
6. Public Comment
7. Adjournment

Submitted by: Kathryn M. Cook, Chair

RECEIVED
By Town Clerk/amb at 3:25 pm, Jan 27, 2025

Town of Southborough, Massachusetts

Neary Building Committee Finance Subcommittee

Monday, December 30, 2024 9 A.M.

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Kathryn Cook, Andrew Pfaff, and Mark Davis

Members Absent: None

Ex-Officio

Members Present: Rebecca Pellegrino, Assistant Superintendent of Finance, and Brian Ballantine Town Treasurer/ Finance Director

Members Absent: None

1. Call Meeting to Order
   Kathryn Cook called the Neary Building Committee - Finance Subcommittee meeting into order at 9:09 am.

2. Approve minutes from 11-14-24
   Kathryn Cook asked for a discussion and a vote.

Andrew Pfaff moved, Mark Davis seconded, and it was unanimously voted by roll call, "To approve the minutes from the 14th."

MOTION TO APPROVE MEETING MINUTES

Roll Call
For: Andrew Pfaff, Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

3. Approve all outstanding invoices
   Kathryn Cook asked for a discussion and a vote.

Andrew Pfaff moved, Mark Davis seconded, and it was unanimously voted by roll call, "To approve the Skanska invoice #1323833-000-12 in the amount of $10,560."

MOTION TO APPROVE OUSTANDING INVOICES

Roll Call
For: Andrew Pfaff, Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

Kathryn Cook asked for a discussion and a vote.

MOTION TO APPROVE OUSTANDING INVOICES

Andrew Pfaff moved, Mark Davis seconded, and it was unanimously voted by roll call, “To approve the Arrowstreet invoice #729863 in the amount of $87,500.”

<u>Roll Call</u>
For: Andrew Pfaff, Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

4. Next meeting date – February 7, 2025, depending on when the Schematic Design submittal and reconcile estimates will be given to the Committee to review. They also agreed to hold February 8, 2025.

5. Other business that may properly be brought forth (None at this time)

6. Public Comment (None at this time)

7. Adjournment
Kathryn Cook requested a motion to adjourn.

MOTION TO ADJOURN

Andrew Pfaff moved, Mark Davis seconded, and it was unanimously voted by roll call, “To adjourn.”

<u>Roll Call</u>
For: Andrew Pfaff, Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

Kathryn Cook adjourned the meeting at 9:17 am.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. NBC – Finance Subcommittee Agenda of December 30, 2024
2. NBC – Finance Subcommittee Meeting Minutes of November 14, 2024

RECEIVED
By Town Clerk/amb at 11:13 am, Dec 19, 2024

Town of Southborough, Massachusetts

Neary Building Committee – Sustainability Subcommittee

Thursday January 2, 2025

1:00 PM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at:

https://www.southboroughma.gov/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order

II. Review the LCCA (Life Cycle Cost Analysis) from the HVAC engineers.

III. Public Comment

IV. Other business that may properly come before the Committee

V. Adjournment

Roger Challen, Chair

Town of Southborough, Massachusetts

Neary Building Committee – Sustainability Subcommittee

Thursday, January 2, 2025

1:00 PM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee – Sustainability Subcommittee

Members Present: Roger Challen, and Chris Evers

Members Absent: Mark Davis

Ex-Officio

Members Present: Keith Lavoie, Assistant Superintendent of Operations

Members Absent: None

I. Call Meeting to Order

Roger Challen called the NBC - Sustainability Subcommittee Meeting to order at 1:05 pm.

II. Review the LCCA (Life Cycle Cost Analysis) from the HVAC engineers.

Kate Bubriski from Arrowstreet reviewed the HVAC life cycle cost analysis (LCCA) as part of its efforts to finalize an HVAC system design for a sustainable, net-zero building. The meeting covered the evaluation of three system options: VRF systems, ground-source heat pumps, and air-to-water heat pump chillers. The focus was on assessing energy use, costs, maintenance, and overall performance to determine the best long-term solution.

The VRF system requires higher maintenance due to more components. The ground source heat pump emerged as the most energy-efficient option, especially with the availability of state and federal incentives, which provided instant payback. The air-to-water heat pump chiller offered moderate energy efficiency with the added advantage of reusable mechanical piping and air handlers. The ground source heat pump aimed to achieve an Energy Use Intensity (EUl) of 25 or less, meeting net-zero building standards.

The analysis compared systems based on energy use, indoor air quality, thermal comfort, acoustics, service life, and maintenance needs. Ground source and air source systems, utilizing displacement ventilation, provided superior air quality and quieter operation compared to the overhead system of the VRF option. Maintenance needs varied, with ground source systems requiring less frequent servicing, than air source systems, due to their design and indoor components.

Cost analysis showed that ground source systems had the lowest annual operational costs when incentives were applied. Without incentives, none of the systems achieved a payback within the assessed period. However, the ground source heat pump still stood out as the most cost-effective in the long term due to energy savings and incentive availability.

The Subcommittee agreed they would like the design consultants to move forward with the geothermal-based HVAC system design, marking a significant step toward achieving a sustainable and efficient infrastructure for the building project. An official vote will take place during a full Neary Building Committee meeting.

III. Public Comment (None at this time)

IV. Other business that may properly come before the Committee (None at this time)

V. Adjournment

Roger Challen requested a motion to adjourn.

Roger Challen moved, Chris Evers seconded, and it was unanimously voted by roll call, "To adjourn."

MOTION TO ADJOURN

Roll Call
For: Chris Evers, and Roger Challen
Opposed: None
Abstained: None

Roger Challen adjourned the meeting at 1:37 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

Documents used during the meeting:

1. NBC – Sustainability Subcommittee Agenda January 2, 2025

Neary Building Project Overview

Kindergroup Presentation
January 2025

Ivan G. Smith Elementary by Tappe Architects

Agenda


Hildreth Elementary by ARROWSTREET Architects

Process Overview to Date

Benefits of a new Gr. 2-5 elementary school meets the future educational needs.

Transition Plan During Construction

Project Cost and Funding

Impact of Yes and No Votes

How to Stay Informed

EXISTING SCHOOL BUILDINGS
FINN, NEARY, & WOODWARD


Finn ES (Grades PK-1)


Neary ES (Grades 4-5)


Woodward ES (Grades 2-3)

Process

The Town of Southborough:

Embarked on the Massachusetts School Building Association's (MSBA) Core Building Program process in September of 2021, to evaluate the needs of the aging Margaret A. Neary Elementary School.

Submitted SOI to MSBA

Submitted a Statement of Interest (SOI) to MSBA in **June of 2021.**

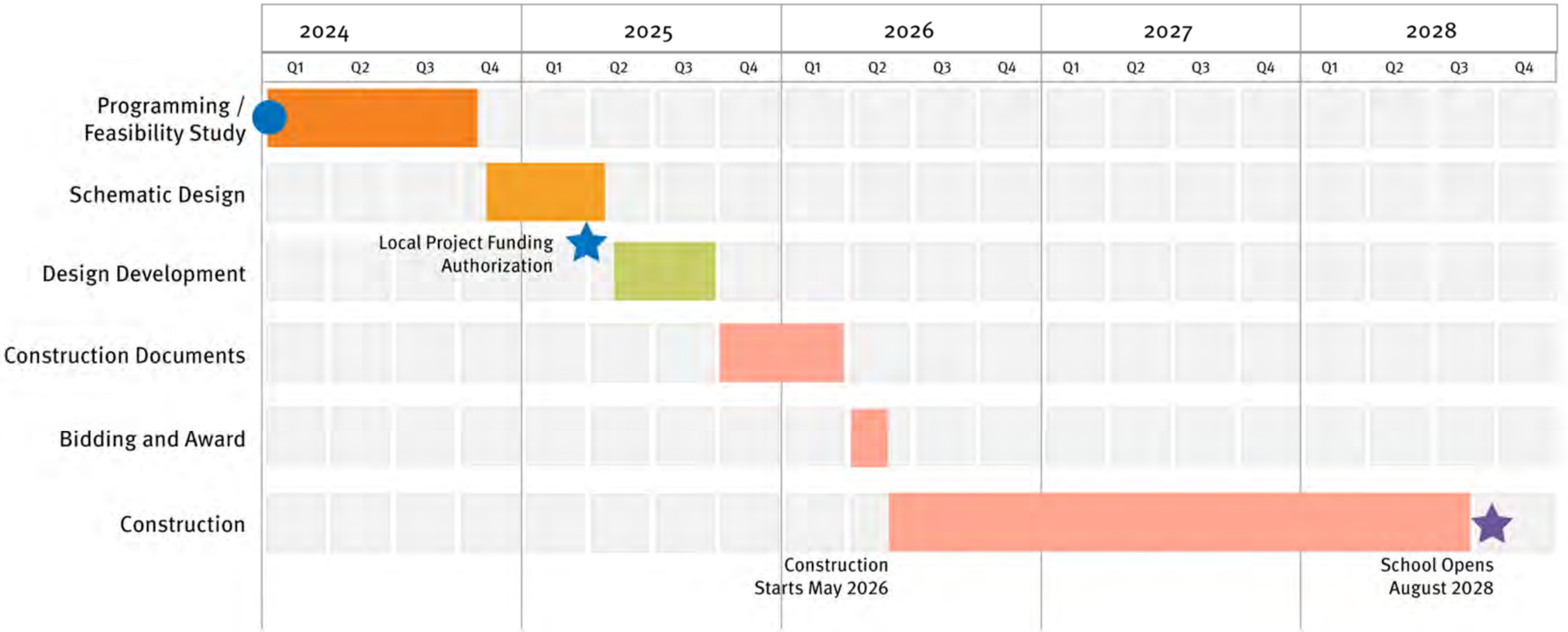
Accepted Invitation

Accepted the MSBA Board of Directors invitation to its Core Building Program in the **spring of 2022**

Process Commenced

Began the MSBA process on **August 1, 2022.**

PROJECT SCHEDULE
OVERALL TIMELINE



MSBA Overview

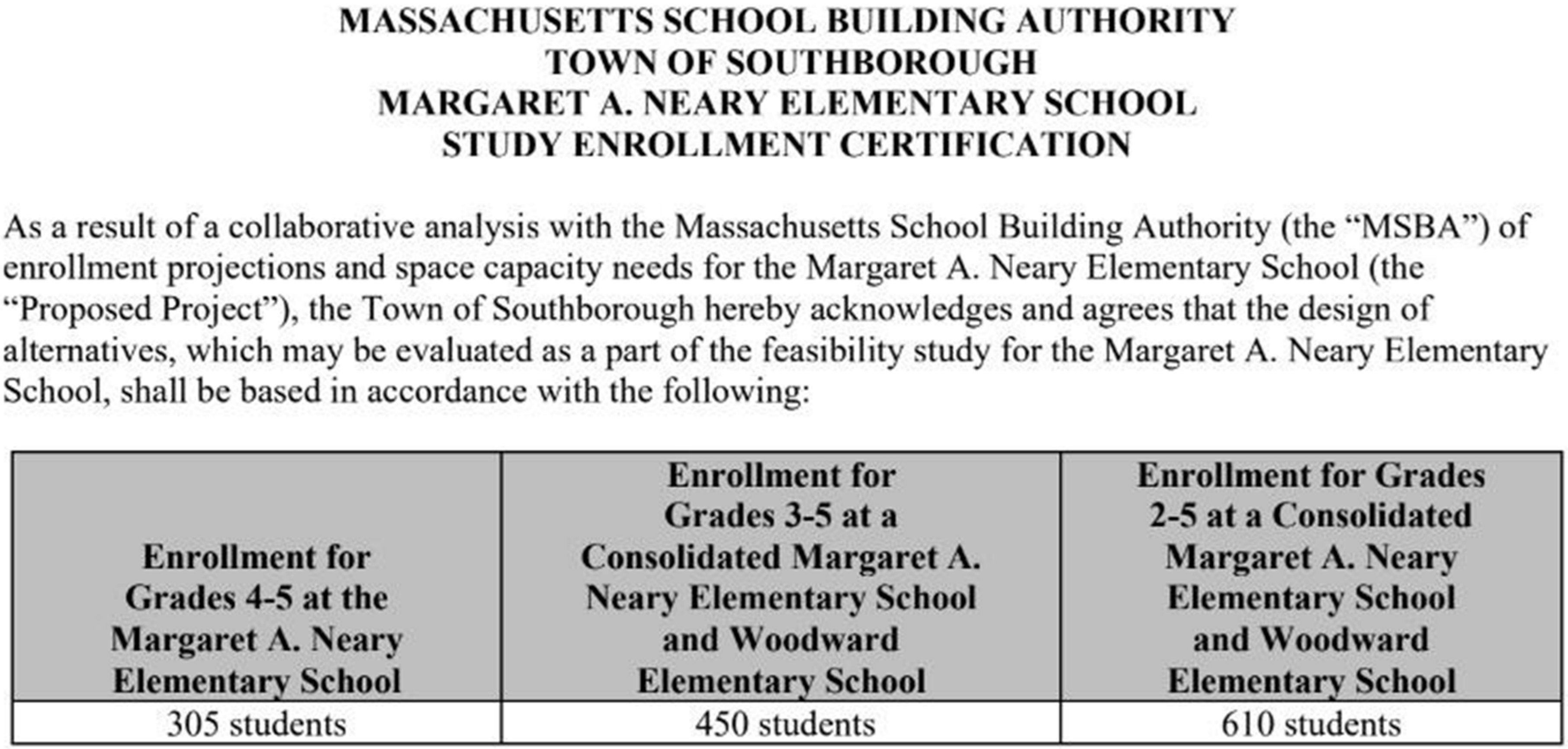
MSBA is a state agency that accepts a limited number of applications through a **highly competitive process each year to provide grants for the construction and renovation of public schools.**

By entering this process, the Town of Southborough stands to receive state money to help pay for the new school's construction.

For the **past 17 months**, the Neary Building Committee has been engaged in the feasibility study, preliminary design, and schematics of the plan.

Eligibility	**Completed**
Feasibility	**Completed**
Schematic Design	**In Process**
Funding	**May 10 and May 13, 2025**
Construction	**2026 - 2027**

Feasibility Grade-level Configuration Options



MASSACHUSETTS SCHOOL BUILDING AUTHORITY
TOWN OF SOUTHBOROUGH
MARGARET A. NEARY ELEMENTARY SCHOOL
STUDY ENROLLMENT CERTIFICATION

As a result of a collaborative analysis with the Massachusetts School Building Authority (the "MSBA") of enrollment projections and space capacity needs for the Margaret A. Neary Elementary School (the "Proposed Project"), the Town of Southborough hereby acknowledges and agrees that the design of alternatives, which may be evaluated as a part of the feasibility study for the Margaret A. Neary Elementary School, shall be based in accordance with the following:

Enrollment for Grades 4-5 at the Margaret A. Neary Elementary School	Enrollment for Grades 3-5 at a Consolidated Margaret A. Neary Elementary School and Woodward Elementary School	Enrollment for Grades 2-5 at a Consolidated Margaret A. Neary Elementary School and Woodward Elementary School
305 students	450 students	610 students

Margaret A. Neary Elementary School

Existing Conditions

The current Neary facility does not have the capacity to deliver the type of programming that grants students an excellent educational experience.

Base Repair

To meet the educational programming requirements and to bring the current building to code the Base Repair cost is estimated to be $63,000,000.

Additional photos - Found here - Neary Existing Conditions Photos

Reviewed Options

Option 1:
New Construction
Grades 4-5 (305)

Option 2:
Add / Reno
(Grades 2-5 610)

Option 3:
New Construction
(Grades 2 -5 610)

After extensive work by the Neary Building Committee, the preferred option is a new elementary school be built to house grades two through five.

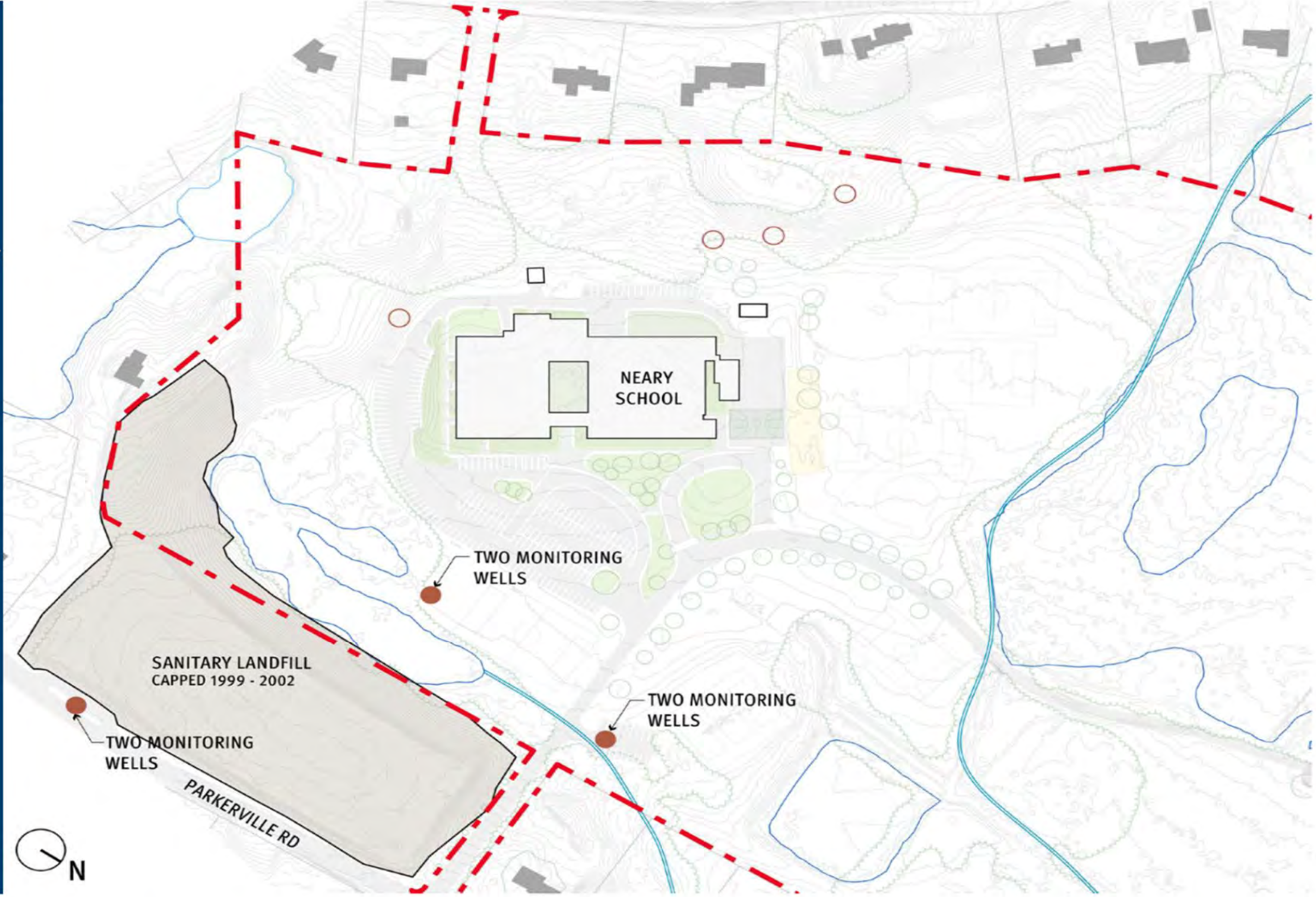
Site Selection and Considerations

LANDFILL

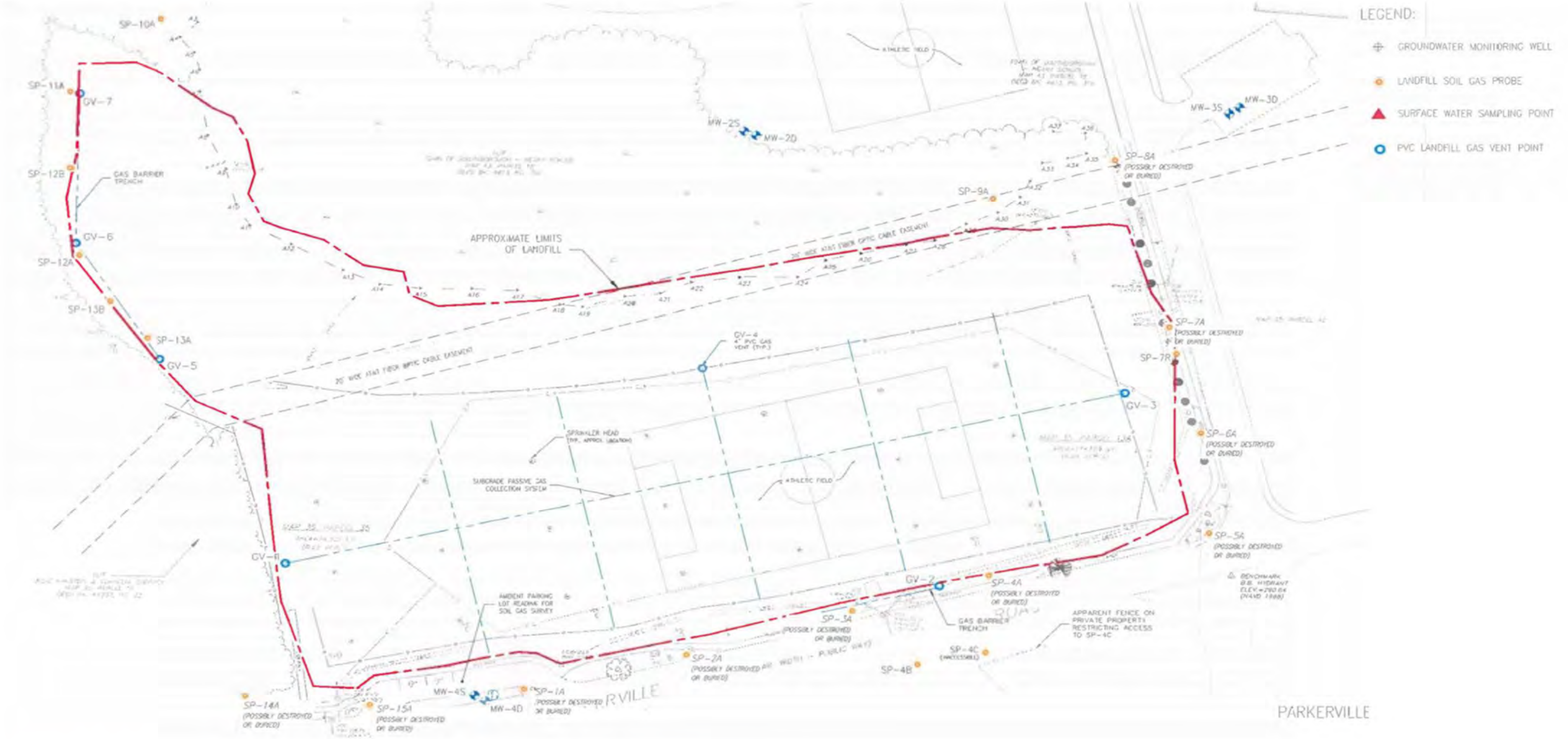
Landfill operated from the late 1930's through the mid-1970's.

The site was closed and capped between 1999 and 2002.

MassDEP performs annual sampling of surface water, groundwater, and soil gas.



LANDFILL PLAN



Benefits of a New School (Grades 2- 5)

The design is centered on the educational program vision, which aligns with the District's strategic plan, ***Vision 2026: Educate, Inspire, and Challenge***.

Community Building

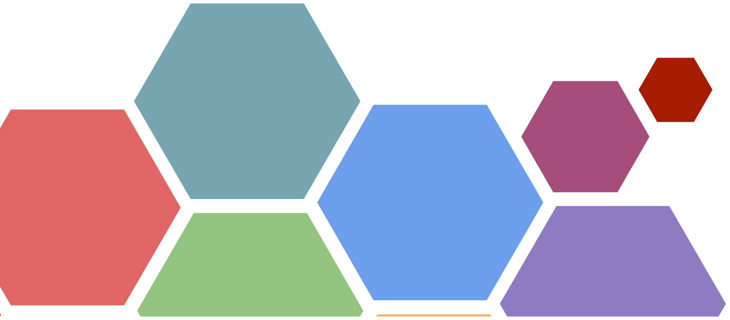
Academic

Social Emotional

Operational and Leadership

Benefits of a New School (Grades 2- 5)

Community Building



Community Building
Family engagement
Multi-year relationship building
Consistent communication platforms
Established parent volunteer programs
Cultural celebrations
Parent education workshops
Reduce school transitions
School-wide positive behavior support
Common values and expectations
Traditional annual events

Staff Collaboration
Regular grade-level team meetings
Cross-grade curriculum planning
Shared best practices
Mentoring relationships between teachers
Collaborative problem-solving
Joint parent conference planning

Benefits of a New School (Grades 2- 5)

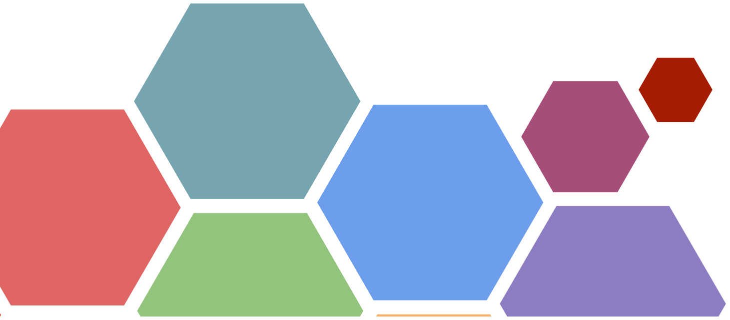
Academic

Academic Benefits

Teachers can create seamless transitions between grade levels
Easier implementation of STEM and project-based learning
Coordinated use of educational technology across grades
More flexible and inclusive learning spaces
Greater opportunities for flexible groupings and collaboration
Increased educator collaboration across grade levels
Enhanced music spaces for practice and performance

Student Growth

Long-term relationships with support staff and specialists
Consistent academic expectations
Coordinated intervention programs
Better tracking of individual student progress over multiple years
Earlier identification of learning challenges
Smoother transitions between grade levels

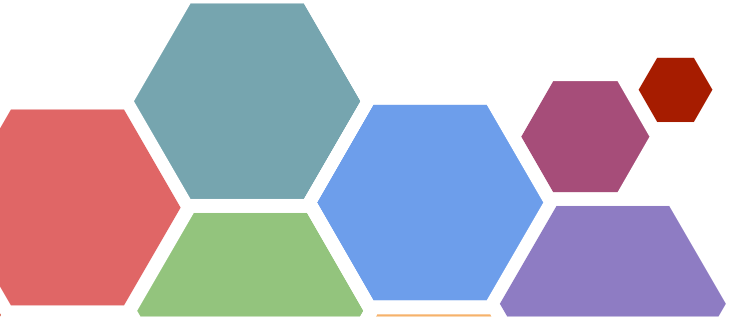


Benefits of a New School (Grades 2- 5)

Social Emotional

Social-Emotional Benefits
Reduced transitions for students
Greater connections and sense of belonging
Increased continuity of services and supports
Reduced Anxiety
Greater Behavioral expectations
Age-appropriate assemblies and presentations
Greater focused counseling programs
Individually tailored social skills curriculum
Appropriate peer groupings
Targeted conflict resolution strategies

Student Leadership Development
Student council opportunities
Cross-grade mentors-reading buddies, etc.

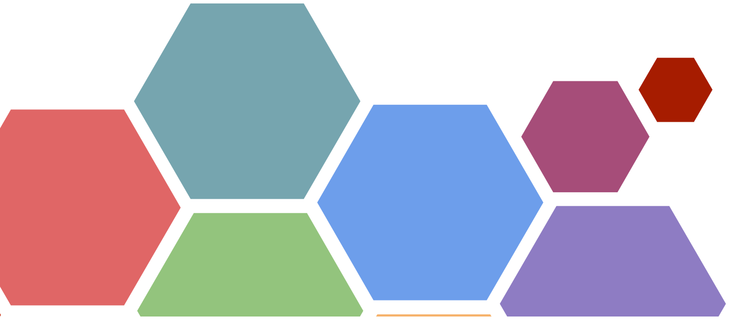


Benefits of a New School (Grades 2- 5)

Operational & Leadership

Operational
Resource management
Shared instructional materials
Maximize technology resources
Custodial resources
Simplified transportation system
Designed for energy efficiencies

Leadership Benefits
Consistent procedures for responding to student behaviors
Streamlined communication channels
Targeted professional development
Coordinated school safety
Unified school improvement planning
Focused budget allocation
Coordinated scheduling of specialists and support staff
Aligned enrichment programs
Greater flexibility in special education programming



Design

First Floor

Design

Second Floor

Relocation Plan During Construction

The goals are to ensure:

- the integrity of the grade-level experience for all students
- student safety and minimize the direct impact of construction on students, faculty, and staff
- continuity for families and students

2026-2027
Finn: Grades PreK (Sboro), Kindergarten, One, and Two
Woodward: Grades Three, Four, and Five

2027-2028
Finn: Grades PreK (Sboro), Kindergarten, One, and Two
Woodward: Grades Three, Four, and Five

2028-2029
Woodward: Grades PreK, Kindergarten, and One
New School: Grades Two - Five

Project Funding

Total Estimated Project Cost	$113.6 M
Estimated MSBA Reimbursement	($31.8 M)
Total Cost Paid by Southborough Taxpayers	$81.8 M

All amounts are estimates at this time and subject to further design modifications and additional cost estimating.

Estimated Homeowner Tax Impact

	$900K Assessed Value	$600K Assessed Value
Estimated Cost per Household Starting in FY 29	$1,207 annually	$811 annually

Key Votes

May 10, 2025 - 9 AM
Special Town Meeting
Two-Thirds Required for Approval

May 13, 2025
Ballot Question
Majority Vote

Impact of a Yes Vote

If voters approve the project in the town election, the MSBA project team would move forward with final design of a new elementary school, then construction with the goal of cutting the ribbon and occupying the new school in fall of 2028.

Impact of a No Vote

- Still need to immediately address the base repairs for Neary to continue to operate as a school, which have been deferred during this current process
- Educational plan would not be met
- Escalating construction costs annually far exceed cost of borrowing
- MSBA involvement would cease and any future MSBA involvement on a future project would require the filing of a new Statement of Interest by the town. 100% of these expenses would likely have to be paid with local tax dollars.

Stay Informed

- Neary Building Project Website
- Facebook
- ParentSquare
- Neary Building Committee Meetings
- Building Tours and Open Office Hours

Thank You

Questions

RECEIVED
By Town Clerk/amb at 10:17 am, Jan 14, 2025

Town of Southborough, Massachusetts

Neary Building Committee – Communications Subcommittee

January 17, 2025

9:00 AM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order
II. Approval of Meeting Minutes for December 16, 2024
III. Communication Plan Update
IV. Review and release of FAQs
V. Public Comment
VI. Meeting Schedule
VII. Other business that may properly come before the Committee
VIII. Adjournment

Jason W. Malinowski, NBC Chair

Town of Southborough, Massachusetts

Neary Building Committee - Communications Subcommittee

January 17, 2025

9:00 AM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Denise Eddy, and Jason Malinowski

Members Absent: None

Ex-Officio

Members Present: Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning

Members Absent: Kathleen Valenti, Neary School Principal

Also Present: Gregory Martineau Superintendent of Schools

I. Call Meeting to Order

Jason Malinowski called the NBC – Communications Subcommittee meeting to order at 9:03 am.

II. Approval of Meeting Minutes for December 16, 2024

The Subcommittee will vote on the December 16, 2024, meeting minutes during their next meeting.

III. Communication Plan Update

Jason Malinowski shared that over the past few weeks, they held their first set of open office hours and conducted two sessions with the Southborough Kinder Group, which consists primarily of parents with at least one non-school-aged child.

Regarding next steps, the full Neary Building Committee has agreed to schedule open office hours every other week moving forward. They are also collaborating with the principals to include an addition to their Principals' Coffee Hour, which was the most attended event for the Neary Building Committee in November.

Additionally, they have filmed a series of videos in partnership with Southborough Access Media and have implemented voice-over overlays from parts of the presentations. They will start publishing brief updates on social media, will send out a weekly newsletter through Parent Square to increase subscriptions, and will ensure that the Neary Building website is up to date and easy to navigate. Superintendent Martineau announced that Cathy Carmignani, Director of Instructional Technology and Science, will take a more prominent role in organizing and maintaining the website.

Roger Challen requested that the school administration provide a brief summary of the educational benefits associated with the building project. Superintendent Martineau mentioned that they are already working on a draft document. His goal is to create a packet for the Southborough School Committee that will include easy access to frequently asked questions, videos, and a comprehensive overview of the benefits. They aim to have the final packet ready before the Parent-Teacher Conferences in March 2025. Denise Eddy emphasized the need to address the deteriorating condition of the Neary School building.

IV. Review and release of FAQs

There are currently no new frequently asked questions that require a vote for release. However, Jason Malinowski has requested that Superintendent Martineau reorganize the website. He aims to improve how the questions are prioritized and linked together in terms of both importance and timeline.

V. Public Comment (None at this time)

VI. Meeting Schedule – January 31, 2025

VII. Other business that may properly come before the Committee (None at this time)

VIII. Adjournment

Jason Malinowski requested a motion to adjourn.

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, "To adjourn."

MOTION TO ADJOURN

Roll Call
For: Roger Challen, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 9:22 am.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. NBC – Communications Subcommittee Agenda of January 17, 2025

Town of Southborough, MA

Neary Building Committee Finance Subcommittee

Neary Building Committee

Friday, January 24, 2025 1 p.m.

Virtual Zoom Meeting

This meeting may be watched and/or participated in remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings.

Agenda

1. Call Meeting to Order
2. Approve minutes from 12-30-24
3. Approve all outstanding invoices
4. Discussion of plan for next meeting tentatively scheduled for 2-7-25
5. Other business that may properly be brought forth
6. Public Comment
7. Adjournment

Submitted by: Kathryn M. Cook, Chair

Town of Southborough, MA

Neary Building Committee Finance Subcommittee

Neary Building Committee

Friday, January 24, 2025 1 p.m.

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Kathryn Cook, Andrew Pfaff, and Mark Davis

Members Absent: None

Ex-Officio

Members Present: Rebecca Pellegrino, Assistant Superintendent of Finance, and Brian Ballantine Town Treasurer/ Finance Director

Members Absent: None

1. Call Meeting to Order

   Kathryn Cook called the Neary Building Committee - Finance Subcommittee meeting into order at 1:06 pm.

2. Approve minutes from 12-30-24

   Kathryn Cook asked for a discussion and a vote.

MOTION TO APPROVE MEETING MINUTES

Andrew Pfaff moved, Mark Davis seconded, and it was unanimously voted by roll call, "To approve the minutes for December 30th."

Roll Call
For: Andrew Pfaff, Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

3. Approve all outstanding invoices

   Kathryn Cook asked for a discussion and a vote.

MOTION TO APPROVE OUTSTANDING INVOICES

Andrew Pfaff moved, Mark Davis seconded, and it was unanimously voted by roll call, "To approve Arrowstreet invoice #729900 in the amount of $87,500."

<u>*Roll Call*</u>
For: Andrew Pfaff, Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

MOTION TO APPROVE OUTSTANDING INVOICES

Andrew Pfaff moved, Mark Davis seconded, and it was unanimously voted by roll call, "To approve the Skanska invoice #1323833-000- 15478-13 in the amount of $5,400."

<u>*Roll Call*</u>
For: Andrew Pfaff, Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

4. Discussion of plan for next meeting tentatively scheduled for 2-7-25

   Jim Burrows, Project Manager at Skanska, confirmed that Skanska, Arrowstreet, and the estimators planned a reconciliation meeting for February 5, 2025, with internal reviews on February 4, 2025, aiming to finalize estimates. Concerns were raised about the budget exceeding $81.6 million, emphasizing the need for value engineering.

   Submission to the Massachusetts School Building Authority is set for February 25, 2025, with budget approval required by February 14th, to make the deadline. Though a later submission on the 17th remained an option.

   Discussions covered project scope, security assumptions, and reimbursement points for maintenance and Green Schools. Town budget projections remained uncertain. Cost management strategies, including tariff impacts and estimate accuracy at different design stages, were reviewed. The meeting also addressed site usage, field availability, MSBA site costs, and detention basin concerns, ensuring proper planning before the town meeting.

5. Other business that may properly be brought forth (None at this time)

6. Public Comment (None at this time)

7. Adjournment

   Kathryn Cook requested a motion to adjourn.

MOTION TO ADJOURN

Andrew Pfaff moved, Mark Davis seconded, and it was unanimously voted by roll call, "To adjourn."

<u>*Roll Call*</u>
For: Andrew Pfaff, Mark Davis, and Kathryn Cook
Opposed: None
Abstained: None

Kathryn Cook adjourned the meeting at 1:40 pm.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. NBC – Finance Subcommittee Agenda of January 24, 2025
2. NBC – Finance Subcommittee Meeting Minutes of December 30, 2024

RECEIVED
By Town Clerk/amb at 9:06 am, Jan 27, 2025

Town of Southborough, Massachusetts

Neary Building Committee – Communications Subcommittee

January 31, 2025

9:00 AM

Virtual Zoom Meeting

May be watched or may participate in the meeting remotely with the meeting link at: https://ma-southborough.civicplus.com/674/Virtual-Meetings

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in person attendance by members of the public will be permitted.

Agenda (all items may have one or more votes taken to the extent action is required):

I. Call Meeting to Order
II. Approval of Outstanding Meeting Minutes
III. Debrief of feedback received to date
IV. Discussion of website updates
V. Communication Plan Update
VI. Review and release of FAQs
VII. Public Comment
VIII. Meeting Schedule
IX. Other business that may properly come before the Committee
X. Adjournment

Jason W. Malinowski, NBC Chair

Town of Southborough, Massachusetts

Neary Building Committee – Communications Subcommittee

January 31, 2025

9:00 AM

Virtual Zoom Meeting

Pursuant to Chapter 20 of the Acts of 2021, An Act Relative to Extending Certain COVID-19 Measures Adopted During the State of Emergency, signed into law on June 16, 2021, this meeting will be conducted via remote participation. No in-person attendance by members of the public will be permitted.

Neary Building Committee:

Members Present: Roger Challen, Denise Eddy, and Jason Malinowski

Members Absent: None

Ex-Officio

Members Present: Kathleen Valenti, Neary School Principal

Members Absent: Stefanie Reinhorn, Assistant Superintendent of Teaching and Learning

I. Call Meeting to Order

Jason Malinowski called the NBC – Communications Subcommittee meeting to order at 9:01 am.

II. Approval of Outstanding Meeting Minutes

The Subcommittee will vote to approve meeting minutes at their next meeting.

III. Debrief of feedback received to date

Jason Malinowski shared feedback from various groups to help the Subcommittee consider the next steps in communicating with the community. He noted that there have been two sessions with the Kinder Group. The main feedback included the need for additional details on the educational benefits of the project, concerns about insufficient discussions regarding costs, inquiries about the transition plan, and questions about staffing structures that were referred to the administration.

During the first open office hours, there were four participants, primarily from the senior community. They raised concerns about communication and advertising for the event. Jason mentioned that the event was posted on Facebook and the blog, but email notifications were sent out late. For future action, flyers will be distributed earlier to provide better notice. There was significant concern over costs, and participants questioned why the more expensive option was chosen. The group decided to revisit other options and clarified that, while the chosen option may have had the largest number, a variety of alternatives did not make financial sense. Questions were raised about the proximity to the landfill and why Finn School was not considered as an option. Additionally, the Public Accessibility Committee requested involvement in the design review after project funding to ensure that accessibility standards are met. There was considerable discussion about the inefficient use of school buses in town, with frustration expressed over empty buses and traffic congestion around schools. Lastly, questions were raised regarding why parents of school-aged children are not attending the meetings.

IV. Discussion of website updates

Jason Malinowski has initiated a process to improve the website's design, mainly by making the headers more prominent for easier navigation. Roger Challen suggested the FAQs be more visible on the website.

V. Communication Plan Update

Open office hours have been scheduled through the beginning of March. The goal is to explore alternative methods of information sharing for user groups. This topic should be discussed, along with the communication regarding the project's costs, after receiving the updated cost during the next full Neary Building Committee meeting.

VI. Review and release of FAQs (None at this time)

VII. Public Comment (None at this time)

VIII. Meeting Schedule – February 10, 2025

IX. Other business that may properly come before the Committee (None at this time)

X. Adjournment

Jason Malinowski requested a motion to adjourn.

Jason Malinowski moved, Roger Challen seconded, and it was unanimously voted by roll call, “To adjourn.”

MOTION TO ADJOURN

Roll Call
For: Roger Challen, Denise Eddy, and Jason Malinowski
Opposed: None
Abstained: None

Jason Malinowski adjourned the meeting at 9:29 am.

Respectfully submitted,

Mariana Silva, Central Office Administrative Assistant

Office of Superintendent

List of documents used at this meeting:

1. NBC – Communications Subcommittee Agenda of January 31, 2025

ARROWSTREET INC.
10 POST OFFICE SQUARE
SUITE 700N
BOSTON MA 02109
617.623.5555

arrowstreet.com