NEWBURYPORT YOUTH SERVICES

FACILITY ASSESSMENT & PLANNING STUDY

VOLUME I

EXISTING CONDITIONS REPORT, DESIGN CONCEPTS + COST ANALYSIS

NOVEMBER 2020

Prepared By:

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TABLE OF CONTENTS

VOLUME I

VOLUME II


Explore More!
NEWBURYPORT YOUTH SERVICES

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I. INTRODUCTION TO NYS

NEWBURYPORT YOUTH SERVICES

MISSION + BRIEF HISTORY

Newburyport Youth Services (NYS), created in 2005, is a municipal department with the mission to create quality programs, events, and services for Greater Newburyport area youth and their families in safe and supportive environments that encourage growth, self-exploration, empowerment and community. NYS achieves this by applying positive youth development principles through recreation programs, youth and family support services, as well as cross-sector community and regional collaboration.

Throughout the years, NYS has repeatedly proven its agility and relevance by offering programs and services that meet the needs of, and improve outcomes for, youth and families navigating ever-changing risks and pressures. This involves continuously having a finger on the pulse of what works best to engage and empower young people, staying current on ways to effectively support youth at each developmental stage, and having the relationships to connect and deploy an extensive, cross-sector network of community partners to increase long-term, positive youth outcomes. There have been countless stories of individual success, resiliency, and support.

Today, with astounding results, NYS provides social services and recreation programs to over 2000 youth, families, and others active in supporting youth development in Newburyport and surrounding areas. Since its inception, NYS, in conjunction with its BEACON Coalition partners, has bolstered a 25% increase in protective factors in Newburyport middle schoolers and high schoolers, as well as a decrease from 15% to 4% of youth with fewer protective factors. As a result, the majority of local youth are healthy and engaged; and those who are not have supports and services readily available.

All of this has been achieved in spite of ongoing challenges surrounding the physical space available to the department. This study has been undertaken to help evaluate strategies to provide NYS with an upgraded facility, that will enable them to continue their great work safely and efficiently.

NYS TEAM

Department Director- Andrea Egmont

Associate Director of Recreation- Margot Harrington

Associate Director of Youth Programs- Lee Gordon

Associate Director of ECAB Network- Tina Los

Learning Enrichment Center Coordinator- Chris Cain

CORE SERVICES

- *RECREATION:* Recreation programs year round from birth- 18 and families.
- *EMPOWERMENT:* NYS is committed to empowering our young people. Newburyport Youth Council is a youth-led community engagement committee for grades 7-12.
- *PREVENTION:* NYS has chosen to develop its recreation, prevention and empowerment programming around the Positive Youth Development approach.
- *SUPPORT:* NYS provides support to children and families in a number of ways. From the Parent Speaker Series to crisis intervention, programs to mentoring.
- *COMMUNITY:* NYS is committed to working with partners in the community to foster healthy youth development throughout the city! They are also passionate about engaging young people in their own community.

YOUTHRIVE

Youth artwork made at NYS

II. EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

In March of 2020, the City of Newburyport engaged studioMLA (sMLA) to perform a feasibility study to identify a preferred and cost-effective alternative for a Newburyport Youth Services (NYS) facility. The goal was to create a permanent home for NYS staff and programs. Two specific locations were identified by the City of Newburyport for evaluation. The first location, at 57 Low Street, would make use of a former National Guard site including a maintenance garage which has been used in recent years as a storage facility and Emergency Management office. The second location, at 42 Milk Street, would involve the renovation and adaptive reuse of the former Brown School building, and would keep NYS in its current location.

A previous study of the Brown School site, conducted in 2014 recommended that the first floor of the main building be reconfigured for NYS programs - with the gym, stage and kitchen wing retained by the City for use as multi-purpose function space for NYS, neighborhood and community events. The remainder of the building (primarily the second and third floors of the main building) would be leased or sold in the future to a private developer for the purposes of affordable and/or market rate housing. With this information as a foundation, studioMLA and its consultants have conducted extensive analysis of both sites and their existing facilities. Additionally, sMLA drafted a survey for Newburyport residents and stakeholders, and facilitated three focus group sessions to gather user feedback in order to determine the strongest path forward for Newburyport Youth Services.

PROCESS OVERVIEW

This study included the following tasks:

1. Documenting existing conditions
2. Understanding the NYS program and services
3. Analysis and assembling of a facility assessment
4. Schematic design options and estimate of construction costs
5. Refinement of options and estimated construction costs
6. Public presentation

The ***First Task*** consisted of identifying the existing conditions of the buildings and sites. studioMLA and their consultants performed site visits in March and April, 2020 to assess both sites and buildings to identify existing conditions and major upgrades required to adequately support NYS at either location. This assessment was based on a review of the available drawing documentation and a visual inspection of the building, excluding invasive exploration techniques or systems testing and not including any testing for the presence of hazardous materials.

The ***Second Task*** consisted of meetings with the Director of Planning and Development, Andrew Port, and the Director of Youth Services, Andrea Egmont, to understand the program. studioMLA met weekly with NYS and the Director of Planning to

gather information on the existing NYS programs, space needs, and develop a plan for gathering community input. A survey questionnaire was generated by sMLA which was distributed to NYS families, community members, and staff. On May 14 and 18, three focus groups were held separately with youth, parents, and staff. The learnings from these focus groups were then summarized and presented to a selected NYS Feasibility Committee on May 19 to help further understand the program and project goals. An ideal architectural program was then constructed to help sMLA and the project team evaluate both sites. All meetings were conducted remotely due to COVID 19 precautions.

Members of the NYS Feasibility Study Committee:

Christine Wallace, Councilor, City of Newburyport
Annie Kate Ames, Youth Rep, City of Newburyport
Chris Johnston, Resident, City of Newburyport
Drew Cassino, Youth Rep, City of Newburyport
Pat Forbes, Resident, City of Newburyport
Sheila Spaulding, Resident, City of Newburyport

The ***Third Task*** was to collect and analyze data, assemble a detailed facility assessment, and develop alternate concepts to meet the program's needs. This report serves as a comprehensive summary of the work required to provide a Youth Services Facility meeting the City's requirements at each location. A range of conceptual options including the adaptive reuse and/or expansion of existing structures on the two sites was presented and discussed with the Director of Planning and the Director of Youth Services.

The ***Fourth Task*** consisted of preliminary schematic design and cost estimating. sMLA worked with the Newburyport project team to select the most advantageous concepts to pursue for each site. The range of options was narrowed down to two options per site and the four options were priced by an independent cost estimator. The options and pricing were then discussed with the NYS Facility Committee to generate a preferred option for each of the two sites.

For the ***Fifth Task***, sMLA sent both of the preferred options to the cost estimator to obtain refined pricing. These cost estimates and the designs were then reviewed with the Newburyport project team to assemble a list of pros and cons for each option and a presentation to the City Council and broader community. An additional budget option was added for the Brown School site, consisting of only the work needed to upgrade building systems and envelope to make the building accessible, safe and stop ongoing weather damage with cosmetic upgrades and minor work to the existing center.

The ***Sixth Task*** involved finalizing the schematic design and construction cost estimate into a final public presentation to City officials.

EXISTING CONDITIONS SUMMARY AND RECOMMENDATIONS *(Continued on next page)*

EXISTING CONDITIONS SUMMARY AND RECOMMENDATIONS

SITE II: 42 Milk Street former Brown School

The site of the former Brown School is located in a medium-dense historic neighborhood. The available area on the site is dominated by asphalt paving and is divided among play yards, dedicated Basketball courts and parking. The original Brown School is a three-story, wood framed structure, constructed on a relatively level 1.24-acre site in 1925 with a Kitchen/ Gymnasium wing added in 1970, and a three-story classroom addition constructed in 1975.

CODE REQUIRED UPGRADES

- Reconfigure the four side entrances to be compliant with the American Disabilities Act (ADA) with ramps to accommodate the elevation changes on the exterior. Correct the change-in-elevation issues on the egress side of these doors.
- Renovate existing bathrooms to be ADA compliant.
- Renovate the kitchen to be ADA compliant.
- Provide ADA compliant handrails on the existing internal stairways.
- The elevator is undersized and does not provide accessible access to the upper levels. It is assumed this elevator will not be needed for the proposed NYS project, but this will need approvals from the Newburyport Building Commissioner and Fire Chief. Any future above-grade modifications will require an upgrade to this existing elevator.
- A new fire alarm system will be required as the notification upgrades (to allow for strobes to alert the hearing-impaired) will require expansion of the existing system, which is no longer being manufactured. At a minimum, the new system will have to serve the work area. It is likely that a new fire alarm system will be required for the building. It is possible the Newburyport Fire Department will want separate systems – one for NYS and one for the future residential portion. It should be assumed the new panel will have to be sized to accommodate the entire building being brought into compliance.

- Significantly more work is required to make the space code compliant. This site also has the most uncertainty regarding fire protection and accessibility.
- Brown School also has significant code compliance issues regarding the existing means of egress system that may or may not require remediation, depending on whether these features are included within the work area.

STRUCTURAL

- Upgrades required to meet seismic code requirements to address lateral force resistance.
- Repointing of 20-20% of the total facade's cast stone and masonry elements.
- Cleaning, coating, or replacement of loose steel lintels.
- Replacement of deteriorated concrete stairs and pads at south and east entries.
- Identify and address water and drainage issues in boiler room.
- Identify and address roof and floors structural capacity.
- Evaluate roof and parapet conditions and include Boiler Room roof which appears to be in poor condition and may have compromised the reinforced concrete roof construction.
- Replace fence on boiler room roof at eastern edge
- Repairs to Boiler room floor cracking.

ARCHITECTURAL

- Current facility is approximately 36,700 square feet.
- Reconfigure the facility to optimize circulation and program layout

UPGRADES TO ADA COMPLIANCE

- Repair overall building envelope to include damage caused by leaks and trapped moisture, addition of insulation, walls and window repair and replacement to optimize thermal performance.
- Replace finishes throughout for floors, walls, and ceilings and repaint.
- Replace bathrooms with ADA compliant fixtures and new finishes.

HVAC

- Demolish and replace entire HVAC system.
- Replace entire exhaust air and ventilation system.
- Remove and replace hot water boiler heating system.
- Add air conditioning.
- Provide a new building control system with a new direct digital control (DDC) and building energy management system (BMS).

ELECTRICAL

- Install new service and distribution equipment .
- Upgrade lighting in all areas to new energy efficient LED type fixtures with occupancy sensors throughout.
- Add receptacles throughout.
- Upgrade site lighting to LED type with proper shielding of the light source.
- Replace all receptacles within 6 feet of a water source with GFCI type.

- Replace existing fire alarm system with a new addressable system.
- Provide voice evacuation if the use group is Educational.
- Replace branch circuiting that is not installed in MC cable. Extend existing MC cable to new branch circuit panel-boards.

PLUMBING

- Replace plumbing fixtures throughout with new high efficiency fixtures .
- Provide accessible plumbing fixtures where required.
- Provide new high efficiency domestic water heater equipped with thermostatic mixing valve, expansion tank, and recirculation pump.
- Video inspect existing sanitary drainage to confirm integrity.
- Provide new natural gas service to building to support new heating boilers.

FIRE PROTECTION

- Install an automatic sprinkler system.
- Install a new dedicated fire water service to supply the building. A hydrant flow test is required to confirm the Municipal water system supply.

SITE II: 57 Low Street Vehicle Maintenance Garage

The Low Street Vehicle Maintenance garage is a one-story steel framed structure constructed in 1951 on a relatively level 2.1-acre site. The three-bay brick garage includes a middle bay converted to office space. The building is located across the street from the existing middle school and adjacent to the Historic Powder House structure.

CODE

- Existing building is substantially accessible. Achieving code compliance would require accessible upgrades at the entrances but only minor interior upgrades.

SITE

- Once-story steel framed structure constructed in 1951 on a relatively level 2.1 acre site. The three bay brick garage includes a middle bay converted to office space.
- Located across the street from the existing middle school and adjacent to the Historic Powder House structure.
- Significant wetlands located behind the site.
- Replication of wetlands required with 2:1 ratio.

STRUCTURAL

- Repointing of open brick masonry joints.
- Repair of small areas of damaged brick.
- Repointing of the brick masonry chimney.
- Cleaning/ coating or replacement of steel loose lintels.

ARCHITECTURAL

- Addressing moisture issues and any structural issues uncovered are key factors that will determine if the structure is deemed worth adapting for reuse or if the cost of reusing it exceeds the resources available.

- Addition of window openings, insulation.

HVAC

- Replace and upgrade entire building HVAC system with a new high efficiency variable refrigerant flow (VRF) heat recovery heat pump system with dedicated outdoor air ventilation system equipped with energy recovery.
- Provide exhaust air systems for all toilet and storage rooms.
- Provide supplemental perimeter electric radiant heating for backup operation to the VRF system.
- Provide a new building control system with a new direct digital control (DDC) and building energy management system (BMS).

ELECTRICAL

- Replace lighting in all areas with new energy efficient LED type fixtures with occupancy sensors throughout .
- Install emergency battery units in egress paths and exit signs replaced with self-contained type.
- Add receptacles.
- Upgrade site lighting to LED type with proper shielding of light source.
- Replace fire alarm system with a new addressable system. Voice evacuation shall be provided if the use Group is educational.

PLUMBING

- Install high efficiency plumbing fixtures.

- Provide dedicated male and female bathrooms and drinking fountains.
- Confirm domestic water service is adequately sized for the intended renovations.
- Video inspect existing sanitary drainage to confirm integrity.
- If overhead door remains, provide dedicated drainage system including floor drains and exterior oil separator.

FIRE PROTECTION

- Provide an automatic sprinkler system.
- Provide a new dedicated water service to supply the building. A hydrant flow test is required to confirm the Municipal water system supply.

DESIGN OPTIONS

As described in the fourth task of the Process Overview section above, sMLA generated concept options for both sites and these were presented to the NYS Feasibility Study Committee along with cost estimates. The committee evaluated all of the options and narrowed them down into a preferred option for each site. After receiving feedback from various stakeholders, the Director of Planning and Development asked sMLA to look at a more minimal renovation option for the Brown School site to add functionality and some cosmetic improvements to provide a 10-year lifespan for NYS Programs and Services at the Brown School. This resulted in two final options for the Brown School site along with the final option for the Low Street site:

Option 1 - Reconfigured Program

Option 2- Minimal Renovation

Option 3 - Staggered Program

Brown School Option 1- Reconfigured Program is a full renovation of the Brown School first floor only and includes all of the recommendations from the Existing Building Conditions Summary section above. This option assumes minimal building systems and heating will be provided for the upper floors which will be "mothballed" until the City determines a suitable future project. The timing for a future project is unknown at this time. Existing walls are retained as much as possible but there is some reconfiguration to provide optimized layout to meet the NYS program needs.

Brown School Option 2- Minimal Renovation is a minimal renovation of the Brown School first floor only and selected exterior repairs. The existing layout is retained and there are minor upgrades for finishes. This option only includes the recommendations from the Existing Building Conditions Summary section above that prevent further degradation of the Brown School building. sMLA's objective in defining this scope was to address systems that have outlived their useful life, include repairs to the building envelope that would ensure weather-tightness, operability, a useful life and enhance safety. The largest issues at Brown are the replacement of the HVAC system, repair of windows and exterior components, and possibly any needed mold or hazardous materials remediation. These items must be addressed to obtain the best value of construction dollars and to protect the investment in the building. This option also assumes minimal building systems and heating will be provided for the upper floors which will be "mothballed" until the City determines a suitable future project.

The Low Street final option is a demolition of the existing vehicle maintenance garage building and new construction of a 10,430 sf NYS program building and the addition of a new 4,315 sf prefabricated gymnasium plus all associated sitework. The concept plan is based on the optimal building program discussed with NYS staff. Because this is all new construction, certain efficiencies were captured in the layout of

program and circulation spaces. This resulted in a more efficient design and smaller footprint than was required at the Brown School site. This option was designed to minimize encroachment onto the wetlands which would require replication with additional costs.

COMPARISON OF OPTIONS

Brown School Option 1- Reconfigured Program utilizes the existing building which dictates much of the program layout and contains inefficiencies in circulation and layout of spaces. Play space opportunities are limited to public multi-surface play spaces under the urban canopy with some play area likely to be claimed for a future project on the upper floors. Proximity to neighbors is close with the existing gymnasium close to the site line. Because the timeline for a potential future housing project for the upper floors is unknown at this point, potential savings can't be realized for any whole building systems and some systems costs may need to be included in the NYS project costs rather than shared with a future project. Without market analysis, it is unknown if retaining the NYS program at the Brown School presents the best use for the first floor at Brown School or if there might be another higher and best use if the entire building were to be available. It is unclear how phasing could work with the adjacent housing timeline so it could be used as a strategy to offset initial costs.

Brown School Option 2- Minimal Renovation attempts to address the needs of NYS Programs and Services in the most cost-effective way and also preserve the building from further degradation. Every building system has outgrown its useful life and requires replacement. The heating system requires immediate replacement prior to the onset of winter conditions to avoid an emergency replacement. This option only provides a 10-year home for NYS instead of a more permanent solution.

Low Street Final Option provides a fresh site that allows for an optimal architectural program layout. Efficiencies in circulation provide a smaller building footprint. This option maximizes existing open space with proximity to open fields, woods, and marshland environments which can provide more creative play space opportunities. The appropriate quantity of parking is easily provided. Overall the impact on the number of neighbors is less with only one adjacent neighbor approximately 60 feet from the existing structure.

ESTIMATED COSTS

Brown School Option 1 Reconfigured Program has an estimated cost of $10,008,947 and includes a 15% design contingency and a 20% owner contingency.

Brown School Option 2 Minimal Option has an estimated cost of $7,881, 681 and includes a 15% design contingency and a 15% owner contingency.

The Low Street final option has an estimated cost of $8,598,040 and includes a 15% design contingency and a 10% owner contingency.

EXCLUDED COSTS:

- Surveys, soils testing
- Additional testing
- Design professional fees and insurance
- Consultant fees
- Mold remediation
- Asbestos / Hazardous Materials remediation
- Costs related to phasing
- Land acquisition costs
- Required wetlands replication
- Relocation costs
- Temporary facility rental costs
- Phasing
- Furniture, Fixtures, and Equipment
- Utility Company back charges
- Financing

Colorful hallway outside of Pre-School Room

studio MLA

III. SUMMARY OF PROCESS

FEASIBILITY STUDY OVERVIEW

PURPOSE OF THE STUDY

The City of Newburyport is evaluating options for an upgraded/new facility to house the Newburyport Youth Services (NYS) programs and recreation center. The recommended location must reflect the values of NYS as a vital member of the community and serve to strengthen their mission of providing services and programs aimed at improving the lives of children, young adults and families.

SUMMARY OF PROCESS

Understanding the existing building and program; consisted of reviewing architectural plans, documenting existing conditions through site observations and photographs, as well as assessing the building's existing structural, HVAC, electrical, plumbing, and fire protection systems. All assessments were conducted in March and April 2020

The spatial and functionality assessment documents the existing program of the buildings on each site and identifies any issues with how these spaces are currently used. From this understanding we can explore opportunities to improve the efficiency of layout and use, specifically for the NYS' architectural program.

The building system assessment analyzes the current condition of each building's HVAC, electrical, structural, and fire protection systems. Deficiencies and necessary upgrades were documented as well as recommendations to meet these requirements.

The code assessment included a preliminary review of Newburyport regulations and the building's conformance to Massachusetts building and accessibility codes. Deficiencies and necessary upgrades were documented as well as recommendations to meet these requirements.

Architectural Program and Stakeholder Engagement; consisted of a community survey as well as several meetings with staff, leadership, focus groups, and the facility committee. sMLA conducted many interviews to analyze the quantitative and qualitative aspects of the architectural program.

A series of digital focus groups were conducted with representatives from each of the NYS user groups (Staff, Youth, Parents) to discuss the needs and visioning the future of NYS. Discussions were focused on the physical environment, with comments ranging from specific desired spaces, activities, and look/feel. A summary of key findings were presented to the facility committee for further discussion and feedback.

NEXT STEPS

Conceptual Design Development; consists of a collaborative design process with the facilities committee. Design options will be vetted and construction cost estimates will be produced to help with the evaluation process.

TIMELINE OF PROJECT MILESTONES

Understanding the building and existing program

- March 18- Project Kickoff meeting
- Mar - Apr- sMLA + consultant site visits
- May 8 - sMLA submits draft of Existing Conditions Report for comments

Architectural Program and Stakeholder Engagement

- May 6 - Survey responses completed
- May 8 - sMLA presents survey results and preliminary analysis
- May 13 - Affordable Housing Trust meeting

- Focus group meetings
  1. May 14 - Students
  2. May 14 - Parents
  3. May 18 - Staff

- May - Meeting with NYS Facility Committee to review focus group feedback

Analysis, Collaborative Design Process, Vetting

- May 5 - sMLA begins concept options
- June 19 - sMLA presents concept options with rough pricing to NYS Facility Committee
- June 24 - Meeting with NYS Facility Committee to present final schematic concepts and refined cost estimates
- Oct 5 - sMLA submits draft of final presentation for review
- Oct 9 - Call to discuss final presentation and feasibility study with NYS Facility Committee
- Oct 14 - Presentation to City Council
- Nov 19 - Public presentation of Feasibility Study

Aerial view of 42 Milk Street

IV. SITE 1: 42 MILK STREET

SITE 1: 42 MILK STREET

OVERVIEW

The Brown School building and site have a lot of potential as a hub for Newburyport Youth Services activities and operations, in addition to a community amenity for Newburyport as a whole. studioMLA and its consultants visited the site several times during the months of March and April 2020 to gather information and document the existing conditions. Our observations are detailed in the following pages where we document and evaluate each area of the building's three levels. While all spaces observed would benefit from cosmetic upgrades, the studioMLA team is also evaluating potential opportunities for how these spaces can work to better serve Newburyport Youth Services operations.

GROUND FLOOR SUMMARY

The ground floor of the Brown School has served its purpose faithfully for many years. The building has been added onto multiple times since it was initially constructed which has led to a piecemeal and disjointed feel to the circulation and program layout. Some of the over-arching issues include:

- Several changes in floor level lead to challenges in maintaining ADA compliance (detailed in the code analysis report).
- The overall building envelope will require repair to the exterior walls, and repair/ replacement of the windows with consideration to any historic guidelines applicable.
- Play spaces will require evaluation and re-thinking. This is explored in further detailed later in the site analysis of the Brown School.

SECOND + THIRD FLOOR SUMMARY

The second and third floors, which is similar on both floors, remain largely unchanged from their original school layout. Although the original footprint was expanded as part of a 1975 addition. The original building and addition, while similar in character, still differ in several key ways:

- Distinct changes in rooms from the original construction to the later additions and expansion/infill.
- The upper floors are primarily laid out as a double loaded corridor serving classroom spaces on both sides and at each end.
- Large quantity of windows will require extensive repair/replacement.
- Interior finishes will need replacement with a few exceptions, ex. Wood floors remain in good shape and can be refinished in most locations.

Gymnasium/Annex entrance on Lime Street

Large quantity of historic windows

Accessibility issues exiting egress stairwell

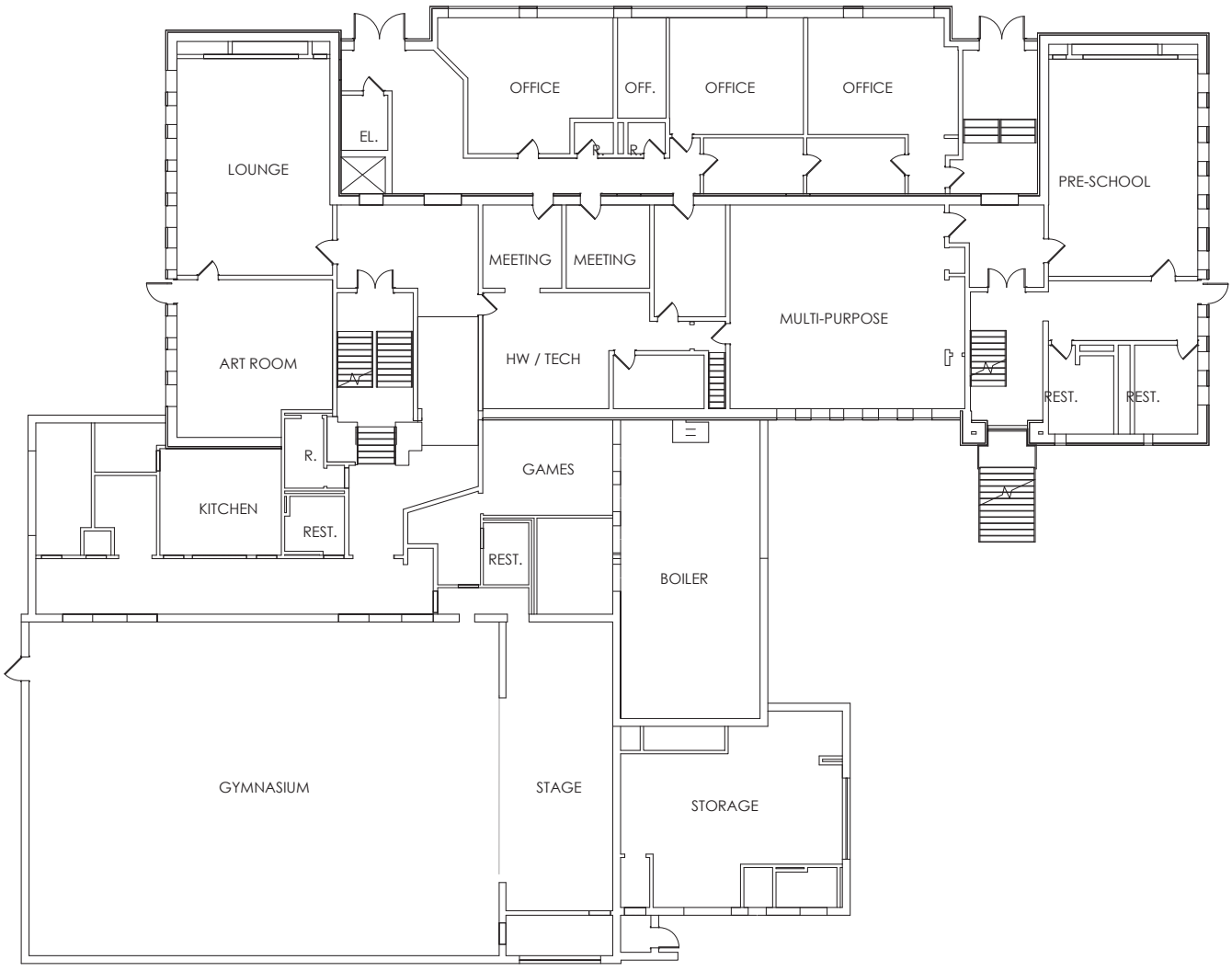
Majority of outdoor space is hardscaped

Outdoor basketball court.

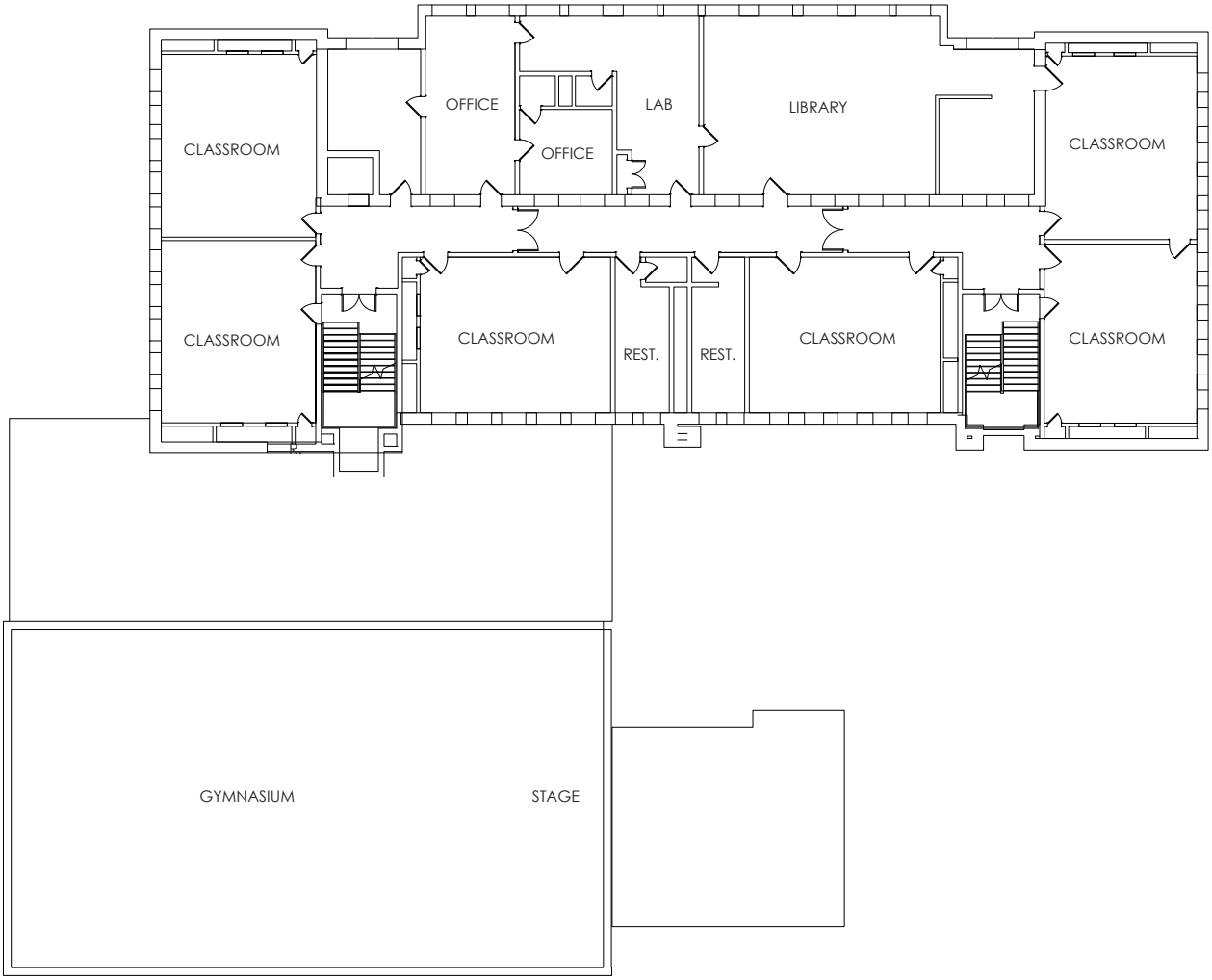
Existing playground equipment


MILK STREET
LIME STREET
PROSPECT STREET
BROWN SCHOOL
PLAYGROUND
EXITING BUILDINGS
SITE

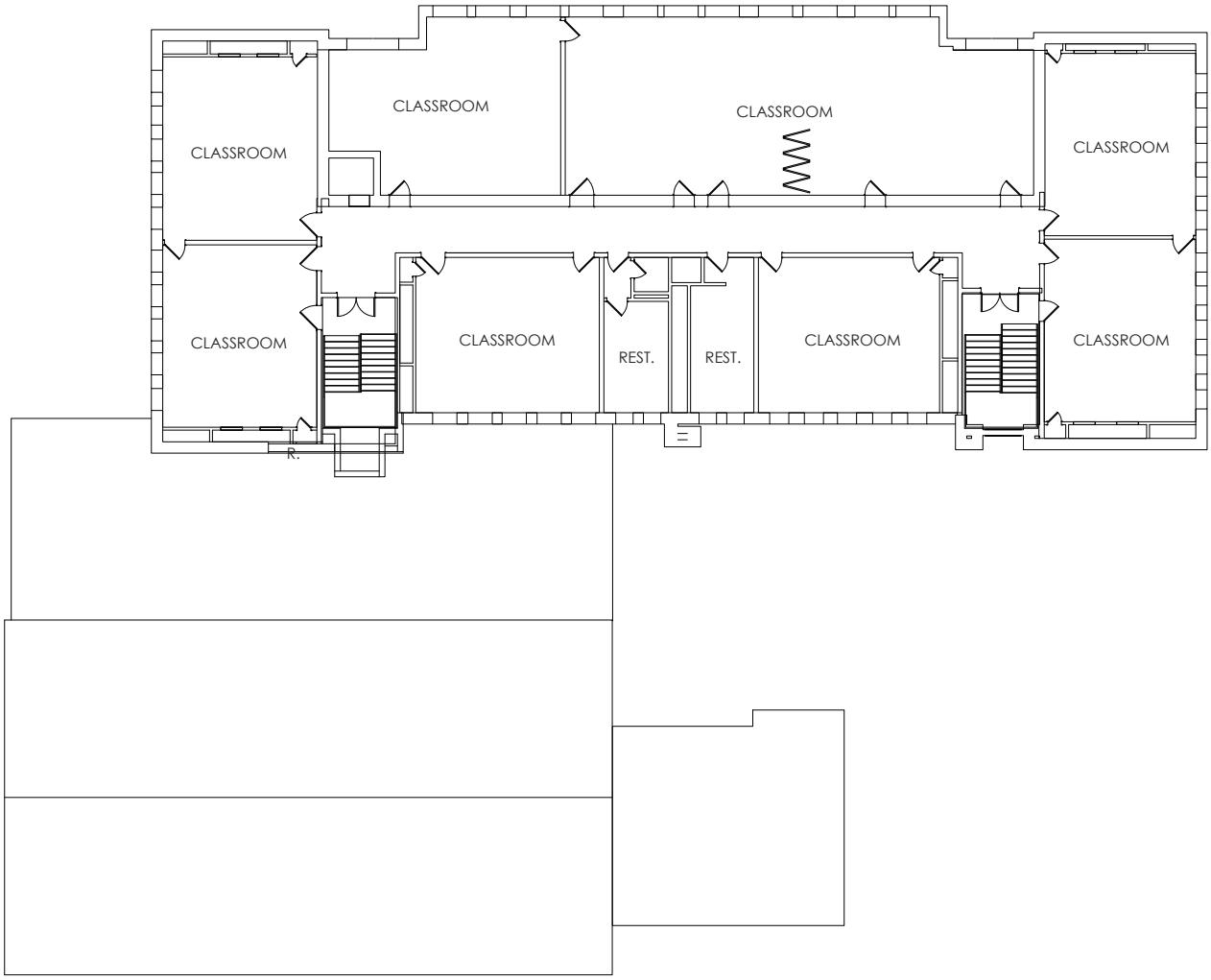
SITE PLAN



GROUND FLOOR PLAN



SECOND FLOOR PLAN



THIRD FLOOR PLAN

PROGRAM ANALYSIS

OVERVIEW

There is a distinct difference between architectural program and its organization of the ground floor and upper floors. The ground floor houses all of the spaces associated with current Newburyport Youth Services, while upper level classroom spaces are primarily vacant and more sparsely used currently.

GROUND FLOOR PROGRAM

A lot is asked of the ground floor. Several overlapping expansion and renovation projects have led to a disjointed and confusing layout. NYS has done admirably in grouping their programmatic uses to fit their needs within this framework.

The ground floor is largely "L" shaped, with the south west leg housing the kitchen, gymnasium, stage, and support areas. Associated storage areas are accessed by a short corridor to the south of the stage. The entrance to the corridor serving these uses directly doesn't provide sufficient sight lines or a welcoming feel for visitors.

The longer north wing of the "L" houses the bulk of the NYS program and administration spaces. On the west end, the art room and lounge are both large spaces connected through a standard doorway. The game room, a very well used area, is buried in the interior of the building, with no windows to the outside. The offices occupy the north face of the building and have a good view of the entrance which serves the Pre-School classroom and multipurpose room, both located on the east end of the building, separate from the other NYS program spaces.

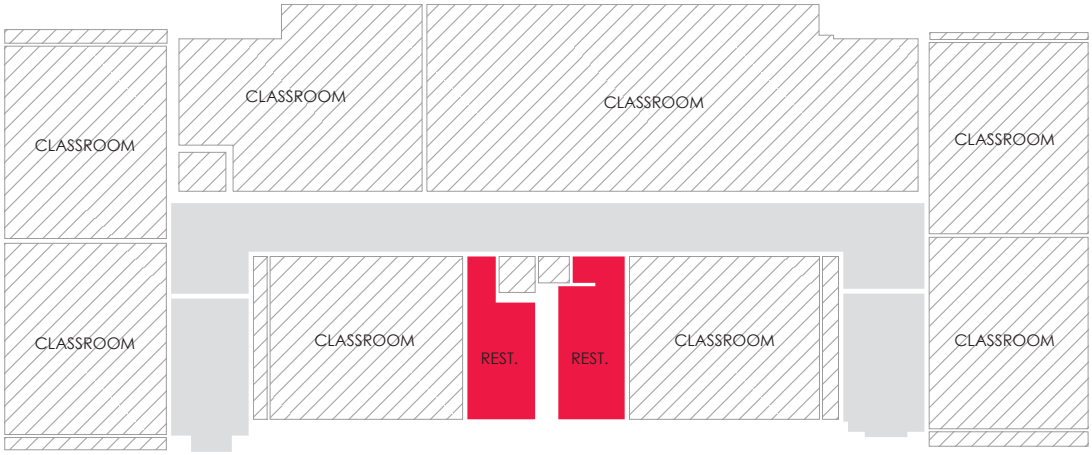
SECOND + THIRD FLOOR PROGRAM

The Second and Third Floors are largely devoted to an efficient layout of regularly sized classrooms accessible by a central corridor leading to the two main stairways. When not used as classrooms, the spaces serve as library, lab spaces and even a dog training area. While these levels should be considered when visioning for the future use of the Brown School, they will not be considered for use by Newburyport Youth Services.

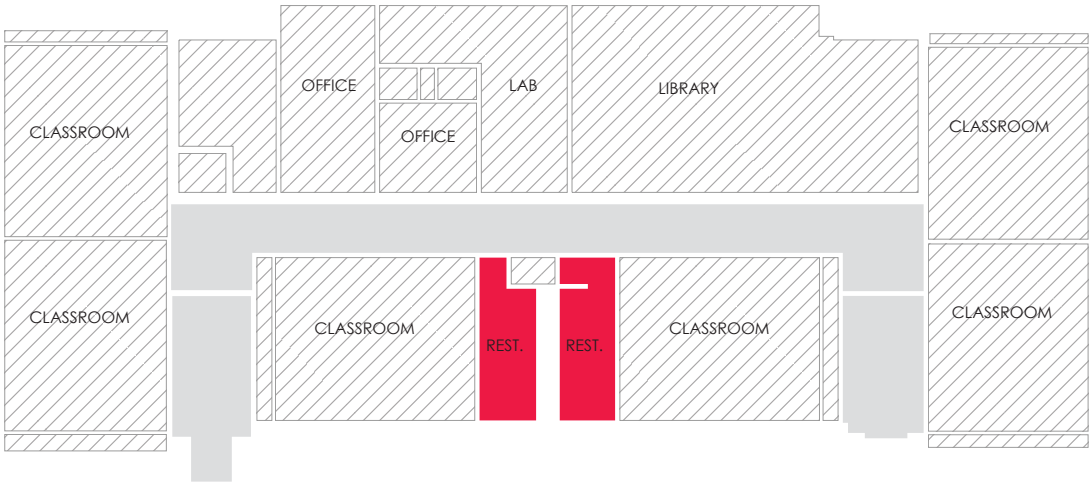
EXISTING NYS PROGRAM (GROUND FLOOR)

NYS SPACES	3,550 sf
OFFICE / ADMIN	1,550 sf
GYM/STAGE/KITCHEN	4,375 sf
RESTROOMS	575 sf
STORAGE	1,575 sf
CIRCULATION	3,100 sf
MECH / OUT OF SCOPE	1,200 sf
TOTAL	15,925 sf

GROUND FLOOR PROGRAM



THIRD FLOOR



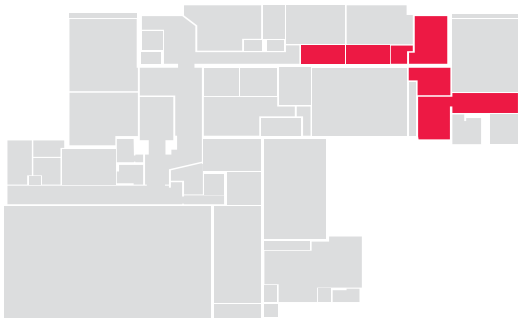
SECOND FLOOR

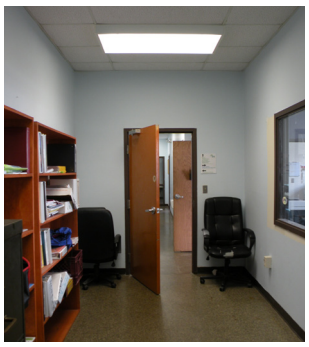
SECOND + THIRD FLOOR PROGRAM

ENTRANCE / CORRIDOR / STAIRS I

The main entrance to the NYS space is located at the east end of the main school building. The double doors show varying degrees of upkeep vs. wear and tear. Although it is a rather dark space, the adjacency to the NYS offices and Pre-school room allow for good visibility through a large check-in window. A ramp leading down to the main floor elevation is fit with a handrail / grab bar for improved accessibility.

Moving further into the building there are evident issues that include heavy wear on the terrazzo floors, leaking radiator enclosures and difficult conditions where short stairways placed too close to doors don't have enough room for ADA required interventions. Damage caused by leaks and trapped moisture will need to addressed in any restoration project. Additionally, the finishes require updating and replacement.





Main NYS entrance

NYS check in window

Interior corridor separates program

Outside of pre-school room and stairwell

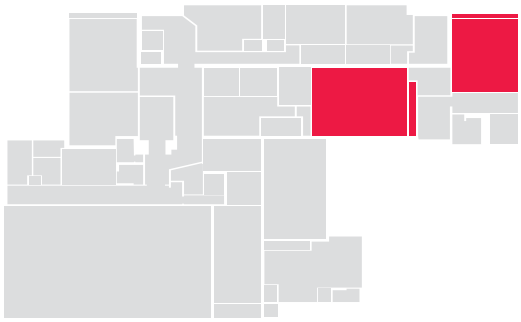
Colorful pre-school cubbies

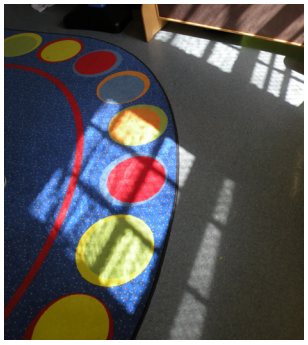
Accessibility issues at points of egress

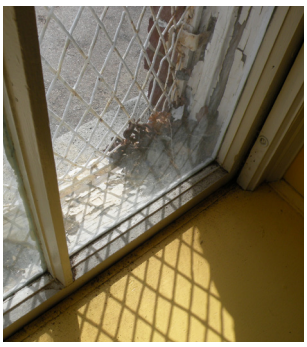
ENTRANCE / CORRIDOR / STAIRS I

PRE-SCHOOL + MULTI-PURPOSE ROOM

The multi-purpose and pre-school rooms are located off of the main entrance and account for some of the largest existing NYS program spaces. Positioned on the exterior of the building they have access to abundant natural light. The windows however will need significant repairs if they are required to adhere to historic guidelines, or possibly replace them with more efficient units. The flooring and ceilings will require replacement as well as the lighting, which can be upgraded to significantly enhance the usability of these spaces. Systems elements such as the sink and enclosed radiators can be updated with more efficient units to save space and increase functionality.







Flexible layout allows for efficient use

Large windows provide natural light

More / better storage options are needed

Open space allows for several uses

ACT ceilings do not align with windows

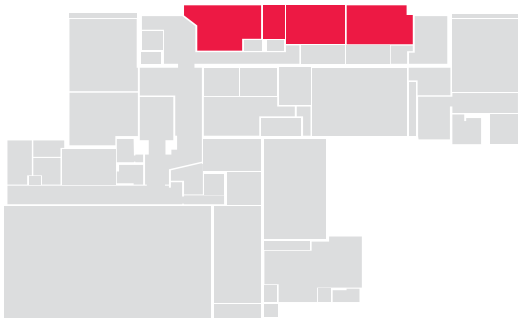
Systems upgrades are required

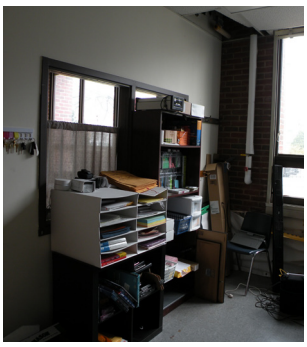
PRE-SCHOOL + MULTI-PURPOSE ROOM

ADMINISTRATIVE OFFICES

The administrative offices are located entirely in the 1975 addition and have access to large expanses of north facing glazing. There is evidence of minor leaks at the windows and walls that will need to be further investigated and addressed.

The current open office set up could be re-thought to provide more privacy and flexibility for the users. Additional attention to storage needs and staff amenities would increase efficiency of use. Overall replacement of flooring and ceilings would greatly improve the feel of the space and updated lighting could be provided to create a more pleasant working environment.

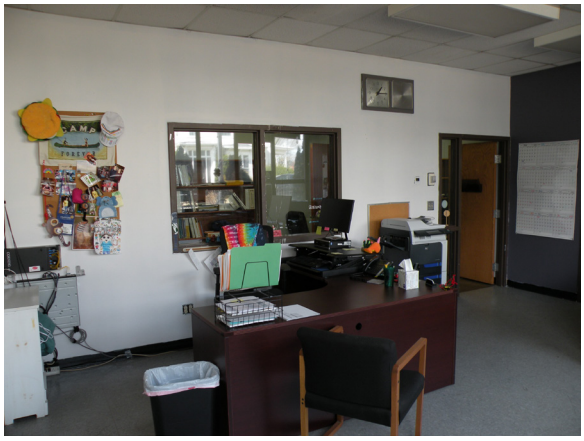




Large windows provide natural light

Storage / organization upgrades needed

Admin "break room" kitchenette



Lack of privacy at individual desks

Divider used to break up the open space

Some storage located between radiators

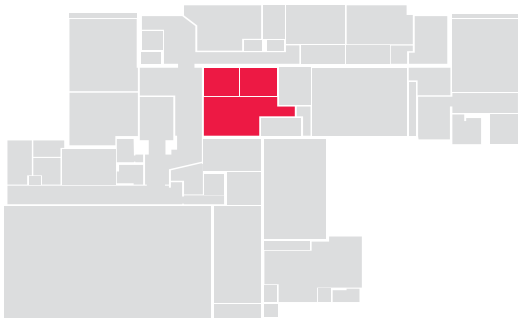
ADMINISTRATIVE OFFICES

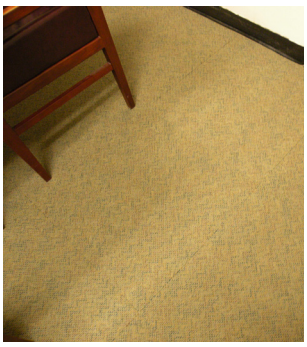
MEETING + HOMEWORK ROOMS

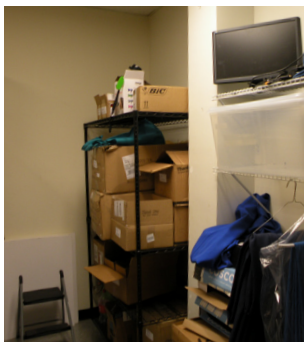
Centrally located in the Brown School's floor plate, are the meeting and homework rooms. As a result they are without access to natural light. The rooms are accessed through the main interior corridor as well as a narrow storage area leading to the boiler room.

The combination of painted drywall and brick walls in the homework room provide bright pops of color and varied textures. The space is functional however the existing acoustic ceiling, fluorescent lighting and gray flooring are aging and could use replacing.

Two small meeting rooms lie just on the other side of the wall. One room is used as a small conference room, and the other for NYS administration storage. Overall, these spaces are hidden away from the rest of the building and lack natural light or any connection to the outside.







HW room provides various studying options

Painted brick walls add texture and color

Storage for NYS administration

Room relies only on artificial light

Small conference space limits use

Small conference space limits use

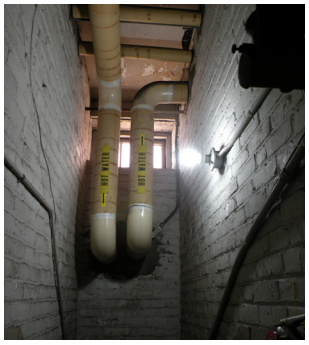
MEETING + HOMEWORK ROOMS

BOILER + MECHANICAL ROOMS

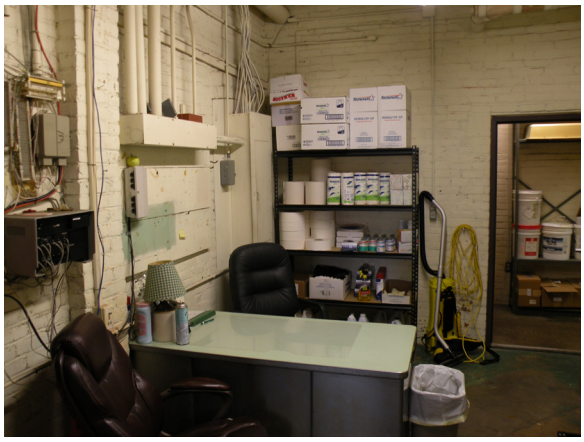
The boiler and mechanical rooms are primarily located on a lower level toward the back of the ground floor layout. The large boiler room house aging equipment which will require thorough investigation to determine what, if anything, can be salvaged and reused, and what should be removed. Please refer to the mechanical systems existing conditions report by ***Garcia, Galuska, Desousa*** included later in the report for further analysis.

Clear signs of flooding problems are visible at here, due to the room being below ground level and relying on a sump pump system to remain dry. This system will have to be addressed with any upgrades to the mechanical equipment.

The Mechanical room doubles as an office for the facilities supervisor. It is and interior room with no natural light and is an extension of the boilier room, containing large pieces of equipment.



Mechanical room houses electrical equip.



Mechanical room doubles as an office

Large equipment in the boiler room

Original furnace

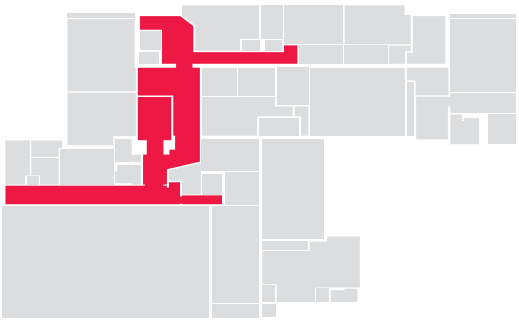
Large HVAC duct work

Mechanical room houses electrical equip.

BOILER + MECHANICAL ROOMS

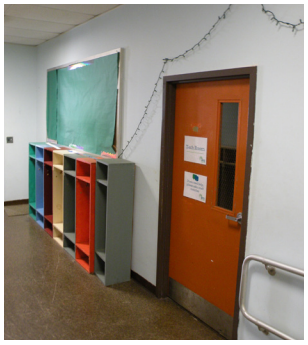
ENTRANCE / CORRIDOR / STAIRS II

The overall building was built in several phases, each time the new part of the building had to connect to the existing corridors. This results in varied floor levels, stairways and ramps. This also makes way-finding a challenge to new visitors, and visibility to entrances can also be difficult especially at the entrance to the gym off of the parking lot.

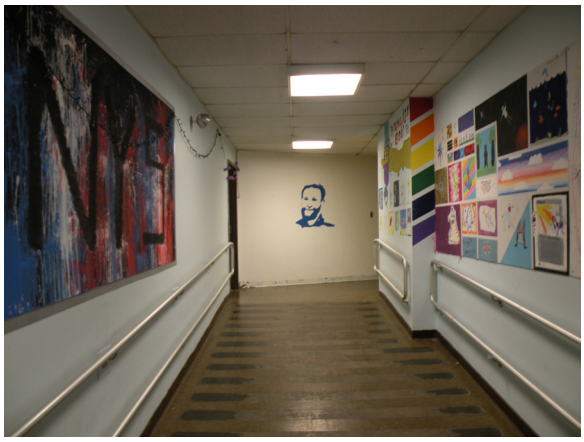


The piece by piece approach also resulted in many moments where the building will have to be adapted to comply with ADA requirements, and is described in more detail in the code section of the report.

The original terrazzo floors appear to remain in good condition and could be reused. The combination of painted brick and gypsum wallboard covered walls require repairs and repainting. The original floor tiles of the later additions are in need of replacement along with the aging acoustic ceiling tiles and lighting.



Back hallway between the gym and kitchen



Main ramped corridor to the rear program

Colorful doors outside of the art room

Secondary entrance at the west end

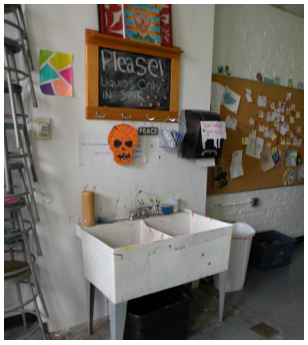
Main stairwells need ADA upgrades

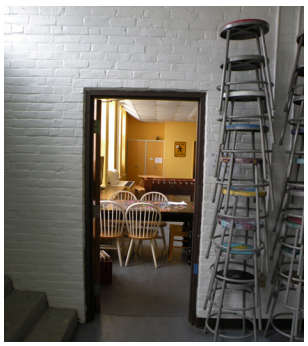
Corridor adjacent to admin offices

ENTRANCE / CORRIDOR / STAIR II

ART ROOM & LOUNGE

The art room and lounge are located just off the main interior corridor and are positioned along an exterior wall with extensive windows and natural light. Both rooms are used heavily and when considering items to adjust in a revised floor plan, these are high on the list. Both rooms are unique and colorful, but the aging acoustic tile ceiling and fluorescent lighting should be replaced along with the worn flooring to improve the spaces. Both room require storage upgrades and ample work area, however the art room will certainly require special consideration to function properly. Though large, one drawback of the lounge is that it is shared by all age groups.



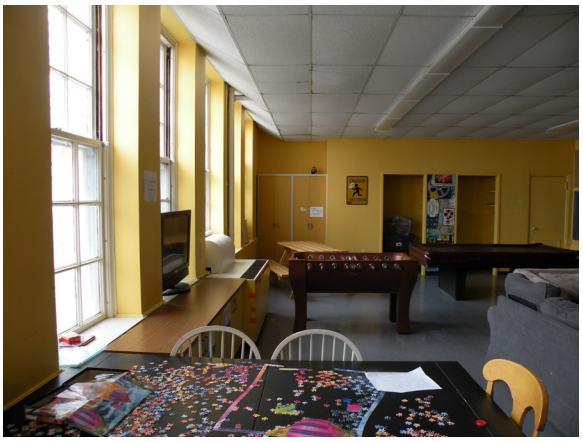


Work tables for art projects

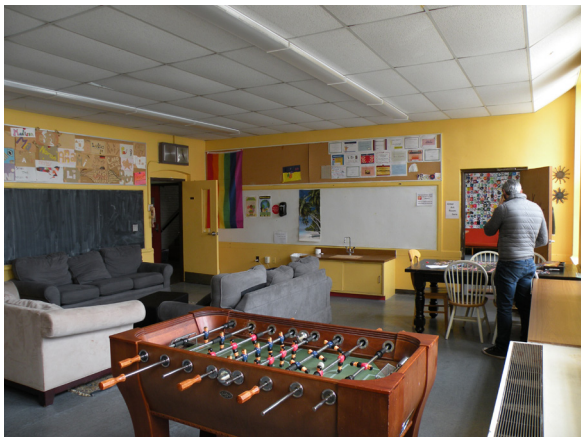
Colorful art projects on display

Large radiators take up usable space

ACT ceiling and floors needs replacement



Games and puzzles in the lounge



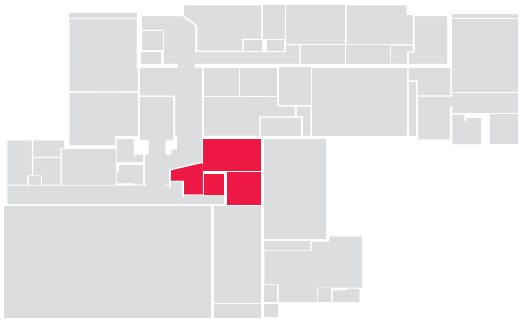
Lounge has to cater to all ages

ART ROOM + LOUNGE

GAME ROOM + STORAGE

The game room and storage areas are an example of space being converted to a new purpose out of necessity. Out of a windowless space the NYS team has set up a room for ski ball, table tennis and relaxation in general. The space lacks access to views, natural light and fresh air but addresses a key need of the program...fun.

Also in this cluster of program are an unused restroom and irregular shaped storage spaces. In the future new locations could be found to accommodate a better environment (light, fresh air etc) and overall situation for these program spaces. Separate entrances for each space would also help them be used independently of one another. Again here, aging finishes such as floors and ceilings should be updated / replaced to improve the look and feel of the space.



Game room buried in other program

Irregular connections to adjacent rooms

Unused restroom

Storage room inefficiently used

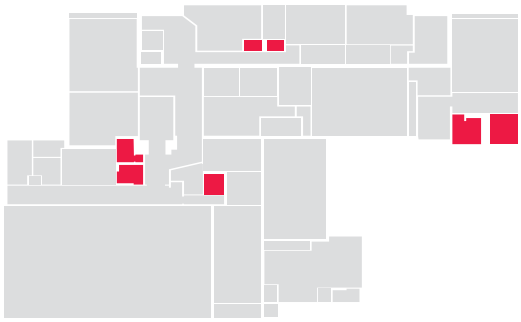
Low ceilings and exposed duct work

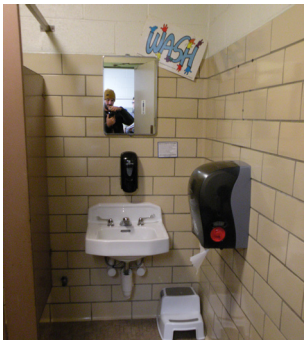
Storage room inefficiently used

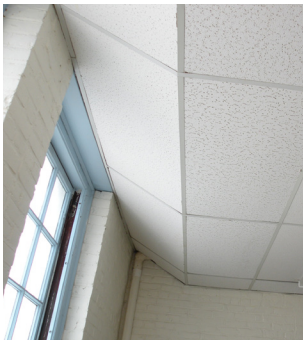
GAME ROOM + STORAGE

FIRST FLOOR RESTROOMS

There are several restrooms scattered across the ground floor. Some of them are currently unused as a result of their location or condition. All restrooms, including those used by the NYS are in need of updating and redesign to accommodate ADA requirements (see the code analysis portion of the report for more information). Sinks require step stools for the younger students to use, multi height fixtures should be incorporated to better serve everyone. As part of a deeper analysis of the plan / operation of the building the team will determine if the existing locations are optimal and meet the need of the group or if they require relocation / expansion.







Ceiling tiles need replacement

Existing youth urinals

Small single restroom

Lighting needs upgrading

Pre-school bathroom

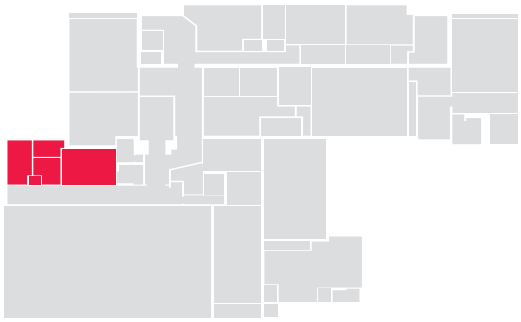
Handicap stall in pre-school restroom

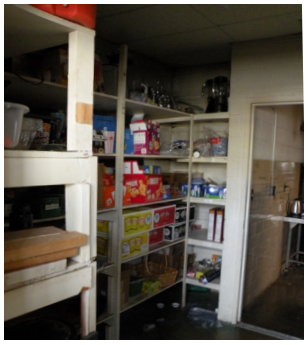
FIRST FLOOR RESTROOMS

KITCHEN + STORAGE

The kitchen is located in the rear building addition. It is adjacent to an entrance off of the parking lot that leads directly to the gym. Now rarely used for cooking, the kitchen operates as a snack bar, serving NYS youth and people coming to events and sports leagues. Its overall setup should be adapted from its original use as a production kitchen to a warming kitchen / teaching area to be more useful to NYS. The kitchen use can be improved by with better site lines to the entry hall where it could also function in supervising events.

The storage and janitorial closet in this area certainly have a back of house feel. A potential reorganization of the program should evaluate other uses for these rooms. Located so close to a primary entrance, they have potential for a better use.





Storage / garbage room next to entrance

Storage / garbage room next to entrance

Food storage adjacent to kitchen

Skylight located in center of room

Existing oven and range in kitchen

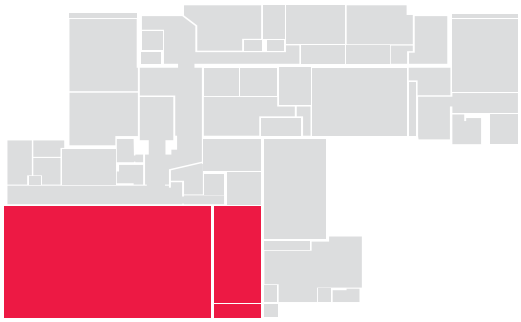
Roll up sales window

KITCHEN + STORAGE

GYMNASIUM + STAGE

The gymnasium and stage area are important program elements for the NYS. The gymnasium building is an addition to the original structure and requires some renovation to be useful in the long term. It is a large volume of space which upon initial inspection doesn't appear to be insulated and its large expanses of glazing would require an upgrade to limit heating and cooling costs in the future.

The current court is not high school sized and stage / backstage areas are largely used for storage at the moment. It was suggested that these areas could be combined into a larger space to provide more flexibility. Improvements to the adjacent entrance corridor should be examined to help the gymnasium operate somewhat independently to the rest of the program and allow for extended operating hours and/ or the ability to rent it out for extra revenue.



Gym and stage share the same space

Windows provide little natural light

There is no space for a crowd of fans

Roof structure at stage

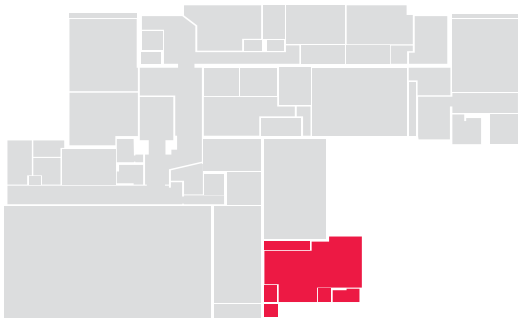
Large HVAC equipment above stage

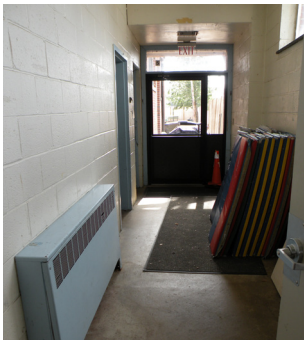
Back of stage

GYMNASIUM / STAGE

STORAGE (LOCKER ROOM)

This storage area located behind the stage area is a the former locker room. It has been mostly converted to storage of play equipment for the NYS. It is accessed by a narrow hallway off of the gym, which also leads directly outside to the play area. The existing showers and restrooms are still operational but not used. Damage to the ceilings from moisture is clearly is visible and will have to be addressed. An evaluation of the best use for this pace will be important in rethinking the program layout.





Restroom stalls are not used or accessible

Existing showers

Toys stored where they fit

Shelving added to accommodate items

Ceiling access panel

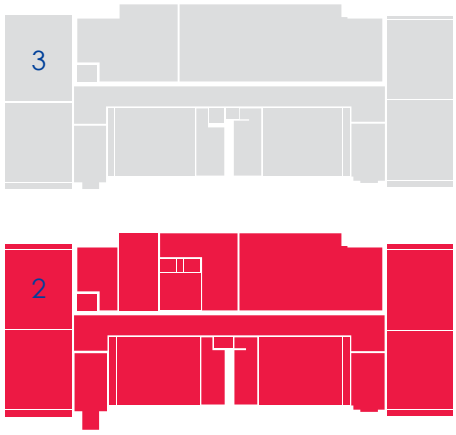
Moisture damage in the ceiling

STORAGE (LOCKER ROOM)

SECOND FLOOR

The upper floors, beginning on the second floor, become much more regular. Originally classrooms, the large rooms are set up efficiently served by a double loaded corridor. Each room has access to large windows, natural light and fresh air. Currently plumbing fixtures such as hand wash stations have been retro-fitted, with painted plywood enclosed pipe chases feeding the fixtures.

The current unofficial use of the some of the classrooms include dog training areas. While not in consideration for use by the NYS any future use with updating, repairing or replacing the interior finishes. The large, aging windows don't exhibit visible moisture damage but closer inspections should be performed. Due to the age and size the of the windows either refurbishment or replacement should be considered to improve their performance.



Natural light through library glazing

Damaged windows by balls in the play area

Typical classroom

Dog training set up in the former library

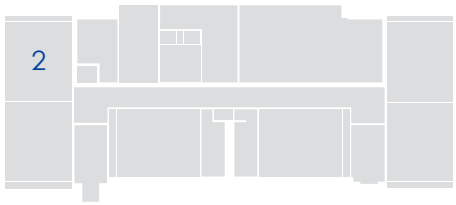
Lab-type room

Computer lab

SECOND FLOOR

THIRD FLOOR

The Third floor mostly mimics the layout of the floor below, including the double loaded corridor and larger open room located in the front addition. The same attention to finishes, fixtures, and envelope items will need to be addressed in any suture uses.



Typical classroom

Condition at original building windows

Large multi-purpose room

View of roof structure in front addition

Some hardwood in good condition

Carpeted classroom

THIRD FLOOR

ROOF

While on site studioMLA performed an initial documentation of the condition of the roof. The roof is accessed through a ceiling hatch at the top of the stairwell. The condition of the roof and current drainage capacity vary greatly. While the high roof over the main portion of the school appears to be in good condition, with heat welded joints and flashings not exhibiting telltale signs of failure upon initial inspection, the lower roof over the storage area behind the gym shows signs of poor drainage and water damage at the roof to wall junction. This will need to be addressed in the near future.

View of gymnasium / addition roofs

Upper roof is clean and serviceable

View of parapet at upper roof

Roof over boiler room needs better drainage

Bulkhead over connecting stairwell

Lower roof over kitchen / corridor

ROOF

SITE + LANDSCAPE ANALYSIS

OVERVIEW

The site of the Brown School is situated in the middle of a medium-density historic residential neighborhood of Newburyport. It is conveniently located just blocks from downtown Newburyport and is in a very walkable neighborhood. This is needed to help offset the limited on-street parking on Milk, Lime and Prospect Streets, and limited off-street parking in two small parking areas off of Lime Street. The dumpster also is located in this parking lot occupying usable spaces.

The front of the building on Milk St. is fenced with a low wrought iron fence and planted with lawn and ornamental trees, with a perennial garden and benches for seating in front.

On the east side of the building, 'behind' the school is a large asphalt pavement area. The paved area is used for vehicular access off of Milk St., has several basketball hoops off of Prospect St., and there is an open expanse of asphalt for outdoor pavement activities adjacent to the building. This includes a seating area made of a ring granite blocks, and inscribed brick pavers. To the east of the asphalt area is a playground with play equipment primarily for the 5-12 year old age group: a climbing structure, an overhead ladder, 3 belt swings, an accessible swing seat, and a spring multi-seat toy. The play equipment is in relatively good condition, and appears to be compliant with current playground guidelines. The playground area is surfaced with wood fiber safety surfacing, in need of replenishment in order to comply with current playground guidelines.

The rear play area can be accessed from the building, off of Milk Street, or through a gate on Prospect St. The entire outdoor play space is fenced with various fence types: a 8' high wood fence at the basketball hoops, a 6' height chain link fence on the Lime St. edge, and a vehicular gate at the Milk St. entrance.

The existing open space is fairly large and could easily be re-designed to accommodate more inviting outdoor activities for a wider population from toddlers and preschoolers to teen age youth and to include activities for families and adults. However, consideration for proposed structures, current and future parking needs, as well as other designated public / private areas will need to be taken in order to maximize the site use for everyone.

Parking on the corner of Milk and Lime Street

Main Entrance to NYS

Play area fenced in on Milk Street

Majority of outdoor space is hardscaped

Outdoor basketball court on Prospect Street

Existing playground equipment

SITE + LANDSCAPE

Foley Buhl Roberts & ASSOCIATES INC
structural engineers

STRUCTURAL REPORT

FOLEY, BUHL, ROBERTS
2150 Washington Street
Newton, MA 02462

INTRODUCTION

Foley Buhl Roberts & Associates, Inc. (FBRA) is collaborating with studioMLA Architects (sMLA) in the review and evaluation of the original Brown School building, located at 42 Milk Street in Newburyport, Massachusetts. The building may be rehabilitated and repurposed as a facility for Newburyport Youth Services.

The purpose of this report is to identify and describe the structural systems of the building and to comment on the structural issues/conditions observed. General comments relating to renovations, alterations and additions to the building (governed by the Existing Building Code of Massachusetts (EBCM 9th Edition)) are presented as well.

GENERAL DESCRIPTION

The original Brown School building is a three-story, wood framed structure, constructed on a relatively level, 1.24 acre site in 1925. The building was U-shaped in plan (facing to the northeast), with one-story Boiler Room wing on the back/southwest side of the building. A one-story, steel framed Kitchen/Gymnasium wing was added on the southwest side of the original building in 1970. In 1975, a three-story, steel framed, office/classroom addition was constructed on the northeast side of the original building, infilling the U-shaped footprint. The total area of the current facility is approximately 36,700 square feet.

Structural systems, details and conditions were reviewed at the building (to the extent visible) by FBRA on April 16, 2020. No exploratory demolition or structural materials testing was conducted in conjunction with our review. No soil boring logs or Geotechnical Engineering Reports were available for the original building or the subsequent additions. Structural information for the original building and the additions was limited.

STRUCTURAL SYSTEMS DESCRIPTION

The design of the original building and the subsequent additions preceded the release of the Massachusetts State Building Code. While the foundations and superstructure of each wing may have adequate capacity to support floor live loads and roof snow loads required by the current code, the existing facility does not meet seismic code requirements. Potential snow drift areas (e.g. at low roofs immediately adjacent to higher roof areas) require further review

The original building and the 1970's additions appear to have performed satisfactorily over time, under the original and current uses. There are no apparent indications of structural overstress or failure. A comprehensive investigation and evaluation of the floor and roof structural capacity is beyond the scope of this report.

Roof Construction: The main roof of the original building is flat, with scuppers in the parapets which outlet to perimeter gutters. The roof of the 1970 Gymnasium is a gable form; the one-story Kitchen wing to the northeast is flat. The roof of the 1975 infilled addition is flat, with internal drains.

Typical roof construction in the original building appears to be wood framed, with joists supported by interior and perimeter masonry bearing walls and steel beams in some locations. The flat roof of the original Boiler Room is a one-way reinforced concrete joist (rib) slab. Sloped Gymnasium roof construction (with snow guards) consists of composite planks spanning to regularly spaced rafters that are supported by beams at the eaves and ridge. Ridge beams extend the full length of the space and are supported by two, clear spanning intermediate steel trusses and columns at the end walls. Flat roof construction in the Kitchen wing to the north is likely steel framed. Roof construction at the 1975 infilled addition consists of steel roof deck spanning 5+/- feet to open web steel bar joists.

Upper Floor Construction (Second and Third Floors): Typical upper floor construction in the original building appears to be wood framed, supported by interior and perimeter masonry bearing walls and by steel beams in some locations. Typical upper floor construction in the 1975 addition appears to be a concrete slab on steel form deck, supported by open web steel bar joists.

Lowest Level Floor Construction (First Floor and Boiler Room Floor): Lowest level floor construction Basement floor in all wings appears

to be a soil supported, concrete slab on grade. The slab thickness and reinforcing could not be confirmed at the site.

Expansion Joints: There does not appear to be any internal expansion joints in the facility; the 1970 and 1975 additions appear to be structurally attached to the original building.

Exterior Wall Construction: Typical exterior walls of the original building are load bearing, solid brick (unreinforced) masonry construction, with cast stone accent elements. The thickness of the exterior walls was not confirmed, but appears to be nearly 2'-0". Exterior wall construction for the 1970 and 1975 additions is a brick veneer, with a concrete masonry unit (CMU) backup.

Subsurface Soils/Foundations: Subsurface soils conditions are unknown; however, it is assumed that columns and bearing walls are supported on conventional spread footing foundations.

Drainage: It is not known if perimeter foundation drains and/or underslab drainage was installed at the Boiler Room during the construction of the original building; however, as there appear to be evidence of water issues; it is unlikely that these drainage systems exist.

Fire Resistance: The fire resistance rating of the wood and steel framed construction in the original building is unknown, but likely minimal. Where present, the original ceiling construction may offer a degree of protection for wood and steel framing; further evaluation would be necessary to make this determination. The steel roof framing of the 1970 Gymnasium addition is unprotected and has no fire resistance rating. Steel framed floor and roof framing of the 1975 addition does not appear to be protected. Construction for each addition is classified as Type IIB (Noncombustible, Unprotected). The facility is not equipped with automatic sprinklers.

Lateral Force Resistance: The original, 1925 building and the 1970's additions were designed before the development of the Massachusetts State Building Code. There is no clearly defined lateral force resisting system in any of the wings; however, the exterior masonry walls provide a level of lateral force resistance (by default) in each case. The original building and the additions do not meet current seismic code requirements. Potential lateral force resistance issues would need to be addressed in conjunction with a future, major renovation/reuse of the school.

STRUCTURAL CONDITION/COMMENTS

Structural conditions at the Brown School building were observed by FBRA at the site (where accessible and exposed) on April 16, 2020. Generally speaking, floor and roof construction in the original building and additions appear to be performing satisfactorily. Except as noted below, there are no apparent signs of structural distress that would indicate significantly overstressed, deteriorated or failed structural members.

Foundations appear to be performing adequately;

there are no signs of significant total or differential settlements.

Floor and roof construction of the original building and the 1975 addition was typically obscured by finishes; accordingly, the condition of this framing is unknown. Roof construction of the 1975 Gymnasium appears to be in satisfactory condition.

Structural/structurally related conditions observed during the April 16, 2020 site visit are noted below:

1. Exterior Façade: Cast stone and masonry façade elements of the original building are showing signs of weathering and deterioration in some locations; particularly at the Boiler Room extension and the chimney. There are open masonry joints at various locations around the building that require repointing (approximately 20% to 25% of the total façade area). Efflorescence was observed on the outside face of exterior walls in some locations (indicating potential moisture issues); further review is recommended. The masonry veneer of the 1970's additions appears to be in generally satisfactory condition. Windows appear to be original.

2. Steel loose lintels at the original building have corroded; cleaning/coating or replacement with new galvanized steel lintels is required,

3. Concrete stairs and pads at entrances on the south and east sides of the original building exhibit signs of weathering and deterioration from deicing salts.

4. Water stains were observed in the Boiler Room; further review/evaluation of water/drainage issues is recommended.

5. As previously noted in this report the structural capacity of the roof and floor construction of the original building and the additions is unknown. Further review and evaluation would be required, in conjunction with a future renovation and/or repurposing of the facility.

6. Access was not gained to the various roofs. The age and condition of the roofs is unknown; further review/evaluation is recommended. The roof of the Boiler Room (viewed from the Third Floor of the original building), appears to be in poor condition and may have compromised the reinforced concrete roof construction. Further review and evaluation would be required, in conjunction with a future renovation and/or repurposing of the facility.

7. Concrete slabs on grade were typically covered by floor finishes, except in the Boiler Room, where cracking was observed. Elsewhere, the condition of the flooring appeared to be generally satisfactory. Some areas of loose or

missing floor tiles were observed in the original building.

8. The height and condition of the original building masonry parapets was not determined; further review and evaluation would be required, in conjunction with a future renovation and/or repurposing of the facility.

9. The fence along the eastern edge of the Boiler Room roof has corroded; repair/ replacement is recommended.

NOTE: Refer to the Architectural report for further information regarding the condition of the building envelope (exterior walls, roofing, windows, etc.).

RENOVATIONS AND ADDITIONS - BUILDING CODE REQUIREMENTS

Compliance Methods - General Comments - EBCM

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

Section 104.2.2.1 of the EBCM requires that the existing building be investigated and evaluated in sufficient detail as to ascertain the effects of any proposed work on the structural systems (both gravity load carrying elements and lateral force (wind and seismic) resisting elements).

The EBCM defines three (3) compliance methods for the repair, alteration, change of occupancy, addition, or relocation of an existing building. The method of compliance is chosen by the Design Team (based on the project scope and cost considerations) and cannot be combined with other methods

The Prescriptive Compliance Method (IEBC Chapter 4) prescribes specific minimum requirements for construction related to additions, alterations, repairs, fire escapes, glass replacement, change in occupancy, historic buildings, moved buildings, and accessibility. If the impact of the proposed alterations and additions to structural elements carrying gravity loads and lateral (wind and seismic) loads is minimal (less than 5% and 10%, respectively), structural/seismic reinforcing of an existing building is not required. Provided that not more than 50% of the spaces in the building are reconfigured, seismic hazards such as bracing the tops of interior masonry walls and partitions, anchorage of floor and roof diaphragms to the exterior walls, bracing of parapets and chimneys, etc. would not be required by code, but could be addressed on a voluntary basis. If the area

of reconfigured spaces exceeds 50% of the gross floor area, these seismic hazards must be addressed to meet the provisions of the EBCM.

The Work Area Compliance Method (IEBC Chapters 5 through 13) is based on a proportional approach to compliance, where upgrades to an existing building are triggered by the type and extent of the work. This method is the most commonly utilized approach and would be appropriate for a renovation of the Brown School. The Work Area Compliance Method includes requirements for three levels of alterations, in addition to requirements for repairs, changes in occupancy, additions, historic buildings, or moved buildings. A complete seismic evaluation of the existing building is required under the following conditions: Level 2 alterations where the demand (mass/seismic force) to capacity (lateral force resistance) ratio of lateral load resisting elements (masonry walls in this case) has been increased by more than 10%, all Level 3 alterations, a change in occupancy to a higher hazard category, and where structurally attached additions (vertical or horizontal) are planned. Provided that not more than 50% of the spaces in the building are reconfigured, renovations would be classified as Level 2. Assuming that modifications to the existing masonry walls (which provide a degree of lateral force resistance) will not be significant (i.e. less than 10% reduction in capacity), seismic upgrades or seismic strengthening of the building would not be required by code. However, seismic hazards such as bracing the tops of interior masonry walls and partitions, anchorage of floor and roof diaphragms to the exterior masonry walls, bracing of chimneys, etc. could be addressed on a voluntary basis. In a Level 3 alteration (more than 50% of the building reconfigured), these seismic hazards must be addressed by code.

The Performance Compliance Method (IEBC Chapter 14) provides for evaluating a building based on fire safety, means of egress and general safety (19 parameters total). This method allows for the evaluation of the existing building to demonstrate that the altered building, while not complying with the code requirements for new construction, will maintain or improve the level of compliance that existed prior to the alterations. A structural investigation and analysis of the existing building is required to determine the adequacy of the structural systems for the proposed alteration, addition or change of occupancy. A report of the investigation and evaluation, along with proposed compliance alternatives, must be submitted to the code official for approval. This method of compliance is not commonly used, due to the additional Building Department reviews and approvals that are required.

Under all Compliance Methods, if the entire roof were to be replaced in conjunction with a future renovation, the evaluation and potential bracing of any chimneys and unreinforced masonry parapets would be required. In addition, if the ultimate wind speed exceeds 150 mph or the building is classified as Risk Category IV, the roof

diaphragm and connections would need to be evaluated and potentially strengthened to meet 75% of IBC 2015 wind forces. As the ultimate wind speed in Newburyport is below 150 mph, these requirements would not be applicable to a renovation of the Brown School building.

Additions - General Comments - EBCM

The design and construction of any addition(s) to the Brown School would be conducted in accordance with the Code for new construction. New additions should be structurally separated from the existing, adjacent construction by an expansion (movement) joint, to avoid an increase in gravity loads and/or lateral loads to existing structural elements.

Renovations/Alterations - General Comments – EBCM

Where proposed alterations to existing structural elements carrying gravity loads result in a stress increase of over 5%, the affected element will need to be reinforced or replaced (if necessary) to comply with the Code for new construction.

Proposed alterations to existing structural elements that are resisting lateral loads (i.e. full height, interior and exterior masonry walls) which result in an increase in the lateral force demand to capacity ratio of over 10% (due to a capacity reduction) should be avoided, if possible. Essentially, this means that removal of masonry walls resisting lateral forces (or creating large openings in these walls) that may be providing lateral force resistance should be avoided; otherwise, seismic strengthening of the building, as well as additional seismic upgrades, may be triggered.

END OF EXISTING CONDITIONS STRUCTURAL REPORT

HVAC, ELECTRIC, PLUMBING + FIRE SYSTEMS

GARCIA, GALUSKA, DESOUSA
370 Faunce Corner Road
Dartmouth, MA 02747

HVAC EXISTING CONDITIONS

Heating Plant

The building heating system is served by two Weil McLain series 1188 cast iron sectional low pressure steam boilers that are located in the Boiler room. The boilers were installed circa 1997 and are approximately 23 years old and are provided with fuel oil burners. The boilers are provided with code complaint operating and safety controls. The boilers each have a capacity of 3,392 MBH input 2,724 MBH gross I=B=R output, and 2,115 MBH low pressure steam output. The boilers appear to be in poor physical condition with signs of severe corrosion and evidence of past boiler leaks on the mechanical room floor. It is our understanding that a 6,000 gallon underground oil storage tank serves the boilers.

The boilers generate low pressure steam (under 15 psi) which is distributed to a combination of older existing building steam heating equipment (which is a combination of steam radiator, radiation heating, and heating and ventilation unit equipment) which was installed during the original 1928 building construction and 1950s addition. The boiler also distributes steam to a steam to heating hot water heat exchanger and a steam to domestic hot water heat exchanger which are located in the boiler room. Condensate return is distributed back to the boiler by a ground mounted duplex steam condensate receiver and duplex pump set

that was manufactured by ITT Domestic. The condensate receiver's capacity is 22.5 gpm, 20 psi, and is equipped with 2 pumps each with ½ hp motors.

The hot water supply from the steam to heating hot water heat exchanger is distributed at approximately 180 deg F on a design heating day and distributes hot water to an overhead schedule 40 black steel piping that distributes hot water to the building hot water heating equipment (combination of hot water fin-tube radiation, convectors, unit ventilator and heating and ventilation unit equipment), which is primarily located in the 1970s Addition area of the building. Hot water is distributed by two (2) base mounted end suction hot water heating pumps. The pumps appear to be in poor condition. The pumps were manufactured by Taco, have a capacity of 165 gpm at 40 feet head, and are equipped with 3 HP motors. There is also an inline hot water circulated pump that

Existing Steam Boilers

Existing Steam Boilers

Existing Condensate Pump

Existing Heat Exhangers + Pumps

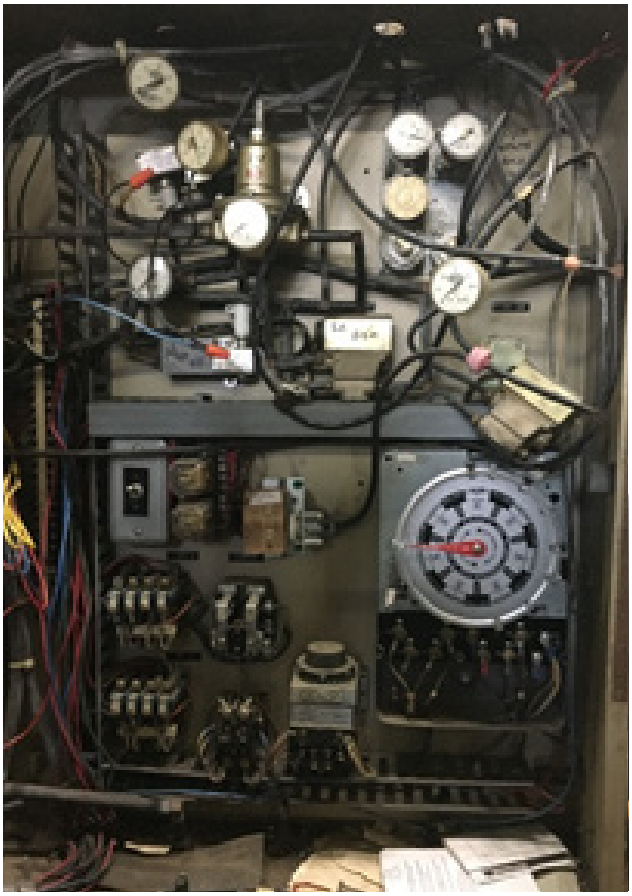
Existing Hot Water + Steam Piping

appears to be served by the domestic hot water heating tank. The steam boiler no longer is used to served the DHW heating storage tank as a gas fired domestic hot water heater is also installed in the Boiler room.

Many sections of the steam, condensate and hot water piping located in the boiler room is damaged and several sections are un-insulated. The majority of piping outside of the boiler room appears to be insulated with fiberglass insulation. Several sections of the piping insulation observed appear to be damaged or in poor condition. Steam and hot water piping is routed exposed within many areas of the building. There is a lack of sufficient shut-off valves located on both the steam and hot water piping systems. It is our understanding that some of the piping insulation may contain asbestos.

Combustion air for the boiler room is provided through a combustion air louver. Breeching for the boiler is welded black steel construction and the breeching is insulated with what appears to be calcium silicate insulation with a canvas jacket. Some sections of the breeching are uninsulated which is non code compliant. The breeching discharges to a masonry chimney which appears to require some repairs. The condition of the chimney liner was not observed during this site visit as the boiler plant was in operation. However, given the age of the chimney, chimney liner repairs and/or replacement with a new internal liner are likely required. The boiler breeching shows signs of rust and corrosion,

Existing ATC Compressor + Dryer



Existing ACT Pnematic Control Panel

and generally appears to be in poor physical condition.

The building HVAC system's automatic temperature controls (ATC) are of the pneumatic type. The ATC compressor and the main control panels are located in the boiler room. The pneumatic compressor consists of a single air storage tank with a compressor that was manufactured by Quincy. The pneumatic system is equipped with an air dryer that was manufactured by Hankinson. The pneumatic compressor and air dryer, control lines, t-stats and associated control components appear to be antiquated and should be replaced and upgraded.

Classrooms

The building classrooms located on the Ground, Second and Third floors are typically provided with heating and ventilation by wall mounted classroom unit ventilators located at the exterior

Ground Level Classroom Unit Ventilator

Ground Level Classroom Unit Ventilator

Ground Level Storage Room - Fin Tube Radiator

Third Floor Classroom Unit ventilator

Ground Level Hallway Convector

wall of each classroom. These units are provided with outside air drawn from a wall mounted louver and return air is drawn directly at the base of each unit. The ground floor classroom unit ventilators have outdoor air ducts that are extended to outdoor air louvers that are located at a slightly higher elevation than the floor mounted unit ventilators. Classrooms are provided with exhaust air registers that are connected to a sheetmetal exhaust ductwork system. In general, all classroom unit ventilators

and exhaust systems appear to be in poor condition, beyond their useful expected service life and are in need replacement.

Corridors, Entrances + Storage areas

The corridors throughout building are typically heated by wall mounted convector units that appear to be in poor condition, beyond their expected useful service life and in need of replacement. Corridors appear to lack code required ventilation air. Storage rooms located in the Ground Level are typically heated by wall mounted fin tube radiation heating. The fin tube radiation and enclosures appear to be in poor condition.

Kitchen

The Kitchen is primarily heated and ventilated by a ceiling suspended steam heating and ventilation unit. The kitchen has an exhaust hood system that is ducted to a sidewall mounted exhaust air fan. The heating and ventilation unit and exhaust air fan system appear to be originally installed equipment and systems that are in poor condition and in need of replacement.

Administration Areas, Guidance /Speech / Music Rooms

Administration office areas are typically not provided with mechanical outdoor supply ventilation air. These office areas are typically

Kitchen Exhaust Hood

Heating + Ventilation Unit

Second Floor Administration Office - Window AC / HW Convector

Gym - Heating + Ventilation Unit

Gym - Wall Supply Diffuser + Radiation Heating

Gym - Wall Return Register

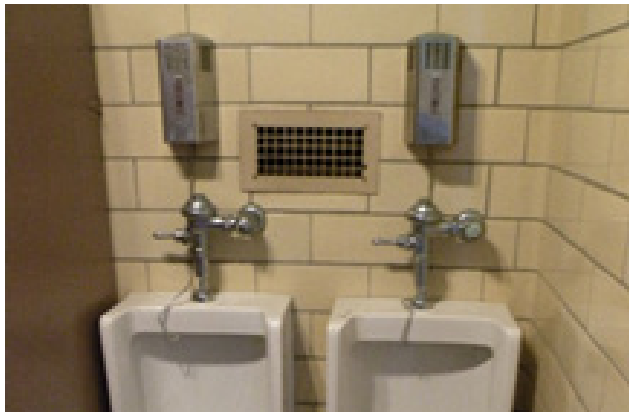
provided with a limited amount of exhaust airflow from roof mounted exhaust fan systems. Outdoor ventilation air appears to be provided by the use of operable windows located in the exterior wall. Office areas are typically heated by wall radiation fin tube radiation or convector heating. The 1970s Addition first floor guidance, speech, music and adjacent storage rooms appear to have been ventilated by an indoor hot water heating and ventilation unit that appears to be originally installed equipment that is in poor condition.

Gymnasium

The gymnasium is provided with an indoor horizontal discharge heating and ventilation air handling unit. The unit has a steam heating coil, supply fan, filters, return air drawn at the rear of the unit, and an outside ventilation air duct connection. Supply air is provided through the unit discharge grille. The Gym also has radiation heating located on the exterior wall of the Gym. The heating and ventilation air handling equipment, ductwork and insulation are original to the Gym Addition construction in the 1950s, and appear to be in poor condition and in need of replacement.

Toilet + Locker Rooms

The toilet rooms and old locker room areas are typically heated by radiation heating units that appear to be in poor condition. The toilet



Ground Level Toilet Room - Exhaust Grille

Ground Level Locker Area - Exhaust Ductwork

Roof Exhaust + Ventilators

rooms are typically provided with wall mounted exhaust registers generally in back of the toilet fixtures. The registers communicate to individual roof mounted exhaust fans through a galvanized sheetmetal exhaust ductwork system. Most exhaust registers were noted to be soiled and appear to be original to the construction of the building and additions. Make up air for the exhaust system is typically provide through the use of door louver or undercut door. In general, the toilet room heating equipment, exhaust grilles/ductwork and exhaust fans appear to be in poor condition and in need of replacement.

Exhaust Air + Ventilation Systems

In general, the majority of the building exhaust air fan and roof ventilator equipment and systems appear to be originally installed equipment and in need of replacement. While some fans may have been replaced in subsequent years, they all appear to be in poor condition and in need of replacement.

Recommendations

Overall, the existing HVAC system is antiquated, in poor condition and has exceeded its expected useful service life. Therefore, we recommend that the building HVAC system is replaced in its entirety. In addition, in order to provide code required ventilation, and a higher degree of thermal comfort for the building we would recommend that the existing HVAC system

Roof Exhaust Fans + Ventilators

Ground Level - Damaged Sidewall Exhaust Fan

is upgraded if it is replaced. HVAC system replacement and upgrade scope of work would include the following:

- Demolish and remove all existing to be replaced and abandoned in place HVAC systems and equipment.

- Remove existing steam heating boiler plant and steam to hot water heat exchangers, associated condensate pumps, hot water pumps, piping/ insulation, and terminal heating equipment. Provide a new high efficiency hot water boiler heating system.

- Replace existing classroom unit ventilators.

    - Potentially install alternate HVAC system with central ventilation that would eliminate Unit Ventilators and incorporate energy recovery ventilation. This would likely require additional ceiling and/or soffit work, or the use of exposed ductwork to accommodate central ventilation ductwork. Structural reinforcements may also be required to support the weight of central indoor or roof mounted air handling equipment.

    - Consider potentially adding partial or full air conditioning to classroom areas.

- Replace Gym, and Kitchen heating and ventilation units. Potentially add full or partial air conditioning to these areas of the building. Replace existing kitchen exhaust hood and fan, and make-up air unit to serve the kitchen if a new kitchen is part of the proposed building renovation project.

- Replace existing Administration area heating and window air conditioning systems. Provide new heating, ventilation, and air conditioning for administration office areas.

- Replace existing entryway, hallway and toilet room radiation and convector heating units with new hot water convectors. Hallways should be provided with code required ventilation air. Toilet rooms should be provided with new code complaint exhaust air systems.

- Replace existing utility/storage room radiation/convectors/unit heaters with new hot water heating equipment.

- Replace existing exhaust fans, roof hood ventilators and associated exhaust air ductwork distribution system. If a new mechanical ventilation system with energy recovery is installed, the number of exhaust air fans required may be substantially reduced.

- Replace the building control systems with a new direct digital control (DDC) and building energy management system (BMS).

ELECTRICAL EXISTING CONDITIONS

Panels + Circuitry

The buildings electrical distribution system is served by a 400 amp fused main disconnect to a CT cabinet with utility meter. Utility company is National Grid Meter #1119190. The service main distribution panel is rated at 400 amps 120/208V, 3 phase, 4 wire manufactured by Westinghouse. Sub-panels "PP" and "LP-1" are manufactured by Federal Pacific and existing Panel "P" is manufactured by Westinghouse. All panels are 1970s vintage or older with exception to a more recently added Cutler-Hammer subpanel tapped from the existing MDP. There are additional sub-panels on the 2nd and 3rd floor. The equipment is generally in poor condition and beyond its serviceable life.

Panel "PP"

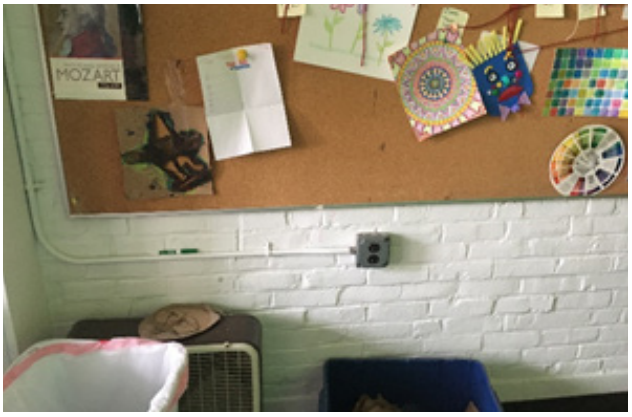
Panel "X"

Branch circuitry consist of surface mounted conduit and receptacle boxes on brick or CMU walls, and duplex receptacles flush mounted within stud walls. Wiring is a combination of MC Cable and Romex. Romex is not typically used in commercial applications. Not all locations within 6' of a water source are provided with GFCI protection.

Utility Meter

Panel "LP-1"

MDP



MC Cable Branch Circuits

Lighting

Lighting is generally recessed 2x4 lay in fluorescent troffers with T8 lamps and acrylic lenses in corridors, and continuous rows of surface type wraparound fluorescent fixtures with T8 lamps within the classrooms. The gymnasium contains upgraded lighting that is in fair condition. Lighting control is via line voltage switching throughout there is no automated control or occupancy sensors.

Main Disconnect

Surface Mounted Recepticles

Gym Exit Signs

Romex Branch Circuits

Exterior fluorescent wall packs with integral photo eyes are installed at entrance/egress doors. These fixtures contain no shielding of the light source.

The fire alarm system consists of an FCI FC72 12 zone non-addressable fire alarm control panel. The panel is obsolete and beyond its serviceable life. The notification appliances are horn strobes and non-compliant for educational use group. Any major renovation will require a new fire alarm system with voice evacuation. Pull stations are non-ADA compliant and need to be lowered to 48" AFF.

There is no BDA system present within the building

Recommendations

- New service equipment and distribution equipment should be installed to replace the existing 1970's vintage equipment.
- Lighting in all areas should be upgraded to new energy efficiency LED type fixtures with occupancy sensors throughout.
- Receptacles should be added to accommodate the needs of the Youth Service Program to avoid excessive use of plug strips and extension cords.
- Site lighting should be upgraded to LED type with proper shielding of the light source.
- All receptacles within 6' of a water

Emergency Lighting Unit

Exterior Wall Packs

Typical Notification Appliance

source shall be replaced with GFCI type receptacles.

- The existing fire alarm system should be replaced with a new addressable system. Voice evacuation shall be provided if the use group is Educational.

- Branch circuiting that is not installed in MC cable shall be replaced. MC Cable can be extended to new branch circuit panelboards.

Fire Alarm Control Panel

PLUMBING EXISTING CONDITIONS

Fixtures

The water closets are predominately wall hung vitreous china with manually operated flush valves. Urinals are wall hung vitreous china with manually operated flush valves.
Lavatories are wall hung vitreous china with manual hot and cold water handle faucets.

Typical Bathroom Fixtures

Typical Drinking Fountain

Drinking fountains are wall mounted vitreous china fountains.

Janitor's sink are floor mounted slop sinks with wall mounted faucets

Water Systems

The main domestic water service is located in an accessible pit. The water service is 4" in size.

Typical Janitors Sink

Piping, where exposed, appears to be copper with sweat joints. The exposed piping in the mechanical room is not insulated.

Domestic hot water in generated through a gas fired tank type water heater. The water heater has an input of 199,000 BTUH and 80 gallon storage. The hot water system is recirculated. There is no thermostatic mixing valve on the systems to prevent scalding. Water heater was manufactured in 2008 and is near the end of its useful life and showing signs of corrosion.

Domestic Water Heater

Gas

An elevated pressure natural gas service is supplied to the building.

Gas piping is black steel with screwed joints and fittings. Gas piping appears to be in good condition.

Drainage Systems

Cast iron is used for sanitary and storm drainage. Where visible, the cast iron pipe appears to be in fair condition. Smaller pipe sizes appear to be copper.

In general, the cast iron drainage piping can be reused even in a major renovation where adequately sized for the intended new use.

Recommendations

- Plumbing fixtures are antiquated. Install high efficiency plumbing fixtures throughout the building to reduce water consumption.
- Provide accessible plumbing fixtures where required.
- Provide new high efficiency domestic water heater equipped with thermostatic

mixing valve, expansion tank, and recirculation pump.

- Video inspect existing sanitary drainage to confirm integrity.

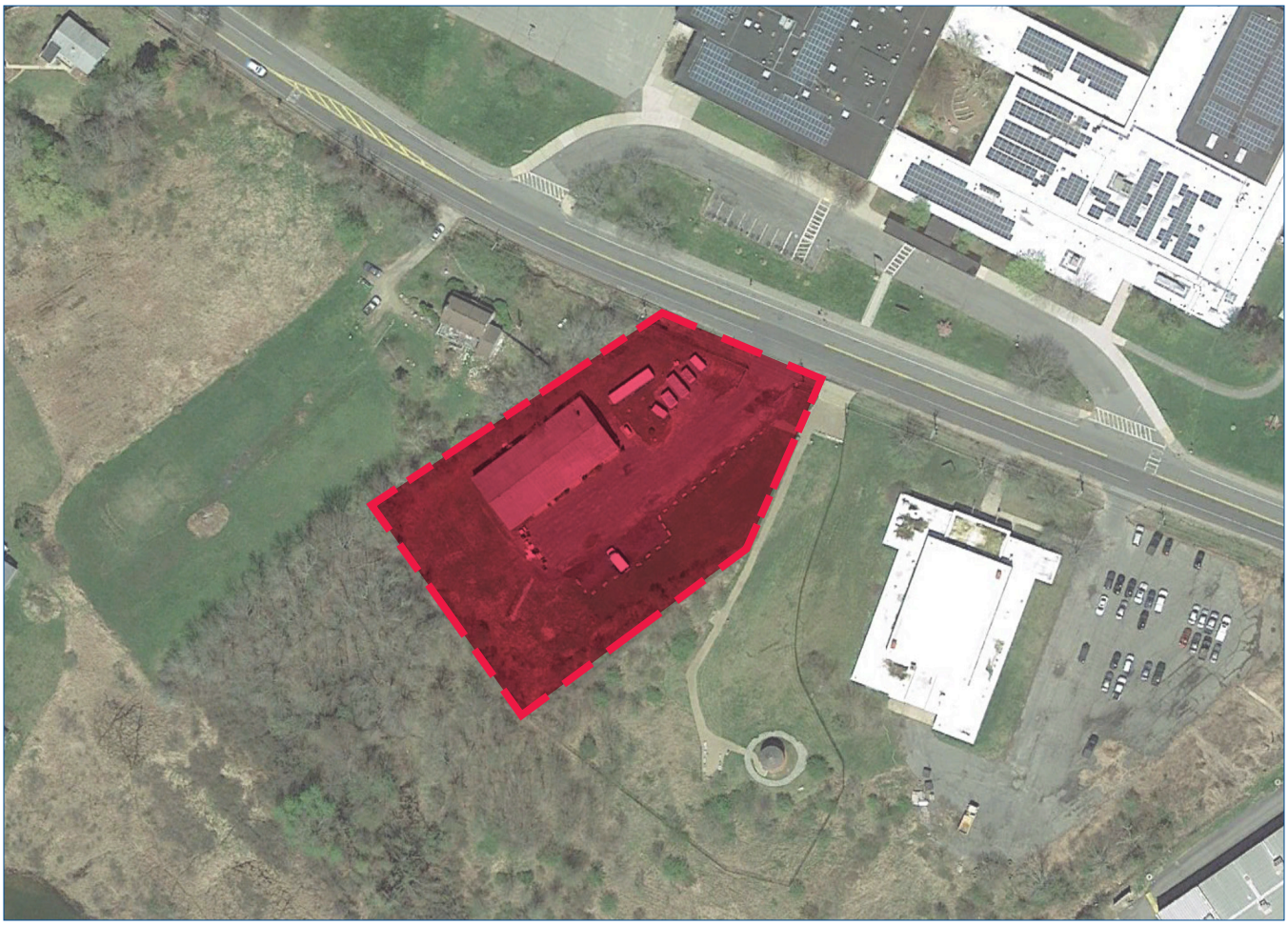
- Provide new natural gas service to building to support new heating boilers.

FIRE PROTECTION EXISTING CONDITIONS

The building is not protected with an automatic sprinkler system.

In general, Massachusetts General Law M.G.L. c.148, s.26G requires that any existing commercial building over 7,500 square feet that undergoes major alterations, or building additions, must be sprinklered. Examples of major alterations are demolition or reconstruction of existing ceilings or installation of suspended ceilings; removal of sub flooring; demolition and/or reconstruction of walls, doors, or stairways; or removal or relocation of a significant portion of the building's mechanical or electrical systems. Alterations are considered major when such work affects 33% or more of the building area or when total work (excluding sprinkler installation) is equal to 33% or more of the assessed value of the building.

If the proposed project scope exceeds these thresholds, then the existing building and any additions will require installation of an automatic sprinkler system. A new dedicated fire water service will be required to supply the building. A hydrant flow test is required to confirm the Municipal water system supply.



Aerial view of 57 Low Street

studio MLA

V. SITE 2: 57 LOW STREET

SITE 2: 57 LOW STREET

SITE OVERVIEW

Located across the street from the existing Nock Middle School, and adjacent to the historic Powder House structure, the Low Street site offers its own set of challenges and opportunities.

Already located on the site is a 3-bay brick faced garage building that has served the National Guard and as an emergency management office. The middle bay was converted into an office space, while the outer two bays function as garage and storage space. Behind the building is a significant area of wetlands and forest which partially occupies a portion of the rear portion of the site, with wetland setbacks (25', 50' and 100') spreading across the site as illustrated in the included site plan diagram.

As part of the site assessment, studioMLA will assist Newburyport in considering this site as a potential future use for the NYS. It will also consider whether the existing garage building should be preserved and added onto or removed in order to make room for a new dedicated youth center facility.

A full assessment of the existing building has not been completed. The quality of the building envelope has not been determined, and the amount of work required to adapt it to the youth's center's needs has not been fully quantified. Window openings will need to be added or expanded. Insulation will need to be added to the walls and roof, moisture issues will need to be addressed, and any structural problems uncovered will need to be repaired or replaced. These are all key factors in determining whether the structure is worth keeping, or if the cost of reusing it exceeds the resources available.

studioMLA and its consultant team completed an initial walkthrough and observation of the site, please refer to the separate consultant sections for more information.

Generator located out front of building

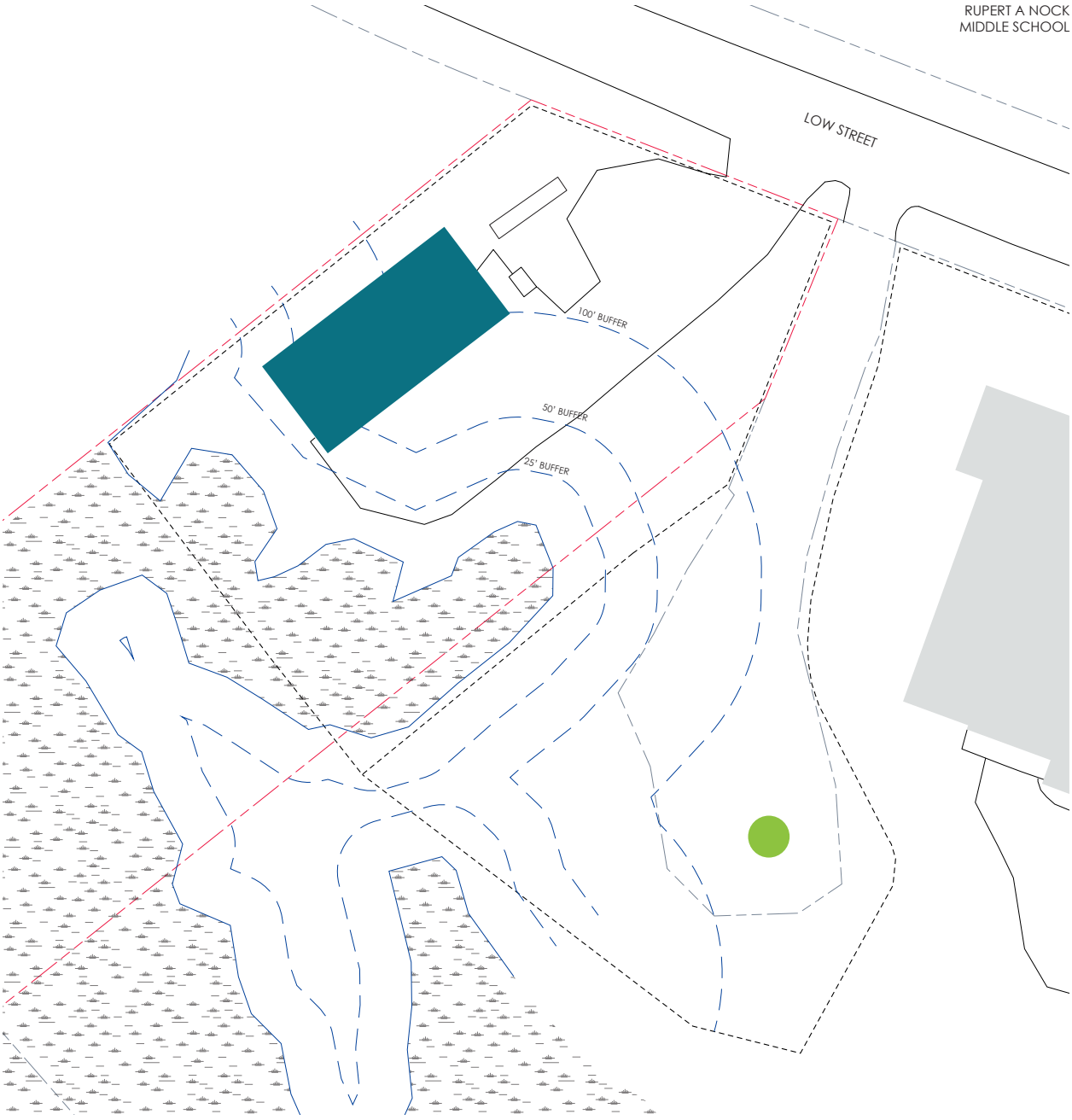
View from across the parking area

Largest garage bay is at the rear

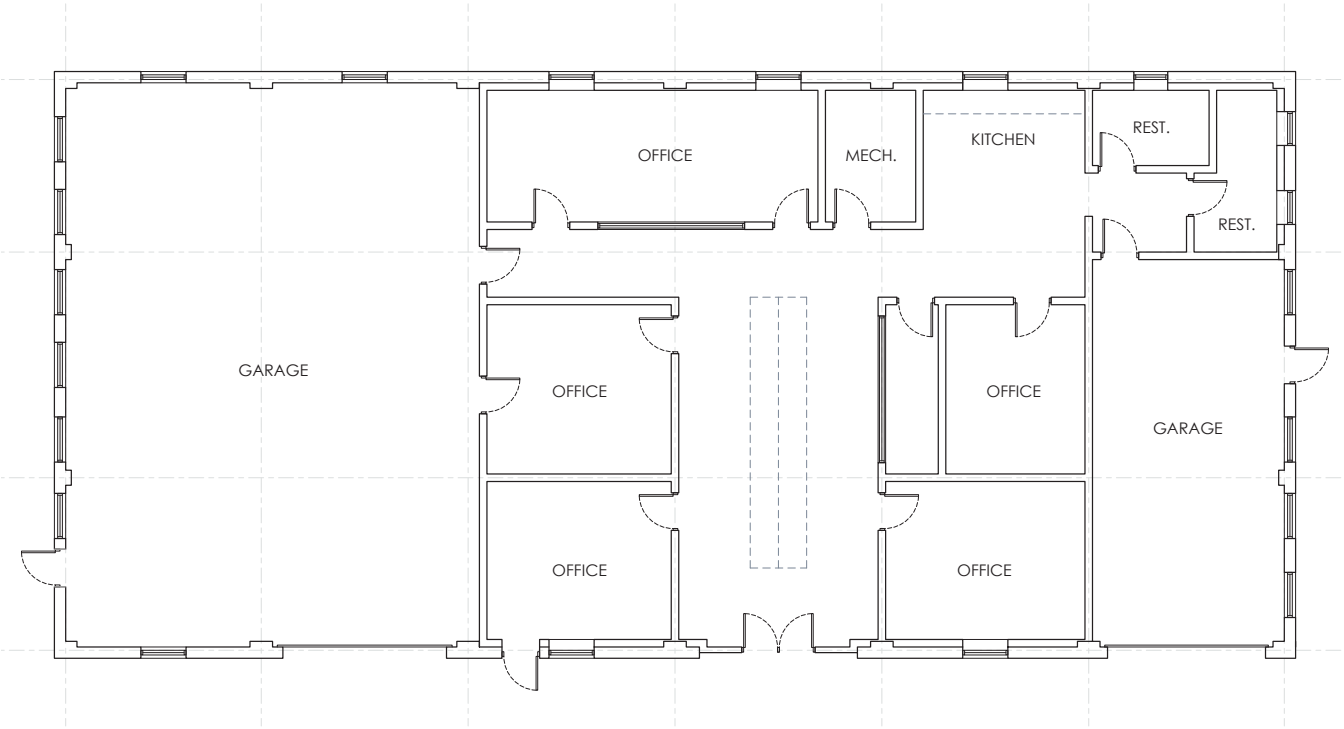
The middle bay main office entrance

Garage window at the rear of the building

Air conditioning for existing offices


RUPERT A NOCK
MIDDLE SCHOOL
LOW STREET
100' BUFFER
50' BUFFER
25' BUFFER
GARAGE
WETLANDS
POWDERHOUSE
NAT'L GUARD
SITE

SITE PLAN



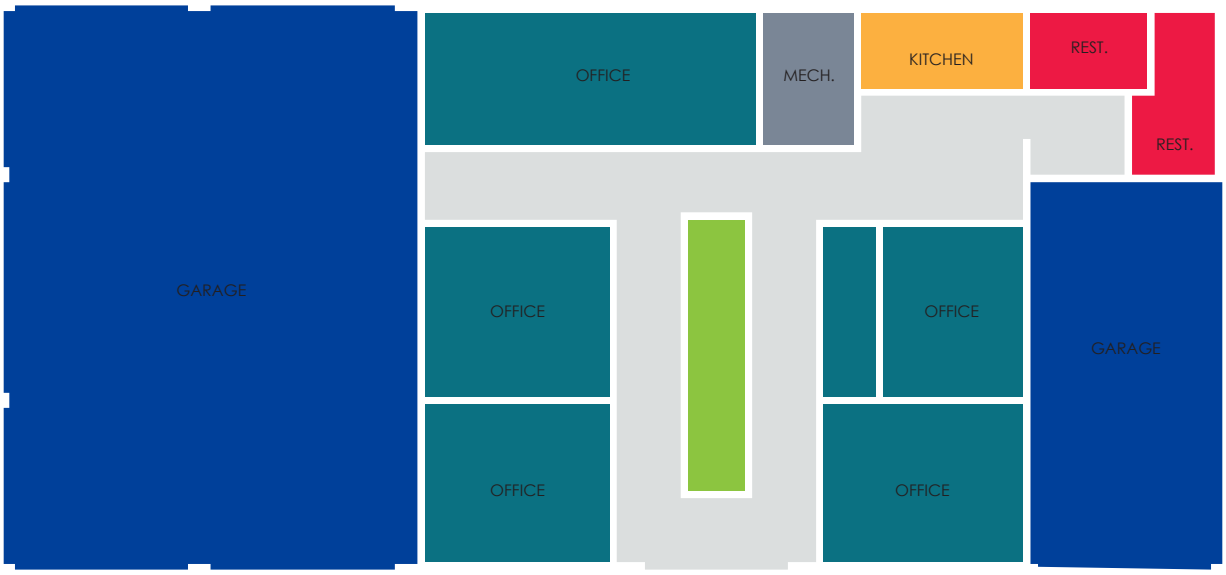
GROUND FLOOR PLAN

PROGRAM ANALYSIS

The existing program of the building is split almost evenly between maintenance + garage bays and converted office area.

The maintenance bays are uninsulated and would require a significant amount of work to be converted to regularly occupied spaces (as mentioned in the previous section). The office areas have been insulated in the past, and the extent and condition will need to be evaluated. The area is currently set up around a central spine of open desks surrounded by closed offices. There is a kitchen and restroom with showers is located down a short hallway.

Re-use of the building would prove to be challenging. The specific needs of the greater NYS program would very likely mean that all existing interior partitions would need to be removed to start with an empty shell.

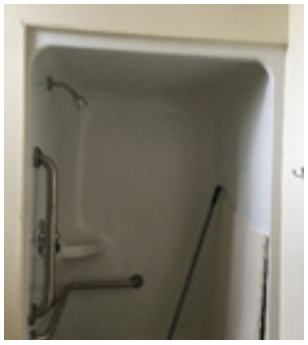


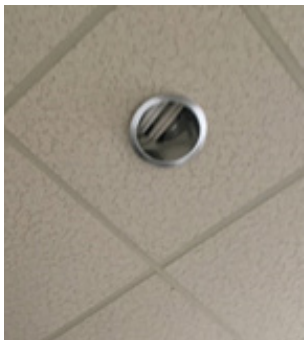
OFFICE / ADMIN
SPECIALTY
GARAGE
CIRCULATION
BREAKOUT DESK
RESTROOMS
MECHANICAL

PROGRAM

INTERIOR OFFICE SPACES

The interior areas of the structure are characterized by either office spaces or maintenance bays. The office spaces, primarily located in the middle bay, have been insulated and subdivided into useful areas (see the program analysis for more information). Generally the finishes are old, outdated and would need replacing to better serve the Youth Services Group. It is likely that this space be completely removed in order to better accommodate NYS program

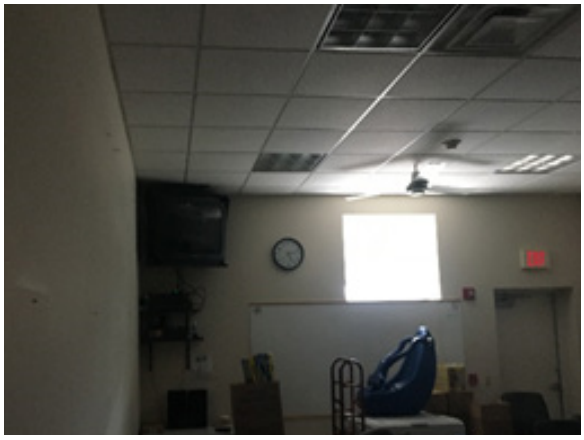




Hallway leading to kitchen and restrooms

Central desk area

Side office



Side office

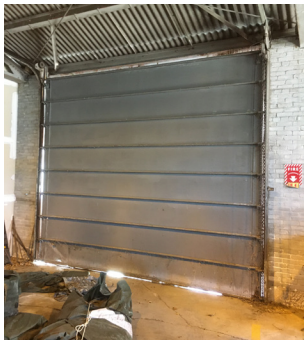
Existing restrooms have ADA amenities

Kitchen / break room area

INTERIOR OFFICE SPACES

GARAGES / STORAGE

The garage / maintenance bays and storage spaces are located at the end os the exiting structure. They are completely raw and unfinished. Lighting is primarily provided by sparsely placed high windows not allowing views to the outside. Temperature is controlled and managed with individual wall mounted heating units which will have to be converted to a much more robust system, see the MEP sections for recommendations. The evaluation and any repairs needed to the existing structure will have to be performed before any finishes or insulation can be applied to make the rooms more usable.



Exposed roof structure in rear bay

Rear bay occupies 1/3 of the building

Light provided by high windows

Narrow repair bay at front building

Overhead door at front maintenance bay

Wall are not insulated

GARAGES / STORAGE

SITE + LANDSCAPE ANALYSIS

OVERVIEW

The Low Street site, when compared to the Brown School Site, has a much more generous amount of buildable area, that comes with its own considerations. To the south east of the site is a large wetlands area which will need to be thoughtfully dealt with to keep our environmental impact as minimal as possible to avoid replication costs. The site is located about 1 mile west of downtown Newburyport, across the street from the Middle School, and has excellent access to the neighboring Powder House Park & Learning Center.

Low Street is a fairly busy road, and there are no sidewalks on Low street on this side of the street. However, there is a sidewalk on the Middle School side of the street.

The site contains one building on it, surrounded by a large asphalt parking lot to its north and east. Behind the building on the south is a large wetland area. The area around the building is within the 25', 50' and 100' buffer zone of the wetlands, which would impact the extent of development of that part of the property. To the east of the site is Powder House Park & Learning Center, and the site of an historic powder house, which sits at the top of a hill. The park is fenced off, and at the time of the site visit, the area was locked. This adjacency to Powder House Park would have great potential in adding to the outdoor recreation opportunities for NYS programming and the wetlands provides a natural landscape element for outdoor exploration experiences.

National Guard building and Powder House

Exiting garage structure on site

Caption

Large backup generator

Site used for vehicle and equipment storage

Rear of site is a wooded wetland

SITE + LANDSCAPE

Foley Buhl Roberts & ASSOCIATES INC
structural engineers

STRUCTURAL REPORT

FOLEY, BUHL, ROBERTS
2150 Washington Street
Newton, MA 02462

INTRODUCTION

Foley Buhl Roberts & Associates, Inc. (FBRA) is collaborating with studioMLA Architects (sMLA) in the review and evaluation of the original National Guard Armory vehicle maintenance garage, located at 57 Low Street in Newburyport, Massachusetts (across from the Nock-Molin School). The building may be rehabilitated/expanded, and repurposed as a facility for Newburyport Youth Services.

The purpose of this report is to identify and describe the structural systems of the building and to comment on the structural issues/conditions observed. General comments relating to renovations, alterations and additions to the building (governed by the Existing Building Code of Massachusetts (EBCM 9th Edition)) are presented as well.

GENERAL DESCRIPTION

The vehicle maintenance garage is a one-story, steel framed structure, constructed circa 1951 on a relatively level, 2.1 acre site. The building is rectangular in plan (front faces to the northeast). The original garage had three (3) vehicular bays with roll-up garage doors on the east side of the building. The northernmost bay is currently used by the City as a workshop for the Parks Department. A full height, masonry bearing/shear wall separates this bay from the others. The southernmost bay continues to be used by the Armory. The central bay of the building has been renovated (hung ceilings, tile floor, etc.) for office

use by the City. This bay is separated from the Armory bay by a full height, steel stud/sheetrock wall.

Structural systems, details and conditions were reviewed at the building (to the extent visible) by FBRA on April 16, 2020. No exploratory demolition or structural materials testing was conducted in conjunction with our review. No soil boring logs or Geotechnical Engineering Reports were available for the building. Original structural drawings for the building were not available.

STRUCTURAL SYSTEMS DESCRIPTION

The design of the vehicle maintenance garage preceded the release of the Massachusetts State Building Code. While the foundations and superstructure may have adequate capacity to support roof snow loads required by the current code, the existing facility does not meet seismic code requirements.

The building appears to have performed satisfactorily over time, under the original and current uses. There are no apparent indications of structural overstress or failure. A comprehensive investigation and evaluation of the roof structural capacity is beyond the scope of this report.

Roof Construction: Sloped roof construction consists of steel roof deck spanning up the slope to steel purlins. Steel purlins span across the slope (north-south direction) to steel trusses, which clear span the space. Trusses are supported by steel columns that are embedded into the masonry side walls of the building. The gable end walls (north and south ends) serve as load bearing walls for the steel purlins. Aluminum gutters (with downspouts) have been installed along the east and west eaves of the roof.

Floor Construction: Floor construction appears to be a soil supported, concrete slab on grade. The slab thickness and reinforcing could not be confirmed at the site.

Expansion Joints: There are no internal expansion joints in the building.

Exterior Wall Construction: Typical exterior walls of the building are masonry construction, consisting of a 4" brick veneer, with an 8" concrete masonry unit (CMU) backup. Originally, there were three (3) roll-up doors on the east side of the building (one has since been infilled). High windows are present on the other three sides.

Subsurface Soils/Foundations: Subsurface soils conditions are unknown; however, it is assumed that columns and bearing walls are supported on conventional spread footing foundations.

Drainage: As there are no below grade areas it is unlikely that there are any perimeter or under-slab drainage systems present.

Fire Resistance: The steel framed roof construction is unprotected and has no fire resistance rating. Construction is classified

as Type IIB (Noncombustible, Unprotected). The building is not equipped with automatic sprinklers.

Lateral Force Resistance: The building was designed before the development of the Massachusetts State Building Code. There is no clearly defined lateral force resisting system; however, the exterior masonry walls provide a level of lateral force resistance (by default). The building does not meet current seismic code requirements. Potential lateral force resistance issues would need to be addressed in conjunction with a future, major renovation/reuse of the building.

STRUCTURAL CONDITION/COMMENTS

Structural conditions at the vehicle maintenance garage were observed by FBRA at the site (where accessible and exposed) on April 16, 2020. Generally speaking, floor and roof construction in the building appear to be performing satisfactorily. Except as noted below, there are no apparent signs of structural distress that would indicate significantly overstressed, deteriorated or failed structural members.

Foundations appear to be performing adequately; there are no signs of significant total or differential settlements.

Roof construction of the building was partially obscured by finishes; accordingly, the condition of the framing in some area is not known. Where visible (north and south ends of the building), the roof construction appears to be in satisfactory condition.

Structural/structurally related conditions observed during the April 16, 2020 site visit are noted below:

1. Exterior Façade: There are open brick masonry joints at various locations around the building that require repointing (some minor wall areas, and some larger areas). There are also small areas of damaged brick (e.g. the southwest corner of the building).

2. Repointing the brick masonry chimney is required.

3. Steel loose lintels at the building have corroded; cleaning/coating or replacement with new galvanized steel lintels is required,

4. As previously noted in this report the structural capacity of the roof construction of the building is unknown. Further review and evaluation would be required, in conjunction with a future renovation and/or repurposing of the facility.

5. The concrete slab on grade was covered by floor finishes, except in the north and south bays. The condition of the slab is generally satisfactory.

NOTE: Refer to the Architectural report for further information regarding the condition of the building envelope (exterior walls, roofing, windows, etc.).

RENOVATIONS AND ADDITIONS - BUILDING CODE REQUIREMENTS

Compliance Methods - General Comments - EBCM

General comments relating to potential renovations, alterations, and additions to the vehicle maintenance garage are presented in this section. Renovations, alterations, repairs, and additions to existing buildings in Massachusetts are governed by the provisions of the Massachusetts State Building Code (MSBC; 780 CMR- 9th Edition) and the Existing Building Code of Massachusetts (EBCM; 780 CMR- 9th Edition, Chapter 34.00). These documents are based on amended versions of the *2015 International Building Code (IBC)* and the *2015 International Existing Building Code (IEBC)*, respectively.

Section 104.2.2.1 of the EBCM requires that the existing building be investigated and evaluated in sufficient detail as to ascertain the effects of any proposed work on the structural systems (both gravity load carrying elements and lateral force (wind and seismic) resisting elements).

The EBCM defines three (3) compliance methods for the repair, alteration, change of occupancy, addition, or relocation of an existing building. The method of compliance is chosen by the Design Team (based on the project scope and cost considerations) and cannot be combined with other methods.

*The Prescriptive Compliance Method (*IEBC Chapter 4) prescribes specific minimum requirements for construction related to additions, alterations, repairs, fire escapes, glass replacement, change in occupancy, historic buildings, moved buildings, and accessibility. If the impact of the proposed alterations and additions to structural elements carrying gravity loads and lateral (wind and seismic) loads is minimal (less than 5% and 10%, respectively), structural/seismic reinforcing of an existing building is not required. Provided that not more than 50% of the spaces in the building are reconfigured, seismic hazards such as bracing the tops of interior masonry walls and partitions, anchorage of floor and roof diaphragms to the exterior walls, bracing of parapets (not applicable here) and chimneys, etc. would not be required by code, but could be addressed on a voluntary basis. If the area of reconfigured spaces exceeds 50% of the gross floor area, these seismic hazards must be addressed to meet the provisions of the EBCM.

The Work Area Compliance Method (IEBC Chapters 5 through 13) is based on a proportional approach to compliance, where upgrades to an existing building are triggered by the type and extent of the work. This method is the most commonly utilized approach and would be appropriate for a renovation of the vehicle maintenance garage. The Work Area Compliance Method includes

requirements for three levels of alterations, in addition to requirements for repairs, changes in occupancy, additions, historic buildings, or moved buildings. A complete seismic evaluation of the existing building is required under the following conditions: Level 2 alterations where the demand (mass/seismic force) to capacity (lateral force resistance) ratio of lateral load resisting elements (masonry walls in this case) has been increased by more than 10%, all Level 3 alterations, a change in occupancy to a higher hazard category, and where structurally attached additions (vertical or horizontal) are planned. Provided that not more than 50% of the spaces in the building are reconfigured, renovations would be classified as Level 2. Assuming that modifications to the existing masonry walls (which provide a degree of lateral force resistance) will not be significant (i.e. less than 10% reduction in capacity), seismic upgrades or seismic strengthening of the building would not be required by code. However, seismic hazards such as bracing the tops of interior masonry walls and partitions, anchorage of roof diaphragms to the exterior masonry walls, bracing of chimneys, etc. could be addressed on a voluntary basis. In a Level 3 alteration (more than 50% of the building reconfigured), these seismic hazards must be addressed by code. With Reference to Chapter 9 of the EBCM, a change in occupancy which results in the building reclassified to a higher hazard category would require that the building be brought into compliance with current code level seismic forces. *Further evaluation of this particular code issue is recommended.*

The Performance Compliance Method (IEBC Chapter 14) provides for evaluating a building based on fire safety, means of egress and general safety (19 parameters total). This method allows for the evaluation of the existing building to demonstrate that the altered building, while not complying with the code requirements for new construction, will maintain or improve the level of compliance that existed prior to the alterations. A structural investigation and analysis of the existing building is required to determine the adequacy of the structural systems for the proposed alteration, addition or change of occupancy. A report of the investigation and evaluation, along with proposed compliance alternatives, must be submitted to the code official for approval. This method of compliance is not commonly used, due to the additional Building Department reviews and approvals that are required.

Under all Compliance Methods, if the entire roof were to be replaced in conjunction with a future renovation, the evaluation and potential bracing of any chimneys (one chimney exists) and unreinforced masonry parapets (none present at the vehicle maintenance garage) would be required. In addition, if the ultimate wind speed exceeds 150 mph or the building is classified as Risk Category IV, the roof diaphragm and connections would need to be evaluated and potentially strengthened to meet 75% of IBC 2015 wind forces. As the ultimate wind speed in Newburyport is below 150 mph, these requirements would not be applicable to a renovation of the vehicle maintenance garage.

With Reference to Chapter 9 of the EBCM, a change in occupancy which results in the building reclassified to a higher hazard category would require that the building be brought into compliance with current code level seismic forces. Further evaluation of this particular code issue is recommended.

Additions - General Comments - EBCM

The design and construction of any addition(s) to the vehicle maintenance garage would be conducted in accordance with the Code for new construction. New additions should be structurally separated from the existing, adjacent construction by an expansion (movement) joint, to avoid an increase in gravity loads and/or lateral loads to existing structural elements.

Renovations/Alterations - General Comments – EBCM

Where proposed alterations to existing structural elements carrying gravity loads result in a stress increase of over 5%, the affected element will need to be reinforced or replaced (if necessary) to comply with the Code for new construction.
Proposed alterations to existing structural elements that are resisting lateral loads (i.e. full height, interior and exterior masonry walls) which result in an increase in the lateral force demand to capacity ratio of over 10% (due to a capacity reduction) should be avoided, if possible. Essentially, this means that removal of masonry walls resisting lateral forces (or creating new, large openings in these walls) that may be providing lateral force resistance should be avoided; otherwise, seismic strengthening of the building, as well as additional seismic upgrades, may be triggered.

END OF EXISTING CONDITIONS STRUCTURAL REPORT

HVAC, ELECTRIC, PLUMBING + FIRE SYSTEMS

GARCIA, GALUSKA, DESOUSA
370 Faunce Corner Road
Dartmouth, MA 02747

HVAC EXISTING CONDITIONS

Heating and Air Conditioning

The building office area is heated and air conditioned by two (2) high efficiency gas fired warm air furnaces that are equipped with split system direct expansion (DX) cooling coils that are connected to outdoor condensing units. The furnaces were manufactured by Heil (Model DC90 NTGM050E7A3) and have a heating capacity of 100 MBH input and 90 MH output. The units are 90% efficient. The furnaces are sidewall vented with PVC flue gas piping material. The heating and air conditioning system was installed circa the late 1990s – early 2000s. In general, the systems show signs of rust and corrosion and are generally considered to be in poor condition and in need of replacement.

The associated air-cooled condensing (ACC) units are located outdoors on grade. The units

Existing Gas Fired Furnaces

Existing Air Cooled Condensing Units

Existing Air Cooled Condensing Units

Existing Gas Fired Furnaces

were manufactured by Heil (Model HAC048AKA1 and HAC036AKA1). One of the ACC units has a capacity of 4 tons and the other has a capacity of 3 tons. The ACC unit operate utilizing R-22 refrigerant and have an efficiency of 10 EER. The ACC units are piped with insulated copper refrigerant tubing to the indoor AC coils located above the furnaces.

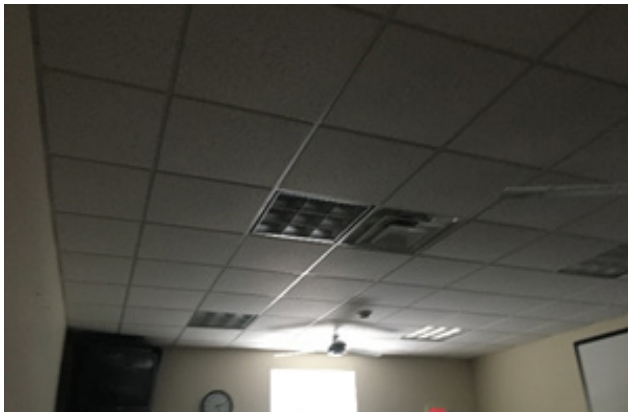
The furnaces are ducted to the ceiling supply and return air distribution devices via an insulated sheet metal and flexible duct work distribution system. The offices also have ceiling paddle type fans.

The gas fired furnace and AC unit operation is controlled by wall mounted cooling and heating thermostat. The thermostats are not programmable type.

The garage/storage area of the building is heated by a gas fired unit heater, that was manufactured by Hot Dawg, Co.

Recommendations

Overall, the existing HVAC system is generally in poor condition and has exceeded its expected useful service life. Therefore, we recommend that the building HVAC system is replaced in its entirety. In addition, in order to provide code required ventilation, and a higher degree of thermal comfort for the building we would recommend that the existing HVAC system is upgraded. HVAC system replacement and



Office Ceiling Supply Diffuser + Paddle Type Fan

Garage Area Unit Heater

upgrade scope of work would include the following:

- Demolish and remove all existing to be replaced and abandoned in place HVAC systems and equipment.
- Remove existing gas fired furnaces and AC units, associated piping, ductwork and controls. Remove existing gas fired garage unit heaters.
- Replace existing HVAC system with a new high efficiency variable refrigerant flow (VRF) heat recovery heat pump system with dedicated outdoor air ventilation system equipped with energy recovery.
- Provide exhaust air systems for all toilet and storage rooms.
- Provide supplemental perimeter electric radiant heating for backup operation to the VRF system.
- Provide a new building control system with a new direct digital control (DDC) and building energy management system (BMS).

ELECTRICAL EXISTING CONDITIONS

The buildings electrical distribution system is served by a 400 amp, 120/208V, 3 phase, 4 wire main distribution panel. The building is supplied by an overhead service to a class 320 meter located on the outside of the building. The distribution equipment is in good condition and manufactured by Cutler-Hammer. There is adequate spare capacity on the main distribution panel for additional branch circuits

Branch circuits are minimal and installed only as needed for the current occupancy.

Lighting in the garage is high pressure sodium high bays, and lighting in Office areas and conference areas are fluorescent 9 cell 2x4 parabolic fixtures and 6" downlights. Lighting is in poor condition. Lighting control is via line voltage switching throughout.

Overhead Service

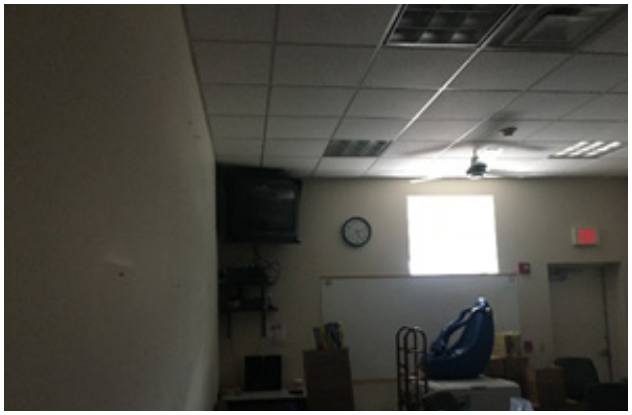
MDP

Distribution Equipment

Exterior fluorescent wall packs and incandescent par style floods are installed around the building.

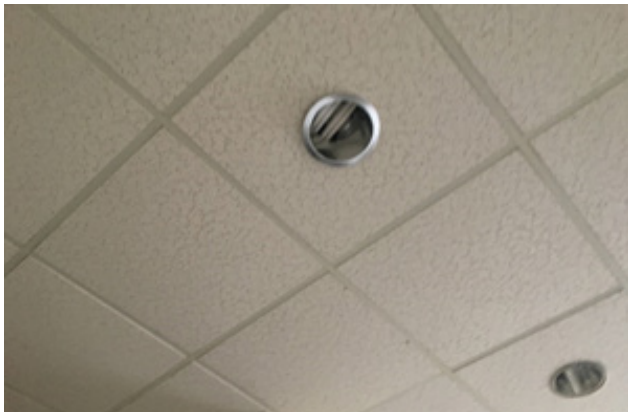
Emergency lighting is powered by an emergency generator however it is not compliant with NEC Article 700 as emergency lighting loads are not separated from optional standby loads. If this configuration were to remain battery units would be required along with self-contained exit signs.

Garage Lighting



Typical Office Lighting

Utility Company Meter



6" Downlight

Exterior Lights

30 kW Generator

Transfer Switch

The fire alarm system consists of a Cerberus 8 zone conventional non-addressable fire alarm control panel. Method of transmission is via master box fire alarm wiring consists of low energy cable, and there seems to be a rodent problem within the panel as they have gained access via an open conduit knock out that should be closed up. Generally, the system ins in fair condition, however it is near end of life. There is no BDA system present in the building.

Recommendations

- Lighting in all areas should be upgraded to new energy efficient LED type fixtures with occupancy sensors throughout.

- Emergency battery units shall be installed in egress paths and exit signs replaced with self-contained type for emergency lighting to be code compliant.

Typical Notification Appliance

- Receptacles should be added to accommodate the needs of the Youth Service Program.
- Site lighting should be upgraded to LED type with proper shielding of light source.
- The existing fire alarm system should be replaced with a new addressable system. Voice evacuation shall be provided if the use Group is educational.

Fire Alarm Control Panel

FACP Open Knockout - Evidence of Rodent issue

ELECTRICAL EXISTING CONDITIONS

Fixtures

Water closet is floor mounted vitreous china with manually operated flush valves.

Lavatory is wall hung vitreous china. With manual hot and cold water mixing faucet.

Janitor's sink are generally trap standard mounted, enameled cast iron sinks. Faucets are equipped with vacuum breakers.

Shower is a fiberglass enclosure with recessed pressure balanced shower valve and freehand showerhead.

Break Room has a single bowl counter mounted stainless steel sink with gooseneck faucet.

There is no Drinking fountain in the building.

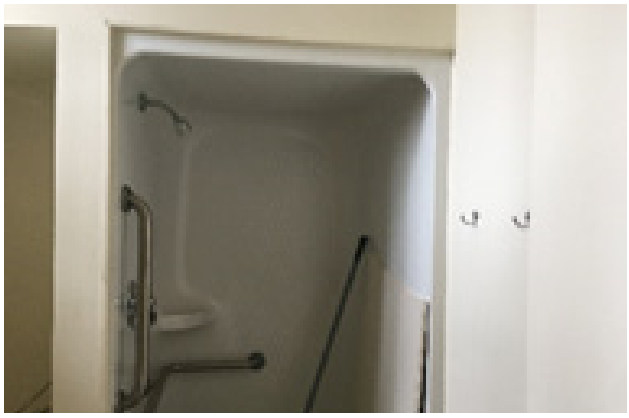
Water Systems

The main domestic water includes a water meter and a reduced pressure backflow preventer. Domestic water service appears to be 1" in size.

Piping, where exposed, appears to be copper with sweat joints. Piping appears to be in good condition.

Domestic hot water is generated through a natural

Water Closet + Lavatory



Shower

Break Room Sink

gas fired tank type water heater. Water heater has an input of 36,000 BTUH and 40 gallon capacity. The hot water system is not recirculated. There is no thermostatic mixing valve.

Gas

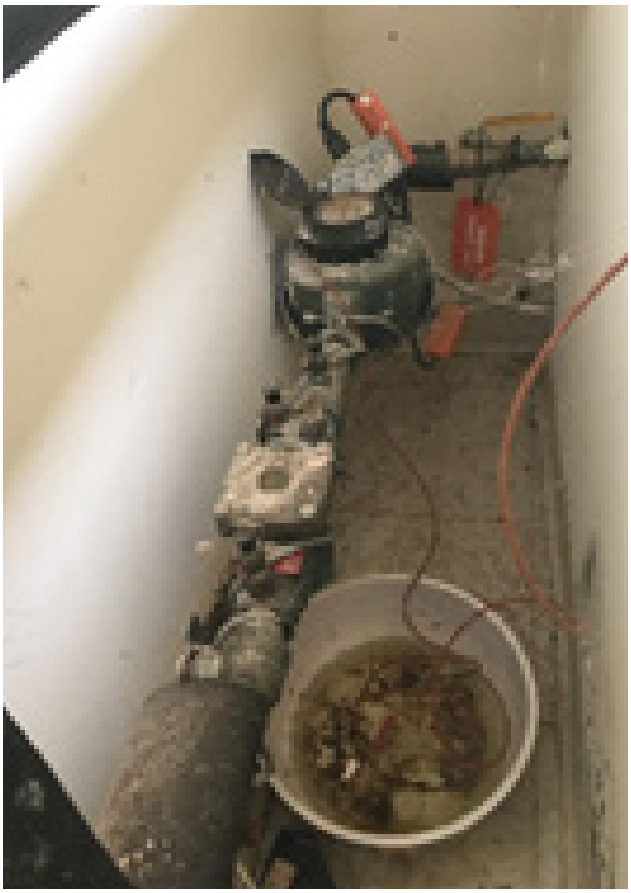
An elevated pressure gas service is supplied to the building. The gas meter is located on the exterior of the building.

Gas piping is black steel with screwed joints and fittings. Piping appears to be in good condition.

Natural gas is provided to the domestic water heater, HVAC air handlers, and unit heaters.

Drainage Systems

Cast iron is used for sanitary drainage. In general, the cast iron drainage piping can be reused even



Domestic Water Service

Domestic Water Heater

in a major renovation where adequately sized for the intended new use.

Garage area was not provided with floor drains. Due to the overhead doors floor drains and oil separator is required.

Recommendations

- Install high efficiency plumbing fixtures to reduce water consumption.
- Provide dedicated male and female bathrooms.
- Provide drinking fountain.
- Confirm domestic water service is adequately sized for the intended renovations.
- Video inspect existing sanitary drainage to confirm integrity.
- If overhead door remains, provide dedicated drainage system including floor drains and exterior oil separator.

Gas Meter

Gas Fired Unit Heater

FIRE PROTECTION EXISTING CONDITIONS

The building is not protected with an automatic sprinkler system.

In general, Massachusetts General Law M.G.L. c.148, s.26G requires that any existing commercial building over 7,500 square feet that undergoes major alterations, or building additions, must be sprinklered. Examples of major alterations are demolition or reconstruction of existing ceilings or installation of suspended ceilings; removal of sub flooring; demolition and/or reconstruction of walls, doors, or stairways; or removal or relocation of a significant portion of the building's mechanical or electrical systems. Alterations are considered major when such work affects 33% or more of the building area or when total work (excluding sprinkler installation) is equal to 33% or more of the assessed value of the building.

If the proposed project scope exceeds these thresholds, then the existing building and any additions will require installation of an automatic sprinkler system.

A new dedicated fire water service will be required to supply the building. A hydrant flow test is required to confirm the Municipal water system supply.

WB Engineers+Consultants
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Prepared by:
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studio MLA

VI. CODE COMPLIANCE APPROACH

WB Engineers+ Consultants

INTRODUCTION

WB Engineers+Consultants has prepared this document for studioMLA to document the code compliance approach related to the proposed scope of work for Newburyport Youth Services in Newburyport, MA. Newburyport Youth Services (NYS) is currently located at the former Brown School building at 42 Milk Street in Newburyport. The facility is not optimized for their program and two options are being considered for a more permanent home. Specifically, NYS is evaluating either remaining at Brown School where the school would undergo a significant renovation to accommodate the program. Alternatively, the group is considering relocating to an existing building at 57 Low Street that has served as a National Guard maintenance garage. The existing garage would also require significant modifications to support NYS.

This narrative addresses requirements contained in the 9th edition of the Massachusetts State Building Code (780 CMR), which is an amended version of the 2015 International Building Code (IBC) and 2015 International Existing Building Code (IEBC). The purpose of this narrative is to document and provide the code compliance strategy, including the framework for the fire protection and life safety concept, for the project.

BUILDING DESCRIPTION

The existing building at 42 Milk Street formerly housed the Brown School. It is a three-story building that was constructed in phases. Originally built in the 1920's, it had multiple additions in the 1970's. The building was constructed of different materials in each phase and is a combination of heavy timber, non-combustible steel, and light-frame combustible construction. As the exterior walls of the building are load-bearing masonry and the interior of the building is non-fire-rated, the building most closely resembles Type IIIB under the currently applicable codes.

The building is mostly vacant at this time – other than Newburyport Youth Services space, which is in the southwest portion of the single-story addition (constructed in the 1970's) that houses the kitchen and gymnasium. The balance of the ground level as well, as the upper levels, consists of a central corridor with unoccupied classroom and office space. Based on WB Engineers+Consultants understanding, the most likely use of this space will be housing.

The existing building at 57 Low Street is a one-story, non-combustible structure that is mostly vacant office space with two storage garages that are still in operation. If NYS were to relocate to this facility, it is WB Engineers+Consultants understanding they will occupy the entire facility.

APPLICABLE CODES + REQUIREMENTS

The following codes are presently adopted in the State of Massachusetts:

- Massachusetts State Building Code (MSBC), 9th Edition, which is an amended version of the 2015 International Building Code.
- Massachusetts Electrical Code, 527-CMR, 12.00, which is an amended version of the 2017 National Electrical Code (NFPA 70).
- Massachusetts Elevator Regulations, 524-CMR.
- Massachusetts Fire Prevention Regulations (MFPR), 527-CMR.
- International Mechanical Code, 2015, as adopted and amended by the MSBC (Chapter 28).
- Massachusetts Fuel Gas and Plumbing Codes, 248-CMR.
- International Energy Conservation Code, 2015, with Massachusetts Amendments, 780-CMR, 115.AA
- Massachusetts Architectural Access Board Regulations, 521-CMR
- National Fire Protection Association (NFPA) Standards, as referenced by the MSBC and the MFPR.

CHAPTER 34 SCOPING PROVISIONS

As the base building is existing, Chapter 34 of the MSBC – an amended version of the 2015 International Existing Building Code - must first be consulted to determine what upgrades are required. The following options may be considered in evaluating the building:

SCOPE AND APPLICABILITY

The provisions of Chapter 34 apply to the repair, alteration, change of occupancy, additions and relocation of existing buildings.

INTENT

The intent of Chapter 34 is to provide flexibility to permit the use of alternative approached to achieve compliance with minimum requirements to safeguard the public health, safety, and welfare insofar as they are affected by the repair, alteration, change of occupancy, additions and relocation of existing buildings.

SAFEGUARDS DURING CONSTRUCTION

Construction work covered in this code, including any related demolition, shall comply with the requirements of this code, 527 CMR and 780 CMR. Further discussions regarding potential impairments during construction should be held as the project progresses.

DUTIES AND POWERS OF CODE OFFICIAL

Any proposed work in an existing building, as a condition of the issuance of a permit, may require the building to be investigated and evaluated in accordance with the provisions of Chapter 34. The investigation and evaluation must consider the impact of the proposed work on the following systems; building elements and materials, fire protection, means of egress, accessibility, structural, energy conservation, and MEP system design for the space under consideration. Additionally, where necessary, the entire building or structure and its foundation if impacted by the proposed work.

This report is intended to document the evaluation described above for the subject structure, along with any proposed compliance alternatives.

CHAPTER 34 COMPLIANCE PROVISIONS

Section 301.1 of Chapter 34 of the MSBC presents the various options available to evaluate the code requirements applicable to repair, alteration, change of occupancy, addition, or relocation projects to existing buildings. Users elect one of the available compliance methods to evaluate the existing building based on the proposed scope of work of the project. These methods include the prescriptive compliance method, work area compliance method, and the performance compliance method.

Based on the level of work required, the proposed method for this project will likely be the work area compliance method:

WORK AREA COMPLIANCE METHOD: Repairs, alterations, additions, changes of occupancy, and relocated buildings complying with the applicable provisions of Chapters 5 through 13 of this code.

The work area compliance method has been selected for use on this project. The work area for the project is assumed to be:

- 42 Milk Street: The majority of the first floor.
- 57 Low Street: The entire building

The code compliance strategy utilizes the following definitions, critical to defining the requirements of the project.

WORK AREA: That portion or portions of a building consisting of all reconfigured spaces as indicated on the construction documents. Work area excludes other portions of the building where incidental work entailed by the intended work must be performed and portions of the building where work not initially intended by the owner is specifically required by this code.

REPAIRS: Repairs include the patching or restoration or replacement of damages materials, elements, equipment or fixtures for the purpose of maintaining such components in good or sound condition with respect to existing loads or performance requirements.

ALTERATION – LEVEL 1: Level 1 alterations include the removal and replacement or the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose.

ALTERATION – LEVEL 2: Level 2 alterations include the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment.

ALTERATION – LEVEL 3: Level 3 alterations apply where the work area exceeds 50 percent of the building area.

CHANGE OF OCCUPANCY: Change of occupancy provisions apply where the activity is classified as a change of occupancy, defined as "a change in the use of the building or a portion of a building. A change of occupancy shall include any change of occupancy classification, any change from one group to another group within an occupancy classification or any change in use within a group for a specific occupancy classification."

GENERAL

The work area will involve multiple different classifications of work regardless of the selected building.

- 42 Milk Street: The work area will involve repairs, Level 2 Alterations (which require compliance with Level 1 and Level 2 Alterations provisions), as well as a potential Change of Occupancy depending on existing permits as compared to final occupancy.

- 57 Low Street: The work area will involve repairs, Level 3 Alterations (which require compliance with Levels 1, 2, and 3 Alterations provisions), as well as a Change of Occupancy.

In accordance with Section 601.2, for Repairs, the work shall not make the building less conforming than it was before the repair was undertaken.
In accordance with Section 701.2, for Level 1 Alterations, an existing building shall not be altered such that the building becomes less safe than its existing condition. Where the current level of safety is proposed to be reduces, the altered portions must conform to the 780 CMR requirements for new construction.

In accordance with Section 801.2 and 801.3, for Level 2 Alterations, all work must comply with the requirements of Chapters 7 and 8. All new construction elements, components, systems, and spaces shall comply with the requirements of 780 CMR for new construction.

In accordance with Section 901.2, for Level 3 Alterations, all work must comply with the requirements of Chapters 7, 8, and 9. All new construction elements, components, systems, and spaces shall comply with the requirements of 780 CMR for new construction.

In accordance with Section 1001.2, for Change of Occupancy all work must comply with the requirements of Chapter 10.

BUILDING ELEMENTS AND MATERIALS

The Brown School is an existing 3-story, Group E school building constructed of Type IIIB construction. While an addition in the mid-1970's resulted in some portions of the building being constructed of non-rated steel, the original building and the gymnasium portion include heavy timer members. As the walls are load-bearing masonry, Type IIIB is the most accurate representation of the overall building's construction type. The proposed repair will not impact the allowable height or area of the building as the footprint and building height will remain the same.

The 57 Low Street property is a one-story, Group B office building constructed of Type IIB construction. As the entire structure appears to be built of non-rated steel, this would be the most accurate representation of the building's construction type.

The table below outlines the fire resistive construction requirements:

The proposed project will not impact the construction classification for the building. As neither project will increase the height or area of the buildings, there is no impact to the allowable height and area. Both buildings are constructed appropriately (based on allowable height and area) for the proposed use(s).

Any proposed alterations must comply with 780 CMR for new construction for all interior finishes and trim. All new work must comply with the materials and methods requirements in 780 CMR for new construction.

The existing stairway and ramp will require careful evaluation depending on the level of work proposed surrounding the stairway. Vertical openings are closely regulated under the existing building code as well as the code for new construction. See Potential Compliance Issues section of this report for additional information.

FIRE RESISTANCE RATING (TABLES 601 AND 602)

BUILDING ELEMENT	FIRE RATING – TYPE IIIB	FIRE RATING – TYPE IIIB
Structural Frame	Non-rated	Non-rated
Interior Walls- General	Non-rated	Non-rated
Floor/Ceiling Assemblies	Non-rated	Non-rated
Roof Assemblies	Non-rated	Non-rated
Exterior Bearing Walls	2-hour	Non-rated

MEANS OF EGRESS

Based on the level of work proposed, the means of egress from the work area will require full compliance with the requirements for new construction.

All new construction elements, components, systems, and spaces need to comply with the requirements MSBC. If work were performed on the means of egress, a compliant means of egress would be required for the building. It is assumed that the building will be fully-sprinklered. See Potential Compliance Issues section of this report for additional information.

FIRE PROTECTION SYSTEMS

Massachusetts General Laws Chapter 148 Section 26G requires sprinkler protection to be provided in occupancies where the altered area exceeds 7,500 square feet. In addition to this requirement the following provisions must be met based on 780 CMR, Chapter 34.

Level 1 Alterations must be done in a manner than maintains the level of fire protection provided.

Work areas in Groups A, B, E, S-1, and S-2 that have exits or corridors shared by more than one tenant or serving an occupant load greater than 30 to be protected with an automatic sprinkler system where all of the following occurs:

- The work area would require a sprinkler system based on requirements for new construction.
- The work area exceeds 50 percent of the floor

Fire Alarm and Detection: An approved fire alarm system must be installed in accordance with NFPA 72. Existing alarm notification devices shall be automatically activated. Where the work exceeds 50 percent of the floor, a fire alarm system shall be required throughout the floor except for tenant spaces outside the work area.

ACCESSIBILITY

The following section documents the requirements for accessibility upgrades. As a base requirement, everything that will be renovated will have to comply with the requirements for new construction. While it is possible the proposed work at Brown School will not exceed 30% of the full and fair cash value of the property, the balance of the building is also proposed to be renovated. When determining the appropriate Level of work as described herein, the cost of the work to be used in the calculation for item 3 is all permitted work over a 3-year period.

Based on the level of work, it is anticipated that the work area will require full compliance with the Massachusetts Architectural Access Board requirements as well as the Americans with Disabilities Act. This includes accessible parking,

entrances, and a full accessible route throughout the building. All bathrooms and kitchens would require accessibility upgrades as well. See Potential Compliance Issues section of this report for additional information.

Massachusetts Architectural Access Board

The Massachusetts Architectural Access Board (MAAB) separately governs accessibility requirements. The MAAB requirements are only applicable to public spaces in a building. MAAB is not applicable to employee only areas.

MAAB application criteria for existing buildings are identified in MAAB Section 3.3. There are three (3) thresholds used to determine the extent of compliance required with MAAB provisions. These thresholds are determined over a rolling 36-month period and are as follows:

1. If the work being performed costs less than $100,000, then only the work being performed must comply with MAAB.

   Exception: General maintenance and on-going upkeep of existing, underground transit facilities will not trigger the requirement for an accessible entrance and toilet unless the cost of the work exceeds $500,000 or unless work is being performed on the entrance or toilet.

2. If the work being performed costs more than $100,000 but less than 30% of the full and fair cash value of the building, then the work being performed must comply with MAAB and the following features must be provided:

   - An accessible public entrance;
   - A publicly accessible toilet room;
   - An accessible telephone; and
   - An accessible drinking fountain.

   Exception: Whether performed alone or in combination with each other, the following types of alterations are not subject to 521 CMR 3.3.1, unless the cost of the work exceeds $500,000 or unless work is being performed on the entrance or toilet. (When performing exempted work, a memo stating the exempted work and its costs must be filed with the permit application or a separate building permit must be obtained).

3. If the work being performed costs more than 30 percent of the full and fair cash value of the building, then the entire building must be made to comply with MAAB. Work performed that is limited solely to electrical, mechanical, or plumbing systems and that does not involve the alteration of any elements or spaces required to be accessible by MAAB, and has a total value of less than $500,000 are excluded from this threshold review [MAAB 3.3.2 (b)]. However, if any

non-exempt work is permitted within the 3-year period, all exempt work must be included.

When determining the appropriate Level of work as described above, the cost of the work to be used in the calculation for item 3 is all permitted work over a 3-year period.

Americans with Disabilities Act Accessibility Guidelines (ADAAG)

ADAAG is applicable to all public and private places of work. ADAAG does not require upgrades be made for alteration work that is limited to work like re-roofing, maintenance, mechanical systems etc. Further, alterations include, but are not limited to, remodeling, renovation, rehabilitation, reconstruction, historic restoration, changes or rearrangement in structural parts or elements, and changes or rearrangement in the plan configuration of walls and full-height partitions. Normal maintenance, reroofing, painting or wallpapering, asbestos removal, or changes to mechanical and electrical systems are not alterations unless they affect the usability of the building or facility.

This is different than MAAB, which does consider all this work in its calculations. However, under ADA, any work that does affect the primary function of the building should be made to be compliant. In addition, up to 20 percent of the project cost may be spent on accessibility upgrades before it is considered disproportionate. Costs that may be counted as expenditures required to provide an accessible path of travel may include:

- Providing an accessible entrance and an accessible route to the altered area, for example, the cost of widening doorways or installing ramps;
- Making restrooms accessible, such as installing grab bars, enlarging toilet stalls, insulating pipes, or installing accessible faucet controls;
- Providing accessible telephones, such as relocating the telephone to an accessible height, installing amplification devices, or installing a text telephone (TTY); and
- Relocating an inaccessible drinking fountain

In choosing which accessible elements to provide, priority should be given to those elements that will provide the greatest access, in the following order

- Accessible entrance;
- Accessible route to the altered area;
- At least one accessible restroom for each sex or a single unisex restroom;
- Accessible telephone(s);
- Accessible drinking fountain(s); and

- When possible, additional accessible elements such as parking, storage, and alarms

MECHANICAL DESIGN

Alterations Level 2 require all reconfigured, occupiable spaces and all spaces converted to occupiable must be provided with natural or mechanical ventilation in accordance with the requirements for new construction. Alternatively, existing mechanical ventilation systems can comply with the following: in mechanically ventilated spaces, existing systems that are altered, reconfigured, or extended shall provide not less than 5 cfm per person of outdoor air and not less than 15 cfm of ventilation air per person. Alternatively, the ventilation air can be determined by ASHRAE 62.

All newly introduced devices, equipment, or operations that produce airborne particulate matter, odors, fumes, vapor, combustion products, gaseous contaminants, pathogenic and allergenic organisms, and microbial contaminants in such quantities as to adversely impact health or cause discomfort shall be provide with local exhaust.

ELECTRICAL DESIGN

Alterations Level 2 requires all newly installed electrical equipment and wiring relating to work done in any area must comply with the requirements for new construction. Additionally, existing wiring within the control area in Group A-1, A-2, A-5, H, and I occupancies must be upgraded to comply with the requirements for new construction.

ASSUMPTIONS + ISSUES

STRUCTURAL DESIGN

The structural requirements must be evaluated by the design team's structural engineer.

ASSUMPTIONS

- This report assumes that there are no outstanding notices of violations or other orders from the building or fire officials concerning the condition or use of the subject building.
- This report assumes there are no hazardous materials in use or storage within the building other than any materials specifically discussed herein.
- The work area at 42 Milk will be limited to the first floor while the 57 Low Street renovation would involve the entire building.

POTENTIAL ISSUES

The building at 57 Low Street has no significant interior code-compliance issues.

- Assuming the building will be reused, any interior renovation work would have to comply with the requirements for new construction.
- Any modifications to the building systems outlined in this report would also have to comply with the requirements for new construction.
- The changes in elevation at the entrances and exits are concrete and do not appear to provide fully accessible grades and changes in elevation. These entrances/ exits would have to be corrected as part of any project at this location.

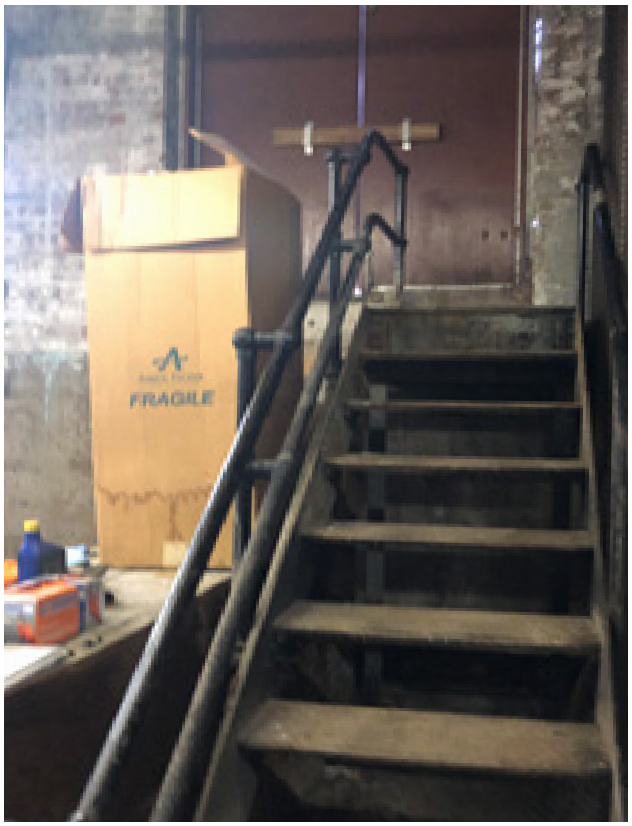
The potential renovation at 42 Milk Street involves significant potential code compliance

issues. Similar to the 57 Low Street project, the interior renovation work would have to comply with the requirements for new construction. Any modifications to the building systems outlined in this report would also have to comply with the requirements for new construction. The following list outlines additional concerns regarding existing conditions that would likely have to be resolved as part of any significant renovation of the former Brown School:

- Stage access and egress is non-compliant. Egress from the stage must be provided via two, 44-inch stairways (as it is greater than 750 square feet). All doors must provide a minimum of 32 inches of clear width (minimum 34-inch door leaves) and swing in the direction of egress travel.

- Boiler room access and egress is non-compliant. The existing stairway to the exterior would likely require being rebuilt and compliant hardware would be required on the egress door.

- The building is currently designed with significant storage beneath the interior



egress stairways. If this space will be utilized moving forward, it must be located within an enclosed, one-hour fire-rated room as storage is not permitted within or beneath a stairway.

- In general, the means of egress system layout is compliant for the proposed use. However, there are several concerns:

    - Door hardware will have to be replaced with panic hardware throughout the work area.

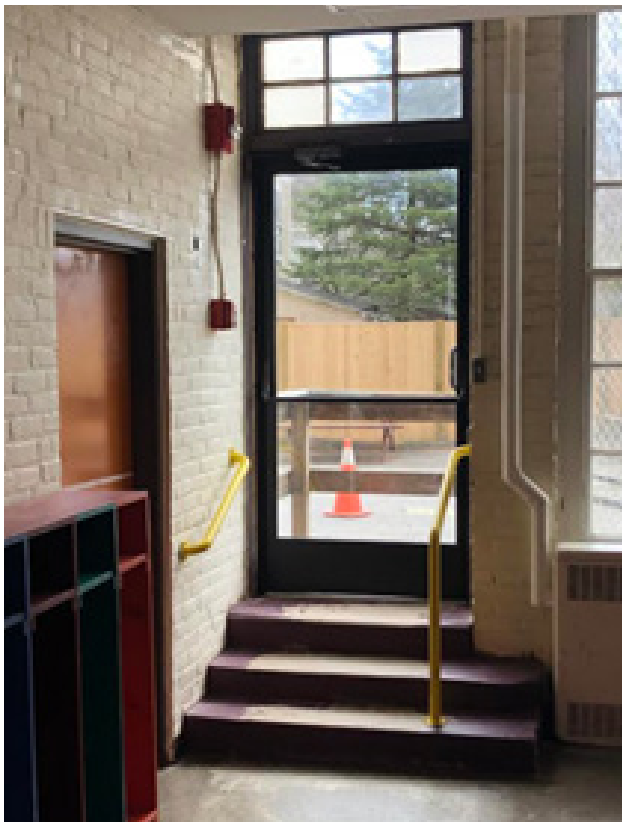
    - Several doors, even those currently equipped with panic hardware, are signed as exits are equipped with locking hardware that must be removed.

    - Existing doorways at each interior exit stair have 31.5-inch door leaves and are not large enough to provide an accessible route. Either a single, compliant active door leaf is required, or the doorway must be widened to allow for a compliant pair of doors. It is possible a variance could be pursued to maintain the existing conditions

with a push-button accessible door opener. It is up to the local code official if the issue creates a "distinct hazard to life."

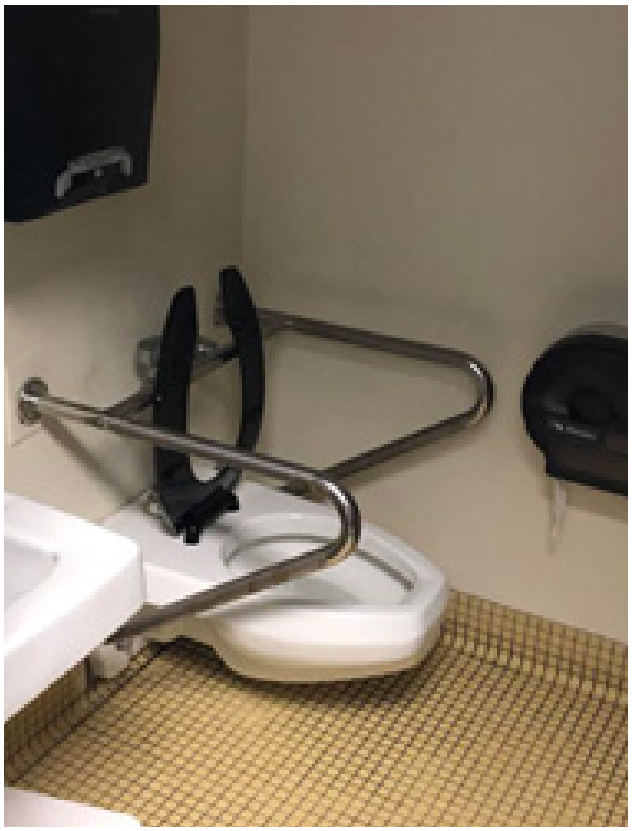
- The existing internal stairways have inconsistent treads and risers. The current covering may be leading to inaccurate measurements and must be removed before the treads and risers can be more accurately evaluated. Depending on the level of renovation surrounding these stairways, a variance may be required to maintain the existing conditions. It is up to the local code official if the issue creates a "distinct hazard to life."

- Accessibility compliance will require remediation to several areas of the building. Any work performed will have to comply with the MAAB requirements and, assuming the upper levels will also be renovated in the next few years, the entire building will require compliance with these requirements as it is assumed



this work will exceed the 30 percent fair cash value of the building:

- o There are currently 6 entrances to the building. While the "main" entrances appear to provide accessible access, the four side entrances are all non-compliant as elevation changes are not provided with compliant ramps. If any of these entrances will be used, they will require accessible upgrades. Photos are examples of two such non-compliant entrances.
- In addition to the accessible entrances, the egress side of these doors also have change-in-elevation issues that must be corrected if the doors will remain. Both examples in the below photos would require ramps. The installation of these ramps would be challenging due to the small footprint of the space and would likely require reconfiguration of the adjacent classroom space. The first photo is from the southwest



portion of the building adjacent to the bathrooms. The second is from a classroom on the north side of the building.

- The existing bathrooms are not accessible. Even those that appear to have been intended to serve as accessible restrooms are non-compliant and would require renovations to bring them into compliance. The below photo shows a restroom that is too small to be made compliant with non-compliant grab bars. The gendered restrooms in the southwest have non-compliant stalls that would have to be reconfigured to comply with MAAB requirements as well. Additionally, there are issues with non-compliant locations of grab bars, mirrors, soap dispensers, etc.

  - o The existing internal stairways ramp have non-compliant handrails and would require remediation as part of the proposed work. This assumes that the project, and the

planned renovation of the upstairs, will exceed 30 percent of the fair cash value of the building.

- The existing kitchen does not provide adequate front approach for the sinks. Any renovation to this area will require accessible upgrades to the kitchen to comply with MAAB requirements.

- Single-height water fountains are provided where high/low fountains should be provided. Additionally, the existing fountains create a non-compliant protrusion into the hallway and would require an alcove or other remediation.

- The elevator is undersized and does not provide accessible access to the upper levels. It is assumed this elevator will not be needed for the proposed NYS project. Any above-grade modifications will require an upgrade to this existing elevator.

o Based on the level of alterations, an NFPA 13-compliant sprinkler system will be required throughout.

o A new fire alarm system will be required as the notification upgrades (to allow for strobes to alert the hearing-impaired) will require expansion of the existing system, which is no longer being manufactured. At a minimum, the new system will have to serve the work area. It is likely that a new fire alarm system will be required for the building. It is possible the Newburyport Fire Department will want separate systems – one for NYS and one for the residential portion - but that will not be known until discussions are held with NFD. It should be assumed the new panel will have to be sized to accommodate the entire building being brought into compliance.

CONCLUSIONS

The scope of work for this project has yet to be finalized, but there are a few items pertaining to the building to consider when moving forward. First, regardless of the selected location, a change of occupancy is likely. Additionally, the proposed scope will correspond to a minimum of Level 2 Alterations. Where the work exceeds 50 percent of the building, Level 3 Alterations will be required. All new construction elements, components, systems, and spaces will need to comply with the requirements within the MSBC for new construction.

The 57 Low Street garage/office building is substantially accessible. Achieving code compliance would require accessible upgrades at the entrances but only minor interior upgrades if this facility is selected. The proposed renovations would require compliance with the provisions for new construction, but the base building does not present additional challenges.

The Brown School setting has significantly more work required to make the space code compliant. It also has the most uncertainty regarding fire protection and accessibility. It is unlikely this project would trigger full compliance with the accessibility provisions (>30% of the full cash value of the building) or require the facility to be fully-sprinklered (7,500 sf of renovated area), both requirements involve multi-year windows in calculating these requirements. As the balance of the building is also assumed to be undergoing renovation as part of a separate project, a complete automatic fire sprinkler system as well as full compliance with accessibility provisions is assumed to be required.

The Brown School also has significant code compliance issues regarding the existing means of egress system that may or may not require remediation, depending on whether these features are included within the work area.
Please contact of our office if you have any questions regarding the items addressed in this letter.

Please contact of our office if you have any questions regarding the items addressed in this letter.

Screenshot of the digital Youth Focus Group held on May 14th

studio MLA

VII. SURVEY + FOCUS GROUP SUMMARY

SURVEY + FOCUS GROUP SUMMARY

Through an online survey and a series of virtual focus groups, we heard from Newburyport Youth Services (NYS) parents, youth and staff, as well as the greater Newburyport community. Survey and focus group participants praised dedicated NYS staff, but longed for improved facilities. Participants talked about the challenges of finding a safe space for youth to play inside during the cold winter months, have unstructured time outside during warmer months, hang out with their friends, learn a new skill, do homework, and more.

Participants wanted space for structured programs and space to hangout. They repeatedly said that the gymnasium is a great flexible space, serving many of their needs. It is a place to connect with friends and get exercise, play team sports or a pick up game of basketball. The gym is an integral part of the service offered by NYS.

"An indoor play space for all ages. Winters can be long and we don't really have any options like this in Newburyport. It would be nice to have a space specifically for kids to be able to meet up for play dates and get some pent up winter energy out."

"My kids are in high school now, but when they were smaller we wish there was an open space that we could have popped into and let them run around when it was rainy or freezing."

"Someplace to hang out with friends when the weather isn't great. My kids are 15 & 18 so they're more interested in hanging out with friends."

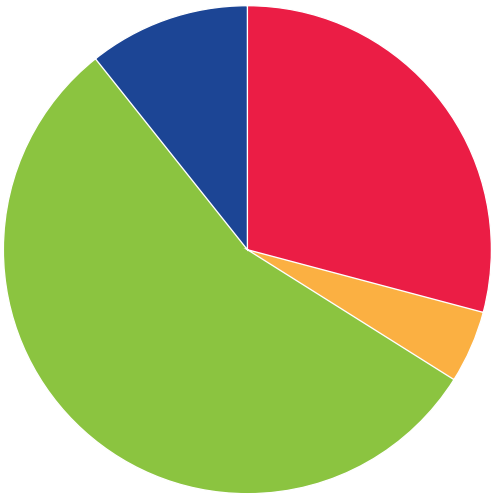
Participants wanted space for more quiet or focused activities, such as cooking, games and homework. They liked the idea of a café space for "coffeehouse" time or cooking lessons. They were interested in a lounge-like area to listen to music, ready or just spend time with friends. They were also interested in smaller rooms that could be reserved to work on a project, hold a meeting, or provide counseling.

"More indoor space suitable when weather is very cold, drop in activities like games, reading area, areas to socialize that don't necessarily involve sports."

"Just please take into account that there are a of quiet kids in Newburyport whose needs get overlooked because louder kids take the spotlight. These more introverted or non-sporty kids need to feel welcome at the new NYS space as well."

"Somewhere that offered weekend 'coffee houses' specifically for high-schoolers and didn't require paying money like most places we end up going downtown."

"A kitchen type setting for cooking classes."



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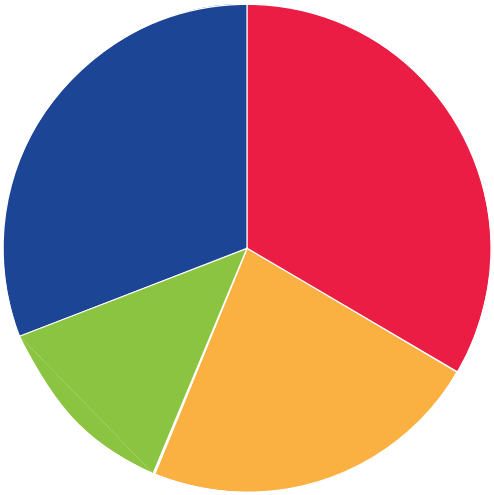
SURVEY PARTICIPANTS

- YOUTH PARTICIPANT
- STAFF
- PARENT OR GUARDIAN
- COMMUNITY MEMBER



Q. What best describes your vision for the future NYS outside space?

- A SAFE PLACE FOR YOUTH TO LET OFF STEAM
- A FLEXIBLE SPACE THE STAFF CAN CHANGE UP
- A SECRET GARDEN TYPE PLACE FOR YOUTH + COMMUNITY TO EXPLORE NATURE
- UNIQUE PARK SPACE FOR YOUTH + COMMUNITY TO CREATE OPPORTUNITIES

Participants wanted space for creative activities including sewing, woodwork, crafting, photography, movie making, and music.

"An open art studio/maker space. Would be awesome to visit for school projects and just for fun."

"I wish there was art spaces in Newburyport."

"A place to make music, do wood working, make art, especially with multiple ages."

"A maker space would be cool because I like to build stuff."

"I would like a space to do artistic things."

"Newburyport has a pretty great range of activities/resources for kids, but I think a youth robotics club/team or a maker space type of thing would be cool."

Participants wanted a designated space for teens, separate from younger children. Staff shared that younger children like to have a space they can look forward to growing into, and teens like to be separate from younger children.

"It would be amazing to have a non-commercial space for different aged kids to spend time in their own distinct spaces designed for them. If the teen offerings are comfortable, cool, and wide open space for physical activities and games, the teens will come. Add ping-pong, billiards, fooseball, they will definitely go and we would support that."

"Some sort of tween friendly park/ playground/outdoor hang out place would be GREAT."

"A spot just for teens to chill and hang out with friends and/or do homework."

Parents and staff emphasized the importance of clear sight-lines. They also voiced interest in seeing a main point of entry and smooth drop-off/ pickup process. Staff reported that having multiple entries is confusing to NYS participants/visitors.

"A one-way traffic flow (like a crescent or loop)."

"A round about driveway - one way in and one way out? Parking, although a challenge because sometimes kids are not ready to go so parents have to sign out etc."

"Covered drop off area to unload/pickup in bad weather. Well-lit, glass so you can see cars pulling up from inside."

"Double doors lobby to wait in for winter."

"A main entrance - only one used for pick-up and drop-off Short-term parking near entrance."

Participants were interested in natural light, and a connection to nature inside. Outside, they were interested in seeing loose parts and space to run around or simply hang out. They were interested in seeing separate space for younger and older youth. A multitude of activities were desired for the outside, but some of lend themselves better to one facility or the other.

> **"A cool playground designed for older kids. Not super predictable safe and boring like all playgrounds lately. They are Lame for any kid over 6. My daughter loves the big climbing rocks at Mosley."**

> **"Some sort of tween friendly park/ playground/outdoor hang out place would be GREAT."**

Multiple participants expressed interest in seeing spaces that are inclusive.

> **"Parents of kids with disabilities really struggle with finding opportunities for their children with social and sensory challenges. It's important to consider this when planning the space. We need to do better with supporting the differently wired population in NBPT."**

> **"Inclusivity - non-gendered bathroom options."**

Ultimately, participants were interested in seeing flexible space. The staff was especially interested in seeing a flexible space that is easy to maintain.

They wanted to see space that would adapt with changing needs over the day, week, month, and year. In order to do that, ample storage space is essential.

> **"An indoor play space with lots of changing areas like loose parts, climbing, jumping and play spaces. More open-ended play."**

With this feedback in mind, these challenges and opportunities must be considered throughout the design:

- Space to be active vs. space to be quiet
- Space for programs vs. space to hangout
- Support different age groups, separately
- Clear sightlines throughout
- Flexible furniture
- Storage space
- Natural light and adaptable lighting where appropriate
- Inclusive spaces

From our research, we determined that these programmatic elements are especially important for the new space:

- Entry and Wayfinding - A single point of entry, with designated space for driving through and temporary parking for drop-off and pick-up; a lobby space where youth can wait for their ride in colder months; clear separation between teen and other space

- Gymnasium - A gymnasium for people of all ages, with space for parents to sit and observe; a high school basketball court; plenty of storage for equipment; potential for a small stage off of the gym, flexible surfacing, or a climbing wall if space permits.

- Teen/Middle School Space "The Hub" – Separate space for teens to hang out and participate in programing; something for younger children to look forward to growing into, and teens to have time away from younger children.

- Café/Lounge – Countertops or tables for cooking lessons or projects; soft seating, possibly including indoor hammocks or bean bag chairs; adaptable lighting; a blank, white wall with a hanging projector to use for different purposes including movies, photos, and announcements; interest in a collaborative mural

- Studio/Makerspace/Workshop – Tables and stools for art, robotics, bike repair, sewing, woodwork, crafting, and general tinkering/making; potentially lighting options for photography or movie making in the same or adjacent space; flexible furniture and storage space for changing interests over the years.

- Gallery – Part of lobby or other shared space where artwork can be displayed or sold.

- Multipurpose Rooms – Flexible furniture for programs year round; storage for furniture or materials not in use.

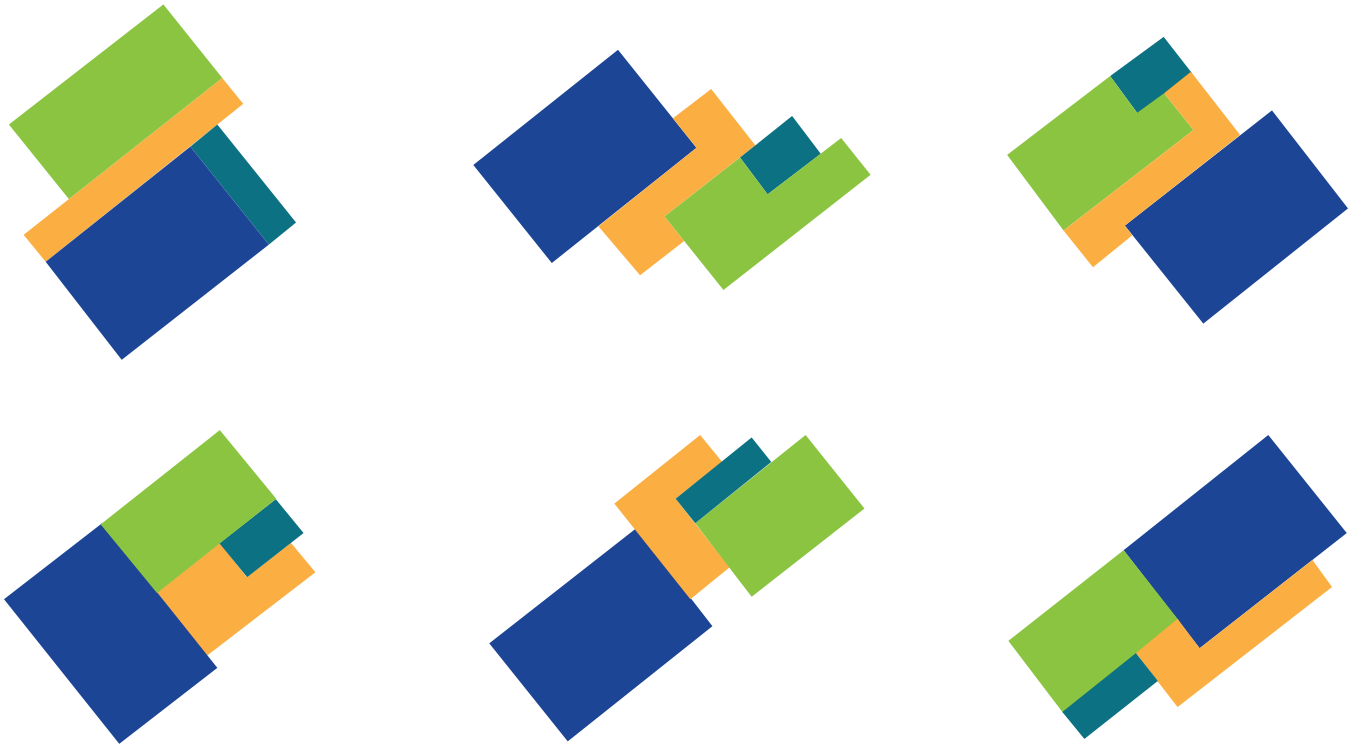
- Meeting Rooms – Flexible furniture for meetings, counseling, or small group work; this space can serve several purposes throughout the day.

- Preschool Space – Separate space for preschool programing, flexible layout to accommodate activities; cubbies or other space to store supplies and other personal items.

- Administrative Areas – Designated desks for full-time NYS staff; cubbies or other space to store personal items; kitchenette for reheating food; meeting space for staff and parents.

- Nature-Based Outdoor Environment – Space to run or simply hang out; loose parts; patio space with seating.

As we evaluate the two potential locations we should keep these desires in mind and work towards incorporating as many of these that are logistically possible to serve the youth, staff and families of Newburyport Youth Services for years to come.



Abstract program layouts

studio MLA

VIII. DESIGN CONCEPTS

OVERVIEW

The following section highlights three approaches to meeting the needs and achieving the vision for Newburyport Youth Services. Two of the options focus on their current Brown School location. One determines the minimal intervention necessary for the program to remain in place. The other, goes further to explore the benefits of rethinking the existing spatial layout to better serve their needs. The third option focuses on the Low Street Site and investigates the advantages of starting with a clean-slate. They are the result of a months long effort from NYS Facility Committee, staff, youth, parents and other stakeholders to identify and address the needs of Newburyport Youth Services Program.

The thorough analysis of both sites was conducted to determine the unique challenges and opportunities that each offers. Concurrently, the focus groups and community survey were used to determine the types of spaces and amenities that were important to the NYS users. This information is the foundation from which these concepts were developed.

PROCESS

The development of the design concepts began by analyzing all the data collected and using it to create an right-sized architectural program. The type and size of each program element was determined from a combination of the current NYS spaces, focus group and survey input, as well as unfulfilled spatial and programmatic needs identified during the site and facility assessments.

These spaces are organized into a diagrammatic blueprint, representing a functional, efficient and safe Newburyport Youth Services. As large programmatic spaces are broken down into more finite spaces the diagram can evolve. Once determined it was applied to each site, adapting to the existing structures, and taking into consideration the site opportunities and other conditions unique to them individually. This approach produced a number of design concepts with varying degrees of intervention. They were presented to the NYS Facility Committee, evaluated, revised, narrowed down, and then put through a preliminary cost analysis exercise. The final three options are the result of this thorough process.

ARCHITECTURAL PROGRAM

The goal in developing the right-sized architectural program diagram is to determine the spatial organization that would provide the maximum benefit to Newburyport Youth Services staff and users, while setting aside the strengths and limitations of any potential site. The diagram represents a basic framework of programmatic requirements, and the starting point for designing a future NYS facility. In addition to the layout of these spaces, the diagram also highlights the relationships between them, identifies both physical / visual connections.

In this diagram the facility is organized around a central core, hub, or main street of common spaces. These are shared spaces that include the

RIGHT-SIZED ARCHITECTURAL PROGRAM

NYS SPACES

672	ART ROOM
861	PRE SCHOOL
771	GAME ROOM
523	HW / TECH SPACE
851	MULTIPURPOSE
430	MAKER SPACE

GYMNASIUM

4315	BASKETBALL COURT

ADMINISTRATION

135	DIRECTOR'S OFFICE
90	SINGLE OFFICE
200	DOUBLE OFFICE
200	DOUBLE OFFICE
90	MULTIPURPOSE
200	MAKER SPACE

COMMON SPACES

80	ENTRY VESTIBULE
350	LOBBY / RECEPTION
204	FAMILY / GENDER NEUTRAL REST.
408	YOUTH RESTROOMS
120	ADULT RESTROOMS
450	A/V + STORAGE
190	MECHANICAL / JANITORIAL
550	CAFE

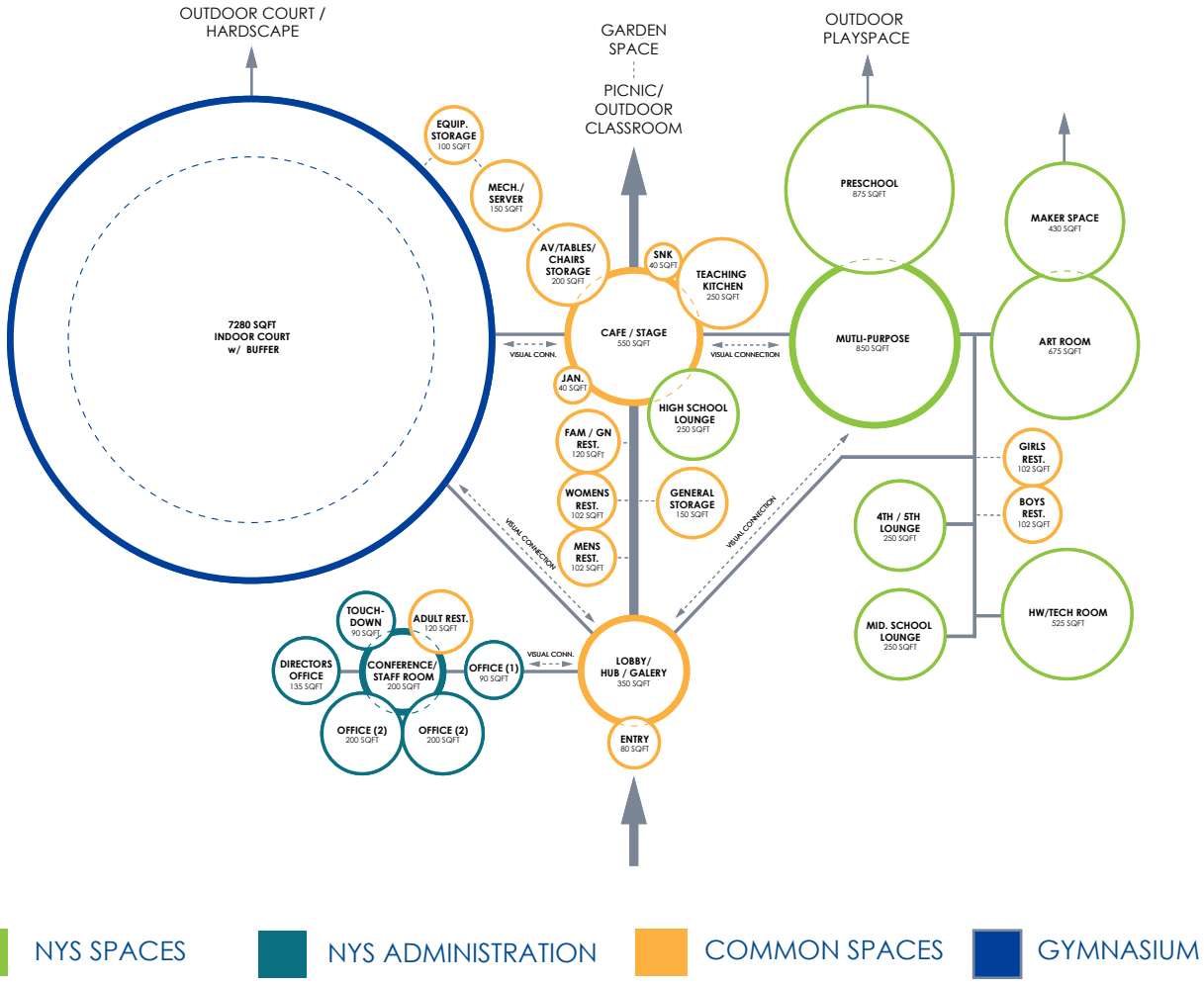
lobby, the cafe, general restrooms, and janitorial/ support spaces. All other main programmatic spaces are connected to and can be accessed from this core.

Locating the administrative offices adjacent to the main entrance and lobby increases safety and security. It allows for NYS staff to supervise activities from a central location, as well as participant arrivals and departures. Once inside, youth should be able to move freely throughout the facility - between the lounges and classroom spaces, the gymnasium, the cafe and other enclosed exterior spaces.

During the focus group sessions, user comments prompted a few adjustments to the right-sized architectural program. Changes include adding a small teaching kitchen to the cafe, larger programs spaces generally became more nuanced.

This can be seen in the breakout of restrooms throughout the facility. Initially grouped in the building core, the total restroom areas have been differentiated by degrees of public/private use as well as by age. Another space type that saw a similar breakout was in the lounge. This is a direct response to frequent comments during the youth focus group session that there was a desire to have lounge spaces that cater to different age groups.

RIGHT-SIZED ARCHITECTURAL PROGRAM

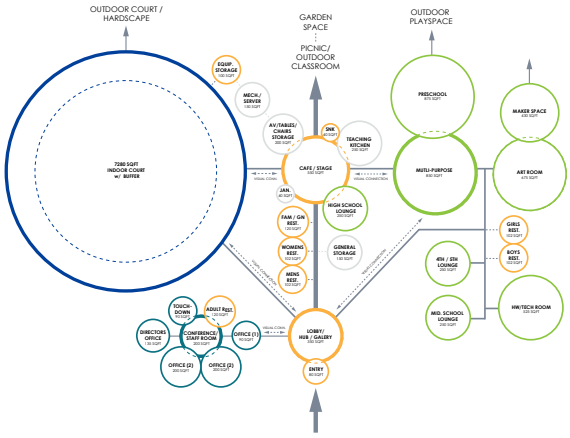


Another use of this diagram is to explore the ways in which the facility can be used beyond Newburyport Youth Services. The ability to allow the facility's amenities to be rented out or utilized for other local events will be a great community asset.

This can be achieved in this layout by permitting sections of the facility to be turned off, depending on the use requirements. designing with this intent with increase the facility's ability to operate during off hours.

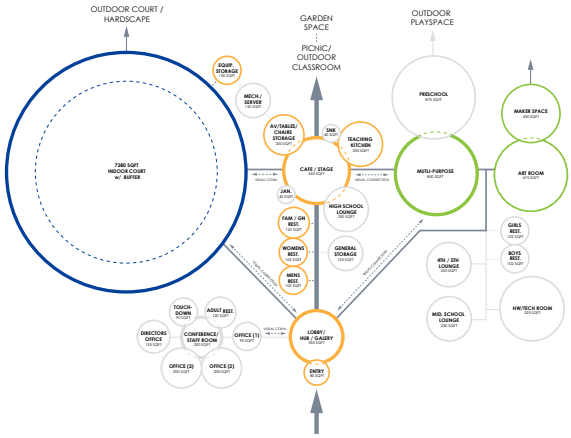
WEEKDAY USE BY NYS

On an average weekday, the majority of the facility will be in use by Newburyport Youth Services. This includes the NYS administration, NYS program spaces and the gymnasium. Some support and storage spaces will remain accessible, however will not be regularly used.



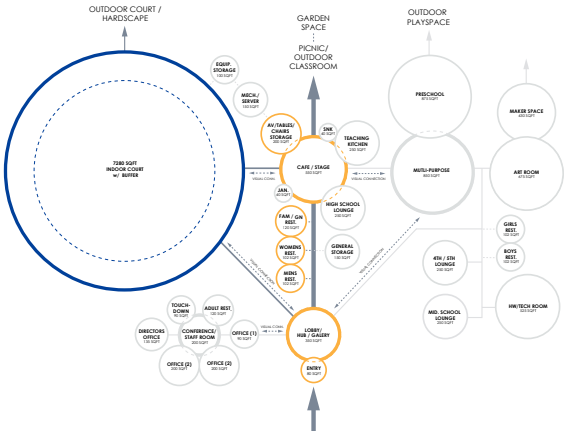
WEEKEND + AFTER HOURS USES

This layout provides the opportunity to rent out space and access to the facility's amenities. Comments from parents indicated the desire to use the cafe space, the gymnasium and the maker space during off-hours, such as evenings and weekends. Sections of the building can be "turned off" to restrict movement to the public areas only.



SPORTING, VOTING, + COMMUNITY EVENTS

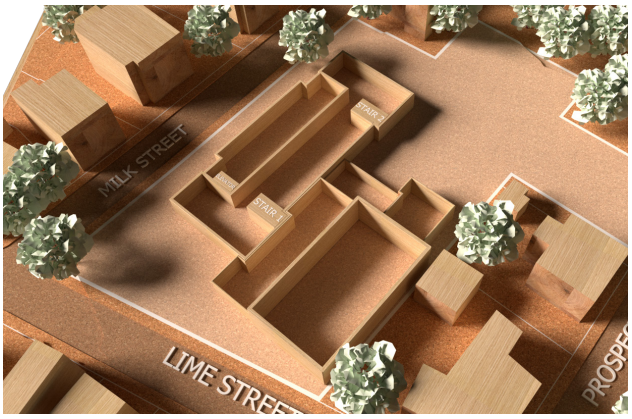
Flexibility is inherently built into the layout. Beyond the NYS, this facility can be an additional asset to the community of Newburyport. Having a regulation high school basketball court and commercial kitchen equipment give the ability to host local sporting events, community gatherings, fund raisers, and even as a potential voting location.



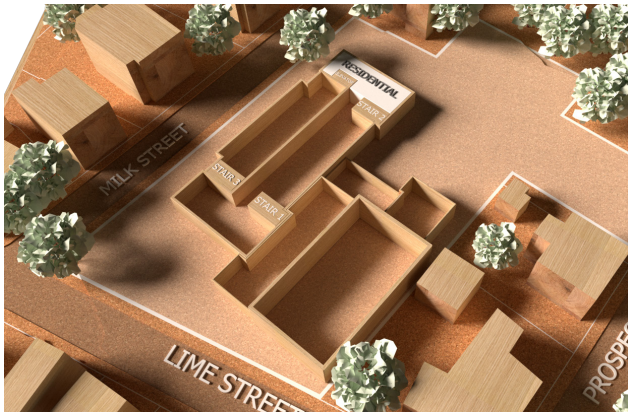
DESIGN CONCEPT EVOLUTION

Applying the right-sized architectural program diagram to both sites generated multiple options. From a big-picture approach, large architectural program areas were shifted and arranged to best represent the goals established in the program diagram. Although the diagram itself does not change, how it fits onto each site, and within the constraints of the existing structures may vary. Numerous options, for both sites, were presented to the NYS Facility Committee, discussing their strengths and weaknesses. Ultimately the options were narrowed down to three approaches. The following narrative describes the evolution of those design concepts.

Brown School - Existing Site



Brown School - Partition Constraints



Brown School - Accounting for Residential

BROWN SCHOOL

Newburyport Youth Services has expanded to the limits of its current home on the ground floor of the Brown School, and has done so within the constraints of a floor plan designed for another use. After multiple additions, though spacious, the ground floor is disjointed and its layout is restricted by the former-exterior, and other load bearing partitions. Though they are immovable, creating openings in these partitions is possible. When exploring opportunities for NYS to remain at this location, a thoughtful reconfiguration of the existing spaces is necessary. It is important to note however, that with an aging facility such as the Brown School, reconfiguration can be met with unforeseeable surprises.

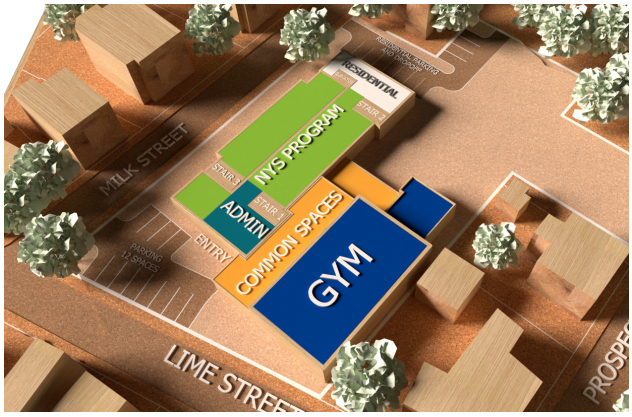
A future residential development on the upper levels of the Brown School is another constraint

to consider for this location as well. Part of the ground floor at the west end of the building will be needed to provide a dedicated entrance and lobby, as well as a new elevator and egress stair. These areas of the model have been blocked out to account for them. Sharing of the site also presents challenges as the existing facility already occupies a large portion of the small urban site. Current playspaces will be further reduced by the parking requirements for the residents. Another significant impact, and potential opportunity this introduces, is the need to relocate the main Newburyport Youth Services entrance.

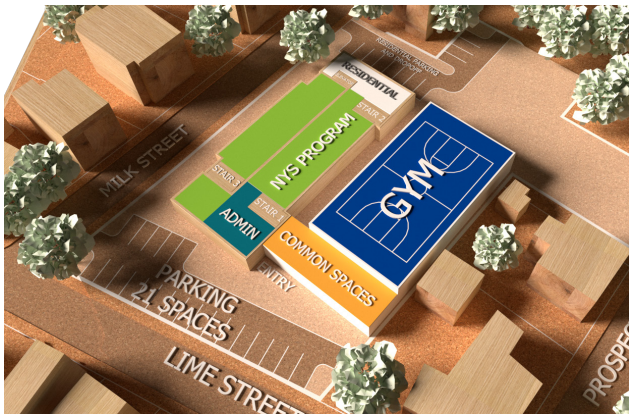
One thing that the Brown School does have is space, and enough of it on the ground floor to meet the spatial needs of the NYS. Assessing the current layout and shifting architectural program around can go far to maximize the efficiency, but not all partitions are movable and that still leaves an undersized gymnasium. Addressing that issue opens up the possibility of removing the existing gymnasium and connector, and replacing them with new construction.

In the about face concept, new construction becomes the fresh face of the NYS facility, and provides more flexibility with the architectural program and site layout. A regulation sized basketball court and spectator space however, are much larger than the existing gym, which already sits on the property lines.

Another, but more extreme approach, would be to not compete for space with the residential development. In this scenario the connecting



Brown School - "Reconfigured Concept"



Brown School - "About Face"

Brown School - "Clean Break"

addition and gymnasium are removed and a new NYS facility would be built on site. The freedom to pursue the ideal architectural program layout can be explored, though it does not erase the size and proximity issues of the site. A multi-story facility would help to reduce the footprint, and retain as much outdoor playspace as possible, but is more costly.

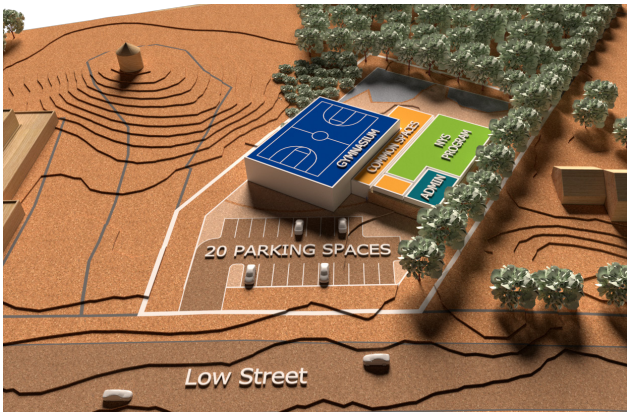
Two options were selected as an approach to the Brown School site. The ***Minimal Intervention*** addresses critical items to extend the life of the building. The ***Reconfigured Concept*** approach goes further to make the Brown School a long term home for Newburyport Youth Services.

LOW STREET

With only one existing structure occupying a small footprint, the Low Street site offers greater flexibility in arranging the main program elements. However,it is not without challenges. Constraints such as property setbacks, wetland buffers and the question of whether or not to reuse the existing garage building, were the main drivers in exploring several alternative options for this site. A new gymnasium would be required for any option, and as the largest program element, its position had a large impact on the overall site organization. Strengthening the connection to the natural elements of the site and to the historic powderhouse, located on the adjacent National Guard property, became important site specific goals that were strived for in each approach explored.

Low Street - Existing Site Model

Low Street - Add to Existing Structure

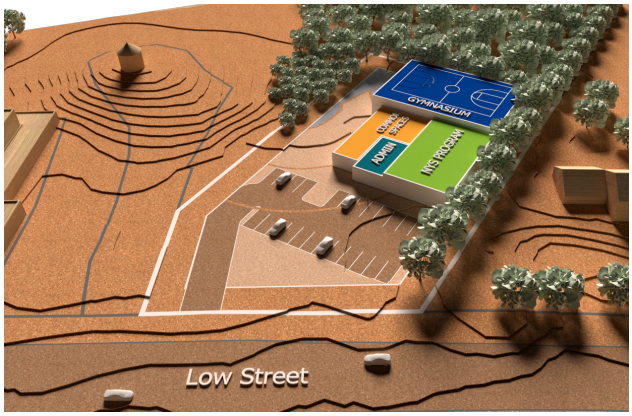


Low Street - Add to Existing Structure

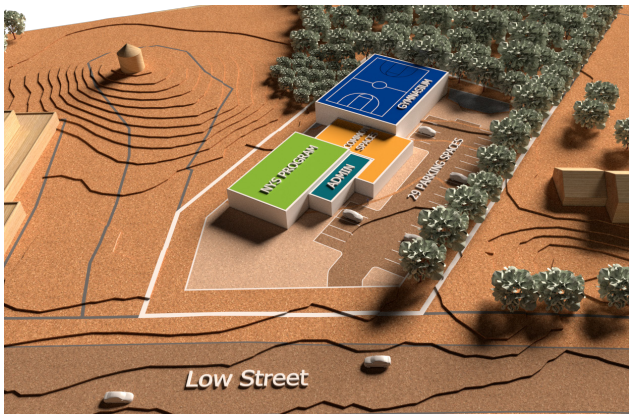
Initial options considered the final look and feel of the facility if the existing garage building was adaptively reused. The existing interior would need a complete renovation in order to house the NYS administration and NYS spaces. The common/support spaces and the gymnasium would be new construction additions. This scenario produced layouts that occupied the center of the site, dividing it with the parking lot in the front and outdoor playspace in the back. This concept evolved to include a "z" shaped core culminating at a rotated cafe space, emphasizing the visual connection to the powderhouse. This move is retained in the final Low Street option.

Removing the existing building from the site allowed for the new NYS Facility to take on forms that more closely depicted the right-sized architectural program diagram. One concept clustered the architectural program tight together to increase outdoor playspace, while another stretched the program elements out. This move allowed the parking to shift to the side of the site, rather than out front along Low Street. Other considerations pushed the gymnasium to the back of the site to help mask its size. That often leaves the bulk of the outdoor playspace to the front of the site. It also impedes into the wetlands area. Similar to previous options, the connection to the powderhouse remains, perhaps growing closer and in a more direct visual alignment as the layout evolved.

Ultimately, the ***Staggered Concept*** option was determined to be the best approach to create a permanent home for the NYS on Low Street.



Low Street - "Clustered Concept"



Low Street - "Stretched Concept"

Low Street - "Staggered Concept"

OPTION 1 - MINIMAL INTERVENTION

During the vetting process to determine the final options selected for each site, the Planning Director asked studioMLA to examine an option for the Brown School that would determine the repairs and upgrades required just to extend the life of the Brown School, for any future tenant or use. This ***"Minimal Intervention"*** would consist of a cost-effective solution to extend the continued use of the site by NYS for the ground floor only. The renovation retains the current layout with a minor cosmetic upgrade to some of the finishes such as carpet, tile, paint, and ceilings.

This option assumes only the most essential recommendations from the Existing Building Conditions summary be implemented to prevent further degradation of the Brown School building. sMLA's objective in defining this scope was to address systems that have outlived their useful life, including repairs to the building envelope that would ensure weathertightness, operability, and safety. The largest issues at Brown are the replacement of the HVAC system, repair of windows and exterior components, and possible mold or hazardous materials remediation. These items must be addressed to retain the value of any spent construction dollars and protect investment in the building.

This option assumes minimal building systems and heating will be provided to the upper floors until the City determines a suitable future project. At this time, the timeline for a future project is unknown, and phasing some of the work may be advantageous to share the costs affecting the entire building.

The following is a narrative for each item included in this option's scope, based on the existing conditions report, along with the corresponding cost from the PM&C cost estimate, provided with more detail in the ***VOLUME II: APPENDIX*** to this report. The narrative is divided into three sections to match the format of the cost estimate.

BASE BUILDING (reflected in the bar chart as Deferred Maintenance in the cost analysis)

- **Addition of an exterior door ramp to provide accessibility from the elevator to the parking lot.** Accessibility requirements must be met to include a path of travel from the accessible parking spots into the building and to the elevator for the upper floors of a future development. **Also included in this line item is patching to the basement slab for MEP piping repairs/ replacement for systems within the base building scope**.

  Lowest floor Construction $109,000

- **Structural steel upgrades at the roof to support the weight of the new rooftop HVAC equipment.** The HVAC system is antiquated and has been identified as the top priority to be addressed for any Brown School renovation.

  Roof Construction $ 49,500

- **Allowance to repoint 25% of the exterior closure, insulate the exterior wall, allowance to replace/ repair 15% of the exterior closure, allowance to repoint 25% of the Lime St. facade, replace/ repair 10% of the Lime St. exterior closure, power wash the Lime St. facade, allowance for a new exterior sign**. Cast stone and masonry facade elements of the original building are showing signs of weathering and deterioration in some locations; particularly at the Boiler Room extension and the chimney. There are open masonry joints at various locations around the building that require repointing. This scope assumes ¼ of all this work would be included in the NYS project budget and ¾ of this work would be allocated to a future developer as part of any potential project.

- **Allowance to restore 60% of the historic windows and 40% replacement of other windows. Replacement of gym glazing system.** Assumes the balance of this work would be allocated to a future developer as part of any potential project. This work and allowances are based on the recommendations of the existing building report and must be completed to keep the building envelope weathertight to prevent any further water issues within the building.

  Exterior Closure $260,034

- **Removal and new flat roofing at problem area with new scupper.** This work is based on the recommendations of the existing building report and must be completed to keep the building envelope weathertight to prevent any further water issues within the building.

  Roofing $91,750

- **Addition of specialties to include miscellaneous sealants added throughout the building for waterproofing and caulking.** This work is based on the recommendations of the existing building report and must be completed to keep the building envelope weathertight to prevent any further water issues within the building. **Fire extinguisher cabinets are another specialty included with this line item.**

  Interior Construction $14,550

- **New roof drain.** This work is based on the recommendations of the existing building report and must be completed to keep the building envelope weathertight to prevent any further water issues within the building.

  Plumbing $3,000

- **HVAC replacement.** As indicated in the existing building report, the HVAC system is in need of immediate replacement due to its age and condition. This includes replacing both existing boilers, the boiler feed unit, and condensate heat pump along with other HVAC costs. The system has not been designed or selected, but assumes a VRF (variable refrigerant flow system) for the NYS program and providing only minimal heating of the upper floors until it can be addressed as part of a future development. When the NYS project is designed, a life cycle cost analysis for three systems can be done to select the most appropriate system. VRF is a good reference point to use for this phase of estimating. The estimate prices a new system with new ventilation and AC and includes new piping, ductwork, air handling units for ventilation, VRF units, condenser, and a new DDC (direct digital control system).

  Total HVAC $1,113,000

- **Addition of sprinkler system for 1st floor only with sprinklers added for the upper floors as part of a future project.** The Brown School is not currently protected by an automatic sprinkler system. Major renovations require the addition of a sprinkler system, and providing the system

for the first floor only with the upper floors phased in later will be subject to approval of the Building Commissioner and Fire Chief.

Total Fire Protection $107,900

- **Addition of a new fire alarm system, equipment, wiring for the new HVAC system, electrical service and distribution for the ground floor only.** The new HVAC equipment will need an upgrade to some of the existing electrical infrastructure. The existing electrical equipment is generally in poor condition and beyond its serviceable life. Additionally, the existing fire alarm system is obsolete and beyond its serviceable life as described in the existing building report. Any renovation will require the addition of a new addressable fire alarm system. Providing the fire alarm for the first floor only with the upper floors phased in is subject to the approval of the Building Commissioner and Fire Chief.

  Total Electrical $265,600

Base scope only construction costs subtotal $2,014,334*

NYS PROGRAM

- **Addition of patching to the basement slab for MEP piping repairs/ replacement for systems within the NYS Program scope.**

  Lowest floor Construction $54,000

- **New exterior doors and storefront.** The existing doors are worn and in need of replacement with added improvements to improve visibility and safety.

  Exterior Closure $15,000

- **Addition of minimal partitions, allowance for replacement of some interior doors, accessible handrails, allowance for rough framing as needed, allowance for architectural woodwork and reception desk, allowance for markerboards and tackboards, code required building signage, allowance for toilet partitions and accessories.** The scope of this interior work is minimized to the fullest extent possible to retain the existing layout and features of the Brown School. Items that need to be replaced or upgraded to comply with code requirements are included. Items that need to be provided to significantly maximize the function of the spaces for the NYS program are also included. Toilet partitions and accessories will be required to be replaced for all accessible bathrooms.

  Total Interior Construction $54,000

- **Wall finishes, refinish and repair 15% of athletic flooring, other floor finishes, and ceiling finishes.** A portion of this scope is attributed to replacing damaged finishes as noted in the existing building report, and some scope will be needed following the installation of new building systems and piping.

  Total Finishes $402,455

- **Allowance to replace all plumbing fixtures and distribution piping.** As noted in the existing building report, fixtures throughout the building should be replaced with high efficiency fixtures and should be accessible as required by code.

  Total Plumbing $166,000

- **Allowance to replace lighting and controls, lighting and branch circuitry, telecommunications rough in, devices, and cabling, new security system, AV rough in and power to community rooms, temporary power and lights.** The existing building report recommends lighting in all areas should be upgraded to new energy efficiency LED type fixtures with occupancy sensors throughout. Receptacles and data should be added to accommodate the needs of the NYS program to avoid any excessive use of plug strips and extension cords.

  Total Electrical $408,360

- **Basketball backboards and wall pads, appliances and food service equipment.** This equipment has been identified to fulfill basic programmatic needs established by NYS for the gymnasium and snack bar/ cafe space.

  Total Equipment $49,250

- **Vestibule mats, casework allowance.** These furnishings provide functionality and safety for the entrances as well as fulfilling storage needs for NYS programming as they try to make the existing spaces as flexible as possible.

  Total Furnishings $85,750

- **Demolition.** Removal and disposal of existing systems, damaged building components or items to be replaced.

  Selective Building Demolition $52,800

NYS Program scope only construction costs subtotal $2,373,315*

SITEWORK

- Play structure and landscaping allowance, asphalt markings for parking lot. Asphalt markings will provide ADA accessible parking spaces and restriping of the parking lot for safety. The allowance will enhance the urban canopy of the site exterior and update the play structure to provide safe, accessible, outdoor space for youth.

  Site Improvements $52,800 for NYS Program

- Connection of new plumbing to existing sanitary sewer and provision of new water service. These are based on recommendations from the existing building report. A new dedicated fire water service will be required to supply the building. A hydrant flow test is required to confirm the municipal water system supply.

  Civil Mechanical $50,000 for Base Building

- Primary and secondary duct bank, empty conduit, transformer pad, telcom services, site lighting allowance. The existing building report recommends new service equipment and distribution equipment should be installed to replace the 1970's vintage equipment. Site lighting should be upgraded to LED type with proper shielding of the light to enhance safety.

  Electrical Utilities $87,000 for Base Building

Site Development scope only subtotal $341,270*

*Please refer to the PM&C cost estimate included in the appendix for all additional contingencies, general conditions, bonds, insurance, permit, profit, and overhead costs that were estimated to be added to these line items for the total estimated construction costs for this option. The PM&C cost estimate contains rough construction costs only, and does not include other estimated project costs such as design fees, additional testing and remediation of hazardous materials, moving, relocation and temporary facilities, financing, surveys, soils testing and removal, or utility company back charges.

OPTION 1 - "MINIMAL INTERVENTION"

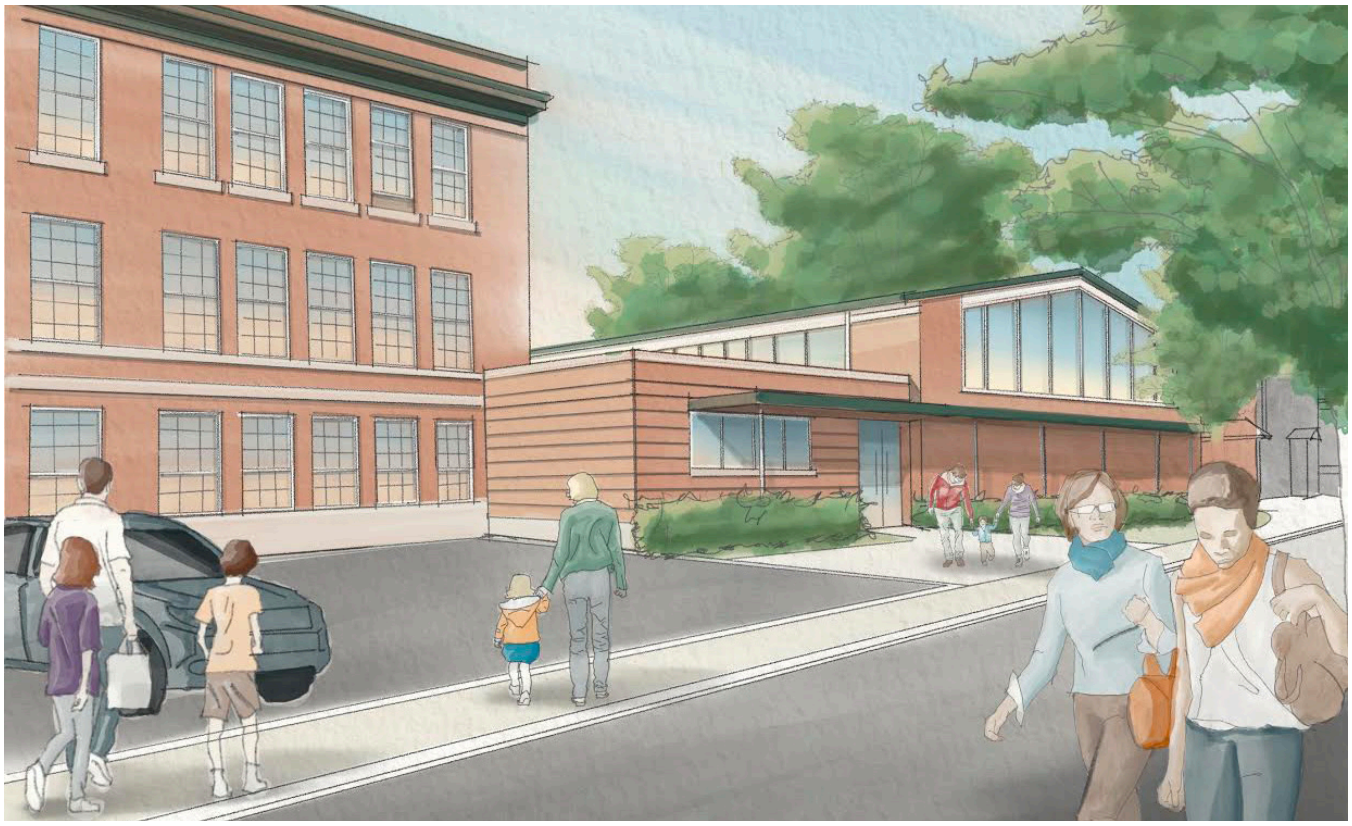
Architectural Program Flexibility	The NYS program will remain in the current layout
NYS Program Opportunities	Opportunities for minor improvements
Site Opportunities	Site located centrally in Newburyport - though space is limited and to be shared
Outdoor Playspace	Public multi-surface play space – Some area subject to use by possible future residential development
Parking + Pickup / Drop Off	Lowest quantity of parking - no change to existing
Access to Nature	Existing site landscaping with be maintained, under the urban canopy
Impact on Neighbors	Proximity to neighbors is close – existing gym hugs the site line

OPTION 2 - RECONFIGURED CONCEPT

After careful evaluation and discussion, the ***"Reconfigured Concept***" is the selected option for the Brown School Site. It seeks to look at the existing facility in a new light and work within the existing facility's constraints. Importantly it take steps to prevent further degradation and extends the useful life of the facility. This includes all of the code, accessibility, and systems recommendations detailed in the Existing Conditions section of this report.

This option provides a long-term home for Newburyport Youth Services. The thoughtful reorganization and renovation of the ground floor, where possible, will improve the efficiency, functionality, and safety of the facility. Increasing NYS's ability to serve the needs of the community and youth. Upgrades to cosmetic finishes, like paint and flooring, in addition to a new main entrance offer a welcoming face to the community.

Most of the existing site and outdoor playspace will be retained and will be elevated to serve NYS and surrounding neighborhood. This includes upgrades to site accessibility, parking, as well as recreational and natural playscapes for all ages.



OPTION 2 - "RECONFIGURED CONCEPT"

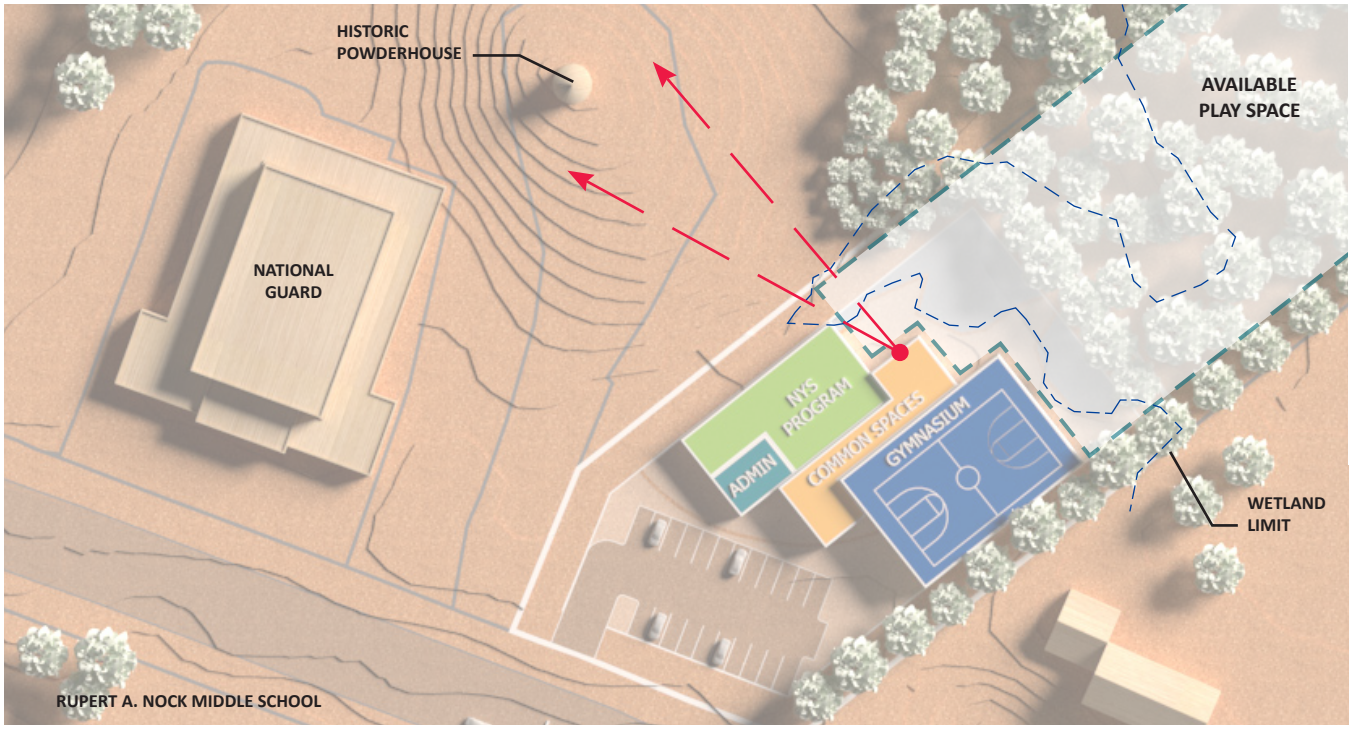
Architectural Program Flexibility	The existing building dictates much of the program layout
NYS Program Opportunities	Fewer opportunities to make significant improvements
Site Opportunities	Site located centrally in Newburyport - though space is limited and to be shared
Outdoor Playspace	Public multi-surface play space – Some area subject to use by possible future residential development
Parking + Pickup / Drop Off	Limited quantity of parking - updated and closer to a new entrance
Access to Nature	Site will be landscaped and include natural playscapes, under the urban canopy
Impact on Neighbors	Proximity to neighbors is close – existing gym hugs the site line

OPTION 3 - STAGGERED CONCEPT

The Low Street site has fewer constraints, and therefore, more flexibility to organize the program in a way that maximizes the benefits to the NYS. The ***"Staggered Concept"*** is the selected option because it builds up the strengths and opportunities discovered during the design evolution process. Most importantly, it is an investment in a permanent home, designed to meet needs of Newburyport Youth Services

This new facility would be a fresh start, creating a vibrant and enriching environment inside and out. The larger natural site and adjacent historic powderhouse are connections to Newburyport's history and natural. It will be an asset and resource for the entire community.

The community responded overwhelmingly in the survey and focus groups that they would like to see a safe flexible space for youth to let off steam. The youth focus group in particular discussed outdoor opportunities including field games and sports, hang out areas with hammocks, swings, fire pit, lighting, and nature walks with seating - All of which are possible on the Low Street site.



OPTION 3 - LOW STREET "STAGGERED PROGRAM"

Architectural Program Flexibility	A clean site allows for an efficient programmatic layout
NYS Program Opportunities	NYS program can be set up for optimal success
Site Opportunities	Maximum site flexibility and a direct visual connection to the historic Powderhouse- across from Nock Middle School
Outdoor Playspace	Expansive site allows for a variety of outdoor activities
Parking + Pickup / Drop Off	Appropriate quantity of parking for facility
Access to Nature	Maximizes existing natural landscape and limits marshland impact
Impact on Neighbors	One adjacent neighbor 60' + from the existing structure

ESTIMATED COSTS ANALYSIS

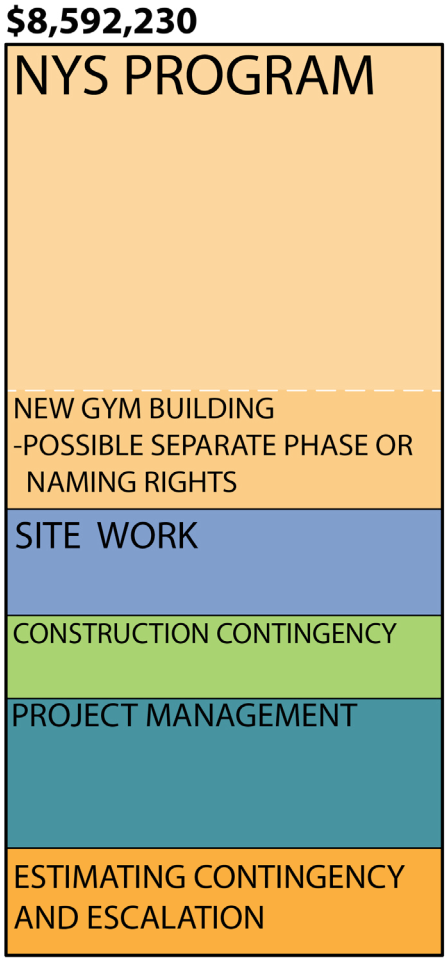
As part of the concepts development, each option was put through a preliminary cost analysis exercise. These estimates were produced from the recommendations of the consultants during the existing conditions study. The are also based on the architectural and landscape narratives that accompany each of the final three options. The complete cost summaries are included in the appendix for reference.

It is important to note that these figures are construction cost only and do not represent the total costs associated with the project. The diagram to the right seeks to simplify the costs for each option in order to compare them.

Option 2 "Reconfigured Concept" is the most expensive, which is common with renovation projects involving older buildings This is because renovation often comes with unforeseen surprises. That is why there is a larger project contingency. Also notable is that a significant portion of the cost goes into restoring the building's systems and making it accessible.

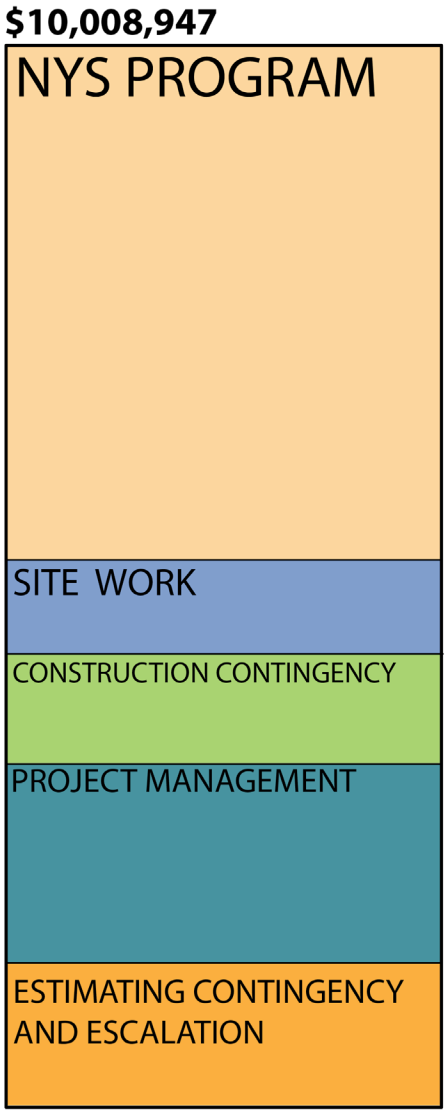
This become clear in Option 1 "Minimal Intervention". This option is broken down to show costs that are associated with deferred maintenance and those that go towards updating the NYS program spaces. Although this option stabilizes the building there are many items that are left out of the project.

The Option 3 "Staggered Concept" is the middle cost option. It achieves the same benchmarks as Option 2, but the benefits of new construction include a lower contingency and no complex systems upgrades. One approach to this option is to phase the gymnasium construction, and possibly offering naming rights.

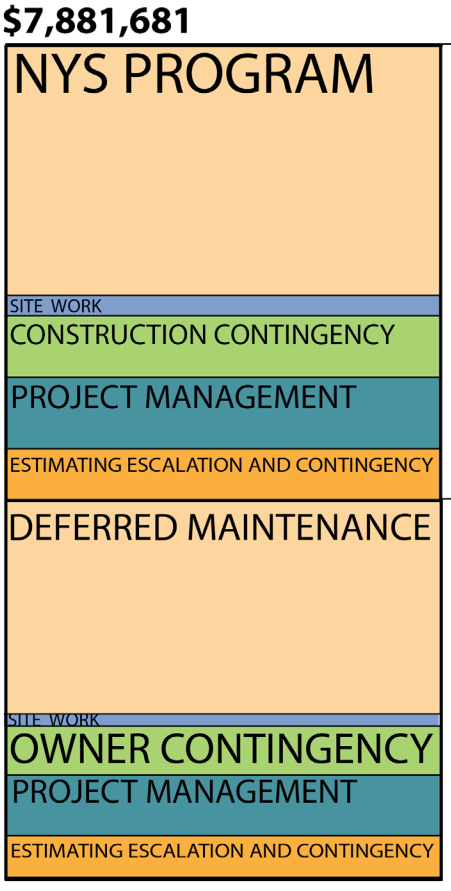


OPTION 3 - Low Street "Staggered Concept"

NOT IN SCOPE:
- **HVAC SYSTEM REPLACEMENT**: COMPLETE HVAC REPLACEMENT - REPAIR WORK TO OTHER EXISTING SYSTEMS AS NEEDED (PLUMBING, ELECTRICAL, FIRE)
- **EXTERIOR WORK:** NO SUBSTANTIAL UPGRADES TO THE EXTERIOR
- **REPAIR WORK:** MINIMAL EXTERIOR REPAIR WORK DONE
- **RENOVATION:** NO RECONFIGURATION OF INTERIOR WALLS
- **WINDOWS:** NO SUBSTANTIAL UPGRADES TO WINDOWS, REPAIRS AS NEEDED ONLY
- **ROOF:** MINIMAL ROOF REPAIR WORK DONE
- **SITE IMPROVEMENTS:** MINIMAL SITE WORK, MAJORITY REPAIRS AS REQUIRED



OPTION 2 - Brown School "Reconfigured Concept"



OPTION 1 - Brown School "Minimal Intervention"

OPTIONS SUMMARY

OPTION 1 - Brown School "Minimal Intervention"

Extends the useful life of the facility

Facility will be up to code, accessible, and inclusive

Upgrades to building systems + building envelope, as needed (complete HVAC)

No spatial reorganization of the NYS program

Minimal upgrades to the cosmetic finishes

Extends Newburyport Youth Services' ability to stay at the Brown School until a permanent home is found

$ 7,881,618

OPTION 2 - Brown School "Reconfigured Concept"

Extends the useful life of the facility

Facility will be up to code, accessible, and inclusive

A new welcoming Lime Street entrance

Improves the spatial organization of the NYS program (interior + exterior)

Upgrades to all building systems

Upgrades to the cosmetic finishes

Provides a long-term home for Newburyport Youth Services

$ 10,008,947

OPTION 3 - Low Street "Staggered Concept"

Allows for an optimal spatial organization for functionality and safety

Site maximizes outdoor opportunities, access to nature and historic resources

Investment in a permanent home, designed to meet needs of Newburyport Youth Services

A fresh approach to the facility creating a vibrant and enriching environment

Facility will become an asset and resource for the entire community to use

$ 8,592,230