

“NO BUILD” ANALYSIS CODE DEFICIENCIES & DEFERRED MAINTENANCE EVALUATION

NORTH READING MIDDLE AND HIGH SCHOOLS
NORTH READING, MASSACHUSETTS



DECEMBER 23, 2011



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CAPITAL IMPROVEMENT PLAN for “NO BUILD OPTION”

Summary

The following Capital Improvement Plan document is intended to outline the Work required at the North Reading High School and the North Reading Middle School to assure code compliance, health, safety, and welfare of each building and its occupants. It is important to note that the existing buildings are structurally sound and code compliant based on the building codes that were in place at the time of construction. Building codes have been revised many times since the 1950’s and 1960’s when these two buildings were constructed. Today’s standards are more stringent than those that were in place at that time. As buildings are updated and renovated the areas under construction are required to be constructed to meet current building codes. When a considerable amount of renovation work is proposed additional upgrades may be required to bring areas and elements outside the initial scope of work up to meet the current building codes. These areas may include handicap accessibility, structural upgrades to meet seismic requirements, and fire and life safety upgrades including the installation of sprinklers and fire alarms. Based on the improvements needed for both the North Reading High School and the Middle School the buildings would fall into the category of “Substantial Renovation” which will require renovations and upgrades throughout the buildings to meet current codes for accessibility, seismic, life safety, and building envelope.

Included in our assessment of the existing buildings’ needs is the reality that elements of repair, maintenance, and upgrades are often not limited to the single element of improvement intended. For example, the scope of work required to install a sprinkler system often involves the removal and replacement of the ceiling and the installation of vertical chases. This Work requires demolition and replacement of existing floor, wall, and ceiling finishes. If the ceiling is to be removed and replaced the natural course of work should include any above ceiling elements of noted for repair or replacement in the near term. This scope of work may include HVAC ductwork, tel /data cables, electrical wiring, the replacement of light fixtures, and plumbing to the floor above or roof.

This report reflects our assessment of the buildings and the recommended improvements that will sustain the buildings and their current use; it does not take into account deficiencies in program space, current or future enrollment, or technological upgrades that will change the way we teach middle to high school students in the coming years. The cost estimates included herein are strictly estimates for the work noted and can be more clearly defined once a decision as to the specific extent and Scope of Work to be performed is determined.

The Capital Improvement Plan, included in the following pages, prioritizes the building needs into seven categories. These categories are used to prioritize individual recommendations. Some items will fall into several categories (a code requirement may also be considered a health, safety, & welfare requirement as well) in this case the recommendation will be placed in the higher category. The definitions for each category are outlined below:

1) **Health, Safety, & Welfare:**

- Health: addresses health and environmental issues relating to the temperature, humidity, and quality of air, provisions for personal hygiene and non-toxic materials or finishes;
- Safety: relates to safety from accidental injury or death, (i.e. prevention or elimination of hazards);
- Welfare: relates to the emotional well-being for living, learning, and working in a space as well as the provisions of equal access, natural light and views to the outside.

2) **Code Compliance:** outlines items that do not meet the current code regulations and *should* be upgraded, but do not fall into the same level of priority as those identified in Health, Safety and Welfare. Items listed in this category do *not* include *all* non-compliant code items as many items are considered “grandfathered” and are assumed to have been compliant at the time of construction.

3) **Functional Use of the Building (aka Space Utilization):** this category notes items that influence the functional use of the building and the group that it serves. In the case of this report our focus was on the ability of the existing systems (mechanical, electrical, plumbing, tel / data, fire protection) to provide for the ongoing functional use of the building, we did not consider any program or educational spaces or their functions.

4) **Handicap Accessibility:** items that are not compliant with Americans with Disabilities Act (ADA) or Massachusetts Architectural Access Board (MAAB) requirements and are not included in previous categories are included here. Compliance for providing equivalent accommodations for the disabled are required by law, however providing compliance for the entire building or for specific areas of the building may not be triggered until impacted by cost or scope of other work done in the building.

5) **Maintenance:** the ongoing maintenance of a structure is important to its ability to function and serve its patrons; items noted in this category aid in the continued functionality of the building structure and systems as well as preservation of building materials and finishes to maximize their life cycle.

6) **Energy Efficiency / Energy Saving:** is the design and the specification of materials and systems that minimize the consumption of energy. This category includes energy efficiency suggestions that can save operating costs over the life of the building and/or reduce the amount of energy consumed.

7) **Hazardous Material Abatement:** assumptions are made regarding the types of hazards that may exist in the materials found in the building based on the age of the materials and the extent of renovations and abatement that have been done in the past. Comprehensive testing must be done prior to the start of any construction. Materials that are in good condition and have not been disturbed do not present a health issue. The estimated dollar amount that is given in the C.I.P. is based on the expectation that once construction begins, testing and removal of suspect materials will need to take place. A comprehensive NESHAP inspection should be performed, which would provide a more accurate hazardous material abatement costs and scope.

Summary of Key Elements Noted per Category

Health, Safety, & Welfare

One of the first items noted in the category of Health, Safety, & Welfare is the need for a building wide egress analysis to be conducted at both the Middle School and the High School. This analysis would take into account the distance traveled to each exit, the direction of door swings, hardware type on each door, the condition of each door, the location and type of exit signs, the number of exits and the width of each exit in relationship to the building occupants. The installation of a building wide fire suppression system (sprinklers), is recommended for both the Middle and the High School buildings, the installation of this system will change the requirements and calculations of the exit and egress study.

Air quality is another important factor in the HSW category. It was noted that several bathrooms, corridors, locker rooms, team rooms, and other exercise and practice areas did not appear to have proper ventilation and fresh air circulation. Classrooms and office spaces that had been former storage rooms also lack proper ventilation for their current use, and large gathering spaces such as the auditorium and cafeteria should be evaluated and provided with updated hvac systems. Our report recommends the installation of roof top units in many areas.

Studies have shown that natural daylighting has both physical and psychological benefits to students and teachers, the quality of this daylighting in the existing schools has been drastically reduced by the aging and deterioration of the polycarbonate window glazing used in many of the windows. In addition to the low daylight quality this type of glazing provides little to no insulation value and is a source of heat loss and or gain throughout the heating and cooling cycle.

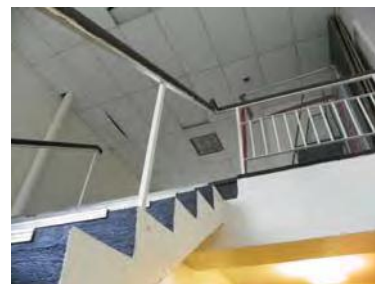
A major safety factor noted in both the Middle and High School buildings is the lack of code compliant handrails and guard rails at stairways. The code requires that guard rails are a minimum height of 42” above the finished floor and that they are constructed in such a way that a four inch spear cannot pass through the openings between balusters. Additionally there are rudiments for the size, location, and extension of handrails that have not been met at the existing stair locations in each of the schools. We recommend the replacement of the guardrails and handrails in all locations.



Doors in need of repair



Aged glazing



Missing guardrails

Code Compliance

As noted in the definition above the items listed in the Code Compliance category are items that *should* be improved to meet the current building or other applicable codes. These items may be “grandfathered” under the building codes that were in place at the time of construction; however repairs, renovations, or upgrades to the existing buildings or building systems may require the upgrading of elements that do not meet the current building code. The requirement to upgrade the building to meet current building codes is based on the analysis of the work to be performed, the cost and scope of the work, and the extent of work that has been performed over time. A further explanation and brief overview of these “triggers” is noted in the following paragraph as well as in the Handicap Accessibility section. A detailed analysis of the scope of work must be done in order to assure that the correct approach to code compliance has been established and that the applicable code requirements have been met. As part of our study we have noted systems or elements that *should* be updated to meet the current codes in order to provide for the wellbeing of students, teachers and other building occupants. These items include installing hose bibbs and back flow preventers, vacuum breakers, and grease traps, and the installation of emergency lighting and audible / visual alarms in corridors, bathrooms, and other public areas is included in this category. Additionally science labs should be updated with proper emergency showers and eye wash stations, and exterior acid waste holding tanks should be installed. Aging restroom fixtures and drinking fountains should be replaced with code compliant low flow toilets and urinals and high / low accessible drinking fountains.



Grease traps to be replaced



Plumbing fixtures to be replaced



The 2009 International Existing Buildings Code (IEBC) with Massachusetts amendments is the current building code governing existing buildings. The IEBC requires that existing buildings be specifically investigated and evaluated for the buildings’ design gravity loads, lateral load capacity, egress capacity, fire protection systems, fire resistive construction, interior environment, hazardous materials, and energy conservation. Specific requirements are included for the analysis of seismic force resisting systems, for consideration of the cumulative effects of alterations, additions or changes of occupancy upon structural elements, and for additional requirements applicable to masonry walls under certain conditions. The IEBC offers three possible compliance method options to be used for repairs, alterations, changes of occupancy, additions or relocations for existing buildings. Based on the renovations noted in the Capital Improvement Plans (see attached) it is assumed that both the High School and the Middle School renovations would fall under the guidelines of ‘Level 3 Work Area Compliance Method’, where the work area exceeds 50% of the aggregate area of the building. Level 3 alterations are required to comply with the IEBC chapters 6, 7, & 8 for accessibility, seismic upgrades and other applicable requirements; for all intensive purposes these requirements would lead to complete compliance for accessibility and upgrades to the building structural system to meet current seismic requirements. Additionally all building systems would need to be upgraded to conform to the current building codes.

In addition to building codes and accessibility requirements both buildings are required to meet the regulations set forth by the Department of Environmental Protection under Title V 310 CMR 15.00 which requires that a Ground Water Discharge Permit be obtained for facilities generating an excess of 10,000 gallons of sewage flow per day. The current wastewater disposal system of the High School and Middle School are 50-60 years old and were not designed for the for the waste loads that are currently required. Both systems are believed to be in failure and would need to be replaced. In order to meet the effluent ground water discharge standards a wastewater treatment facility will be required for this site and would be designed to service both the High School and the Middle School.

Functional Use of the Building

The existing building systems at both the High School and Middle School are well beyond their intended useful life. It has been with considerable attention to maintenance and repairs that these systems continue to function. The age of the existing systems make them inefficient, costly to repair, and in many cases, such as the electrical system, incapable of expansion to meet the demands of the technology required to educate the students of the 21st century. The current electrical service should be upgraded from an 800A to 1600A 120/208 V 3 phase 4 wire service. Panel boards and distribution upgrades are suggested as well. The expansion of the tel / data system is suggested to meet the capabilities of the technology required in the classrooms. An upgrade to the fire alarm system should include door hold-opens tied into the alarm system and an annunciator panel should be installed near the main entrances. The boiler room in the Middle School experiences on going flooding, and the existing ground water pumps at both schools are in continuous operation and need to be replaced.

A campus wide (Middle and High School) waste water treatment plant should be constructed to replace the existing system and to meet the demands of updated plumbing fixtures, should they be replaced. HVAC systems throughout both buildings are antiquated and in need of replacement which will lead to better air quality, lower maintenance cost and lower operational cost.



Flooding



Tel / Data



HVAC supply

Handicap Accessibility

Students, teachers, staff members, parents and other visiting guest should have the ability to access all ‘public’ areas of the school; this includes classrooms, restrooms, cafeteria, gymnasium, locker rooms, auditorium, offices and other areas inherent to the educational process. Both the Middle and High Schools have areas where a person(s) with physical challenges would have difficulty and equal

opportunity to all spaces. For example in the Middle school a chair lift is provided for students, parents, or others to gain access to the second floor, the lift does provide a stop at the stair landing where restrooms are located (there are no restrooms located on the second floor) however, these restrooms do not provide the dimensional requirements to allow for a wheel chair bound person to enter and use the restroom. A wheelchair accessible restroom is provided at the opposite end of the building on the lower level, a great travel distance for any person in need of an accessible restroom. High School and Middle School locker rooms are not accessible and special classrooms such as music and art provide limited accessibility at both schools. Not all restrooms noted to be accessible meet the dimensional requirements set forth by the Massachusetts Accessibility Access Board, and fixtures such as grab bars, faucets, drinking fountains, and door hardware, as well as, several ramps and handrails do not meet accessibility requirements. It is suggested in our report that plumbing fixtures be replaced to meet ADA / MAAB requirements, an elevator be installed at each school, and that revisions are made to areas such as classrooms, locker rooms, and the auditorium to meet the code requirements for accessibility.

It is important to note that Chapter 3 of the Massachusetts Architectural Access Rules sets specific triggers for compliance, based upon the nature and scope of the Work, dollar cost of the Work and the cost of the Work as a percentage of the full and fair cash value of the building. If the Work to be performed exceeds these “trigger” amounts then additional alterations must be made to provide greater accessibility. Certain alterations are exempt from these calculations unless their costs exceed \$500,000. Other areas of Work are also considered except from these calculations, however at this point in time it is safe to assume that the work to be performed, as outlined in the Capital Improvement Plan (attached) for each building will exceed \$500,000 and 30% of the full and fair cash value of the building and will require the existing building to become *fully* accessible per MAAB rules.



Non-accessible doorway

Non-accessible
drinking fountain

Non-accessible music classroom

Maintenance – Extending the Life of the Building

Ongoing maintenance is important to the life of the building, as buildings age the maintenance required for up keep generally increases in both time and cost. In the case of both the North Reading High School and the North Reading Middle School this maintenance includes careful consideration of areas that may contain hazardous materials such as VAT (vinyl asbestos tile) flooring which should be removed if damaged or cracked. Window caulking and insulation around pipes that contain asbestos should be removed and replaced with non-asbestos materials. Additional maintenance to prevent mold and mildew both inside and outside the buildings is required. Maintenance of rain water leaders to avoid ponding and puddling at the roof and ground areas is important to prevent the infiltration of water. Cleaning of filters and ductwork throughout the building especially in the kitchen area, and

cleaning of grease traps should be part of an ongoing maintenance schedule. Damaged door hardware must be replaced to provide adequate safety and security of the building. Doors that have rusted should be repaired or replaced and weather stripping should be maintained on all exterior doors. The existing domestic water service is over sixty years old and should be replaced.



Ponding at roof drain



Mold on exterior wall



Rusting door frame

Energy Efficiency / Energy Savings

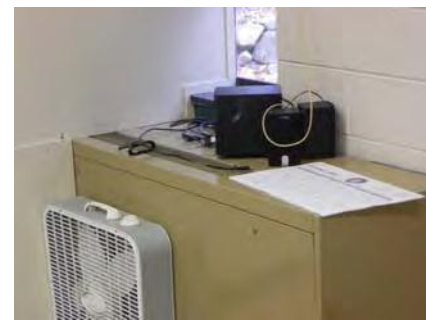
As building systems are repaired or replaced consideration should be given to their ability to reduce energy consumption and thereby assist in the overall reduction of the operating cost of the building. Some of these energy reduction items include the installation of occupancy sensors in all rooms, the replacement of pneumatic controls with direct digital controls and the replacement of existing toilets, urinals and lavs with automatic control low flow fixtures.



Pneumatic control located on upper locker



Existing lighting



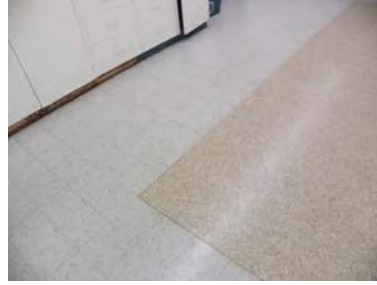
Existing HVAC units

Hazardous Materials Abatement

Given the ages of the two schools it is assumed that both schools contain hazardous materials in the window and door frame caulking and sills, piping insulation, flooring. Additional materials may exist in other areas of the building and therefore comprehensive testing must be done prior to the start of any construction.



Asbestos insulation



Existing VAT and new floor tiles



Existing windows

Reports and Cost

The following reports have been developed to give a more extensive view of the work noted for repair or replacement per our assessment and the potential cost of the work. The first set of documents, the Capital Improvement Plan (CIP), outlines the elements of work and places them into one of the seven categories noted above. The second document, the PM&C report combines the items noted in the CIP report into construction categories and provides pricing for each category. The third report is a summary of the PM&C report combining the task and cost for each building and summarizes the total cost of renovations for both the High School and the Middle School over a ten year phased construction time line.

Capital Improvement Plan

Capital Improvement Plan North Reading High School

CATAGORY		NOTES
1	Health, Safety & Welfare	NOTES : the following notes are possible combinations or groupings of elements of work that could be considered when outlining the Scope of Work and are not intended suggest the extent of work required for each task
1.01	Conduct egress study to verify interior door swings, exit travel path, and exit discharge capacity of the overall building as well as high occupancy spaces such as the auditorium, gymnasium and cafeteria	Coordinate work with: 1.02,1.23, 2.10, 5.24, 6.09,
1.02	Install sprinkler system throughout	Coordinate work with: 1.01, 1.04,1.07,1.09, 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 1.16, 3.29,
1.03	Install FRP in kitchen area to meet Board of Health Standards for washable surfaces	Coordinate work with: 1.04,
1.04	Replace all ceiling tiles in kitchen area with scrubable tiles	Coordinate work with: 1.02,1.04, 3.19, 5.15
1.05	Install vacuum breakers and reduced pressure zone backflow preventers in janitor sinks	Coordinate work with: 1.06,1.07, 2.05
1.06	Install backflow preventers on exterior hose bibbs	Coordinate work with: 1.05,1.07, 2.05
1.07	Install backflow preventers on exterior wall hydrants	Coordinate work with: 1.05,1.06, 2.05
1.08	Disconnect acid waste system from the sanitary system, install holding tanks outside and discharge acid waste to exterior tanks	Coordinate work with: 5.10
1.09	Disconnect existing sprinkler service from the existing domestic water service extend a separate water service to the lower level mechanical room to feed the existing sprinklers (located only in the visual arts wing of the building)	Coordinate work with: 1.02, 1.10, 1.11, 3.29,
1.10	Add fire service main into the building fed from the main street to service new sprinkler system	Coordinate work with 1.02, 1.09, 1.11, 1.15, 1.16,
1.11	Install double check back flow preventer on the sprinkler service entrance	Coordinate work with 1.02, 1.09, 1.10, 1.15, 1.16,
1.12	Install deluge system with fire hose connections at the auditorium stage area	Coordinate work with 1.02, 1.09, 1.10, 1.15, 1.16, 3.29,
1.13	Install zone valves through out the facilities	Coordinate work with 1.02, 1.09, 1.10, 1.14, 1.15, 1.16, 3.29,
1.14	Install annunciator panel	Coordinate work with 1.02, 1.09, 1.10, 1.13, 1.15, 1.16, 2.08, 2.09, 3.25, 3.29
1.15	Construct sprinkler room (at exterior wall or install post indicator valve on the sprinkler entrance)	Coordinate work with 1.02, 1.09, 1.10, 1.11, 1.12, 1.14, 1.15, 1.16
1.16	Install tamper switches on all sprinkler system control valves tied to the fire alarm system	Coordinate work with 1.02, 1.09, 1.10, 1.11, 1.12, 1.14, 1.15
1.17	Remove air handlers in locker rooms and replace with rooftop units, replace supply and exhaust ductwork and exhaust system to ensure proper ventilation	Coordinate work with 2.01, 3.11, 3.12, 3.13, 3.14, 3.25, 6.07,
1.18	Provide proper air ventilation in restrooms	Coordinate work with 3.17,
1.19	Remove cabinet heaters in corridors and install ducted air systems for heating and venting the corridors	Coordinate work with 1.02, 2.01, 3.17,
1.20	Replace handrails and guard rails at all stairs to meet code	Coordinate work with 1.01
1.21	Install no skid carpet or tile in auditorium sloped isles	
1.22	Install no skid flooring surface in locker rooms	
1.23	Provide illuminated exit signs where required (5%)	Coordinate work with 1.01, 3.25,

Capital Improvement Plan North Reading High School

	1.24	Provide additional storage areas to eliminate the accumulation of storage, props, and paint in the theater backstage, side walls, and cat walk area. Items currently stored block proper access / egress from stage and catwalk.	Coordinate work with 1.01, 1.25,
	1.25	Provide proper access to below stage storage area (current ladder does not allow for safe access to theater storage area)	Coordinate work with 1.01, 1.24
	1.26	Provide proper area for batting cage (current location does not provide proper ventilation , lighting, or egress)	
2	Code Compliance (items not noted above)		
	2.01	Seismic upgrades to building structural system (May Be required for the Installation of RTUs)	Coordinate work with any structural work to be done
	2.02	Replace all toilets & urinals to meet current low flow requirements - replace with auto flush controls	Coordinate work with 2.03, 2.05, 3.02, 5.07,5.08, 6.02, 6.05,
	2.03	Update restrooms to meet ADA / MAAB requirements including path of travel, interior dimensions, fixtures and accessories	Coordinate work with 2.02, 2.07, 2.08, 2.09, 4.03, 4.08, 5.07,5.08, 6.02, 6.03, 6.05,
	2.04	Install new high low drinking fountains	Coordinate work with 3.02,
	2.05	Install hose bibbs in all restrooms with backflow preventers	Coordinate work with 1.05, 2.02,
	2.06	Re-feed emergency shower equipment in science rooms to provide a tempered water system	Coordinate work with 3.06, 5.07, 5.08,
	2.07	Install emergency lighting in all toilet rooms and public spaces	Coordinate work with 2.03, 2.08, 2.09,
	2.08	Expand existing emergency distribution system to include areas such as toilet rooms and public areas	Coordinate work with 2.07
	2.09	Install audible / visual units in all toilet rooms, library and all public spaces	Coordinate work with 2.07
	2.10	Review exit capacity of existing courtyard and reverse door swings as required for exit from courtyard into building, install protection rails on hallway side to avoid swinging into the path of egress in hallway	Coordinate work with 1.01
3	Functional Use of Building		
	3.01	Replace all VAT flooring (includes all flooring with exception of the gym, corridors and library)	Coordinate work with 7.03
	3.02	Up date sanitary waste system to meet the needs of the new plumbing fixtures - Provide a campus wide water treatment plant (include Middle School)	Coordinate work with 2.02, 2.03, 2.04, 2.06, 4.04, 4.05, 4.06, 5.07, 5.28,
	3.03	Correct the on going flooding that occurs below the auditorium area	
*	3.04	Install new combustion air unit to supply boiler room with proper combustion air	Coordinate work with 3.05, 3.06, 3.07, 3.08
	3.05	Install a steam to hot water heat exchanger in the boiler room	Coordinate work with 3.04, 3.06, 3.07, 3.08
*	3.06	Remove steam distribution piping and heating equipment and replace with hot water distribution piping and heating equipment, install new hot water distribution pump in the boiler room	Coordinate work with 3.04, 3.05, 3.07, 3.08

Capital Improvement Plan

North Reading High School

*	3.07	Install new relief exhaust fan in boiler room	Coordinate work with 3.04, 3.05, 3.06, 3.08
*	3.08	Replace the burners in both boilers	Coordinate work with 3.04, 3.05, 3.06, 3.07
	3.09	Replace ground water duplex pumps with new duplex pumps	
	3.10	Remove existing unit ventilators in the team rooms, replace with a roof top unit and ducted supply to ensure proper ventilation, replace exhaust system with ducted system and roof top exhaust fan, replace finned tube radiation	Coordinate work with 2.01, 3.11, 3.12, 3.13, 6.13,
	3.11	Remove existing gym air handlers, exhaust fans and ductwork system and replace with roof top units with ducted supply	Coordinate work with 2.01, 3.10, 3.12, 3.13,
*	3.12	Replace unit ventilators in both the boys and girls locker rooms with rooftop units	Coordinate work with 2.01, 3.10, 3.11, 3.13,
*	3.13	Replace the exhaust system serving the boys locker room with a rooftop exhaust fan	Coordinate work with 2.01, 3.10, 3.11, 3.12
*	3.14	Replace convectors in boys and girls locker rooms	Coordinate work with 2.01, 3.10, 3.11, 3.12
*	3.15	Remove existing air handlers and ductwork in the cafeteria and replace with roof top units	Coordinate work with 2.01, 3.16, 3.17,
*	3.16	new ductwork to provide proper air flow and ventilation and connect to exhaust fan	Coordinate work with 2.01, 3.15, 3.17
*	3.17	Remove existing air handlers, and exhaust fan and replace with a rooftop supply and exhaust system	Coordinate work with 2.01, 3.15, 3.16
	3.18	Replace finned tube radiation at the stage	
*	3.19	Exhaust the kitchen hood to a separate dedicated rooftop exhaust fan	Coordinate work with 2.01, 3.20
*	3.20	Remove the air handler serving the kitchen and replace with a roof top unit and new ductwork to provide proper air flow	Coordinate work with 2.01, 3.19
*	3.21	Replace existing unit ventilators in all classrooms and office areas	
*	3.22	Remove existing unit ventilators in teacher's cafeteria and install rooftop units with ducted ventilation air and finned tube radiation for heating	Coordinate work with 2.01
*	3.23	Remove unit ventilators in the library and install roof top units with ducted ventilation air and finned tube radiation for heating.	Coordinate work with 2.01
*	3.24	Remove window mounted air condition units in office areas. Install rooftop air handler with ducted supply and return air for heating, air conditioning and ventilation	Coordinate work with 2.01
*	3.25	Upgrade primary electrical service from 800 A to 1600 A 120/208 V 3 phase four wire to meet current demands of the school	Coordinate work with 2.08, 3.26, 3.27, 3.28
	3.26	Provide a centrally located main electric room for the main distribution board, secondary metering, miscellaneous lighting, and general purpose power panel boards	Coordinate work with 2.08, 3.25, 3.27, 3.28
	3.27	Upgrade 12 circuit load centers located in corridors to 225A 120 / 208 V 3 phase 42 circuit panel boards for future loads	Coordinate work with 2.08, 3.25, 3.26, 3.28
*	3.28	Replace panel boards located in the kitchen	Coordinate work with 2.08, 3.25, 3.26, 3.27
	3.29	Install remote annunciator panel at main entrance	Coordinate work with 1.14

Capital Improvement Plan

North Reading High School

*	3.30	Install new intercom / master clock system with ceiling mounted speakers in the corridors and public spaces and clock / speaker units in the classrooms. Equip all	Coordinate work with 3.31, 5.21, 5.22, 5.23, 5.27
	3.31	Expand the tel / data system to provide computer workstations in each classroom	Coordinate work with 3.30, 5.21, 5.22, 5.23, 5.27
	3.32	Re construct areas around doors that access classrooms, restrooms, offices, and public areas to provide push - pull clearance to meet ADA / MAAB requirements	
*	3.33	Provide path and access for emergency stretcher at nurses area	
*	3.34	Disconnect electrical floor mounted electrical outlets that are no longer used and remove outlets from floor (+/- 20 outlets)	Coordinate work with 7.03
	3.35	Provide protection from steam pipes	Coordinate work with 7.02
	3.36	Reconstruct entrance / exit from team rooms to field at the lower level to provide head room clearance	Coordinate work with 3.35
	3.37	Provide proper venting for fixative spray booth in art room	Coordinate work with 3.16, 6.12, 7.01
*	3.38	Install hold opens tied to the fire alarm system on all hallway doors	
4 Handicap Accessibility (includes only items not noted above)			
*	4.01	Install elevator to provide access to team locker rooms and whirlpool area (May Be Required By Trigger)	Coordinate work with 2.01, 3.25, 4.02, 7.03
	4.02	Provide access to the stage from the auditorium space via a lift	Coordinate work with 2.01, 3.25, 7.03
*	4.03	Replace existing and add new signs as required to meet ADA / MAAB requirements (contrast, braille, location, etc.)	
	4.04	Replace sinks in classrooms with lavs to meet ADA / MAAB	Coordinate work with 3.02, 5.07, 5.08, 5.28
*	4.05	Add handicap shower to boys and girls locker rooms	Coordinate work with 1.22, 3.02, 3.13, 3.14, 4.06, 5.07, 5.08, 5.12, 5.13, 5.14, 7.03
*	4.06	Add ADA / MAAB accessible toilet and sink in the boys locker room and in the girls locker room	Coordinate work with 3.02, 5.07, 5.08, 7.03
*	4.07	Add accessible lockers to locker room	
	4.08	Replace existing audible / visual devices with ADA compliant visual devices	Coordinate work with 3.25
	4.09	Replace door hardware to meet ADA / MAAB (75%)	Coordinate work with 1.01, 4.10
	4.10	Reconfigure classroom and office entrances to conform to ADA / MAAB push pull requirements	Coordinate work with 1.01, 4.09
5 Maintenance - Extending the Life of the Building (includes only items not noted above)			
*	5.01	Clean , repoint, and / or waterproof exterior brick walls	Coordinate work with 5.11, 5.26
*	5.02	Provide screens for windows to allow venting	Coordinate work with 3.24, 6.01
*	5.03	Repair gym floor where popping has occurred	

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*	5.04	Resurface glazed structural tile in both girls and boys locker rooms	
*	5.05	Replace damaged lockers throughout corridors	
*	5.06	Replace 2x4 damaged ceiling tiles and frames with new 2x2 ceiling tiles (typ. through out classrooms and corridor)	Coordinate with sprinkler, electrical and HVAC work
*	5.07	Provide new domestic water service (existing is over 60 yrs. old)	Coordinate work with 2.02, 2.06, 3.02, 4.04, 4.05, 4.06, 5.08
	5.08	Replace hot water storage tank and heat exchanger with a pair of gas fired storage tank water heaters	Coordinate work with 5.07
	5.09	Maintain grease traps in kitchen	
	5.10	Maintain new exterior acid waste holding tanks	Coordinate work with 1.08
	5.11	Re-route rain leaders to connect to interior roof drains to avoid ponding, mold and mildew build up on the exterior walls and at grade	
*	5.12	Install master shower mixing valve for girl locker room showers in PE office, repipe risers to PE office	Coordinate work with 5.13, 5.14,
*	5.13	Replace shower heads and shower valves in both locker rooms	Coordinate work with 5.12, 5.14,
*	5.14	Replicate master shower mixing valve from boys locker rooms to PE office	Coordinate work with 5.12, 5.13,
	5.15	Clean hood, filters , ductwork and exhaust fan in kitchen hood	Coordinate work with 3.19
*	5.16	Provide a surge suppression / conditioned power to all computer loads	Coordinate work with 3.25, 3.26, 3.27, 3.31
	5.17	Replace classroom lighting fixtures with direct / indirect linear fluorescent T8 lamps and electronic ballast with two levels of switching	Coordinate work with 3.25, 3.26, 3.27, 3.31
	5.18	Upgrade gym lighting with pendant mounted HID low bay fixtures	Coordinate work with 3.25, 3.26, 3.27, 3.31
	5.19	Upgrade cafeteria / Auditorium lighting with energy efficient HID or fluorescent lighting	Coordinate work with 3.25, 3.26, 3.27, 3.31
	5.20	Replace existing telephone cabling with cat 5 cabling	Coordinate work with 3.31, 5.21, 5.22, 5.23,
	5.21	Provide IDF rooms in each wing of the building	Coordinate work with 3.31, 5.20, 5.22, 5.23,
	5.22	Relocate telephone service entrance hub to the head end room	Coordinate work with 3.31, 5.20, 5.21, 5.23,
	5.23	Expand head end equipment to meet program requirements	Coordinate work with 3.31, 5.20, 5.21, 5.22,
	5.24	Repair and / or replace exit hardware (50%)	Coordinate work with 1.01, 3.38, 4.09, 5.30
	5.25	Repair areas and wall surfaces damaged by leaks	
	5.26	Repair area subject to flooding (exterior grade and at entrances)	Coordinate work with 5.01
	5.27	Provide conduit for power and data cords to avoid cords from being stretched across the floor or draped over walls	Coordinate work with 3.31, 5.20
	5.28	Remove sinks and dishwashers that are no longer used (10 +/- sinks, 5 +/- dishwashers)	
*	5.29	Remove center handrails on stairways where they are not necessary by code and create a hazard	Coordinate work with 1.01
	5.30	Install master key locking system	Coordinate work with 5.24

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6		Energy Efficiency / Energy Saving (includes only items not noted above)	
*	6.01	Windows installed in 1989 have begun to fail, remove existing window and install new windows through out	Coordinate work with 3.24, 5.02
	6.02	Replace lavs with auto controls	Coordinate work with 2.02
	6.03	Replace restroom accessories with auto controls	Coordinate work with 2.03
*	6.04	Add butterfly valves with memory stops to the hot water recirculation branch and re balance branch	Coordinate work with 3.05, 3.06, 6.05
*	6.05	distribution with hot water distribution system, add hot water distribution pump in boiler room	Coordinate work with 3.05, 3.06, 6.04
*	6.06	item deleted	
*	6.07	Replace pneumatic controls with new or direct digital control	
*	6.08	Install occupancy sensors in all classrooms, offices, and toilet rooms	
*	6.09	Install interior vestibule at entrance doors	Coordinate work with 1.01
	6.10	Construct insulated walls at overhead door locations in the existing art room	
	6.11	Provide proper collection / filter system for clay and paint at sink in the art room	
	6.12	Provide proper heat and venting in art area	
	6.13	Provide proper venting for the clothes dryer in the team area	
*	6.14	Retrofit existing building with energy efficient light fixtures	Combine work with electrical and lighting work noted
*	6.15	Remove electrical and telephone wires that have been disconnected and are no longer in use.	
*	6.16	Remove mold from exterior walls	
	6.17	Repair weather stripping around all doors	
7		Hazardous Materials Abatement	
*	7.01	Remove asbestos at window frames and sills	
*	7.02	Remove asbestos at all piping insulation	
*	7.03	Remove asbestos in existing flooring materials	
*	7.04	Remove asbestos at door frames and sills	
*	7.04	For any renovation project, include an allowance to address abatement of asbestos containing materials and pcb's, lead containing paint renovation requirements	
		TOTALS	
FOOTNOTES			

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		North Reading Middle School	
1	Health, Safety & Welfare		
	1.01	Replace existing windows, frames, glazing, and sills throughout the building	Coordinate work with 7.01
	1.02	Replace exterior doors and frames with new insulated steel doors and frames	Coordinate work with 7.04
	1.03	Hardwire all exist signs	Coordinate work with 1.04,1.02
	1.04	Conduct exit study to verify interior door swings, exit travel path, and exit discharge	Coordinate work with 1.03,1.02
	1.05	Conduct exit study to verify exit discharge capacity from large spaces (cafeteria / gym)	Coordinate work with 1.03,1.04
	1.06	Repair and replace all exit hardware that has been damaged or does not operate properly(approx 25%)	Coordinate work with 1.02, 1.03, 1.04, 1.05
	1.07	Install FRP in kitchen area to meet Board of Health Standards	
	1.08	Install vacuum breakers and reduced pressure zone backflow preventers in janitor sinks	
	1.09	Install vacuum breakers and reduced pressure zone backflow preventers in science labs	Coordinate work with other work in the science labs -1.13, 1.15, 1.16, 1.17, 2.09
	1.10	Install vacuum breakers and reduced pressure zone backflow preventers in mechanical rooms	
	1.11	Install backflow preventers on exterior hose bibbs	
	1.12	Remove pipe insulation containing asbestos and replace with new insulation (typical through out building)	Coordinate work with 7.02
	1.13	Disconnect acid waste system from the sanitary system, install holding tanks outside and discharge acid waste to exterior tanks	Coordinate work with other work in the science labs -1.09, 1.15, 1.16, 1.17
	1.14	Add floor drains to each shower in boys locker room to prevent cross drainage	Coordinate work with 3.05, 4.05
	1.15	Reconfigure the gas system that feeds the gas turrets in sci. labs to feed each room through a master shut off valve	Coordinate work with other work in the science labs -1.09, 1.13, 1.16, 1.17
	1.16	Re-feed emergency shower equipment in science rooms to provide a tempered water system	Coordinate work with other work in the science labs -1.09, 1.13, 1.15, 1.17
	1.17	Install eye wash station (ADA compliant) in science labs	Coordinate work with other work in the science labs -1.09, 1.13, 1.15, 1.16
	1.18	Add sprinklers through out the building, include fire service main into the building fed from the main street	Coordinate work with other above ceiling work through out the building
	1.19	Install double check back flow preventer on the sprinkler service entrance	Coordinate work with 1.18, 1.20, 1.21, 1.22, 1.23, 1.24
	1.20	Install deluge system at the auditorium stage area	Coordinate work with 1.18, 1.19, 1.21, 1.22, 1.23, 1.24
	1.21	Install zone valves through out the facilities	Coordinate work with 1.18, 1.19, 1.20, 1.22, 1.23, 1.24
	1.22	Install annunciator panel	Coordinate work with 1.18, 1.19, 1.20, 1.21, 1.23, 1.24
	1.23	Construct sprinkler room (at exterior wall or install post indicator valve on the sprinkler entrance)	Coordinate work with 1.18, 1.19, 1.20, 1.21, 1.22, 1.24
	1.24	Install tamper switches on all sprinkler system control valves tied to the fire alarm system	Coordinate work with 1.18, 1.19, 1.20, 1.21, 1.22, 1.23
	1.25	Remove air handlers in locker rooms and replace with rooftop units, replace supply and exhaust ductwork	Coordinate work with 1.26, 1.32

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1.26	Replace exhaust system in locker rooms	Coordinate work with 1.25 1.32
1.27	Remove cabinet heaters in corridors and install ducted air systems for heating and venting the corridors	Coordinate work with 2.01
1.28	Replace handrails and guard rails at all stairs to meet code	
1.29	Extend partition walls that were installed after the original construction up to the underside of the deck	
1.30	Repair source of flooding in the music room	
1.31	Provide proper air ventilation in storage rooms that have been converted to office / classroom space	
1.32	Provide proper air ventilation in restrooms and locker rooms	Coordinate work with 1.26, 1.25
2 Code Compliance (items not noted above)		
2.01	Seismic upgrades to building structural system (MAY BE REQUIRED BY INSTALLATION OF RTUs)	Coordinate with all structural revisions to the building
2.02	Update restrooms to meet ADA / MAAB requirements including path of travel, interior dimensions, fixtures and accessories	Coordinate work with 2.03, 2.04, 2.06, 3.05
2.03	Replace existing toilets to meet ADA / MAAB requirements - new toilets to be auto flush control and meet current low flow requirements	Coordinate work with 2.02, 2.04, 2.06, 3.05
2.04	Replace all toilets & urinals to meet current low flow requirements - replace with auto flush controls	Coordinate work with 2.02, 2.03, 2.06, 3.05
2.05	Install new high low drinking fountains	Coordinate work with 3.05
2.06	Replace existing non ADA / MAAB sinks with lavs and fixtures to meet ADA / MAAB including sinks located in classrooms	Coordinate work with 2.02, 2.03, 2.04, 3.05
2.07	Install hose bibbs in all restrooms with backflow preventers	Coordinate work with proposed work in restrooms
2.08	Install backflow preventers on hose bibbs in mechanical rooms	Coordinate work with proposed work in mechanical rooms
2.09	Replace science room faucets with faucets with integral vacuum breaker	Coordinate work with 1.09
2.10	Install new grease trap at triple sink in kitchen	Coordinate work with 5.10
2.11	item deleted	
2.12	Remove the non - life safety loads (such as freezers) from the life-safety panel boards	Coordinate work with 3.24
2.13	Provide a 2 hour fire resistive rated room adjacent to the main electric room for the emergency systems generation and distribution equipment	Coordinate work with 2.12, 3.24
2.14	Install emergency lighting in all toilet rooms and public spaces	Coordinate work with 2.12, 2.13, 2.14, 3.24
2.15	Install audible / visual units in all toilet rooms, library and all public spaces	Coordinate work with 2.12, 2.13, 2.14, 3.24
2.16	item deleted	

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3 Functional Use of Building (Impact on Learning - below MSBA standards)		
3.01	Replace all VAT flooring (includes all flooring with exception of the gym, corridors and library)	Coordinate work with 7.03
3.02	Add dedicated storage areas to prevent the storage of items in the path of egress	Coordinate work with 1.04, 3.03
3.03	Provide storage for snow blowers and other maintenance equipment that is currently stored inside building hallways	Coordinate work with 3.02
3.04	Add acoustical ceiling treatment to the cafeteria / gym / auditorium and large meeting room to improve sound quality and reduce noise	
3.05	Up date sanitary waste system to meet the needs of the new plumbing fixtures / or Provide a campus wide water treatment plant	Coordinate work with all plumbing upgrades
3.06	Correct the on going flooding that occurs in the boiler room through the open window well	Coordinate work with 3.11
3.07	Install new combustion air unit to supply boiler room with proper combustion air	Coordinate work with 3.08
3.08	Install new relief exhaust fan in boiler room	Coordinate work with 3.07
3.09	Replace the older boiler and burners (one was replaced in 2005)	Coordinate work with 3.07, 3.08
3.10	item deleted	
3.11	Replace the ground water pumps	Coordinate work with 3.06
3.12	Remove existing gym air handlers (2) and replace with roof top units with ducted supply	Coordinate work with 2.01
3.13	Remove existing air handlers and ductwork in the cafeteria and replace with roof top units	Coordinate work with 2.01, 3.15
3.14	Remove unit ventilators in the music storage room and replace with roof top unit. Add new ductwork to provide proper air flow	Coordinate work with 2.01
3.15	Remove the air handler serving the kitchen and replace with a roof top unit and new ductwork to provide proper air flow	Coordinate work with 2.01, 3.13
3.16	Remove existing unit ventilators in all classrooms and office areas and install rooftop units with ducted ventilation air and finned tube radiation for heating	Coordinate work with 2.01, 3.17
3.17	Install ducted ceiling exhaust for proper air flow in all classrooms, library, offices, etc.	Coordinate work with 2.01, 3.16
3.18	Remove unit ventilators in the library and install roof top units with ducted ventilation air and finned tube radiation for heating.	Coordinate work with 2.01, 3.17
3.19	Remove window mounted air condition units in office areas. Install rooftop air handler with ducted supply and return air for heating, air conditioning and ventilation	Coordinate work with 1.01, 2.01, 3.17
3.20	Upgrade primary electrical service from 800 A to 1600 A 120/208 V 3 phase four wire to meet current demands of the school	Coordinate with lighting, HVAC, alarm, emergency power and technology upgrades
3.21	Provide a centrally located main electric room for the main distribution board, secondary metering, miscellaneous lighting, and general purpose power panelboards	Coordinate work with 3.20, 3.22, 3.23, 3.24,
3.22	Upgrade 12 circuit load centers located in corridors to 225A 120 / 208 V 3 phase 42 circuit panelboards for future loads	Coordinate work with 3.20, 3.21, 3.23, 3.24,

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	3.23	Replace panel boards located in the boiler room	Coordinate work with 3.20, 3.21, 3.22,3.24,
	3.24	Provide an additional manual transfer switch to serve critical standby loads currently fed from the life safety panelboard	Coordinate work with 3.20, 3.21, 3.22,3.23,
	3.25	Install remote annunciator panel at main entrance	Coordinate with fire alarm and electrical upgrades
	3.26	Install new intercom / master clock system with ceiling mounted speakers in the corridors and public spaces and clock / speaker units in the classrooms. Equip all classrooms with a call back feature via handset	Coordinate work with 3.21, 3.27
	3.27	Expand the tel / data system to provide computer workstations in each classroom	Coordinate work with 3.21
	3.28	Re construct areas around doors that access classrooms, restrooms, offices, and public areas to provide push - pull clearance to meet ADA / MAAB requirements	
	3.29	Provide path and access for emergency stretcher at nurses area	
4	Handicap Accessibility (includes only items not noted above)		
	4.01	Install elevator to provide access to classrooms and large group area on the second floor (MAY BE REQUIRED BY TRIGGER)	
	4.02	Remove and install new door hardware to meet ADA / MAAB requirements	Coordinate work with 1.04, 3.28
	4.03	Replace existing and add new signs as required to meet ADA / MAAB requirements (contrast, braille, location, etc.)	
	4.04	item deleted	
	4.05	Add handicap shower to boys locker room and in the girls locker room	Coordinate work with 4.06, 4.07
	4.06	Add ADA / MAAB accessible toilet and sink in the boys locker room and in the girls locker room	Coordinate work with 4.05, 4.07
	4.07	Add accessible lockers to locker room	Coordinate work with 4.05, 4.06
	4.08	Provide ramp for accessibility to all areas of the music room	
	4.09	Provide handicap accessible restroom at Nurse's office	
	4.10	Provide accessible restrooms on second floor	
	4.11	Correct slope and handrails of existing ramp to meet ADA / MAAB	
5	Maintenance - Extending the Life of the Building (includes only items not noted above)		
	5.01	Clean and re-surface existing exterior brick walls with mold resistant application	
	5.02	Replace exterior doors and frames that are rusting	Coordinate work with 1.02

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	5.03	Replace asphalt shingles at the gym roof with alt. (rubber membrane)	Coordinate work with 3.12
	5.04	Repair and replace cracked plaster walls in office area	
	5.05	Replace damaged lockers throughout corridors	
	5.06	Replace 2x4 damaged ceiling tiles and frames with new 2x2 ceiling tiles (typ. through out classrooms and corridor)	Coordinate work with all above ceiling work (electrical, sprinkler, havc , lighting
	5.07	item deleted	
	5.08	Provide new domestic water service (existing is over 50 yrs. old)	Coordinate work with 1.16, 5.09
	5.09	Replace hot water storage tank and heat exchanger with a pair of gas fired storage tank water heaters	Coordinate work with 1.16, 5.08
	5.10	Maintain grease traps in kitchen	Coordinate work with 2.10
	5.11	Maintain new exterior acid waste holding tanks	Coordinate work with 1.13
	5.12	Re-route rain leaders to connect to interior roof drains to avoid ponding, mold and mildew build up on the exterior walls and at grade	Coordinate work with 1.30
	5.13	item deleted	
	5.14	Replace shower heads and shower valves in locker rooms	Coordinate work with 5.15
	5.15	Replace master shower mixing valve in locker rooms	Coordinate work with 5.14
	5.16	Clean hood, filters , ductwork and exhaust fan in kitchen hood	Coordinate work with 3.15
	5.17	Provide a surge suppression / conditioned power to all computer loads	
	5.18	Replace classroom lighting fixtures with direct / indirect linear fluorescent T8 lamps and electronic ballast with two levels of switching	Coordinate with electrical and ceiling replacement work
	5.19	Upgrade gym lighting with pendant mounted HID low bay fixtures	Coordinate with electrical and ceiling replacement work
	5.20	Upgrade cafeteria / Auditorium lighting with energy efficient HID or fluorescent lighting	Coordinate with electrical and ceiling replacement work
	5.21	Replace existing telephone cabling with cat 5 cabling	Coordinate work with 3.27,5.22, 5.23
	5.22	Provide IDF rooms in each wing of the building	Coordinate work with 3.27,5.21, 5.23
	5.23	Relocate telephone service entrance hub to the head end room	Coordinate work with 3.27,5.21, 5.22
	5.24	Expand head end equipment to meet program requirements	Coordinate work with 3.27
	5.25	item deleted	
	5.26	Remove VAT flooring. Install VCT flooring	Coordinate work with 7.03
6	Energy Efficiency / Energy Saving (includes only items not noted above)		
	6.01	Replace lavs with auto controls	Coordinate work with 2.06
	6.02	item deleted	
	6.03	Add butterfly valves with memory stops to the hot water recirculation branch and re balance branch	Coordinate work with 5.09
	6.04	Replace pneumatic controls with new or direct digital control	

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	6.05	Install occupancy sensors in all classrooms, offices, and toilet rooms	
	6.06	Install interior vestibule at entrance doors	Coordinate work with 1.04
7	Hazardous Materials Abatement		
	7.01	Remove asbestos at window frames and sills	
	7.02	Remove asbestos at all piping insulation	
	7.03	Remove asbestos in existing flooring materials	
	7.04	Remove asbestos at door frames and sills	
	7.04	For any renovation project, include an allowance to address abatement of asbestos containing materials and pcb's, lead containing paint renovation requirements	
		TOTALS	\$0
FOOTNOTES			

No Build Analysis Cost Summary

High School		Comment	Code Compliance	Deferred Maintenance
Structural	1,157,058	Seismic, Bracing, Foundation Repair, Firestopping,	x	x
Building Envelope	1,419,862	Doors, Windows, Sill Replacement/Repair, Curtainwall, Repoint, Insulation, Caulking	x	x
Interior Construction	829,600	ADA, Accessibility, Interior Partitions, Paint, Paper, Patching,	x	x
Stairs	38,950	Deferred maintenance improvements, handrail extensions etc.	x	x
Finishes Elevators	1,148,520	VAT removal, cut, patch, refinish, paint		x
HVAC/Plumbing/Electrical/Fire Prot.	120,000	New elevator	x	
Furnishings	5,949,156	Replace old, outdated systems, install fire protection	x	x
Demolition	300,310	Replace non-compliant furnishing	x	
	578,075	As required	x	x
Total Trades	11,541,531			
Hazardous Material Allowance	693,690	As required	x	
Sitework Allowance	350,000	As required		
GC/GR/OHP/Testing/Contingencies	5,825,135	Contract, Testing, Contingency		
Phasing	1,258,672	As required		
Total Construction Costs	19,669,028			
Soft Cost Allowance @ 20%	3,933,806	Allowance		
Total HS Project Cost	23,602,834			
Middle School				
Structural	795,402	Seismic, Bracing, Foundation Repair, Firestopping,	x	x
Building Envelope	806,921	Doors, Windows, Sill Replacement/Repair, Curtainwall, Repoint, Insulation, Caulking	x	x
Roof	100,695	Shingles at Gym, Elevator Override		x
Interior Construction	758,464	ADA, Accessibility, Interior Partitions, Paint, Paper, Patching,	x	x
Stairs Finishes	38,950	Deferred maintenance improvements, handrail extensions etc.	x	x
Elevators/Lifts	759,690	VAT removal, cut, patch, refinish, paint		x
HVAC/Plumbing/Electrical/Fire Prot.	120,000	New elevator	x	
Demolition	4,767,021	Replace old, outdated systems, install fire protection	x	x
	405,000	As required		
Total Trades	8,552,143			
Hazardous Material Allowance	250,000	As required	x	
Sitework Allowance	250,000	As required		
GC/GR/OHP/Testing/Contingencies	5,340,875	Contract, Testing, Contingency		
Phasing	350,000	As required		
Total Construction Costs	14,743,018			
Soft Cost Allowance @ 20%	2,948,604			
Total MS Project Cost	17,691,622			
Combined MS/HS Project				
Total Combined MS/HS Project	41,294,455			
Waste Water Treatment Plant	2,600,000			
Phasing Price Escalation (10 years)	6,060,675	Phased Project Escalation over 10 years		
Total Phased MS/HS Project Cost	49,955,130			