

May 2017

# **Concord Middle School Facility Study** **Sanborn and Peabody Buildings** **Maintenance and Long Term Plans Report**

**Prepared For:**  
**Concord Public Schools**  
**Concord-Carlisle Regional School District**  
**120 Meriam Road**  
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### **Accompanying Volume**

**Concord Middle School Facility Study**  
Sanborn and Peabody Buildings  
 Existing Conditions Report, January 2017  
*Finegold Alexander Architects*



## Section 1            Introduction

Concord Middle School (CMS) is part of the Concord-Carlisle Regional School District. It serves grades six through eight with a total population of about 700 students and 75 staff, and is located within two buildings that are less than a mile apart. The Sanborn Building is at 835 Old Marlboro Road, and the Peabody Building is at 1231 Old Marlboro Road.

Finegold Alexander Architects (FAA), and our consultant team, were selected in the fall of 2016 to perform a comprehensive Concord Middle School Facility Study for the Concord Public Schools, Concord-Carlisle Regional School District. This study evaluates existing conditions of the two buildings, assesses physical and code deficiencies, and establishes a prioritized program, with broad costs, for addressing recommended improvements over the next 10 years. The study then evaluates goals of the Concord educational community and explores a 50-year Long Term Plan to adapt the two buildings to new teaching environments, to expand Sanborn to accommodate Peabody students, or to construct a new single Concord Middle School on the larger Sanborn site.

Two reports make up the Concord Middle School Facility Study. First, this “Maintenance and Long Term Plans” Report lays out priorities for a 10-years of maintenance and options for a 50-year capital plan. It is divided into an Executive Summary, a statement of challenges and goals, a section each on the short and long term plans, and recommendations for achieving those goals for the Concord Middle School stakeholders – students, parents, faculty and staff. The second report is the January 2017 “Existing Conditions” Report which documents current physical conditions and deficiencies at Sanborn and Peabody.

The Consultant team for the Concord Middle School Facility Study is composed of:

- Finegold Alexander Architects; Boston – Architecture and Administration
- Samiotes Consultants, Inc; Framingham – Civil Engineering
- Fohley Buhl Roberts & Associates Inc; Newton – Structural Engineering
- BALA/TMP Consulting Engineers; Boston – Mechanical/Electrical/Plumbing/Fire Protection Engineering
- ART Engineering Corp; Worcester – Information Technology and Telecommunications Consultant
- Jensen Hughes; Framingham – Fire Protection, life safety, and accessibility code consultant
- Fennessy Consulting Services; Stoughton – Cost Estimating
- Universal Environmental Consultants; Framingham – Hazardous Materials Identification Consultant

The companion “Existing Conditions” Report is bound as a separate volume.

## **Location Map**



## **Section 2**            **Executive Summary**

### **General**

The first phase of this *Concord Middle School (CMS) Facility Study*, completed in January 2017, produced an Existing Conditions Report for the Sanborn and Peabody Buildings. Although continuing to operate two Middle School campuses is necessary in the short term (and possibly, for up to 10 years), having a single campus is essential to improve education, increase efficiency, and to make a reasonable attempt to qualify for MSBA funding. The Concord Public Schools administration and the CMS Facility Study Committee acknowledge that operating two buildings is extremely inefficient and that alternative options must be investigated for consolidating the two campuses.



*Sanborn School Building*



*Peabody School Building*

An early conclusion, informing the study process, was that operating the two campuses is not fiscally prudent, and not in the interest of Concord taxpayers.

### **10-Year Maintenance Plan**

#### **Approach:**

The short-term plan focuses on improvements, beyond regular annual maintenance, that should be made over the next 10 years to upgrade facilities at Sanborn and Peabody. Proposed action items are prioritized as *Required*, *Recommended*, or *Optional*. Factors influencing the categorization include current code compliance, additional code requirements if construction costs exceed specific thresholds, and expectations as to when Sanborn and Peabody might merge into a single facility. All the prioritized action items with budget costs are presented in Sections 4b and 4c.

#### **Sanborn Building:**

Action items prioritized as *Required* relate to site drainage, minor exterior repairs, and code compliance (exit signage, telecommunications infrastructure, and expanded fire alarm). *Recommended* items are probable roof replacement within 10 years, exterior cleaning, replacement of the aging hot water distribution system, evaluating settlement in the cafeteria courtyard, and although not currently required by code, installation of a sprinkler system and provision of Americans with Disabilities Act (ADA) compliant staff restrooms and casework/sinks in classrooms. *Optional* items relate to overall systems improvements in anticipation of major renovation and expansion.

Budget costs are about \$1.0 Mil. for *Required* items escalated over the next 2 years, \$18.5 Mil. for *Recommended* items escalated during the next 10 years, and \$1.7 Mil. for *Optional* items over the same period. Total budget costs are \$21.2 Mil. with escalation for construction during the 10 years, but not including any other project costs.

#### Peabody Building:

Action items prioritized as *Required* include addition of 22 paved parking spaces (Concord zoning), minor exterior repairs, drainage and exposed reinforcing bar issues at balconies, and code compliance (exit signage, telecommunications infrastructure, and expanded fire alarm). *Recommended* items are probable roof replacement within 10 years, exterior cleaning, replacement of the aging hot water distribution system, upgrade of video surveillance, and although not currently required by code, installation of a sprinkler system and provision of ADA compliant staff restrooms and casework/sinks in classrooms. *Optional* items relate to overall systems improvements in anticipation of major renovation and expansion. If Peabody is to be retained long-term, consideration should be given to early construction of a new gymnasium and a new auditorium.

Budget costs are about \$0.8 Mil. for *Required* items escalated over the next 2 years, \$13.7 Mil. for *Recommended* items escalated during the next 10 years, and \$11.4 Mil. for *Optional* items over the same period. Total budget costs are \$25.9 Mil. with escalation for construction during the 10 years, but not including any other project costs.

#### Combined budget cost

Total budget construction cost with escalation for Sanborn and Peabody for the 10-Year Maintenance Plan is \$47 Mil.

### **50-Year Long Term Plan**

#### Approach:

For comparative purposes, the long-term plan addresses maintaining existing conditions with two buildings, and then investigates three options for achieving long-term educational goals. Option 1 renovates Sanborn, adds a new classroom wing, and expands several other

program elements. Option 2 retains the auditorium and gymnasium, while demolishing the classroom wing and constructing a large new academic and cafeteria wing on the opposite side of the retained structure. Option 3 envisions a new Concord Middle School with two versions – the MSBA program, and an expanded plan with auditorium and enlarged gymnasium.

Factors influencing the option selection process include site selection (Sanborn has been selected as a large existing school department site), size of the student body (expected to remain constant at about 700), maintenance and operating costs, comparative construction costs, and which option will prove most adaptable to the future teaching environment.

Program:

Finegold Alexander Architects (FAA) toured the Willard Elementary School and Concord-Carlisle High School to understand how these new facilities are meeting the curricula and design goals of the Concord Public Schools. The Study Committee and FAA also solicited programming input through meetings with faculty, support staff, and parents (Section 5b).

The Massachusetts School Building Authority (MSBA) publishes program standards for the area of individual spaces within public schools, adjusted for the size of the student body. For the combined 700 students at Sanborn and Peabody, the total building size recommended by MSBA is 115,000 SF. Existing building sizes are approximately 84,000 SF for Sanborn and 56,000 SF for Peabody. This combined total of about 140,000 SF illustrates two conditions – the inefficiency of operating two buildings with repetitive spaces and staff, and the fact that Sanborn and Peabody have spaces that are either oversized or not included in the MSBA standard program for middle schools. For instance, Sanborn’s gymnasium and associated spaces are nearly 5,000 SF larger than the standard, and CMS’s exemplary music and band program already occupies more space for Art & Music just in Sanborn than MSBA allocates for both student populations. Sanborn has an enviable auditorium, but MSBA does not provide for an auditorium, assuming a middle school cafeteria will also serve as the assembly and performance spaces.

Existing Condition – Long Term Occupancy of Sanborn and Peabody:

Continued occupancy of both buildings with 400 students at Sanborn and 300 students at Peabody is the benchmark for comparison with the design options. As noted, the area of both buildings is 140,442 GSF (gross square feet), or 145,842 GSF including the three double-classroom modular units, and MSBA allocates only 115,000GSF under their space program standards for a single campus with 700 students.

Retaining both buildings long term would require major building and infrastructure investment as detailed in the 10-Year Maintenance Plan. Peabody would require the greater attention since it was constructed as an elementary school. The light frame partitions

ineffectively separating the classrooms must be rebuilt. And to meet Town of Concord expectations, the elementary school gymnasium should be replaced with a larger facility, and the Forum should be replaced by a new added auditorium. The inefficiencies of staffing and operating the two schools would continue, and it would be challenging to adapt the aging structures to the necessary flexibility for innovative teaching methods and technology.

The estimated construction cost to maintain and improve the two facilities during the 10-Year Maintenance Plan is \$47 Mil. At the end of the 10 years, Concord Public Schools would still be faced with the unacceptable reality of operating two small middle schools inefficiently on two campuses with higher maintenance costs and unsatisfactory teaching environments. For a more direct cost comparison with the alternative design options, a comprehensive renovation and code compliance upgrade of Sanborn and Peabody for the long-term would cost about \$53 Mil. (details in the Appendix; Cost Report). That figure is with escalation only to the earliest start date of April 2019 for a single construction project, as with the cost estimates below for Options 1 through 3.

*Option 1 – Renovated Sanborn with Additions:*

This option renovates and expands Sanborn for the total CMS student population of 700. The most significant space need, based on the MSBA standards, is an additional 23,000 NSF (net square feet) for classrooms and support. This is accommodated in a new 2-story classroom wing at the opposite end of Sanborn from the existing classroom wing. Other areas of expansion are the cafeteria, library/media center, and custodial department. The existing Sanborn building will require extensive renovation of spaces and systems over time, and location of the new classroom addition will cause reconfiguration of the parking and some site infrastructure.

The expanded size of Sanborn becomes 126,341 GSF. This is larger than the MSBA 115,000 GSF standard due to retaining oversized or additional program areas, including the gymnasium, art/music, and the auditorium.

The estimated construction cost for Option 1, with escalation only to the earliest start date of April 2019, is \$46.2 Mil.

*Option 2 – Major Sanborn Reconfiguration with Demolition and Additions:*

This option more aggressively updates and expands Sanborn for the total CMS student population of 700. Since the most flexible future needs will be for teaching spaces, and the gymnasium and auditorium common spaces are larger than the MSBA standards but already exist, the principle of this plan is to retain the common space half of the building, and demolish the classroom half in favor of a new flexible design. The new addition, on the opposite side of the common spaces from the demolition zone, has an enlarged cafeteria

and one of three classroom pods (for one of the three grade levels) on the ground floor. The other two pods are on the second floor. The existing gymnasium, auditorium, and administration spaces are fully renovated, with the media center replacing the former cafeteria. A new entrance is in the link between the old and new halves of the school, and the site is substantially reconfigured for parking, playing fields, and infrastructure.

The total area of the school is 125,124 GSF, which is larger than the MSBA 115,000 GSF standard for the same reasons as Option 1.

The estimated construction cost for Option 2, with escalation only to the earliest start date of April 2019, is \$47.8 Mil.

### Option 3 – New Building on Sanborn Site:

This option builds a new CMS for 700 students on the Sanborn site. Two approaches were explored. Option 3a addresses a new school that adheres to the MSBA space program, and Option 3b increases the size of the gymnasium and adds an auditorium as desired by the Town of Concord.

Option 3a, not encumbered by retaining all or part of Sanborn, takes advantage of the site topography. The building is set back from Old Marlboro Road allowing generous space for drop-offs and parking. The common spaces are on the flat portion of the site, and then the classrooms terrace down the steep south-facing slope creating three pods for the three grade levels. The building is curved in shape to fit the contours, creating an exciting environment for learning and opportunities for “green” design. The overall site is flipped in use with the new building taking over the existing playing fields, and the fields relocated to the old Sanborn location. The area of the new school is 115,429 GSF which meets the MSBA standard.

Option 3b is identical, except the gymnasium and support spaces are enlarged from the MSBA standard of 8,400 NSF to the current Sanborn size of about 13,300 NSF. Also, an auditorium and support spaces the size of Sanborn’s is added at the opposite end of the common spaces. These desired additions result in a school of 126,341 GSF.

The estimated construction cost for MSBA Option 3a, with escalation only to the earliest start date of April 2019, is \$50.2 Mil. Option 3b with the desired additional programming is \$54.4 Mil. These two new-building options do not carry the 1% Existing Building Remediation Contingency for unforeseen conditions.

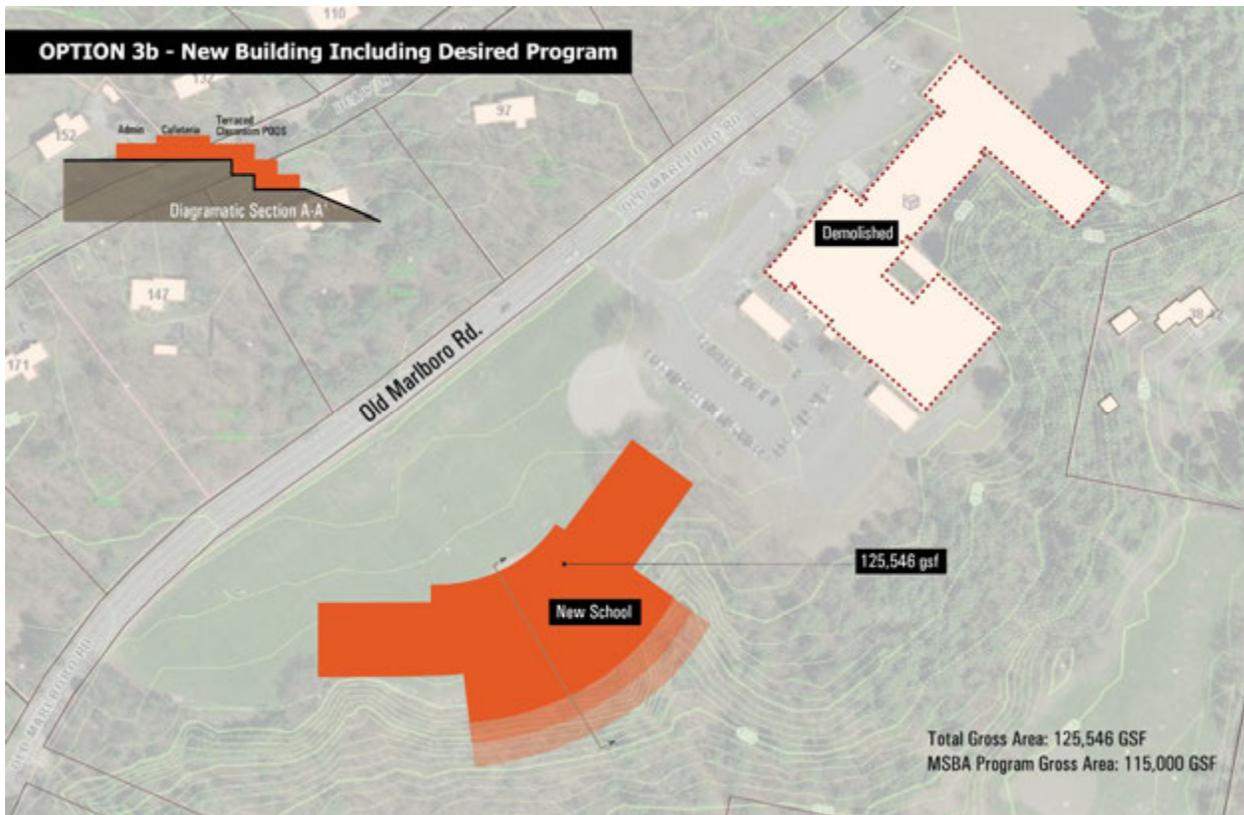
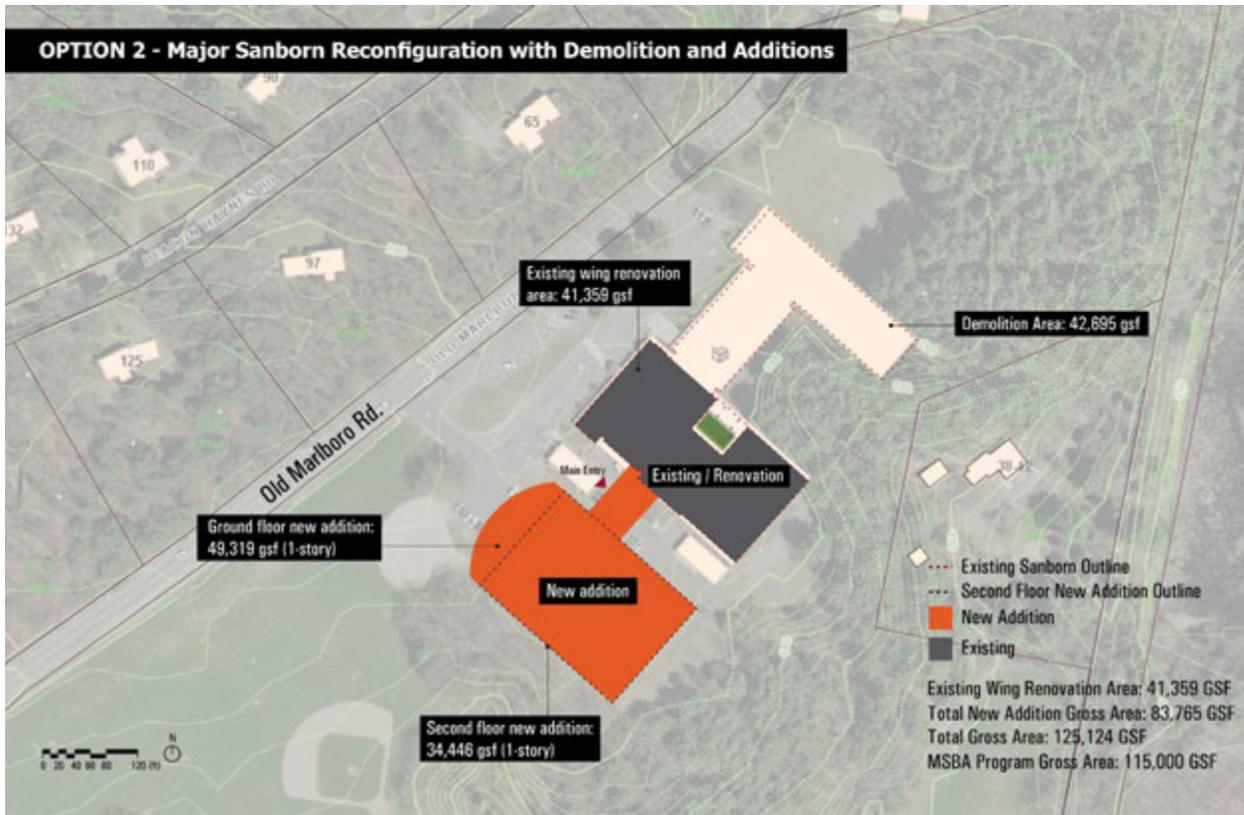
## **Recommendations**

The first recommendation of this study, based on the conditions, maintenance needs, and operating costs of two buildings, together with the staffing challenges and lack of flexibility to provide for innovative curricula and technology advances, is to NOT pursue the existing two-campus condition for the long term. The total project cost projection to renovate and upgrade the Sanborn and Peabody buildings, to the degree possible to meet facility and teaching needs, is \$68,466,110. This is the same or more than all the design options explored.

The second recommendation responds to viable long term options. There are two approaches – work with and expand Sanborn, or build a new school. For expanded Sanborn, Option 1 comprehensively renovates the building and adds needed space to accommodate the Peabody student population; the primary addition is a second classroom wing. Option 2 takes a more aggressive approach by demolishing the classroom and administration wing, and retaining the auditorium and gymnasium common spaces. This saves the auditorium and large gymnasium amenities that are not included in the MSBA middle school standards, but are desired by the Town of Concord. It also concentrates all the classrooms, with a pod for each grade level, in a large new addition that is inherently flexible. Option 2 is favored for the Sanborn expansion approach.

Option 3 has two iterations: 3a is a totally new school that efficiently meets the MSBA standards; 3b is similar but adds the auditorium and an enlarged gymnasium that are desired, but may not receive MSBA funding. Both designs take advantage of the natural site with the common areas on the flat facing open space, and the three classroom pods cascading down the steep embankment in a dynamic curved form.

The professional recommendation of Finegold Alexander Architects, with concurrence by the CMS Facility Study Committee, is to further develop Option 2 and Option 3b. This keeps open a dialog with the community and MSBA to either retain part of Sanborn or build a new school, and both options incorporate the additional program spaces desired by the town. The total project budget is \$60,768,007 for Option 2, and \$68,001,277 for Option 3b. Either approach will fulfill the goals for a middle school that measures up to the district's elementary schools and high school, all of which have been fully renovated or rebuilt.





## **Section 3**            **Stating the Challenge**

The Existing Conditions Report identifies deficiencies in the Sanborn and Peabody buildings that challenge maintaining a physical environment that is conducive to teaching and learning. But that is only part of the problem faced by the School District. The strain on teachers and students, dealing with a split campus of dated buildings, will have a detrimental effect on implementing exciting curricula that will evolve in unimagined directions.

The CMS Facility Study Committee is well versed in the challenges and clearly states why the community should commit to comprehensive improvements to the educational environment. Their reasoning is divided into three components – addressing the deteriorated condition of the existing buildings, mitigating the staffing and operational costs of the two-campus configuration, and overcoming the practical and psychological struggle with the current setup.

### **Deteriorated Condition of Peabody and Sanborn Buildings**

- Both buildings are run down and depressing.
- Ventilation and air circulation are nonexistent.
- The roofs of both buildings must be replaced.
- Both buildings still use their original 1960s electrical systems.
- The heat can be on or off, and there is no air conditioning, such that classrooms are continually overheated.
- Hazardous materials such as asbestos, mercury and PCBs are in both buildings.
- Neither building has a fire suppression system.
- Security system need replacement.
- Plumbing and kitchen facilities are inadequate.
- Concrete is flaking off the Peabody building revealing reinforcement bars which is a symptom of the final stages of concrete failure.
- Peabody septic system is likely non compliant with Title V.
- *Existing building layout cannot serve modern educational technology or teaching methods and cannot provide for learning experiences of the future.*

### **Two Campus Configuration is Inefficient and Expensive**

- Two buildings require redundant administration, classroom equipment and supplies, and two Assistant Principals.

- Sanborn and Peabody are a mile apart requiring 22 teachers and 20 buses to drive back and forth between schools multiple times per day.
- Faculty collaboration is severely compromised by the split.
- One coping method for scheduling classes and sharing teachers across the separation is to change the time at one school by seven minutes. This is unsustainable.
- *Each year we are spending more than \$500,000 additional funds to operate the two buildings.*

### **Current Situation Creates Struggle for the School Community**

- The Peabody building is in worse condition than the Sanborn building creating anxiety for the students who feel unfairly segregated.
- The Peabody building was built as an open floor plan elementary school with makeshift partitions, no auditorium, no designed cafeteria space, a small gym, and without doors on many teaching spaces. It was meant to serve younger students whose needs are different than those of the middle school level, causing further anxiety for students and teachers.
- Teachers find they must prepare two spaces instead of one, sometimes leaving supplies needed in one building in the other and facing the choice of being late for class or unprepared.
- Every six years the need for expansion at Sanborn has been alleviated with a modular unit which looks temporary. Three “mods” have been built so far. Further overcrowding is expected.
- Students report thinking twice about joining after-school clubs to avoid staying longer in the unpleasant school buildings.
- All after-school clubs and activities are at Sanborn so that Peabody students must be bussed to Sanborn daily compounding feelings of inequality.
- *CMS community members are not proud of their school.*

### **WHY ARE WE DOING THIS?**

We need one facility for Concord Middle School which meets national and common core standards and will serve our students in the future as well as today. We want to unify the school in one building that will have lower operating costs and will boost school community morale.

## Section 4a            10-Year Maintenance Plan Overview

Using the findings of the consultant team described in the Existing Conditions Report, Finegold Alexander Architects (FAA) assessed priorities for addressing deficiencies at both the Sanborn and Peabody buildings, regarding physical plant needs outside of regularly scheduled maintenance, and code compliance. The priorities were organized into three categories:

- Required Action – Highest priority, to be implemented during the next 2 years.
- Recommended Action – Should be implemented during the 10-year maintenance plan.
- Optional – Not critical, but recommended particularly if a building is to be retained long term.

Budget costs were assigned to each of the action items, and this information is summarized for each building in spreadsheets at the ends of the next two sections.

Decisions on prioritizing short term building improvements are influenced by expectations as to whether both buildings will be retained long term and upgraded, one building will be retained and expanded, or both buildings will be vacated in favor of a new CMS. A significant driver in this decision-making process is the inefficiency and cost of retaining both the Sanborn and Peabody sites for the Middle School curriculum. There is duplication of administrative, teaching, assembly, cafeteria, and gymnasium space. Two buildings require five more faculty as well as additional support staff, create logistical problems with teachers commuting between campuses, and demand higher operating and maintenance budgets. School Department Administration and the CMS Study Committee agree that the long-term plan should study consolidation of the two facilities onto the larger Sanborn Site by either expanding the Sanborn building or demolishing it following construction of a new school. The Peabody building would be vacated and available to the Town for repurposing.

Another consideration is whether construction improvements undertaken during the 10-year maintenance plan will cause additional cost by triggering further code compliance requirements. Additional code requirements are triggered if the total value of building permits exceeds the following:

- Full compliance with Massachusetts Architectural Access Board (MAAB) and Americans with Disabilities Act (ADA) requirements, as if it were a new building, if the building permits exceed 30% of the full and fair cash value of the building over a 3-year period.
- Increased compliance with the Massachusetts State Building Code (780 CMR and referenced codes) requirements for Life Safety upgrades, if the building permits exceed 33% of the full and fair cash value of the building over a 5-year period.
- Compliance with current Seismic Code requirements for any project where the area of work exceeds 50% of the area of the building.

These triggers for additional required work could be avoided during the 10-year maintenance period if it is known the Sanborn building will be demolished within that period in favor of a new facility.

For calculating the value of work that will trigger additional code compliance for Accessibility and Life Safety, the current full and fair cash value is \$14,260,000 for the Sanborn Building, and \$10,227,000 for the Peabody building.

FAA presented the Existing Conditions Report and prioritized action items with concept level costs to the CMS Facility Study Committee. Observations included:

- Dealing with hazardous-materials at the Concord Carlisle High School was more costly than anticipated.
- Maintenance expectations suggest the Sanborn and Peabody roofs will need to be replaced within the next 10 years, and priority should be a “Recommended Action.”
- Peabody classrooms are unacceptable with their light frame partitioning of the original elementary school open classrooms, particularly for hearing-challenged students.
- There is no natural light in the Sanborn gymnasium, and poor ventilation in both the auditorium and gymnasium.
- The Massachusetts School Building Authority (MSBA) will likely not invest in two buildings.

Action items for Sanborn and Peabody are addressed separately in the next two sections.

## **Section 4b            10-Year Maintenance Plan** **Sanborn Building**

### **Prioritized Work Items**

The Existing Conditions Report for the Concord Middle School Facility Study describes the design and the physical condition of the Sanborn and Peabody buildings. Included are observations from design team consultants about physical deficiencies that should be addressed. For the 10-year maintenance plan, we have organized them into the three prioritized categories noted in Section 4a. Some items of special note include the following:

#### **Required Action**

- Re-grade paving and landscaping at the east side of the south parking area to properly direct runoff to the bioswale.
- Repair deteriorating steps at the northwest corner of the classroom wing.
- Upgrade exit signage, some of which is paper or not illuminated (code).
- Upgrade telecommunications infrastructure for unsupported cables, non-dedicated IT rooms, and inadequate clearances (code).
- Expand and upgrade fire alarm system (code)

#### **Recommended Action**

- Steam clean entire exterior for overall facelift.
- Replace membrane roof, add insulation, improve drainage/parapet/scuppers
- Evaluate and mitigate settlement at concrete paving and lawn at the cafeteria courtyard.
- Replace 50-year old hot water piping distribution system in perimeter tunnels.
- Although not required until code cost threshold exceeded, it would be good practice to install sprinkler system for overall life safety.
- Although not yet required, provide ADA compliant staff toilet rooms.
- Although not yet required, provide ADA compliant casework and fixtures in classrooms and staff spaces.

#### **Optional**

- Evaluate floor-to-wall seismic connections, should major project be anticipated.
- Perform complete building condition and code survey if major project anticipated.

### **Concept Budget Costs**

The following spreadsheet for the Sanborn Building 10-Year Maintenance Plan includes all identified physical plant recommendations and deficiencies from the Existing Conditions Report, and a budget cost associated with each work item. Trade costs (labor and materials) are totaled for the Required, Recommended, and Optional categories. General

Conditions and Project Requirements, Overhead and Profit, and a design contingency are added across the board to each category. Since the Required items are expected to be addressed in the first 2 years, an average 1-year escalation is added to reach the total budget cost. Since the Recommended and Optional items may take place any time during the 10-year maintenance plan, an average compounded 6-year escalation is added. Total budget costs for the categories, should all work items be undertaken in each category, are:

• Sanborn Required Action	0-2 years	\$969,231
• Sanborn Recommended Action	0-10 years	\$18,528,507
• Sanborn Optional Items	0-10 years	<u>\$1,735,093</u>
	Total:	\$21,232,831

These budget costs are based on preliminary information and should only be used for broad planning purposes. They are escalated at an assumed annual rate of 4% over average time periods of 1 year for Required Action, and 6 years for Recommended and Optional items.

# SANBORN BUILDING

No	Categories	Required Action	Cost	Recommended Action	Cost	Optional	Cost		
		Priority: 0-2 Years		Priority: 0-10 Years		Priority: 0-10 Years			
<b><u>1</u></b>	<b>Architectural/Interior</b>	<b>1.1</b> Provide rated doors at two classroom egress stairs	\$25,050	<b>1.2</b> Steam clean entire exterior	\$88,725				
				<b>1.3</b> Replace roof; improve insulation, drainage, parapet	\$2,993,562				
				<b>1.4</b> Replace worn carpeting and flooring	\$382,237				
				<b>1.5</b> Replace VAT where previously carpeted over	\$63,750				
				<b>1.6</b> Replace main entry doors and frames	\$95,900				
				<b>1.7</b> Replace quarry tile in main entry	\$36,408				
				<b>1.8</b> Replace science lab casework, counters, sinks	\$86,400				
				<b>2.2</b> Clean all drainage structures and pipe network	\$5,000				
<b><u>2</u></b>	<b>Stormwater Management</b>	<b>2.1</b> Re-grade paving and landscape to direct runoff	\$49,454	<b>2.3</b> Repair landscape at minor erosion scars	\$2,000				
<b><u>3</u></b>	<b>Sewer</b>			<b>3.1</b> Assess condition of existing building sewer system	\$1,000				
<b><u>4</u></b>	<b>Water</b>								
<b><u>5</u></b>	<b>Parking</b>	<b>5.1</b> Stripe 21 additional required parking spaces	\$2,100						
<b><u>6</u></b>	<b>Structure</b>	<b>6.1</b> Repair several brick veneer cracks	\$10,000	<b>6.3</b> Evaluate roof drainage and add scuppers	\$58,400	<b>6.8</b> Repoint brick veneer in limited areas	\$409,500		
		<b>6.2</b> Repair concrete exterior steps, NW corner classrooms	\$4,462	<b>6.4</b> Regrade concrete paving and lawn at cafeteria courtyard	\$23,904	<b>6.9</b> Evaluate floor-to-wall seismic connections	\$280,250		
				<b>6.5</b> Evaluate condition and clean courtyard retaining wall	\$3,580				
				<b>6.6</b> Repair concrete at 10% of exterior column bases	\$2,400				
				<b>6.7</b> Repair crack at classroom interior CMU wall	\$1,000				
				<b>7.1</b> Complete modification of boiler room ventilation	\$2,500	<b>7.2</b> Replace unit vents, exhaust units, air handlers, H&V units	\$1,756,729	<b>7.4</b> Review efficiency of hot water pump system	\$68,750
<b><u>7</u></b>	<b>HVAC</b>			<b>7.3</b> Replace aging hot water piping distribution system	\$714,459				
				<b>7.5</b> Replace dated pneumatic control system	\$357,230				
		<b><u>8</u></b>	<b>Fire Protection and Plumbing</b>	<b>8.1</b> Make Kitchen gas header code compliant	\$2,500	<b>8.2</b> Protect building with automatic sprinklers	\$764,486		
						<b>8.3</b> Selectively replace piping insulation.	\$2,000		
						<b>8.4</b> Provide ADA compliant Staff Toilet Rooms	\$91,058		
				<b>8.5</b> Provide ADA compliant casework fixtures	\$80,000				
		<b>8.6</b> Replace domestic hot water distribution system	\$648,378						
<b><u>9</u></b>	<b>Electrical</b>	<b>9.1</b> Expand and upgrade fire alarm system (code)	\$294,189	<b>9.3</b> Upgrade lighting levels and energy efficiency	\$777,500	<b>9.5</b> Provide emergency generator.	\$150,000		
		<b>9.2</b> Upgrade exit signage (code)	\$14,000	<b>9.4</b> Improved electrical distribution and circuit capacity	\$189,122				
<b><u>10</u></b>	<b>Technology</b>	<b>10.1</b> Upgrade telecommunications infrastructure (code)	\$215,724	<b>10.3</b> Expand and upgrade intrusion detection system	\$7,150				
		<b>10.2</b> Upgrade telephone to new system provider	\$7,500	<b>10.4</b> Upgrade and expand video surveillance system	\$75,000				
				<b>10.5</b> Upgrade data communications/Wi-Fi system	\$210,135				
				<b>10.6</b> Upgrade front door intercom	\$6,000				
				<b>10.7</b> Upgrade PA system and integrate with telephone	\$63,041				
				<b>10.8</b> Provide new wired or wireless clock system	\$25,216				
		<b>10.9</b> Upgrade audio visual system	\$250,000						
<b><u>11</u></b>	<b>Code</b>					<b>11.1</b> Perform complete building survey if major project	\$15,000		
Trade Costs: \$627,479			Trade Costs: \$9,861,770			Trade Costs: \$923,500			
General Conditions & Project Requirements (17%): \$108,554			General Conditions & Project Req.(17%): \$1,706,087			General Conditions & Project Req. (17%): \$159,766			
Overhead & Profit (7%) \$51,522			Overhead & Profit (7%) \$809,750			Overhead & Profit (7%) \$75,829			
Design Contingency & Escalation to \$144,398			Design Contingency & Escalation to \$2,269,434			Design Contingency & Escalation to			
Construction Start (17.9%)			Construction Start (17.9%)			Construction Start (17.9%) \$212,520			
<b>SUBTOTAL: \$931,953</b>			<b>SUBTOTAL: \$14,647,041</b>			<b>SUBTOTAL: \$1,371,615</b>			
Escalation (1 year/4 %) \$37,278			Escalation (6 years/26.5 %) \$3,881,466			Escalation (6 years/26.5 %) \$363,478			
<b>Total Construction: \$969,231</b>			<b>Total Construction: \$18,528,507</b>			<b>Total Construction: \$1,735,093</b>			



## **Section 4c**            **10-Year Maintenance Plan** **Peabody Building**

### **Prioritized Work Items**

The Existing Conditions Report for the Concord Middle School Facility Study describes the design and the physical condition of the Sanborn and Peabody buildings. Included are observations from design team consultants about physical deficiencies that should be addressed. For the 10-year maintenance plan, we have organized them into the three prioritized categories noted in Section 4a. Some items of special note include the following:

#### **Required Action**

- Repaint underside of concrete balcony and roof overhangs.
- Extend paving and provide 22 additional parking spaces per Town of Concord zoning ordinance.
- Repair cracks in exterior brick veneer in several locations.
- Correct drainage on several balconies and address exposed deck reinforcing bars.
- Upgrade exit signage, some of which is not illuminated (code).
- Upgrade telecommunications infrastructure for unsupported cables, non-dedicated IT rooms, and inadequate clearances (code).
- Expand and upgrade fire alarm system (code)

#### **Recommended Action**

- Steam clean entire exterior for overall facelift.
- Replace membrane roof, add insulation, improve drainage/parapet/scuppers.
- Upgrade light-frame classroom partitions/doors.
- Replace 50-year old hot water piping distribution system, in perimeter tunnels.
- Although not required until code cost threshold exceeded, it would be good practice to install sprinkler system for overall life safety.
- Although not yet required, provide ADA compliant staff toilet rooms.
- Although not yet required, provide ADA compliant casework and fixtures in classrooms and staff spaces.
- Upgrade and expand video surveillance system.

#### **Optional**

- Build gymnasium addition to middle school standards.
- Build auditorium addition to middle school standards.
- Evaluate floor-to-wall seismic connections, should major project be anticipated.
- Perform complete building condition and code survey if major project anticipated.

**Concept Budget Costs**

The following spreadsheet for the Peabody Building 10-Year Maintenance Plan includes all identified physical plant recommendations and deficiencies from the Existing Conditions Report, and a budget cost associated with each work item. Trade costs (labor and materials) are totaled for the Required, Recommended, and Optional categories. General Conditions and Project Requirements, Overhead and Profit, and a design contingency are added across the board to each category. Since the Required items are expected to be addressed in the first 2 years, an average 1-year escalation is added to reach the total budget cost. Since the Recommended and Optional items may take place any time during the 10-year maintenance plan, an average compounded 6-year escalation is added. Total budget costs for the categories, should all work items be undertaken in each category, are:

• Peabody Required Action	0-2 years	\$828,419
• Peabody Recommended Action	0-10 years	\$13,671,159
• Peabody Optional Items	0-10 years	<u>\$11,442,016</u>
	Total:	\$25,941,594

These budget costs are based on preliminary information and should only be used for broad planning purposes. They are escalated at an assumed annual rate of 4% over average time periods of 1 year for Required Action, and 6 years for Recommended and Optional items.

# PEABODY BUILDING

No	Categories	Required Action	Cost	Recommended Action	Cost	Optional	Cost
		Priority: 0-2 Years		Priority: 0-10 Years		Priority: 0-10 Years	
<b>1</b>	<b>Architectural/Interior</b>	<b>1.1</b> Repaint underside of balcony and roof overhangs	\$38,169	<b>1.2</b> Steam clean the entire exterior	\$88,010	<b>1.8</b> Build gymnasium addition to middle school needs	\$2,802,800
				<b>1.3</b> Replace roof; improve insulation, drainage, parapet	\$1,562,726	<b>1.9</b> Build auditorium addition to middle school needs	\$3,053,470
				<b>1.4</b> Replace worn carpeting and flooring	\$256,426		
				<b>1.5</b> Replace VAT where previously carpeted over	\$63,750		
				<b>1.6</b> Upgrade light-frame classroom partitions/doors	\$267,530		
				<b>1.7</b> Replace exterior doors, including balcony exits	\$174,750		
						<b>2.1</b> Clean all drainage structures and pipe network	\$5,000
<b>2</b>	<b>Stormwater Management</b>			<b>2.2</b> Repair landscape at minor erosion scars	\$2,000		
<b>3</b>	<b>Sewer</b>			<b>3.1</b> Assess condition of existing building sewer system	\$1,000		
				<b>3.2</b> Find alternative to leaching field siphon dosing	\$40,000		
<b>4</b>	<b>Water</b>						
<b>5</b>	<b>Parking</b>	<b>5.1</b> Pave and provide 22 additional parking spaces	\$71,264				
		<b>5.2</b> Provide 1 additional ADA parking space	\$5,825				
<b>6</b>	<b>Structure</b>	<b>6.1</b> Repair several brick veneer cracks	\$7,500	<b>6.3</b> Evaluate roof drainage and add scuppers	\$39,200		
		<b>6.2</b> Repair balcony decks and correct drainage	\$49,681	<b>6.4</b> Repair parapet shrinkage cracks and spalling	\$15,000		
				<b>6.5</b> Repair exterior concrete and brick in select locations	\$273,770		
				<b>6.6</b> Brick veneer requires repointing in limited areas.	\$60,930		
				<b>6.7</b> Evaluate floor-to-wall seismic connections	\$188,000		
<b>7</b>	<b>HVAC</b>			<b>7.1</b> Provide ventilation and AC at main office	\$28,000	<b>7.4</b> Review efficiency of hot water pump system	\$68,750
				<b>7.2</b> Replace unit vents, exhaust units, air handlers, H&V units	\$1,178,509		
				<b>7.3</b> Replace aging hot water piping distribution system	\$479,298		
				<b>7.5</b> Replace dated pneumatic control system	\$239,649		
<b>8</b>	<b>Fire Protection and Plumbing</b>	<b>8.1</b> Make Kitchen gas header code compliant	\$2,500	<b>8.2</b> Protect building with automatic sprinklers	\$513,492		
				<b>8.3</b> Selectively replace piping insulation.	\$1,500		
				<b>8.4</b> Check cast iron piping for repairs	\$15,000		
				<b>8.5</b> Provide ADA compliant Staff Toilet Rooms	\$91,058		
				<b>8.6</b> Provide ADA compliant casework fixtures	\$65,000		
				<b>8.7</b> Replace domestic hot water distribution system	\$454,716		
						<b>9.5</b> Provide emergency generator.	\$150,000
<b>9</b>	<b>Electrical</b>	<b>9.1</b> Expand and upgrade fire alarm system (code)	\$197,358	<b>9.3</b> Upgrade lighting levels and energy efficiency	\$521,589		
		<b>9.2</b> Upgrade exit signage (code)	\$12,000	<b>9.4</b> Improved electrical distribution and circuit capacity	\$126,874		
<b>10</b>	<b>Technology</b>	<b>10.1</b> Upgrade telecommunications infrastructure (code)	\$144,520	<b>10.3</b> Expand and upgrade intrusion detection system	\$19,500		
		<b>10.2</b> Upgrade telephone to new system provider	\$7,500	<b>10.4</b> Upgrade and expand video surveillance system	\$98,000		
				<b>10.5</b> Upgrade data communications/Wi-Fi system	\$140,970		
				<b>10.6</b> Upgrade front door intercom	\$6,000		
				<b>10.6</b> Upgrade PA system and integrate with telephone	\$42,291		
				<b>10.7</b> Provide new wired or wireless clock system	\$16,916		
				<b>10.8</b> Upgrade audio visual system	\$200,000		
<b>11</b>	<b>Code</b>					<b>11.1</b> Perform complete building survey if major project	\$15,000
		Trade Costs: \$536,317 General Conditions & Project Requirements (17%): \$92,783 Overhead & Profit (7%) \$44,037 Design Contingency & Escalation to Construction Start (17.9%)		Trade Costs: \$7,276,454 General Conditions & Project Req.(17%): \$1,258,826 Overhead & Profit (7%) \$597,470 Design Contingency & Escalation to Construction Start (17.9%)		Trade Costs: \$6,090,020 General Conditions & Project Req. (17%): \$1,053,537 Overhead & Profit (7%) \$500,052 Design Contingency & Escalation to Construction Start (17.9%)	
		<b>SUBTOTAL: \$796,557</b>		<b>SUBTOTAL: \$10,807,240</b>		<b>SUBTOTAL: \$9,045,072</b>	
		Escalation (1 year/4 %) \$31,862 <b>Total Construction: \$828,419</b>		Escalation (6 years/26.5 %) \$2,863,919 <b>Total Construction: \$13,671,159</b>		Escalation (6 years/26.5 %) \$2,396,944 <b>Total Construction: \$11,442,016</b>	



## Section 5a            50-Year Long Term Plan Overview

### Site Confirmation

#### Approaches

There are several approaches to long term planning for the Concord Middle School. The first is to retain and update the Sanborn and Peabody facilities indefinitely into the future. There is consensus that it is inefficient, impractical, and costly to continue operating two campuses instead of one, so this approach is documented as the “Existing Condition” but not pursued further. The two promising approaches are to either expand one of the buildings or to build a new middle school.

An idea put forth recently was to adapt the smaller Peabody building as the sixth grade school and larger Sanborn as the seventh and eighth grade school. This would perpetuate the disadvantages of operating two campuses, and shortchange the sixth graders, stepping back from the types of facilities they experienced in elementary school with auditorium and full-size gymnasium.

#### New or existing site

A new site would simplify construction of a new school since it would have no impact on continued occupancy and operations at the Sanborn and Peabody sites. Concord Public Schools has evaluated several new site opportunities and determined that a suitable new site is not available.

The Sanborn site is 31.29 acres and the Peabody site is only 7.99 acres. Therefore, considering the space requirements for the building footprint, paved drives, parking, and playing fields, Sanborn is the preferred site for either renovation and expansion or for construction of a new building. Peabody then becomes an asset to the Town for repurposing. If Sanborn is expanded, construction will be more disruptive to continued school operations than building an adjacent new school. Comprehensive renovations will be phased and use of the three modular classroom units impacted. If a new building is constructed on the same site, the combined building footprints will compromise full utilization of the site during construction, particularly the playing fields.

### Design Parameters for Sanborn Expansion or Replacement

#### Size of student body

The current student population of the two schools is about 700 students for grades six through eight. Demographic projections suggest this will remain relatively constant for the foreseeable future. Therefore, Sanborn will expand, or a new building will be built, to accommodate the combined facilities of the two campuses, while eliminating duplicated program elements.

### Maintenance

There are routine annual maintenance costs budgeted for any school building, which will climb as the building ages. With age also come major systems replacements and teaching/technology advances. If a new building is anticipated in the short term, for instance within the next 10 years, the higher maintenance budget for major improvements might be deferred. For any part of Sanborn to be retained in a long term plan, there is a point at which continuing to maintain an outdated structure has diminishing returns, save for a renovation project on the scale of a new building.

### Operating costs

New buildings take advantage of new technology. This is particularly significant for building systems in terms of design, efficiency, reduced size, lower fuel costs, and renewable energy. Sanborn's systems vary from half-century old piping to relatively new boilers. There is essentially no air conditioning, and ventilation and temperature control are sub-standard, particularly in the auditorium and gymnasium. Systems upgrades for expansion need to be compared with costs in a new building.

### Construction costs

Construction costs for renovation/expansion and for a new building deserve careful comparison. For expansion, higher maintenance costs and upgrades to systems will offset the anticipated cost advantages of working with an existing building. Additionally, the scale of the comprehensive renovation project will trigger additional code compliance requirements (as if for new construction) when retrofitting the existing building. This includes the accessibility, life safety, and seismic codes. On the other hand, a new building will incorporate current best practices for design and building systems, and inherently comply with current codes. A new building may carry more significant site development costs due to complete reorganization of structures, site improvements, and playing fields. Experience in Concord with other school projects suggests there will be high hazardous materials mitigation costs both for major renovation and for demolition/disposal.

### Program and future needs

Perhaps the most important factor influencing the “expansion or new building” decision is the anticipated curriculum needs decades from now, and which option might best satisfy them. The Existing Conditions Report and the prioritized 10-Year Maintenance Plan deal with the bricks and mortar needs of Sanborn and Peabody. Envisioning the future academic

environment for the 50-Year Long Term Plan requires foresight into what kinds of teaching spaces will be flexible enough to adjust to new teaching philosophies, subject matter, and presentation technology. What resources will faculty and support staff need? And what goals will parents and the Concord-Carlisle School District have for their children and the school system? The next section of this study reports on informational meetings with faculty, support staff and parents that explored these questions.

### **Design Options**

Following discussion of the informational meetings, space program, and impacts of remaining in the two buildings, the last three parts of this Section 5 present three long term concept design alternatives. Option 1 renovates the existing Sanborn building and adds a major new classroom wing. Option 2 more aggressively removes the outdated classroom wing and builds a new larger wing the opposite side of the auditorium and gymnasium, which are retained and renovated. Option 3 is a totally new school that strictly meets the MSBA program, with a variation that adds an auditorium and larger gymnasium.



## Section 5b            50-Year Long Term Plan Informational Meetings

To better understand the design goals for the expanded Sanborn school or a new facility, Diana Rigby, Concord Public Schools Superintendent, and John Flaherty, Deputy Superintendent of Finance & Operations, took FAA representatives on tours of the new Willard Elementary School and the new Concord Carlisle-Carlisle High School. Heather Bout, Chair of the CMS Facility Study Committee facilitated discussion sessions with CMS support staff, with faculty, and with a parents group. These groups were asked to comment on what does and does not work well at Sanborn and Peabody, and what long-term goals they have for a renovated and expanded building or a new school on the Sanborn site.

### Tour of the Willard Elementary School



*Willard Elementary School*



*Willard Media Center*



*Willard Auditorium*

The new Willard Elementary School has 500 students, an area of 82,000 SF, and was completed in 2009. It was built immediately adjacent to the old school building which was

demolished. The new building complies with criteria of the Massachusetts Collaborative for High Performance Schools (MA CHPS) and is LEED certified.

Primary observations relevant to the middle school design included:

- Earth tones are used as the color palette of materials.
- Admin offices and meeting rooms are located in close proximity to the entry.
- Media Center is located at the center of the school at entry, as at new High School.
- The school is filled with natural light and outdoor views via windows and skylights.
- While the platform in the auditorium is designed flat in Willard Elementary School, it should be higher than audience seating in the Middle School.
- Auditorium seats one half the school population. Gymnasium is used for entire school assembly.
- All K-12 classrooms have tutor rooms.
- Furniture in classrooms is moveable and recyclable.
- All classrooms are carpeted (advantageous for hearing impaired). Linoleum flooring is used for the common spaces.
- Cafeteria operates with up to 6 sittings a day with 80-student capacity in each session. Cafeteria is in close proximity to the outdoors.
- Fire-rated glass should be used with more sensitivity in the Middle School.
- Trough sinks and blow driers are provided in the bathrooms. No paper hand towels are used.
- Nurse's room has an office desk and two beds. The main room is connected to a private room, which can be made dark, with fully accessible rest room.
- Bus loop and parents' loop are separate.
- Digital / Mobile technology is well integrated into the classrooms. Middle School should be all electronic with no bulletin boards.
- When entering, a swipe card is needed for both front and back doors of the school. Faculty members and students use the same entry/exit door.
- Computer labs should also be designed as innovation spaces. They should include steam labs and 3D printers.
- Computer lab should be located next to the library (media center).
- Gymnasium for Middle School should provide for all types of sporting events. Direct connection to outdoor playing fields is important.
- Students in Elementary School do not change clothes so there are no lockers room, but this should be discussed for Middle School design.
- Displaced air and air-conditioning systems are used at the school; the roof has solar panels.
- Concord has sustainable principles. Middle School will need to score higher than Willard's 66 MA CHPS points.
- The school operates on about one third of conventional energy cost.
- Willard Elementary School was not built through the MSBA process, allowing for upgrade of certain materials and finishes.

### Tour of the Concord-Carlisle High School



*Concord-Carlisle High School*



*CCHS Lobby and Learning Commons*



*CCHS Auditorium*

The new 1,225-student Concord-Carlisle High School is 240,000 SF in area and opened in 2015. The adjacent existing building was demolished during Phase 2. The school is MA CHPS Verified.

Primary observations relevant to the middle school design included:

- Like the Willard Elementary School, the central entrance lobby is adjacent to the Learning Commons (library/media center) and the Main Office (administration).
- The Auditorium is a theatre with an orchestra pit and steep seating that seats 675.
- The mechanical system is mostly displacement air with air conditioning throughout.
- Landscape design includes bio-swales.

- A major feature, like Willard, is natural light and views to the outdoors.
- The intent is a “no paper” on the walls environment with flat screens throughout the school.
- The building is extremely energy efficient, with low natural gas consumption better than electricity. A “dashboard” screen in the lobby monitors weather and sustainable energy performance of the building in real time.
- Concord Public Schools is contracting out more of operations and maintenance due to increasing complexity of the energy-conserving building systems.
- The Dining Commons serves 3 sittings, and is used for other curriculum programs.
- Music and Band are strong programs, as with the entire Concord school system.
- MSBA only approved funding toward a single gymnasium. Concord separately funded a second practice gymnasium and multi-purpose room that were required to be fully separated from the rest of the school.
- The main gym is the only space that seats the entire school population, with bleachers and movable seats on the court.
- The boilers are mounted on the roof; this favorably reduced the area of the building for MSBA calculations.
- The High School was built to MSBA standards.

### **Meeting with Concord Middle School Support Staff**

#### *Kitchen area:*

- “U” shaped serving (similar to Weston High School) with stations in food court format.
- An additional “Grab & Go” section (similar to seven eleven) with pre-made food.
- Pizza ovens
- Allergy free zone (example: Mass General Hospital) as a separate nook in which all the food is labeled
- Real plates and silverware
- Composting
- Adequate number of hand sinks
- Outdoor seating
- Ice machine
- Deli section with panini press
- Ethnic foods
- Good lighting in kitchen
- Large storage & walk-ins
- Outdoor space close to cafeteria – mix of hard surface & green space
- Flexible cafeteria space enabling school events, gatherings
- Cafeteria location in proximity to loading dock / custodial
- Properly laid out loading dock

Some observations regarding the kitchen's operational cycles:

- 140-school lunches in Sanborn and 110-school lunches in Peabody are served in one sitting
- There are three lunch sittings which work well. Students eat by grade level.
- Deliveries for milk are twice a week, general food items are once a week and drinks are once a week.
- Trash is collected twice a week and recycle is once a week.

Custodial area:

- Separate bathroom for support staff
- An office area / meeting area
- More storage area near cafeteria, kitchen and loading dock
- Heated out-buildings for grounds equipment.
- Deliveries for custodial occur a couple times a month

Outdoor site considerations and parking:

- Enough space for snow removal
- Lower or sloped curbs to protect plows
- Ample parking, enabling school events in evenings
- Playing fields with proper drainage
- Separate bus drop-off

Interior finishes:

- Solid, durable, sustainable flooring, like linoleum
- Concrete block or tiles for wall surfaces (no gypsum wallboard)

Mechanical system:

- Future mechanical system with a combination of solar, heat pumps and gas
- Air handling Units (AHU), and displacement air

Other discussion items:

- More digitized screens should be included for displaying students' work.
- There should be shut down system so that administration can isolate classroom areas when needed, such as for evening events.
- Design with rectangular, efficient geometry facilitates cleaning.
- Auditorium design should provide flexibility for different uses.
- Steam Maker Spaces should be included.
- At least three gathering spaces should be planned. (gym and auditorium should be flexible enough for school gatherings)

### Meeting with Concord Middle School Faculty



*Input meeting with Concord Middle School faculty*

#### Common teaching facilities:

- Classrooms at Sanborn building should converge in one area, which would provide a space for organic collaborations and interdisciplinary studies in an intimate environment.
- Classroom PODS could be designed for different grade levels and connected by common use zones such as art, music and gym.
- PODS should also provide enough space for two teaching groups per grade.
- Design library as the heart of the school, to emphasize to students its importance as a resource and media center.
- Include Maker Space for STEAM projects.
- The overall design should reinforce a sense of close-knit community. The two separate school buildings make this difficult.
- Integrate outdoor areas into the overall school experience.
- The school may need a space for CASE (Concord Area Special Education) program in the future. Administration should identify the services provided and space allocation.
- The school administration will identify the overall teaching methodology that the school will follow in the future.

#### Band area:

- Currently there is no dedicated orchestra or choral rehearsal space. These spaces should be designed separately.
- Entire school should fit into auditorium and entire band should fit on stage platform.
- Music program is well-supported in Concord Middle School.
- Improve sound proofing of practice rooms.

- Music instruments need short term storage area. Some instruments are left temporarily in corridors creating an egress issue.

Additional comments, forwarded to FAA team after the meeting included:

- There is lack of facilities for general music classes and storage space. Combined band (Peabody and Sanborn) barely fits in the Sanborn band room and does not fit on the stage. There are no dedicated practice rooms for individuals / small ensembles. There is insufficient office space for teachers.
- In ideal layout, band room is connected to small ensemble room with practice rooms and student instrument storage. There should be two musical classrooms, one of which could be a music lab. Band room is recommended to have easy access to auditorium. Instrument storage should be close to auditorium for easy movement of large equipment.

Science

Additional comment, forwarded to FAA team after the meeting included:

- Need a sink and ice maker in the Sanborn science prep room, and an ice maker in the Peabody prep room.

Technology:

- Currently, there are mounted ceiling projectors in the classrooms.
- Wireless Apple TVs should be integrated into the classrooms.
- The school should have a strong infrastructure for technology.
- Include flat screens and Bluetooth technology.
- Board and projector could work together as the teacher writes and projects at the same time.
- Provide maintenance room for tech repair.
- “Geek Squad” classroom could be included. Students would earn community points by teaching technology to other students.

Nurse’s room:

- There should be a separate room for private conversations, inside the nurse’s room. While the nurse’s room in Sanborn building meets this requirement, Peabody does not.

Additional comments, forwarded to FAA team after the meeting included:

- Sanborn: Need improved fixtures/faucets; no air conditioning for students with chronic conditions such as asthma.
- Peabody: Need increased cabinet and closet storage; also separate office for private calls and meetings with students and parents.

PE department:

- Fieldhouse (example: Waltham Middle School) could be considered as a new program item. Beside school use, this facility could be rented for additional revenue.

- Large spaces are needed for storage.
- Fitness center could be designed for both students and staff. Gym membership could be integrated.
- Provide well ventilated locker rooms.
- Gym should be divisible into two areas for multiple classes at the same time.

FACS/ Health (Family and Consumer Sciences):

- Design six full kitchens with one of them meeting ADA requirements.
- Provide ample storage.
- Refrigerator should have proper capacity when bringing the two schools together.
- Include sewing machines.
- Classroom should have kitchen & storage area, and a part of the classroom should function as a food lab.
- Floors should not be carpeted.

Additional comments, emailed to FAA team after the meeting included:

- Space for washer and dryer is critical.
- The FACS room should be in a location that is conducive to bringing in large amounts groceries. Ground floor is preferable.

Art Room:

- Include a dedicated gallery space.
- Provide separate room / facility for kilns & storage of clay & clay projects.
- Classroom should have adequate natural light, preferably north light.
- The non-load bearing wall in Sanborn's art room could be removed as a short-term space improvement.
- Provide adequate number of sinks.
- Include art faculty office area.

Additional comments, emailed to FAA team after the meeting included:

- There should be a dedicated storage space for tools, materials. This could be within classrooms as short term use; adjacent to classrooms as longer-term use, or a shared space if the rooms are close together.
- Include a minimum of six sinks per art classrooms in the design. Sinks should be peninsulas that project into the room space with a sink on either side. Cabinetry with doors above the counter for storage should be integrated. Provide open shelving for 3-D storage.
- Sinks, tools and materials must enable wheelchair access.
- Classroom should be flexible to allow for variety of seating / working configurations. One large rectangular space probably works best for classroom configuration. Art rooms should be in proximity to each other.

- Design integrated built in cabinets for student backpacks, books, and personal effects.

Other discussion items included:

- Teachers' room should have sufficient ventilation and natural light. A comfortable lounge room could be added.
- Consider more sinks for teachers' room and art room.
- Science lab should be well ventilated and designed with thicker walls.
- There is currently very limited space for gatherings in the mornings. These spaces could be designated by grade level. Separate entrances/exits for each gathering space would be ideal.
- Quick and easy exit/entry should be designed in balance with the security requirements.
- Performance Art Center could be included in the school program and this facility could serve the community as well.
- Consider places for student 'downtime.'
- Safety and security issues should be well thought through.
- Provide dedicated stations throughout building for recycling / composting.
- Each department head office should have adequate meeting and storage space.
- Guidance room ideally should be next to nursing room and school psychologist. It should also be centrally located for easy access by students.

***Comments from teachers who travel between schools***

Primary concerns from faculty members teaching classes at both Sanborn and Peabody were submitted after the meeting. Identified inefficiencies and hardships included:

- Provision of more than one classroom.
- Attend both Back to School Nights.
- Lose planning periods and lunch blocks during travel.
- Not able to help a student or attend a morning parent meeting because of being at the other building.
- Not able to talk with a student after class because of commitment at other building.
- Examples of tasks that must be done twice:
  - Make classroom bulletin board.
  - Unload and organize copy center box.
  - Set up two classrooms in September.
  - Clean and organize two classrooms in June.
  - Set up two classrooms for special activities.
  - Build two cities (Spanish and French teachers)
  - Keep two sub-folders current.

- Can be numerous trips between buildings in a single day.
- Load and unload car multiple times with boxes of supplies and materials for each class.
- Halt student projects when essential materials are in the other building.
- Not having an assigned classroom.
- Shortchange classroom set-up time before certain faculty meetings.
- Additional communications/emails about students' issues; must check in with guidance in two buildings.
- Impacts on faculty time for number of classes taught, non-classroom duties, opportunities to connect with other teachers.

### Meeting with Parents Group

#### General:

- Recent middle school projects about the size of CMS had budgets in the \$60-70M range.
- The Willard and CCHS projects will inform design of CMS.
- Tour other middle schools to see how they addressed challenges.

#### Site:

- Need outdoor spaces for teaching and non-athletics gathering.
- MSBA gives a percent of funding for site work, but this does not include playing fields.
- Sanborn has a dedicated cross-country trail through the woods. This should be retained and could be associated with a new adjacent Rail Trail. This suggests a rear school entrance with bike racks.
- Improve Sanborn parking for student pickup. Will need additional staff parking.

#### School design:

- The building must be “green” and flooded with natural light. MSBA uses MA CHPS program (or LEED).
- Provide space for students to congregate outside and inside, particularly after being dropped off.
- The concept of “Outdoor Teaching Space” was mentioned multiple times.
- How should middle school classes mix? In cafeteria sittings? Should classroom pods be divided by grade with multi-grade common spaces between?
- Build in opportunities for future flexibility – large structured spaces that can be partitioned freely. Wider corridors can provide for flexible use and collaborative learning.
- How are middle school challenges different? Sixth grade students are “children” straight out of elementary school, but eighth grade students are more mature and

anxious to move on to high school. Must relate to context of Concord families; every middle school will respond to different community needs.

- CMS is built around teams, or communities, where faculty teaches the whole child with core curricula, arts/music, and PE. This is a special time in the intellectual growth of this age student.
- Students strongly associate with being a “Sanborn kid” or a “Peabody kid.” How will this change to class associations with a single building? Larger grade levels in one building should help students grow. Three elementary schools will continue to feed into the single middle school.
- School must be safe, including addressing inter-grade or sexual intimidation.
- School needs to be inspiring and unite the student body. Site challenges can be opportunities for unique solutions.

Dedicated teaching spaces:

- Provide STEAM appropriate science labs.
- Would like to see shop program.
- Allocate “Maker” spaces – tools for students to be entrepreneurial and creative.

Common Spaces:

- Don’t lose auditorium and “stage.” Auditorium also used by elementary schools.
- Explore upgraded food service with locally grown farm products. Provide quality space for food preparation.
- Discussion about evolution of library into media center; combine information and technology with books and reading nooks.
- Suggest global connect area in media center with large screen for a group connecting to the outside world.

PE department:

- Sanborn gym still too small for championship type contests, compared with some other middle schools. Would like upgraded baseball diamond with dugouts and stands for major games.
- Playing fields/diamonds will remain adaptable to multiple sports. Provide outside areas for both competitive athletic teams and for less athletically inclined students.
- Middle school has less recess time than elementary school. Outdoor spaces should be for hanging out as opposed to playing tag.

Other discussion items included:

- Expectation is to work toward an April 2018 Town Meeting vote to proceed with design and construction.
- There will be numerous working meetings with MSBA about the merits of Sanborn expansion or a new building. A strong case would be necessary for a new school.

- Intuitively a new school should be more practical and operationally superior to an expanded Sanborn building. Research convincing rationale to justify a new school to MSBA, and at Town Meeting, as the most financially viable option.
- Peabody as a surplus property asset to the town is part of the economic justification. Include this as part of the comprehensive plan. CMS is also the last school level addressed for major facility improvement.
- The combined buildings will result in reduced faculty and staff, to be planned through attrition.
- There was a discussion about planning for unexpected growth in the student population.

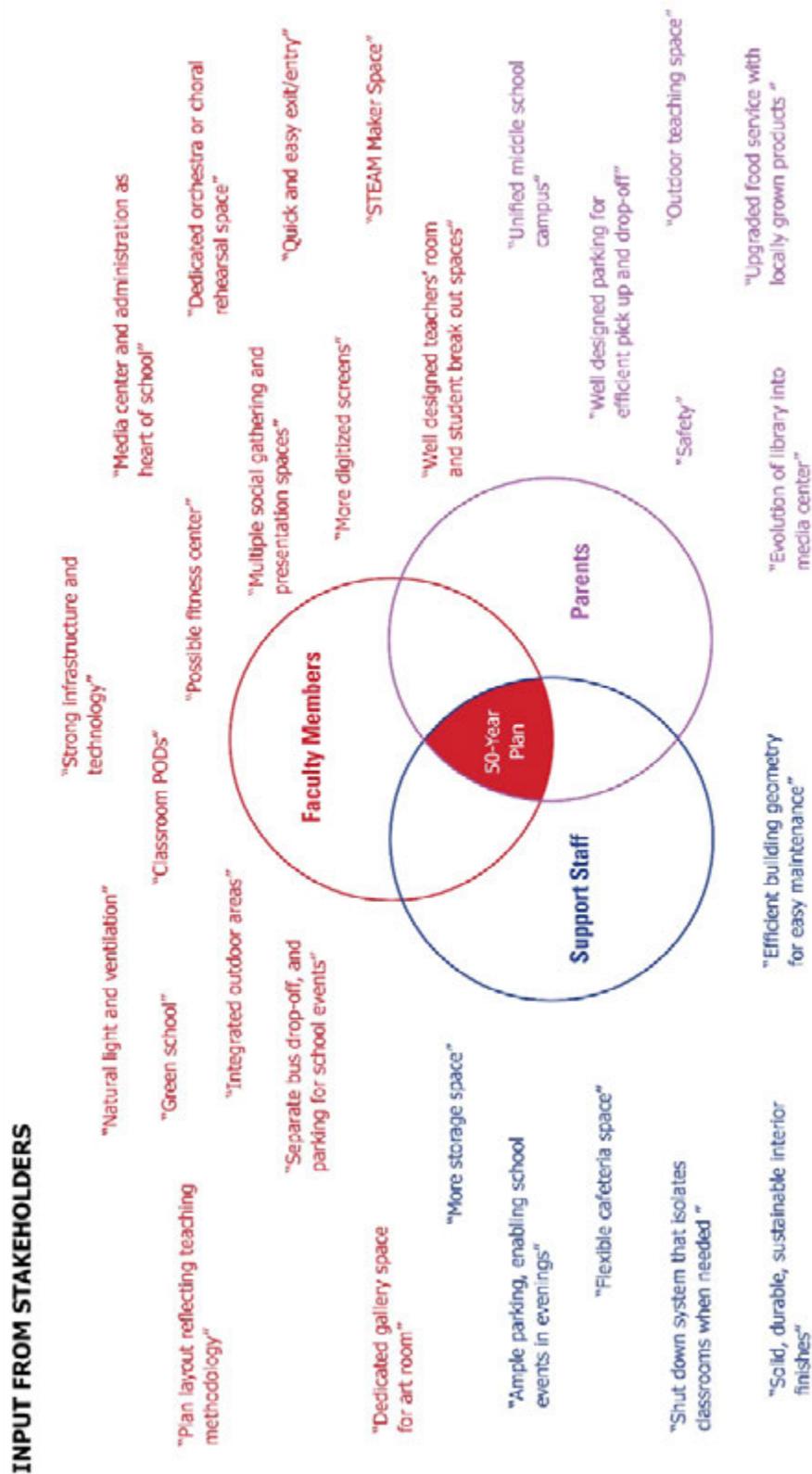
### ***Comments submitted by parents unable to attend the meeting***

#### Response #1

- The town has a new high school building and relatively new elementary school buildings, so to us it follows that the town should invest in a new middle school building
- Trying to patch and / or renovate two old middle school buildings is inefficient and costly, and the results will be disappointing when compared to our newer school buildings
- The planning for a new middle school facility should start now, given the long lead times involved
- We should replace Peabody and Sanborn with one - a unified middle school campus
- Unifying the middle school will resolve other issues - the different start times, dividing students between the two campuses, more efficient use of staff / resources, etc
- If the new unified campus were to occupy either of the existing Peabody or Sanborn sites, then the building footprint would be larger than at the moment, necessitating possibly a loss of playing fields - so that the unused site would then have to be converted into more playing fields, which seems eminently do-able.
- We'd support the investment into a new, unified campus, even though it looks doubtful that our children (youngest of whom is seven) would benefit

#### Response #2

I didn't make it to the meeting last night but as a parent who has had several kids in or through middle school I want to make sure they an outdoor play area is part of whatever plans are made – preferably with something to do other than standing around. Middle schoolers still need to be active during the day.





## Section 5c                      50-Year Long Term Plan Program

Envisioning a program for an expanded or new Concord Middle School that will be relevant over the next 50 years will require a facility designed with great flexibility. The teaching environment and technology are constantly changing and the physical plant will need to adapt. The recently built Willard Elementary School and Concord-Carlisle High School are excellent benchmarks for future planning. Meetings during this study (Section 5b) with parents, faculty and support staff inform our program development for the beginning of the 50-year Long Term Plan.

The Massachusetts School Building Authority (MSBA) publishes standards for curriculum and common spaces, with square foot allowances for different size student bodies. They are a guide for what portions of a proposed public school project may be included in MSBA's funding program. Additional program spaces included in a design are to be funded locally. For instance, Concord Middle School has an exemplary music and band program that is featured both at Sanborn and Peabody with additional program needs. Sanborn has a high school type auditorium that would not be funded by MSBA at the middle school level – the cafeteria is expected also to serve as a meeting and performance space. Retention of these spaces would presumably require additional local funding. It is noteworthy that the Willard Elementary School was built exclusive of MSBA funding, which gave wider latitude in design of program spaces, and quality of finishes.

Since application for MSBA funding is anticipated, it is informative to compare the MSBA program standards for a student body of 700 (Sanborn and Peabody populations combined) with the program areas currently provided at Sanborn (which serves about 400 students). For renovation/addition Options 1 and 2, we will compare MSBA with just Sanborn to determine what expansion is necessary there to absorb Peabody. Here is a comparison of the MSBA standards for 700 students, by major program categories, with existing Sanborn. Note that a combined square footage is given for Sanborn for the first three teaching categories since it is difficult to break out these spaces.

<u>Program Category</u>	<u>MSBA Net SF</u> <i>700 students</i>	<u>Sanborn Net SF</u> <i>400 students</i>	<u>Sanborn + or -</u>
Core Academic Spaces	31,480	—	
Special Education	8,050	—	
Vocations & Technology	6,400	—	
Subtotal Sanborn	<i>[45,930]</i>	22,552	( - ) 23,378
Art & Music	4,600	6,102	1,502
Health & Physical Education	8,400	13,272	4,872
Media Center	4,405	3,676	( - ) 729
Dining & Food Service	9,558	5,345	( - ) 4,213
Medical	610	596	( - ) 14
Administration & Guidance	3,500	2,787	( - ) 713
Custodial & Maintenance	2,175	1,850	( - ) 325
Other (Sanborn Auditorium)	—	5,169	5,169

<b>Total Building Net Floor Area (NFA)</b>	<b>79,178</b>	<b>62,706</b>	<b>( - ) 17,829</b>
<b>Total Building Gross Floor Area (GFA)</b>	<b>115,000</b>	<b>84,054</b>	<b>( - ) 30,946</b>
Grossing Factor (GFA/NFA)	1.45	1.34	

Overall, the existing Sanborn building for 400 students is 84,054 GSF (gross square feet), which is 30,946 GSF smaller than the MSBA standard of 115,000 GSF for 700 students.

Some important observations are:

- For the major academic spaces (Core, Special Education, Vocation/Tech), existing Sanborn is 23,378 NSF (net square feet) below of the MSBA standard. This is the primary shortfall when the two schools are combined, and represents a second classroom wing about the size of the current 2-story Sanborn wing.
- Note that the Sanborn net area for classrooms does NOT include the portable modular units. Each of those three 2-classroom units currently in use is about 1,800 SF. This represents an additional shortfall of 5,400 SF for classroom space in existing Sanborn.
- The Art & Music department in Sanborn is already larger than MSBA, before adding current space in Peabody.
- Sanborn’s full size gymnasium, locker rooms and support spaces are 4,872 NSF larger than the MSBA 8,400 NSF standard. This does not include the spectator balcony which is currently used for storage.
- Sanborn’s Dining and Food Service are understandably 4,213 NSF smaller than the MSBA 9,558 standard, serving 400 rather than 700 students.
- Sanborn has a 5,169 NSF Auditorium facility that is not included in the MSBA standards.

The gross area of Peabody is 56,388 GSF. Added to the 84,054 area of Sanborn, we have 140,442 GSF for the combined CMS. This is about 25,000 GSF larger than the 115,000 GSF for MSBA’s 700 students, and is accounted for by the inefficiency of operating two buildings and existing program spaces that are larger than, or not included in, the MSBA standards.

For Option 3a, construction of a new school on the Sanborn site, the MSBA standards will constitute the base area program. Additional or larger spaces are added in Option 3b, principally an auditorium and enlarged gymnasium, that presumably will not be included in the calculation for MSBA partial funding.

A further breakdown of MSBA and existing Sanborn program areas appears on the distribution “block diagrams” that follow.



*Sanborn Gym (oversize for MSBA)*



*Sanborn Auditorium (not funded by MSBA)*



*Classrooms are largest addition in merger*



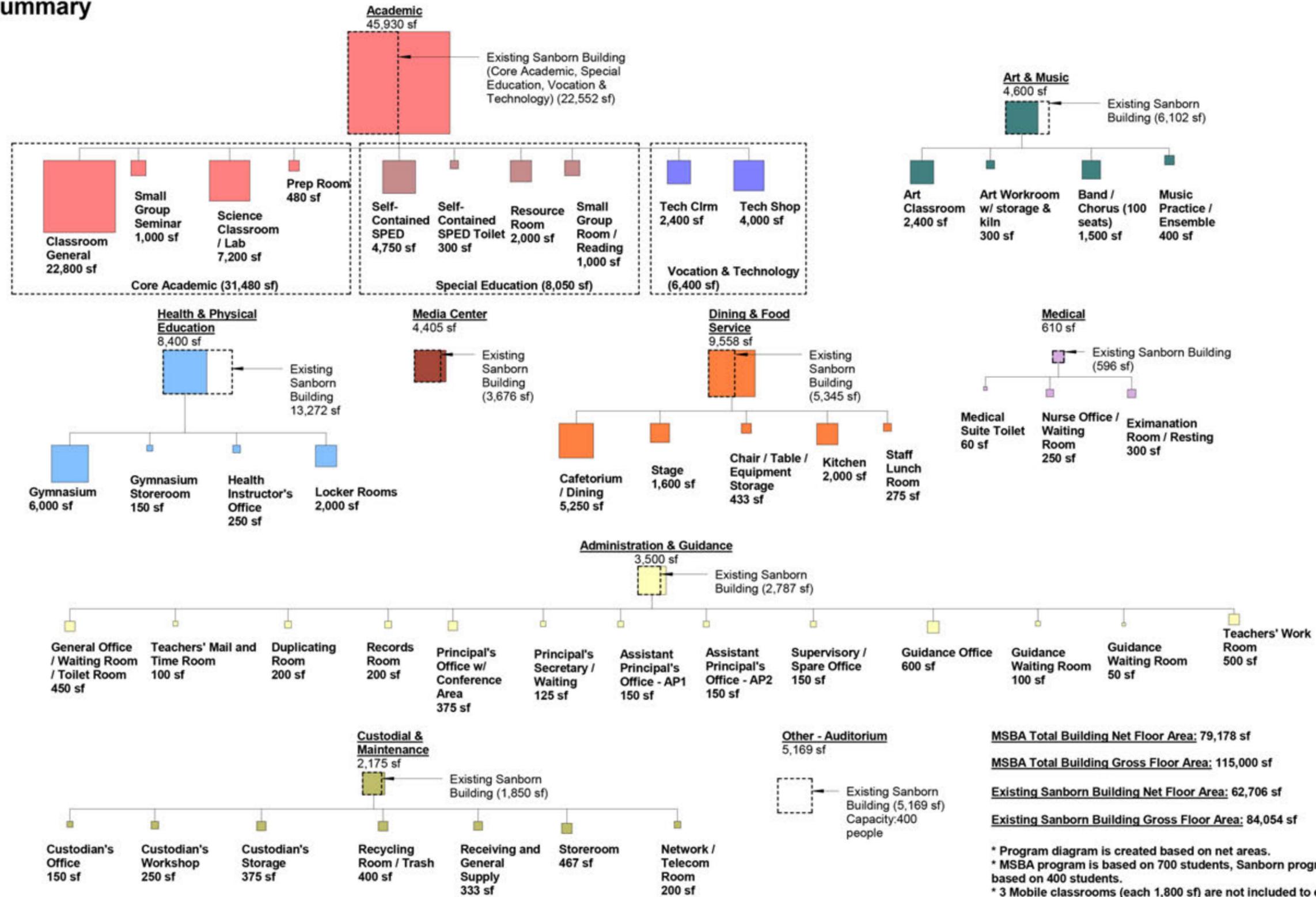
*Cafeteria will expand with merger*

### **Parking**

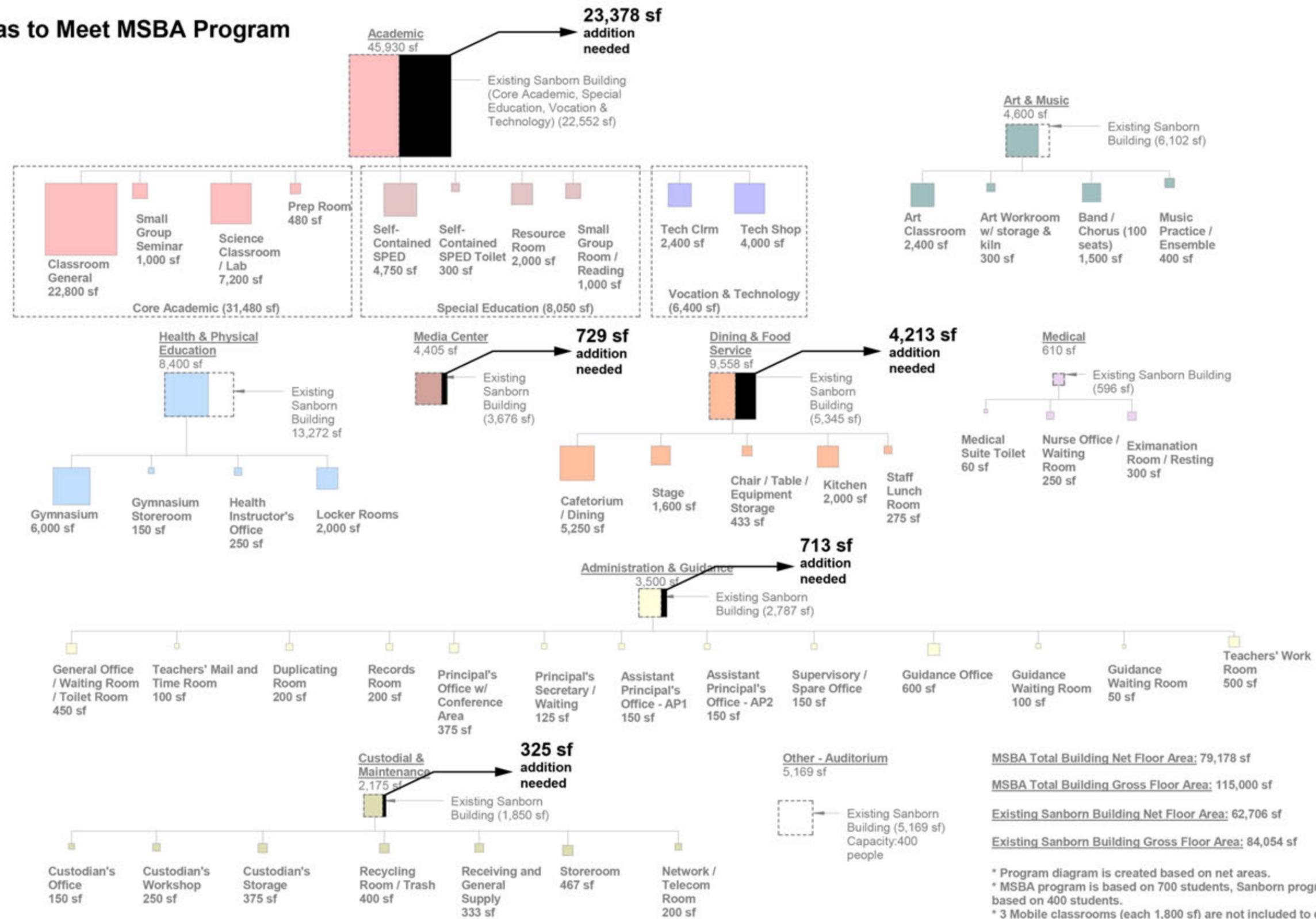
Town of Concord zoning regulations require one parking space for each faculty or staff member plus 1 space for each classroom. Sanborn has 65 faculty and staff and 32 classrooms. Peabody has 56 faculty and staff and 25 classrooms. This adds up to a total of 178 parking spaces for the combined campus. A minimum of 5 spaces must be ADA accessible, with one of those sized to accommodate a van.



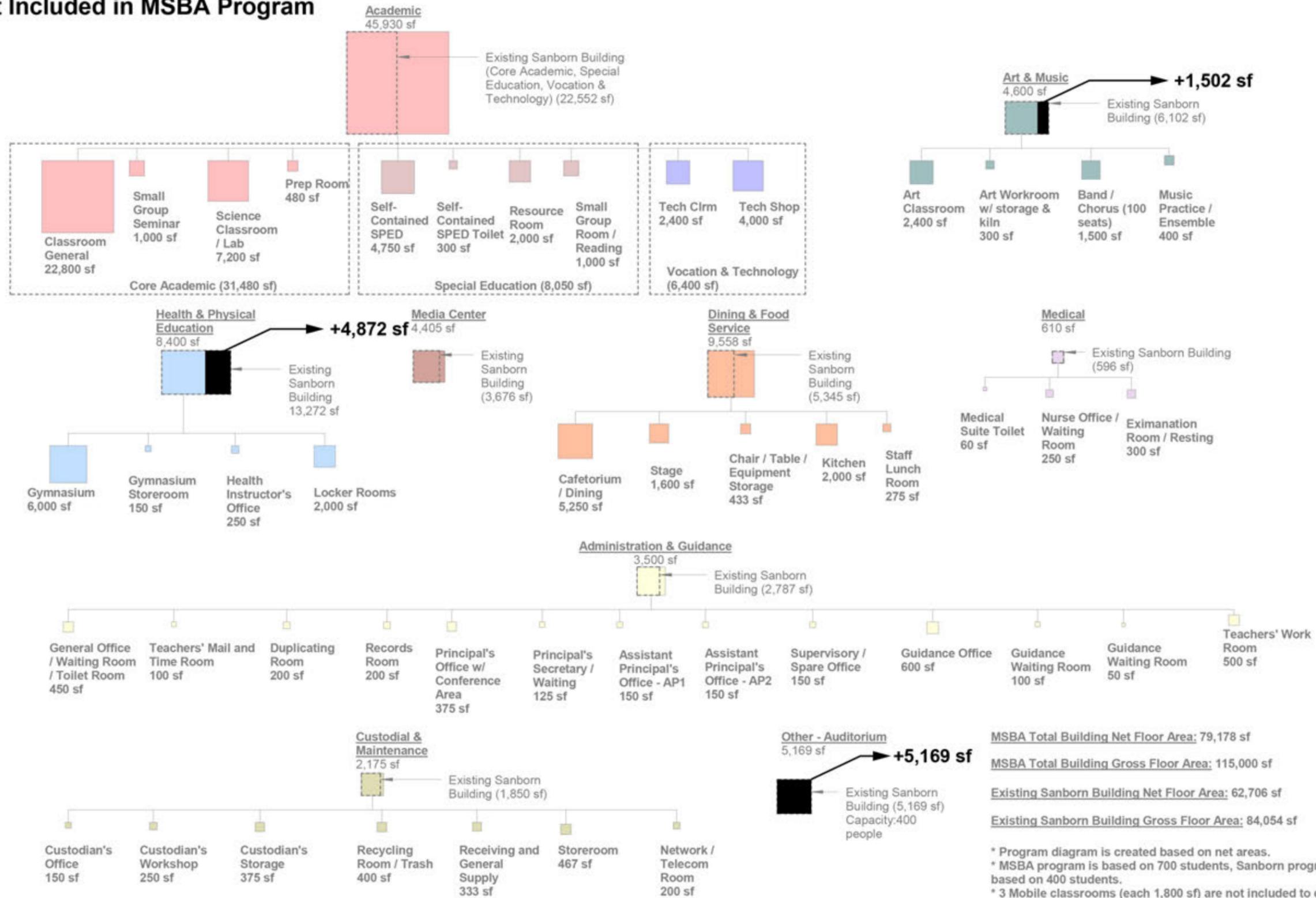
# MSBA Space Summary



# Additional Areas to Meet MSBA Program



# Exceeds or Not Included in MSBA Program



# DUPLICATES OF COMMON SPACES



First Floor Plan

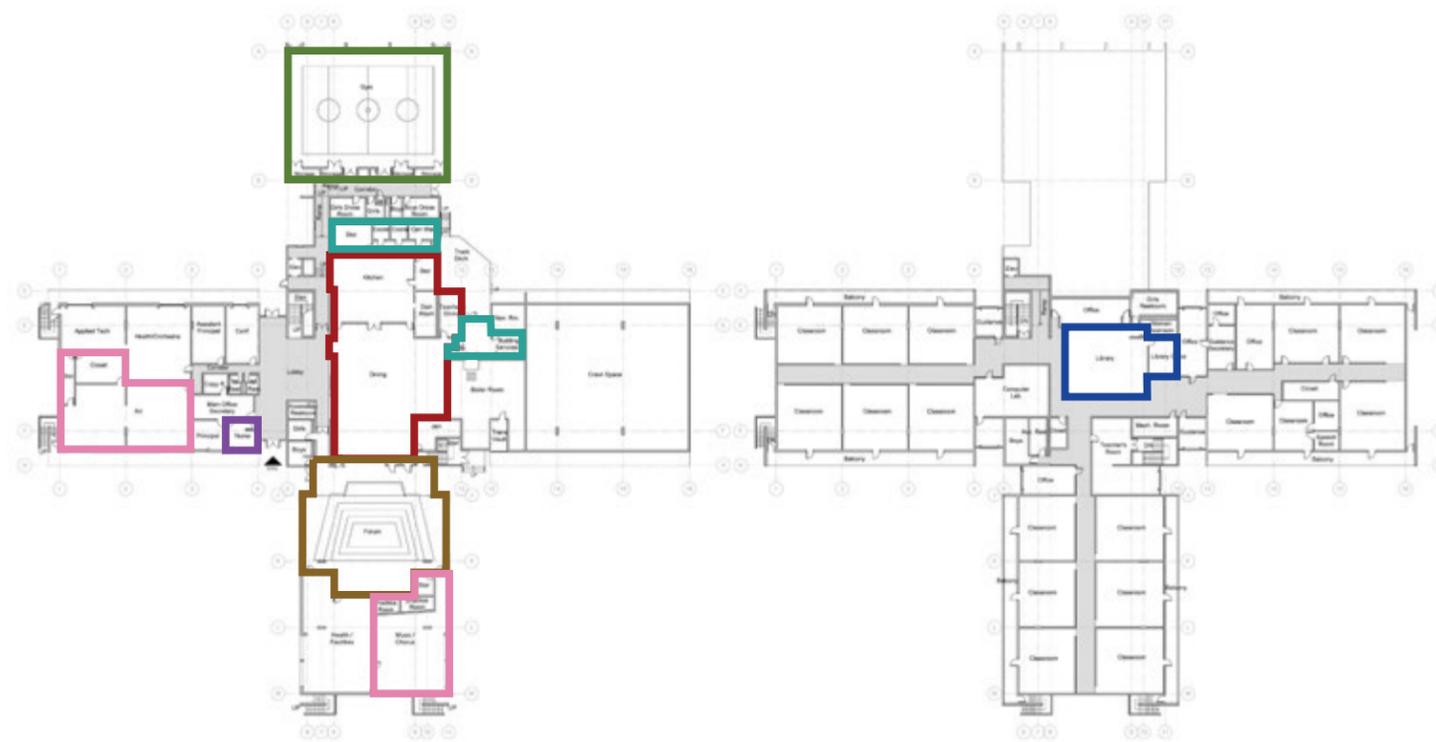
Sanborn Building



Gym Level Lower Floor Plan



Second Floor Plan



First Floor Plan

Peabody Building

Second Floor Plan

Duplicates of Common Spaces - Legend	
Gym	Arts & Music Room
Cafeteria	Nurse's Room
Auditorium / Forum	Custodial / Maintenance
Library	

**Existing Sanborn GFA:** 84,054 gsf

**Existing Peabody GFA:** 56,388 gsf

**Duplicates of Common Spaces:** 51,335 nsf

## **Section 5d**            **50-Year Long Term Plan** **Existing Condition:** **Long Term Occupancy of Sanborn and Peabody**

Retaining and operating two campuses is not a viable option, but consideration of disadvantages and long term costs make it a valuable benchmark for comparison with the various concept design options. The 700 students would remain split between Sanborn (400) and Peabody (300), with consequent duplicated spaces and staffing. The combined area of Sanborn and Peabody is 140,442 GSF, or 145,842 counting the modular classrooms. This compares with the 115,000 GSF allocated as the MSBA standard for 700 students.

### **Architectural design**

Long term occupancy would require major investment in the two buildings, including all the action and optional items in the 10-Year Maintenance Plan. The cost of this amount of work would trigger code compliance requirements, that are the same as for new construction, for accessibility, life safety, and seismic upgrades (see Section 4a). Interior renovation would be necessary throughout both buildings to adapt, as best the existing buildings allow, to changing teaching and infrastructure needs. Due to Peabody being built as an elementary school, renovations there will be extensive requiring new classroom partitioning (isolation), an enlarged gymnasium, and an auditorium.

### **Site development**

Site improvements in support of internal renovations would be modest, but local approving authorities might request upgrading of site systems if the cost of the internal renovations meet a threshold of value set by the authority. Parking on the two sites would be increased to meet the Town of Concord zoning requirements noted in the 10-Year Maintenance Plan.

### **Structure**

Structural considerations would primarily impact an enlarged gymnasium and a new auditorium at Peabody. Expanding the gymnasium would likely trigger seismic upgrades, suggesting a new facility. The new gymnasium and auditorium should be structurally independent of the existing school building.

### **Building systems**

Full renovation of Sanborn and Peabody for long term occupancy would require significant upgrades to the mechanical, electrical, plumbing, and (new) fire protection systems. Some of these improvements are included in the 10-Year Maintenance Plan (such as automatic sprinkler protection and replacement of hot water distribution piping), and others would be recommended for long term comfort in the buildings (such as central air conditioning).

### **Technology**

Code compliance and existing system upgrades for information technology, communications, and security systems would take place under the 10-Year Maintenance Plan. For long term occupancy, more comprehensive technology systems replacements would be implemented.

Code considerations

The anticipated intensity of construction projects at both buildings would trigger extensive code compliance upgrades for accessibility, life safety, and seismic design.

Concept scheme probable cost

The estimated construction cost to carry out the improvements described above is \$53,045,781. This figure includes an escalation of 10.1% until a construction start date of April 2019. That is likely the earliest construction could begin if approval were given immediately for the design and approvals process. In practice, the total scope of work would be implemented incrementally incurring added escalation costs over time. The scope of work estimated in the 10-Year Maintenance Plan includes the various escalation periods noted.





## Section 5e                      50-Year Long Term Plan Option 1: Renovated Sanborn with Additions

Option 1 renovates and expands Sanborn for the total CMS student population of 700. The existing size of Sanborn is 84,054 gross square feet (GSF), not counting the three modular portable classroom units. The MSBA standard for a new school for 700 students is 115,000 GSF.

### Architectural design

In this scheme, Sanborn is expanded to accommodate the Peabody students, using the MSBA program area standards for the new additions. The greatest needs are an additional 23,378 net square feet (NSF) for classrooms, 4,213 NSF for dining and food service, and modest increases for the media center, administration/guidance, and custodial/maintenance. The Sanborn health and physical education areas (gymnasium and support) currently exceed the MSBA standards by 4,872 NSF, art and music are 1,502 NSF oversized while just serving Sanborn, and the 5,169 NSF auditorium isn't included as an MSBA program element. MSBA assumes the cafeteria is a multi-purpose meeting and performance space.

The main feature of this concept design is the addition of a new 2-story classroom wing in the parking area to the southwest of the existing building. It is at the opposite end of the school from the existing classroom wing, canted at an angle for the view and solar exposure. Access is from the main building through a connector with additional administration space and a student break-out area. The cafeteria expands into its adjacent outdoor courtyard, the library expands into the landscape creating the media center, and custodial/maintenance marginally expands. Natural light is introduced into the gymnasium through skylights.

The overall size of expanded Sanborn becomes 126,341 GSF. This represents an addition of 42,287 GSF and a school that is 11,341 GSF larger than the MSBA standard of 115,000 GSF. This is due to the existing oversized or missing program areas from the standards, including the gymnasium, art and music, and the auditorium. MSBA may not contribute funding toward upgrading these spaces, but the assumption is they would remain in the design as desired program elements for the Town of Concord.

### Site development

The added southwest classroom wing will displace a large area of parking, and one baseball diamond practice field. The parking is expanded for the 2-school population and relocated to the northeast side of the school on top of the leaching field, to the southwest of the new classroom wing, and in front of the building. ADA accessible spaces will be closest to the main entrance. The leaching field (wastewater) will be replaced and enlarged under one of the

playing fields. A stormwater detention/infiltration system will also be located under one of the playing fields, and require permitting. Water/fire protection, electric, and natural gas services are assumed to be new. Grading and landscaping will respond to the new footprint of the building and parking.

### Structure

Structural considerations are straightforward with primary focus on a conventionally framed 2-story classroom wing and connecting link to the main building. The new wing should be structurally separated from the existing building. The cafeteria, library and custodial expansions will be one-story light steel framed and easily accommodated. Seismic upgrades will be triggered for a project involving major renovation in more than 50% total existing floor area.

### Building systems

Essentially all of the Sanborn building is retained, but it will experience a full renovation for long term occupancy including significant upgrades to the mechanical, electrical, plumbing, and fire protection systems. Many of these improvements are included in the 10-Year Maintenance Plan (such as automatic sprinkler protection and replacement of hot water distribution piping), and others are recommended for long term comfort in the existing building (such as central air conditioning).

### Technology

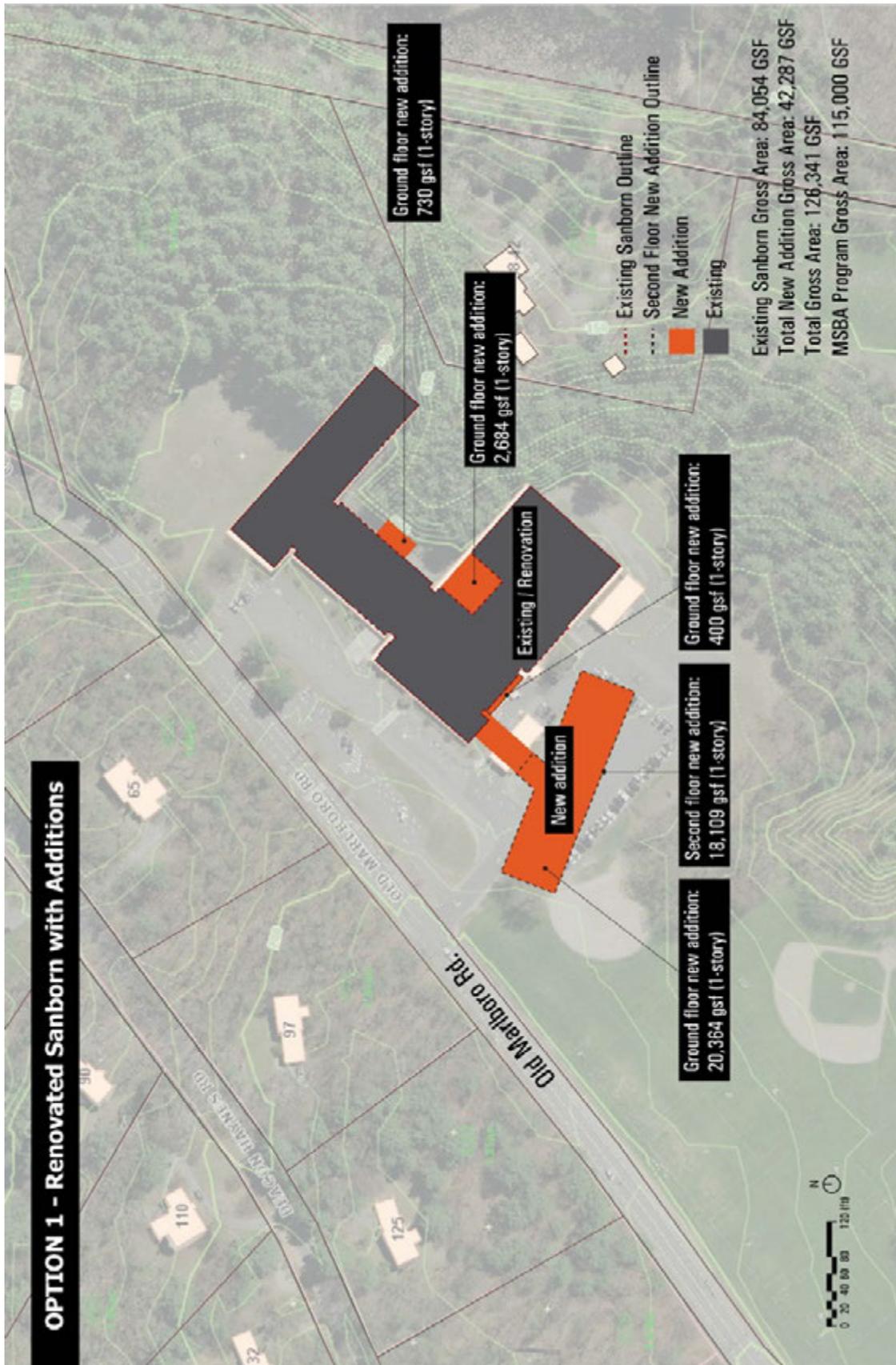
Code compliance and existing system upgrades for information technology, communications, and security systems will take place under the 10-Year Maintenance Plan. Since this is a plan for long term occupancy, more comprehensive technology system replacements should be implemented.

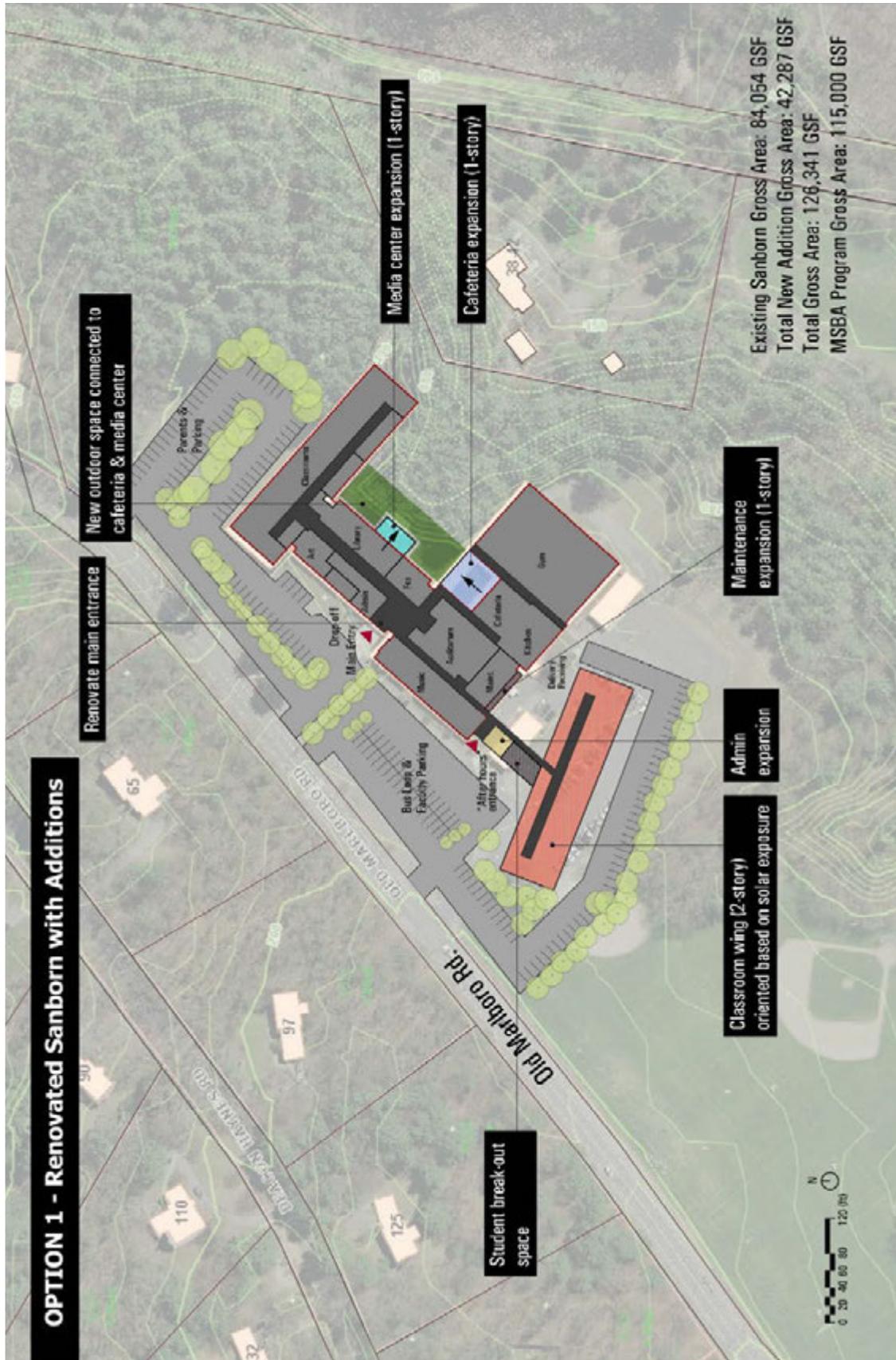
### Code considerations

The new classroom wing will be fully code compliant and may require fire rated separation from the existing building. The full renovation of the existing building will trigger extensive code compliance upgrades for accessibility, life safety, and seismic design.

### Concept scheme probable cost

The estimated construction cost to carry out the Option 1 improvements described above is \$46,207,629. This figure includes an escalation of 10.1% until a construction start date of April 2019. That is likely the earliest construction could begin if approval were given immediately for the design and approvals process. In practice, the total scope of work would be implemented incrementally incurring added escalation costs over time. The scope of work estimated in the 10-Year Maintenance Plan includes the various escalation periods noted.





## Section 5f                    50-Year Long Term Plan **Option 2: Major Sanborn Reconfiguration with Demolition and Additions**

Option 2 is a more aggressive approach to accommodating the Peabody students than the straightforward additions of Option 1. This scheme demolishes the administration and classroom wing of Sanborn, and constructs a large addition with about the same footprint as the remaining auditorium and gymnasium wing.

### Architectural design

Like Option 1, the expansion uses the MSBA program area standards for the new addition. The greatest Sanborn expansion needs are again for classrooms, dining and food service, and modest increases in program for the media center, administration/guidance, and custodial/maintenance. The existing Sanborn gymnasium and art/music department are oversized by MSBA standards, and auditorium isn't included as an MSBA program element.

The premise of this design is to retain and renovate the large community spaces that exceed the MSBA standards, but are an asset to the school and Town of Concord (auditorium and large gymnasium), while building a new academic wing that will more easily adapt to the ever-changing needs of the teaching environment. Teaching will continue in the northeast classroom wing while the new wing is under construction, although the modular classrooms will be displaced. After demolition of the northeast administrative and classroom wing, the main entrance moves to the opposite side of the remaining auditorium and gymnasium section in a new link to the addition. This remaining section houses reconfigured administrative and art & music areas, and the renovated auditorium and gymnasium. The existing cafeteria is moved to the addition, and this space is taken over by the expanded library/media center, looking out onto the former cafeteria courtyard. The main entrance is immediately adjacent to administration, the media center, and to a student break-out space in the link.

The addition to the southwest is considerably larger than the new classroom wing in Option 1, also built in the existing parking lot. The ground level of the addition features the enlarged cafeteria with a high curved glass wall facing a landscaped outdoor space. One of three pods of classrooms, accommodating one of the three grade levels, occupies the opposite end of the addition ground floor. A slightly smaller second floor houses the other two classroom pods, encircling an interior courtyard.

The overall size of the school, including the remaining portion of Sanborn (41,359 GSF) and the new addition (83,765 GSF), is 125,124 GSF. This is 10,124 GSF larger than the MSBA standard of 115,000 GSF. This is about the same difference as Option 1 for the same

reason – due to the existing oversize or missing MSBA program areas for the gymnasium, art and music, and auditorium. MSBA may not contribute funding toward upgrading these spaces, but the assumption is they would remain in the design as desired program elements for the Town of Concord.

#### Site development

Like Option 1, the large new southwest wing will displace a large area of parking, and one baseball diamond practice field. The parking is expanded for the two schools and relocated to the northeast side of the school, on the hardscape footprint of the demolished section of Sanborn. The drop-off area in front of the school is reconfigured for the new entrance with ADA accessible spaces. A stormwater detention/infiltration system will be located under one of the playing fields, and require permitting. The existing adjacent leaching field may be expanded or rebuilt to serve the larger building population. Water/fire protection, electric, and natural gas services are assumed to be new. Grading, storm water control, and landscaping will respond to the new footprint of the building and parking.

#### Structure

Structural considerations are straightforward for the new freestanding addition, which will be structurally independent of the existing building. Renovation and adaptation of the spaces within the remaining section of Sanborn should not pose significant challenges; however, major renovation would trigger seismic upgrades.

#### Building systems

The remaining section of Sanborn will experience a full renovation for long term occupancy including significant upgrades to the mechanical, electrical, plumbing, and fire protection systems, especially to improve ventilation and climate control in the gymnasium and auditorium. Some of these improvements are included in the 10-Year Maintenance Plan (such as automatic sprinkler protection and replacement of hot water distribution piping), and others are recommended for long term comfort in the existing building (such as central air conditioning).

#### Technology

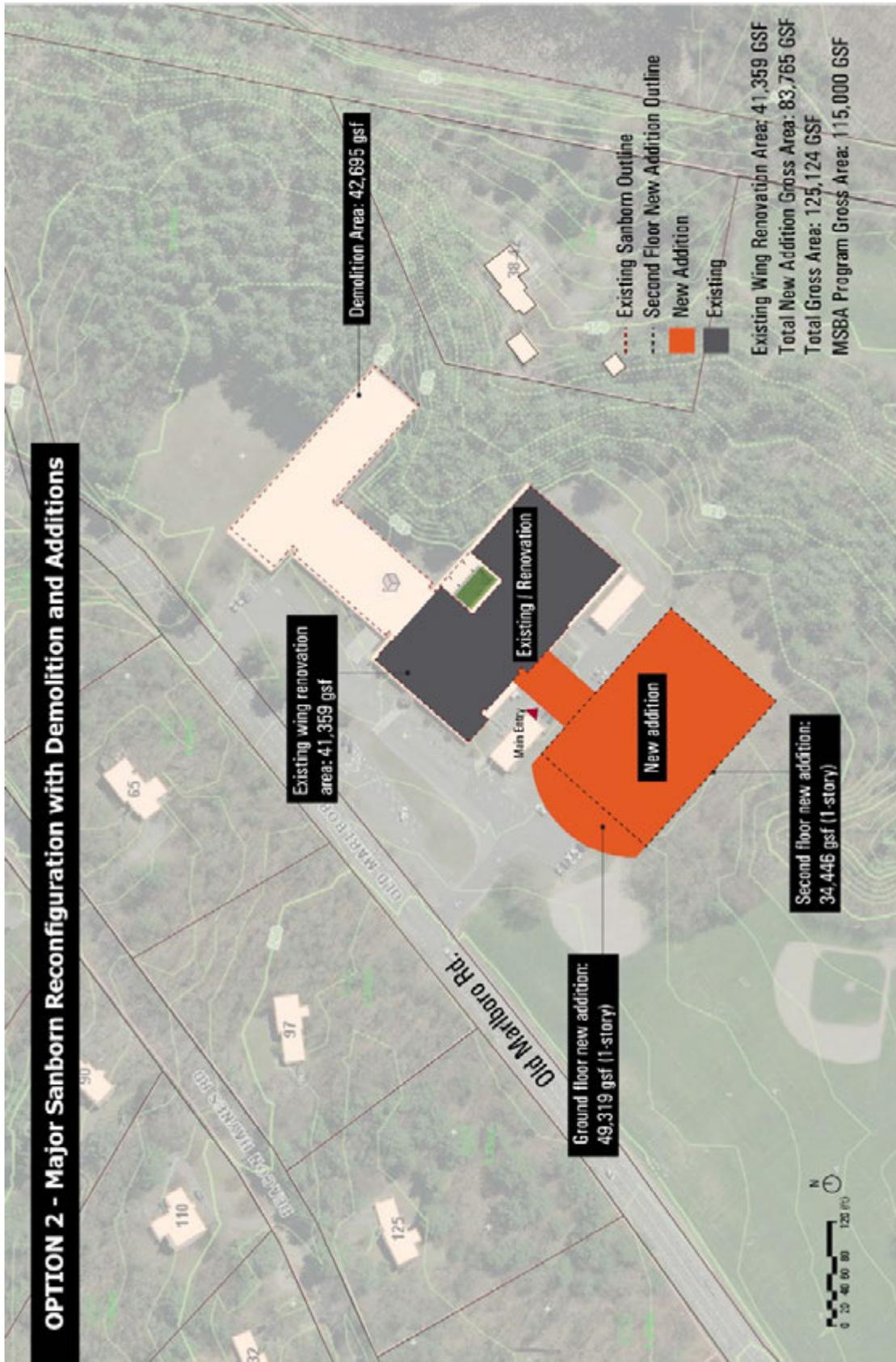
Code compliance and existing system upgrades for information technology, communications, and security systems will take place under the 10-Year Maintenance Plan. More comprehensive technology system replacements will be tied into the advanced infrastructure of the new wing.

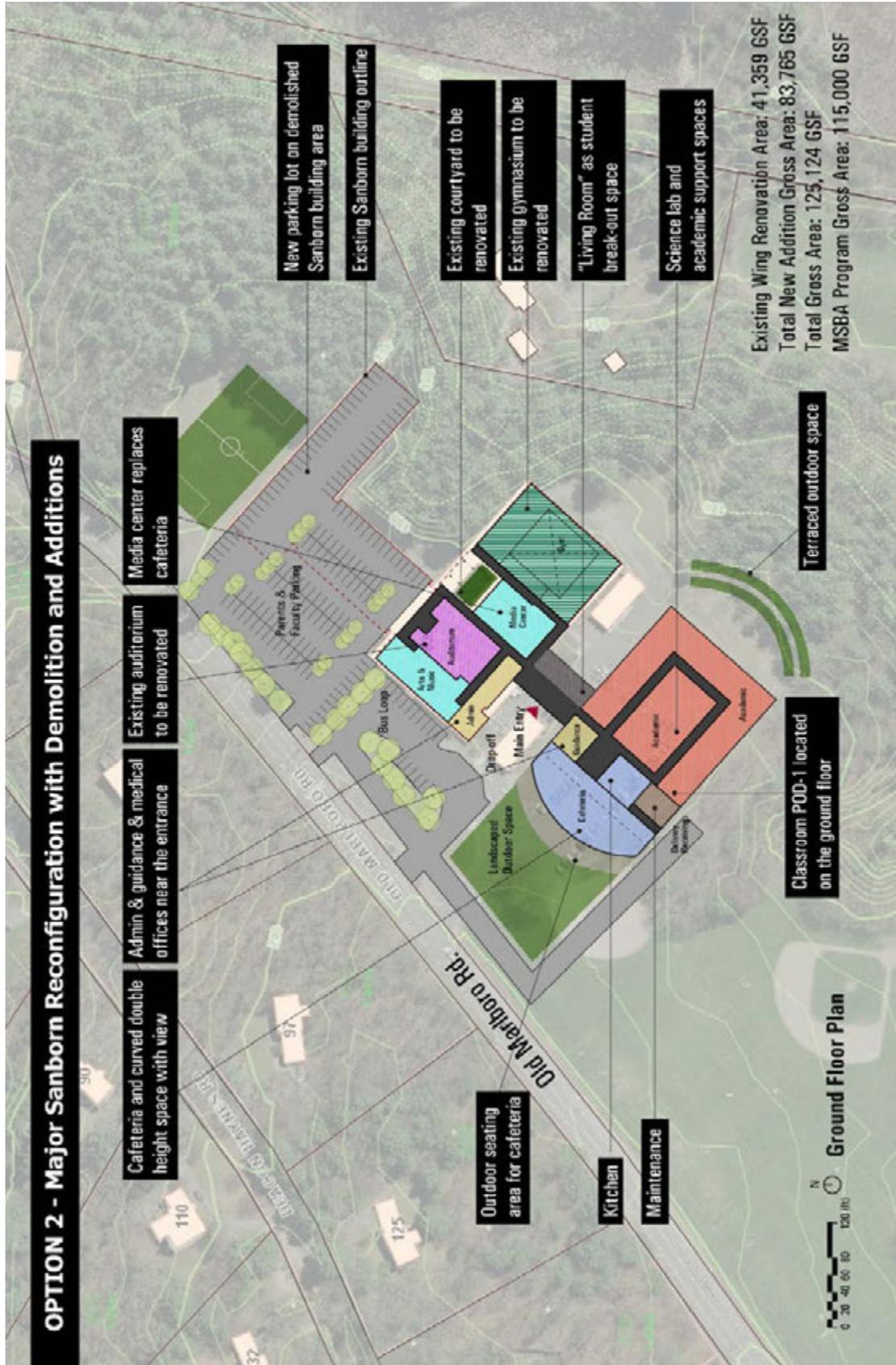
#### Code considerations

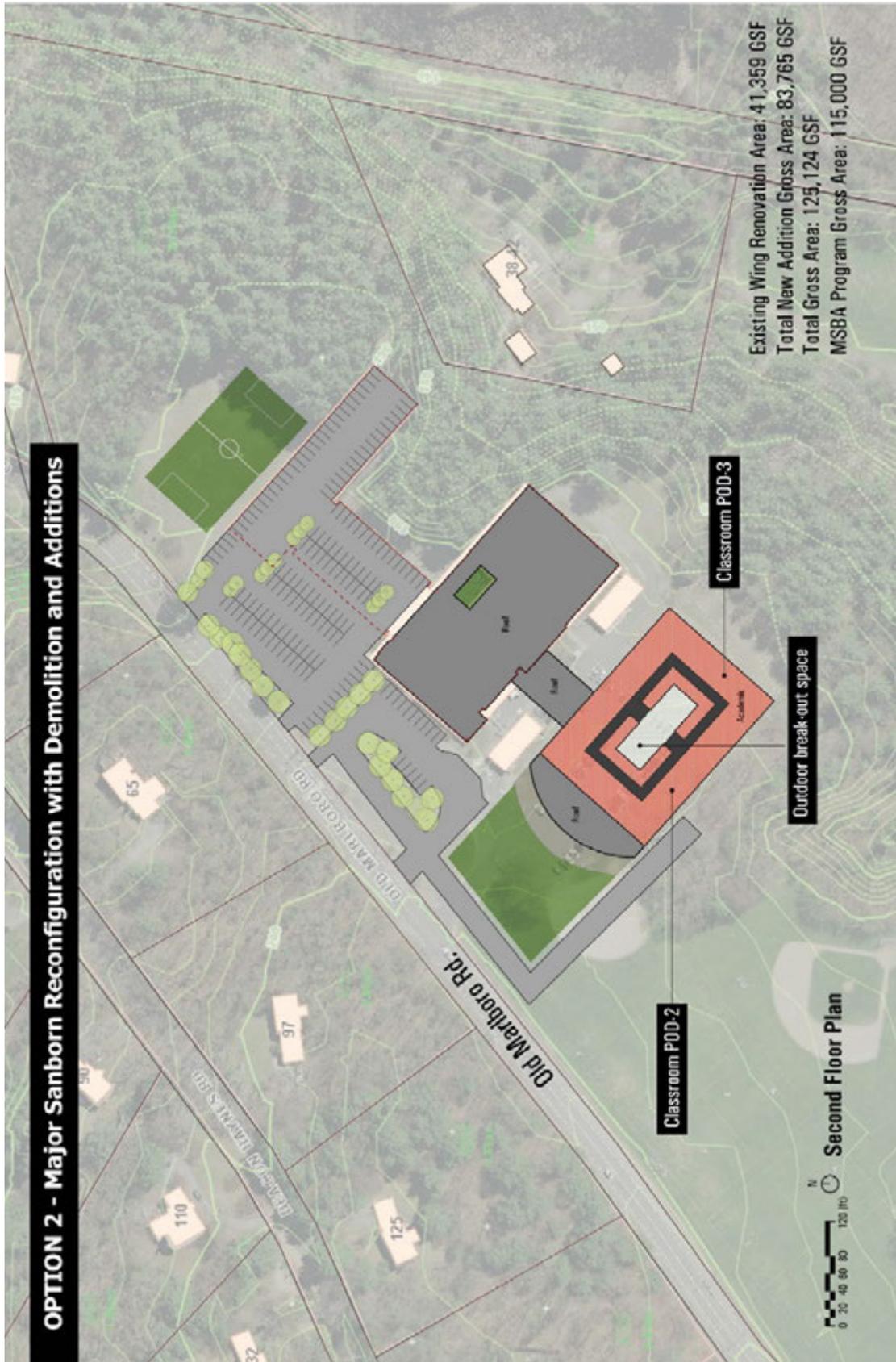
The large addition will be fully code compliant and may require fire rated separation from the existing building. Full renovation of the remaining Sanborn section will trigger extensive code compliance upgrades for accessibility, life safety, and seismic design.

*Concept scheme probable cost*

The estimated construction cost to carry out the Option 2 improvements described above is \$47,769,469. This figure includes an escalation of 10.1% until a construction start date of April 2019. That is likely the earliest construction could begin if approval were given immediately for the design and approvals process. In practice, the total scope of work would be implemented incrementally incurring added escalation costs over time. The scope of work estimated in the 10-Year Maintenance Plan includes the various escalation periods noted.







## **Section 5g**                    **50-Year Long Term Plan** **Option 3: New Building on Sanborn Site**

Option 3 involves construction of a new Concord Middle School on the Sanborn site, followed by occupancy and demolition of the existing school. Two alternatives are presented. Option 3a adheres to the 115,000 GSF space standards of MSBA’s program for 700 students, while Option 3b adds desired spaces favored by the Concord community. Option 3b is more comparable to renovation and addition Options 1 and 2 which retain the auditorium and oversize gymnasium.

### **Option 3a: New Building Built to MSBA Program Standards**

#### *Architectural design*

Since a new school will not be directly tied to the existing Sanborn building, there is opportunity for it to take better advantage of site features. Existing Sanborn and the upper playing fields are on relatively level ground between Old Marlboro Road and a steep drop toward the south side of the site. The immediate drop is the steepest for about 25 feet in elevation, and then the slope moderates for another 25 feet of drop.

Option 3a places the community portion of the school on flat ground at the lip of the slope, which maximizes the open area of the site between the road and the building for landscaped parking and drop-offs. The classrooms then terrace down the slope on three levels creating pods for the three grades, south facing, and in an arc following the natural contours of the site. The single-story community part of the school is composed of administrative spaces flanking the entrance which has direct access to a student break-out space, the media center and the cafeteria. These spaces may have high ceilings to admit clerestory light over the classrooms. Art and music are at one end of the community section with sound isolation from the classrooms, and the MSBA small gymnasium is at the opposite end. The upper pod of classrooms, for one of the grade levels, is at the same elevation as the community spaces, with a southern exposure. The second and third pods, for the other two grade levels, then terrace down the slope with each extending about half way under the one above. This offers sustainable design opportunities for green roofs and outdoor spaces on each terrace, and ground coupling of the classrooms recessed into the hillside. Construction of a new school also offers the greatest opportunity to design flexibly for future trends in teaching and technology.

The proposed square footage of Option 3a is 115,429 GSF, which is in line with the MSBA standard of 115,000 GSF. Modern design and construction technology will help offset the normal premium for the curved shape and stepped foundations. It is these features that will

create dynamic spaces and environmentally conscious design strategies to inspire students and teachers.

#### Site development

The new school allows continued occupancy of existing Sanborn with its current utilities and parking during construction. The enlarged parking area will fill the area between the new building and Old Marlboro Road, with ADA accessible spaces closest to the entrance. Playing fields will be displaced until relocated to the Sanborn end of the site after demolition. New utilities and leaching field will serve the new building. A stormwater detention/infiltration system will be located under one of the playing fields, and require permitting. Drainage from terraced roofs may require multiple infiltration systems. Grading, storm water control, and landscaping will be responsive to the new site development.

#### Structure

Structural design will involve innovative solutions to the site-responsive scheme with terraced classrooms and a curved footprint following the contours. Faceted walls may reduce construction costs. Location of support spaces built into the hillside, without exterior window walls, will partially offset the additional stepped foundation costs. Attention will be paid to snow loads on terraced roofs. The long bars of the classroom pods will allow future relocation of intermediate partitions to create teaching spaces of various sizes.

#### Building systems

All building systems will be new and efficient with considerably lower operating and fuel costs. Experience with recent new schools in the Concord-Carlisle school district points to fuel costs at one third to one half that of old buildings replaced.

#### Technology

All systems will be new, state-of-the-art, and more flexible for upgrades as compared to working with outdated systems.

#### Code considerations

The new school will be fully code compliant

#### Concept scheme probable cost

The estimated construction cost to build the new school described above to MSBA standards is \$50,190,958. This figure includes an escalation of 10.1% until a construction start date of April 2019. That is likely the earliest construction could begin if approval were given immediately for the design and approvals process.

### **Option 3b: New Building Including Desired Program Elements**

#### Architectural design

Option 3b is the same as Option 3a, but with addition primarily of two desired program spaces that may not be funded by MSBA, but have been included in other Concord school projects. The first is a gymnasium larger than the MSBA standard that will provide a proper venue to host major school conference games. MSBA allocates 8,400 NSF (net square feet) for Health & Physical Education, whereas the existing department at Sanborn is 13,272 NSF. In Option 3a, the approximate gross area of the gymnasium and support spaces, with a modest net to gross factor, is 9,240 GSF. For the larger sports venue shown in Option 3b it is about 14,600 GSF.

The second desired program space is an auditorium. MSBA assumes the cafeteria will be used for assembly and performances and does not include an auditorium in its space standards. A middle school auditorium is important to Concord for its support of the arts and music/band curriculum, and as a resource for programs both outside and within the school department. The proposed auditorium in Option 3b is based on the approximate 5,600 GSF of the existing Sanborn auditorium and support spaces.

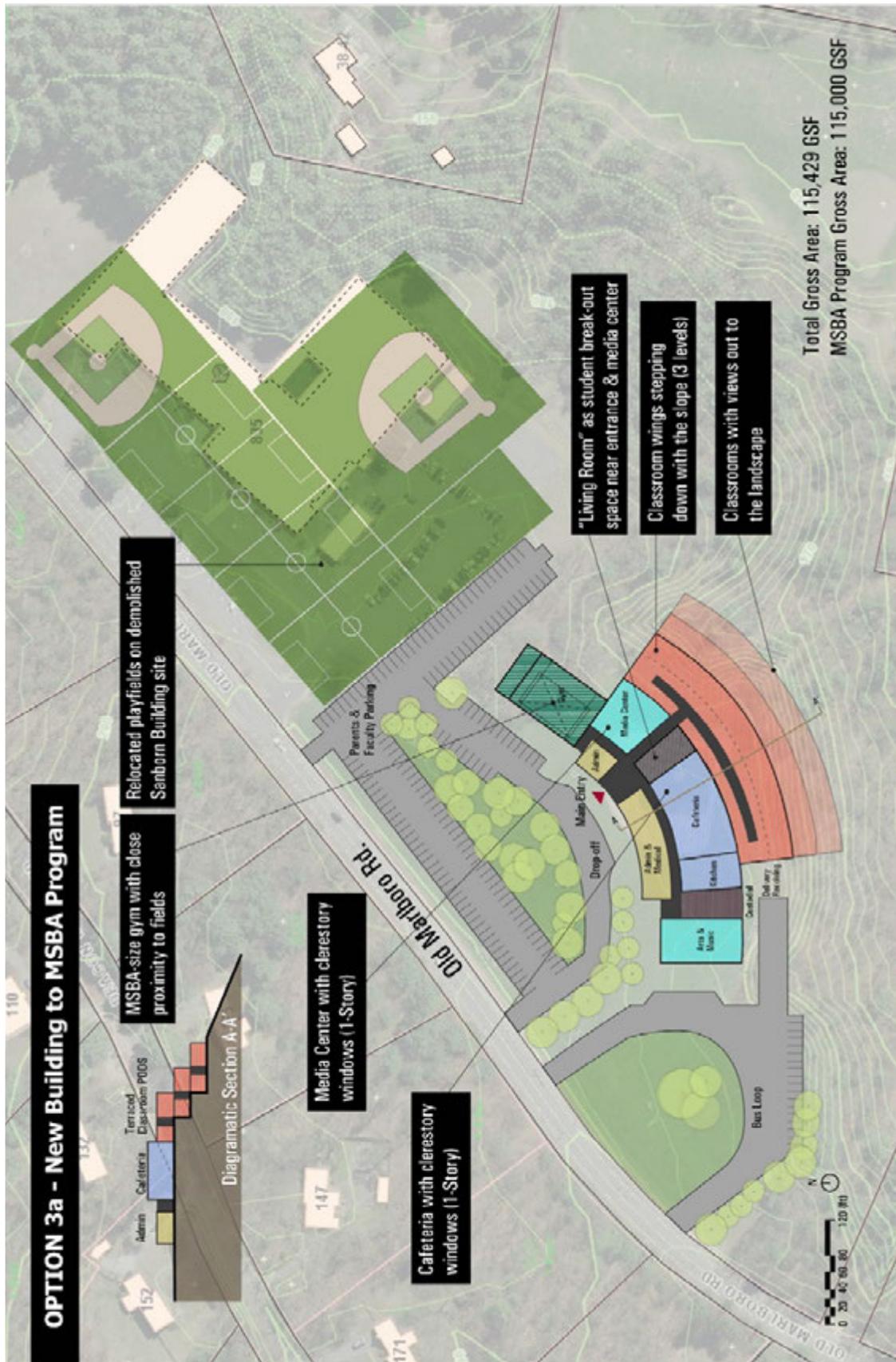
The concept scheme would allow either the enlarged gymnasium or the auditorium to be detached from the rest of the school, should that become an MSBA requirement, as it was for the practice (Maroon) gymnasium at the new high school. The proposed square footage of Option 3b with the enlarged gymnasium (5,360 GSF larger) and the auditorium (5,600 GSF) is 125,546 GSF, as compared with the MSBA standard of 115,000 GSF.

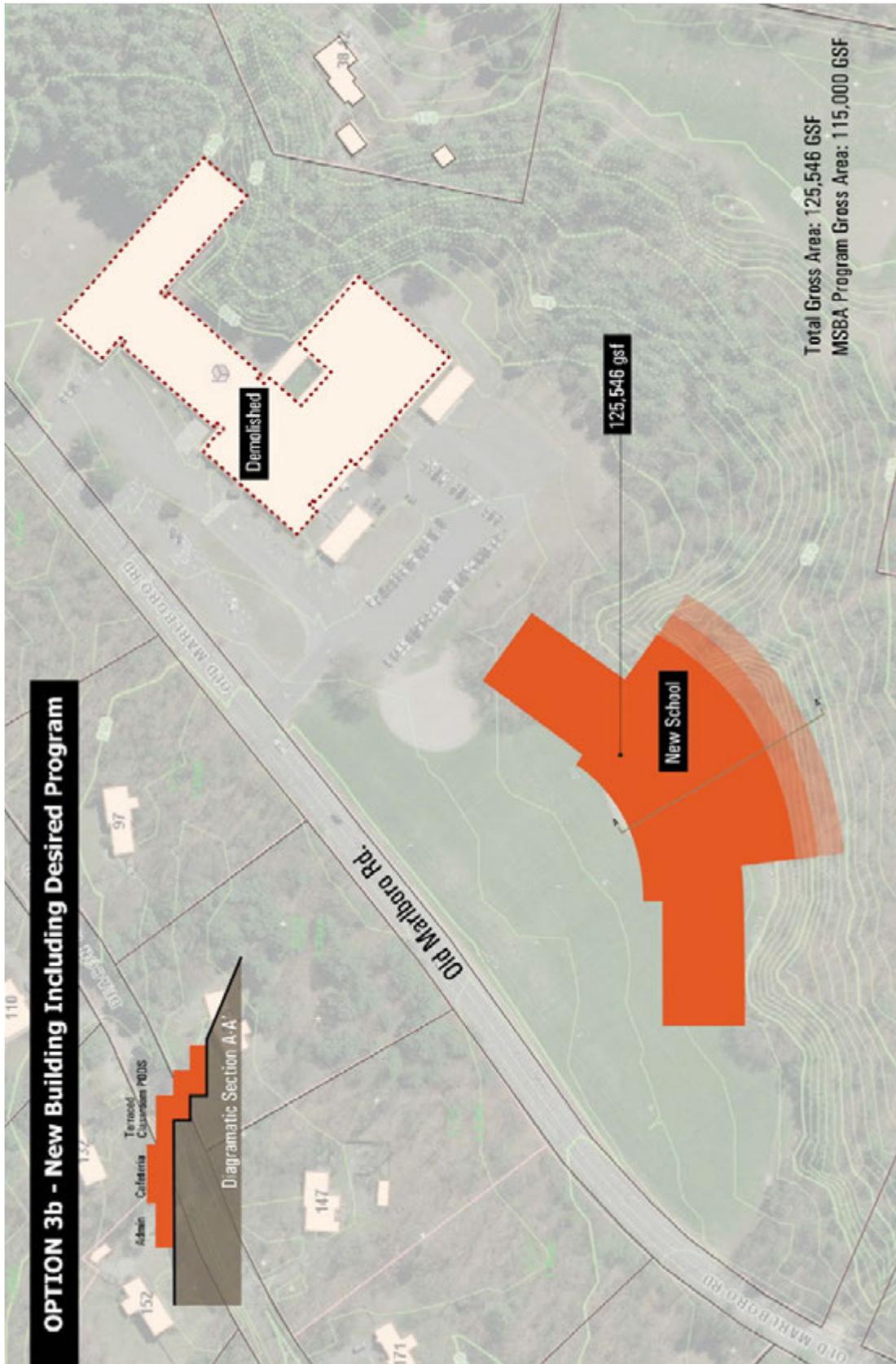
Site development, structure, building systems, technology, and code considerations are similar in Options 3a and 3b.

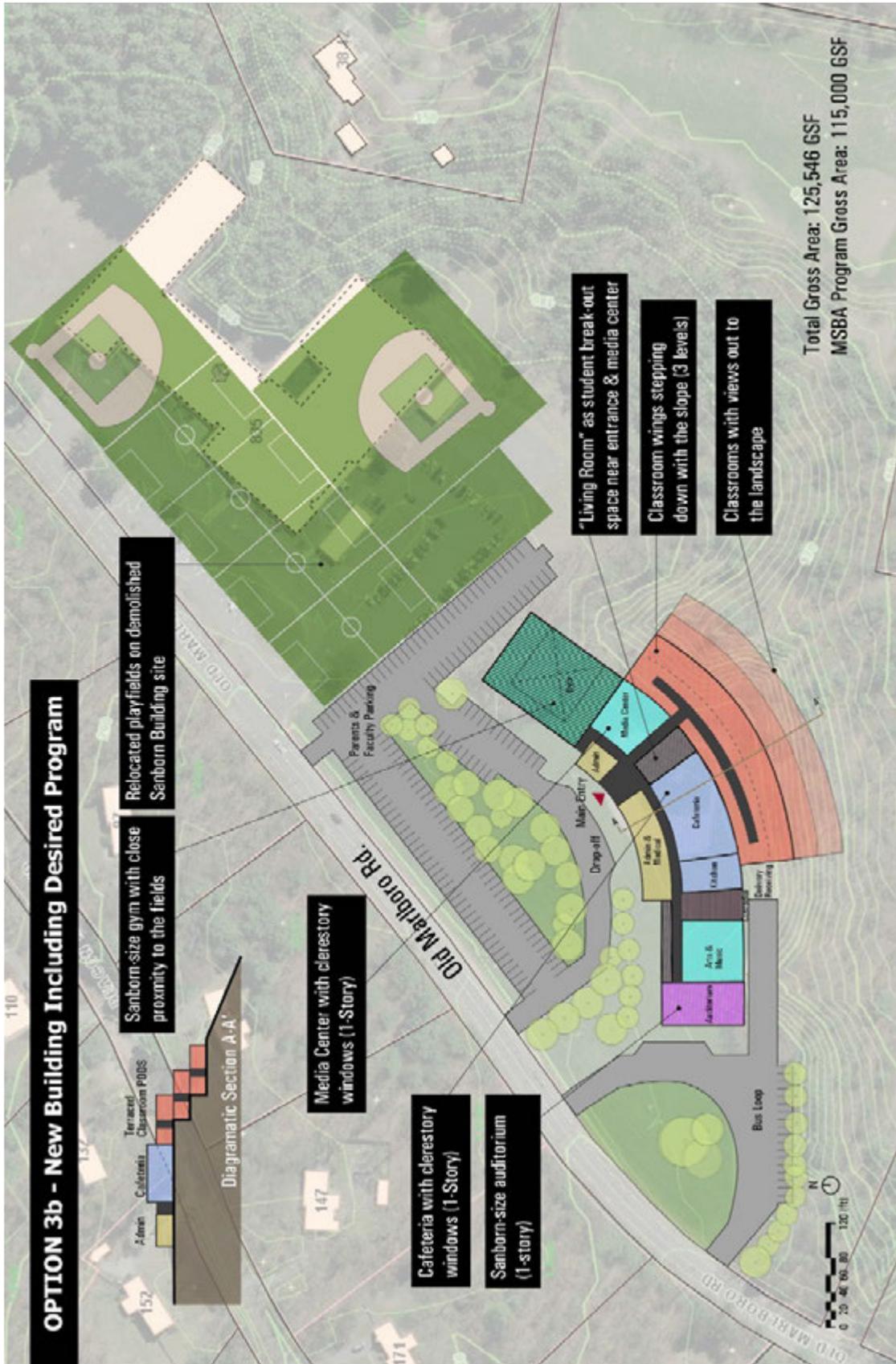
#### Concept scheme probable cost

The estimated construction cost to build the new school described above to MSBA standards but with the additional Concord program area is \$54,358,271. That is \$4,167,313 higher than the for the strictly MSBA program. These figures include an escalation of 10.1% until a construction start date of April 2019. That is likely the earliest construction could begin if approval were given immediately for the design and approvals process.











## **Section 6**            **Recommendations**

### **General Recommendations**

#### **Existing Conditions Report:**

The Existing Conditions Report, which is a part of this Concord Middle School Facility Study, evaluates the current physical condition of the Sanborn and Peabody campuses. Both buildings were built in the 1960's of substantial concrete and masonry construction and are in aging but sound condition. Peabody was built as an elementary school but immediately and inefficiently converted to accommodate middle school overflow from Sanborn. An early conclusion, informing the study process, was that operating the two campuses is not fiscally prudent, and not in the interest of Concord taxpayers. There have been no major renovations during the lifetimes of the two buildings except for upgrades like replacement of the boilers and roofs. Site infrastructure is similarly dated.

#### **10-Year Maintenance Plan:**

The objective of the short-term maintenance plan is to address code compliance and building deficiencies identified in the Existing Conditions Report. These action items are categorized as "Required," "Recommended," or "Optional." They are assigned budget costs and a recommended schedule for implementation within the 10-year time frame of the plan. This plan is not intended as a long-term solution to retaining Sanborn and Peabody, but rather an interim recommended course of action while developing a comprehensive long-term plan for integrating the Peabody student population into Sanborn.

The detailed description of the 10-Year Maintenance Plan is found in Section 4. The total cost of the plan, which is in addition to normal annual maintenance expenditures, and escalated according to priority through the 10 years, is:

Sanborn	\$21,232,831	
Peabody	<u>\$25,941,594</u>	
Total 10-year	\$47,174,425	Escalated Construction Cost

The cost estimate for Peabody includes construction of an enlarged gymnasium and a new auditorium, which are desired by the Concord community but both lacking when it was initially designed as an elementary school.

#### **50-Year Long Term Plan:**

The long-term plan addresses not only the physical building deficiencies, but also the need for flexibility and response to the changing demands of the learning environment. The most important decision is whether to retain and continue upgrading Sanborn and Peabody over

the long term, or to start over with an aggressively renovated/expanded Sanborn building or new school on the Sanborn site. Section 3 clearly states the challenge – there are serious teaching and physical shortcomings in the current buildings, and a middle school that will proudly serve the needs and desires of the Concord community is not feasible while retaining and inefficiently operating two campuses with outdated structures.

Putting aside the maintenance plan, and looking instead at a budget to totally renovate and improve both schools, to the degree possible to accommodate evolving curricula, the estimated construction cost is \$53,045,781. With the long term in mind, this is a more comprehensive project than the 10-Year Maintenance Plan, and is escalated only to April 2019, which would be an early start date following funding approvals and design. At the end of this project, Concord Public Schools would still be left with two inflexible buildings that require duplicated program space and staffing, and are more expensive than new construction to maintain and operate. The MSBA space standard for the 700 students of Sanborn and Peabody is 115,000 GSF. The actual combined area of the two buildings to maintain is a considerably larger 140,442 GSF. There is no certainty that MSBA will contribute funding toward continued operation of a double campus.

It is the recommendation of the Study Committee and the design team that the long-term plan focus on alternatives for reconfiguration with additions to Sanborn, or for a new building. Budget costs suggest these alternatives are the same or less expensive than retaining and upgrading the two buildings. Design Options 1, 2, and 3 are explained in Section 5 and their relative merits are evaluated below. In all options Peabody becomes surplus property and a capital asset for the Town of Concord. Several additional design options dropped from consideration appear in Appendix Section 7a.

### **Comparison of the Concept Design Options**

#### **Option 1 – Renovated Sanborn with Additions:**

This option fully renovates Sanborn. The major addition is a 2-story classroom wing to accommodate the student increase from Peabody and replacement of the modular classrooms. Smaller additions expand the cafeteria, library/media center, and maintenance department. The floor area of the design is 126,341 GSF.

Design features for comparison:

- Essentially no demolition, but full renovation of the existing concrete and masonry building will still limit flexibility.
- About half of the classrooms are in a new addition designed to adapt to new curricula and technology. The old and new classroom wings are at opposite ends of the building.

- The non-funded MSBA program spaces of the auditorium, and the over-size music department and gymnasium will remain. These are renovated rather than new spaces.
- The scale of the project will trigger “new building” code compliance throughout existing Sanborn.
- The existing building will perpetuate higher maintenance and operating costs than new construction.
- Full renovation of existing Sanborn will be disruptive, or require a longer phased project during summer vacations. Modular classrooms must be replaced during construction.
- Site impact is minor, but requires additional parking for the larger building population and displaces one playing field.

*Option 2 – Major Sanborn Reconfiguration with Demolition and Additions:*

This option demolishes the classroom/administration part of the building and retains the community space block with the auditorium and gymnasium. A new enlarged classroom and cafeteria wing is built on the other side of the community block. The floor area of the design is 125,124 GSF.

Design features for comparison:

- Demolition of half the existing Sanborn footprint. In the retained community block, the large open spaces of the auditorium, gymnasium, and relocated library/media center may be efficiently renovated for their specific purposes.
- All the classrooms and support spaces, requiring the most flexibility, are concentrated in the new addition, with one pod for each of the three grade levels.
- The enlarged cafeteria is new, prominently located in the addition with site access, and adaptable for multiple purposes.
- The non-funded MSBA program spaces of the auditorium, and the over-size music department and gymnasium remain. The renovated music department is adjacent to the auditorium and sound isolated from the classroom wing.
- The scale of the project will trigger “new building” code compliance in the retained portion of Sanborn.
- This design is more conducive to phasing. The new classroom wing may be constructed prior to moving out of the Sanborn classroom wing and out of Peabody. The remaining community space block may be renovated during a summer break. Modular classrooms must be replaced during construction.
- Site impact is minor, but requires additional parking for the larger building population and displaces one playing field. New parking is on the hardscape footprint of the demolition area.

Option 3 – New Building on Sanborn Site:

This option builds a new school on the Sanborn site, and is in two versions. Option 3a with an area of 115,429 GSF strictly adheres to the MSBA space standards for the combined 700 student population. Option 3b with an area of 125,546 GSF enlarges the gymnasium from the modest size allowed by the standards, and adds an auditorium. MSBA assumes a middle school cafeteria will double as the performance space. These areas, and the expanded program for music, are desired program elements that have been built into the other Concord schools. MSBA may not contribute funding to these spaces.

## Design features for comparison (Option 3a):

- The entire Sanborn building is demolished after completion of the new school.
- All program spaces are new, offering the most designed-in flexibility for evolving curricula and technology, with efficient building systems and low operating costs.
- There will be no impediments to the new design due to retaining all or part of existing Sanborn. This allows relocation of the new school to the edge of the steep slope with the entrance and community spaces on flat land and three classroom pods terracing down the slope.
- The result is enhanced utilization of the site, maximizing flat area for parking and playing fields, and creating a dynamic learning environment that will define Concord Middle School.
- Beneficial south-facing exposure to sun and views and opportunity for enhanced sustainable design.
- Since it meets the MSBA program standards, this scheme has no auditorium or enlarged gymnasium, and limits opportunity to enlarged the music department.
- The new building will inherently comply with all codes.
- Phasing is simplified in that the new building is independent from existing Sanborn and can be constructed during the school year with limited impact on educational activities.
- Most playing fields will be lost during construction and until demolition of Sanborn. The modular classrooms may remain in place.

## Design features for Option 3b are the same as for Option 3a, except:

- This option reintroduces the auditorium, and the over-size gymnasium and music department that are desired by the Concord community.

Comparative Project Costs:

Construction budgets for the design options appear in the Feasibility Study Cost Report prepared by Fennessy Consulting, in Appendix Section 7b. They are based on an early construction start date of April 2019, following funding approvals and design (same as the construction cost estimate above for continuing occupancy of Sanborn and Peabody).

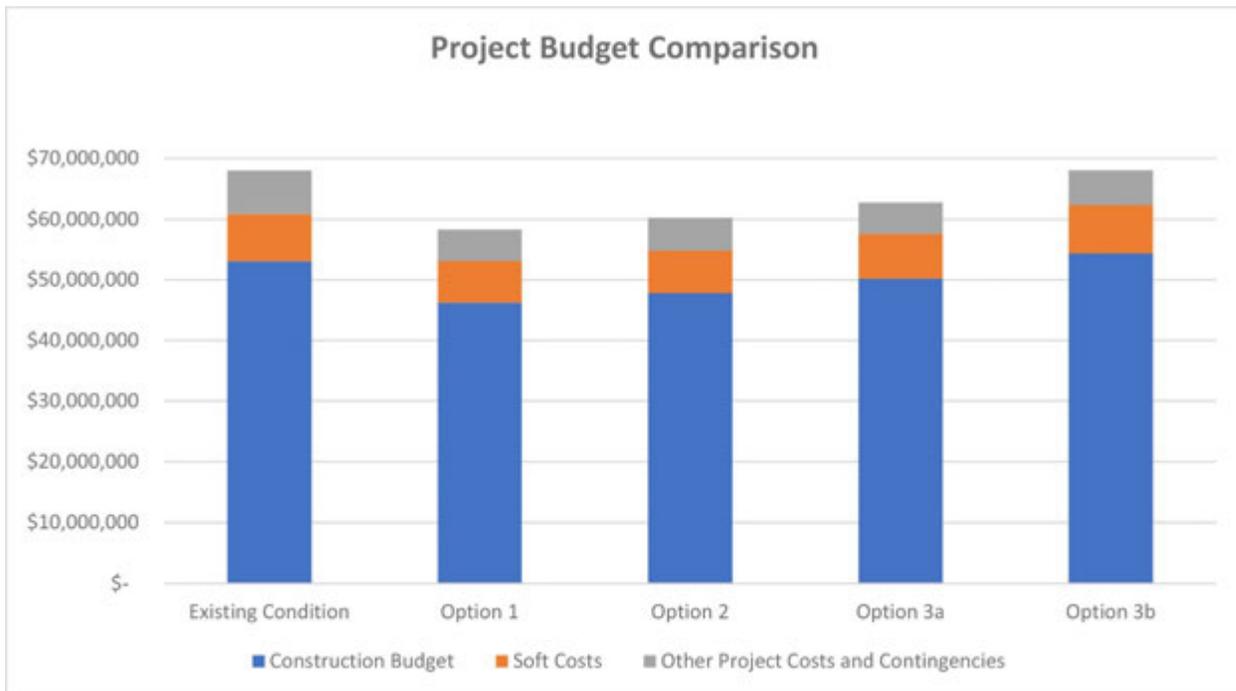
Below, we add soft costs, and other project costs and contingencies to generate probable total project costs. A breakdown of these additional costs appears on the spreadsheet at the end of this section, and is based on previous experience with MSBA budgets.

	<u>Construction Cost</u>	<u>Total Project Cost</u>
<u>Option 1:</u> Renovation/addition	\$46,207,629	\$58,806,024
<u>Option 2:</u> Major reconfiguration	\$47,769,469	\$60,768,007
<u>Option 3a:</u> New/MSBA standards	\$50,190,958	\$62,807,972
<u>Option 3b:</u> New/MSBA + desired	\$54,358,271	\$68,001,277

Comparison with continued occupancy of Sanborn and Peabody:

Existing Condition	\$53,045,781	\$68,466,110
--------------------	--------------	--------------

A 1% Existing Building Remediation Contingency is carried for the two-campus Existing Condition and for renovation/addition Options 1 and 2, but not for new building Options 3a and 3b.



**Recommended Approach for Long Term Plan:**

The Study Committee and design team recommend two design approaches for creating a dynamic Concord Middle School that will respond to the program desires of the community and the changing curricula and technology the Concord-Carlisle Regional School District will

adopt over the next 50 years. The first works with the existing Sanborn building and the second proposes a new school.

Work with the Sanborn building:

Option 2 is the preferred approach to working with the existing Sanborn school.

- Saves the desired auditorium and large gymnasium that would not be funded by MSBA in a new building. These are large special use spaces that are straight forward to renovate.
- Creates an all-new classroom wing with pods devoted to the three grade levels. New construction offers the better opportunity to design a flexible learning environment.
- Projected Total Project Cost is \$7.6 Mil. less than full renovation and upgrading of the two existing campuses.

Build a new Middle School:

Option 3b is the preferred approach to building a new school.

- Creates an entirely new and exciting home for middle school students, faculty and staff. All program spaces will be new, flexible, and incorporating the latest technology.
- Includes Town of Concord desired program elements or expansions outside MSBA standards. They are easily removed if the Town does not vote separate funding.
- Projected Total Project Cost is the same as full renovation and upgrading of the two existing campuses.

Conclusion:

These are two very different and equally viable long term solutions for correcting the severe deficiencies in the Sanborn and Peabody buildings. They allow latitude for discussion with the Town of Concord and MSBA, on the way to approving funding, final design and construction.

# Total Project Budget Comparison: 50-yr Long Term Plan



Budget Components	Existing Condition	Option 1	Option 2	Option 3a	Option 3b
	Occupy both buildings	Renovation/addition	Major reconfiguration	New/MSBA standards	New/MSBA + desired
Feasibility study	\$ 1,060,916	\$ 924,153	\$ 955,389	\$ 1,003,819	\$ 1,087,165
OPM, A/E, other					
Administration	\$ 1,591,373	\$ 1,386,229	\$ 1,433,084	\$ 1,505,729	\$ 1,630,748
Legal, OPM, other					
Architectural / Engineering	\$ 5,039,349	\$ 4,389,725	\$ 4,538,100	\$ 4,768,141	\$ 5,164,036
Basic and additional services					
Preconstruction services	\$ 160,000	\$ 160,000	\$ 160,000	\$ 160,000	\$ 160,000
<b>Construction budget</b>	<b>\$ 53,045,781</b>	<b>\$ 46,207,629</b>	<b>\$ 47,769,469</b>	<b>\$ 50,190,958</b>	<b>\$ 54,358,271</b>
Escal. 10.1% to Apr 2019 start					
Construction contingency	\$ 2,652,289	\$ 2,310,381	\$ 2,388,473	\$ 2,509,548	\$ 2,717,914
(5% of construction cost)					
Exist. Bldg. Remediation Contingency	\$ 530,458	\$ 462,076	\$ 477,695	\$ -	\$ -
(1% of construction cost)					
Misc. Project Costs	\$ 50,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
Utility fees, moving					
Move/replace modulares during construction	\$ 1,620,000	\$ 500,000	\$ 500,000	\$ -	\$ -
Assume new constr. for Existing Cond.					
Furnishings and equipment	\$ 2,185,486	\$ 1,903,754	\$ 1,968,102	\$ 2,067,867	\$ 2,239,561
Owner's contingency	\$ 530,458	\$ 462,076	\$ 477,695	\$ 501,910	\$ 543,583
(1% of construction cost)					
<b>Total Project Budget</b>	<b>\$ 68,466,110</b>	<b>\$ 58,806,024</b>	<b>\$ 60,768,007</b>	<b>\$ 62,807,972</b>	<b>\$ 68,001,277</b>
Town Assessed Asset Value of Peabody	Not Applicable	\$ 10,227,000	\$ 10,227,000	\$ 10,227,000	\$ 10,227,000
<b>Notes:</b>					
Construction budget includes hazardous materials abatement trade costs	\$ 1,065,000	\$ 555,000	\$ 605,000	\$ 825,000	\$ 825,000
Existing Condition: New Sanborn addition to replace 3 double-modular classrooms:					
Area of 3 modulares 5,400 SF x \$300/SF new construction = \$1,620,000					



## **Section 7 Appendix**

### **Appendix Section 7a**

#### Additional Long Term Concept Design Options

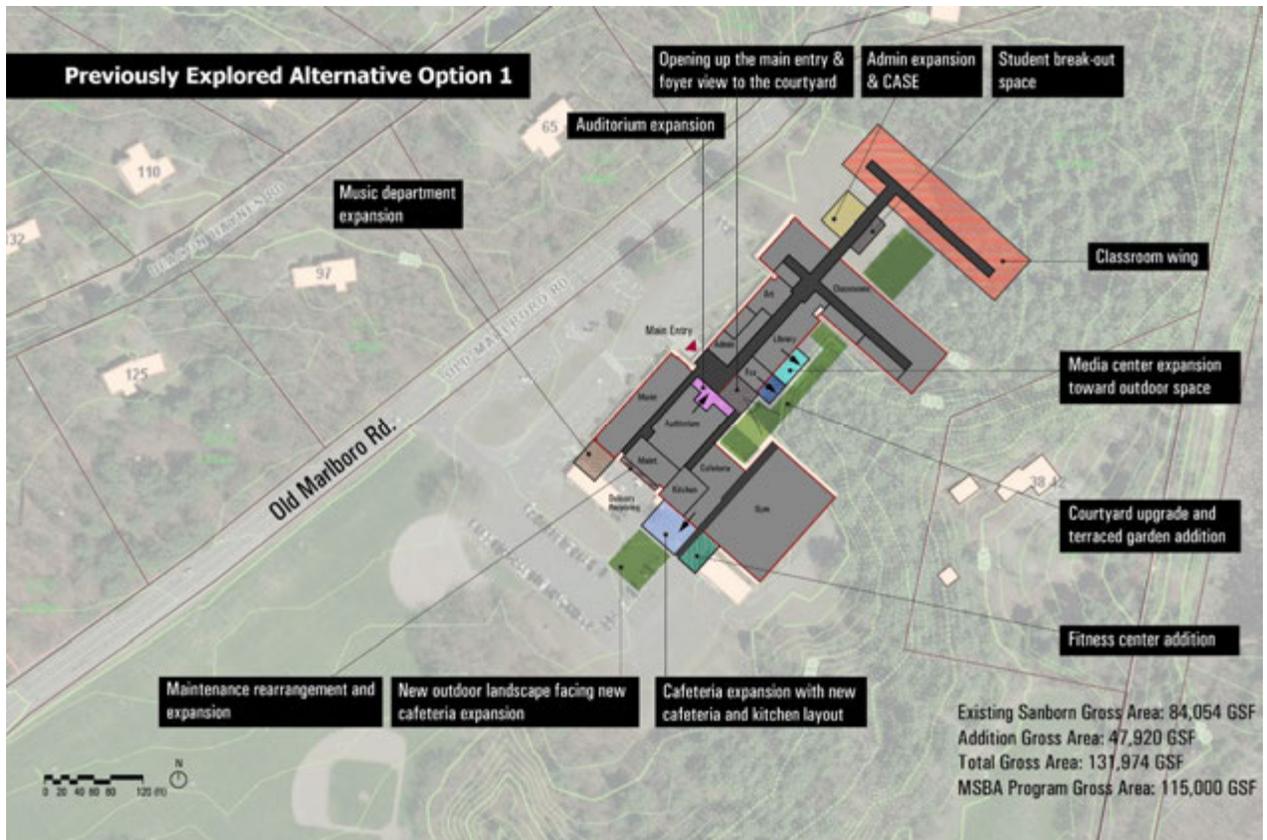
- Alternative Option 1
- Alternative Option 3a
- Alternative Option 3b

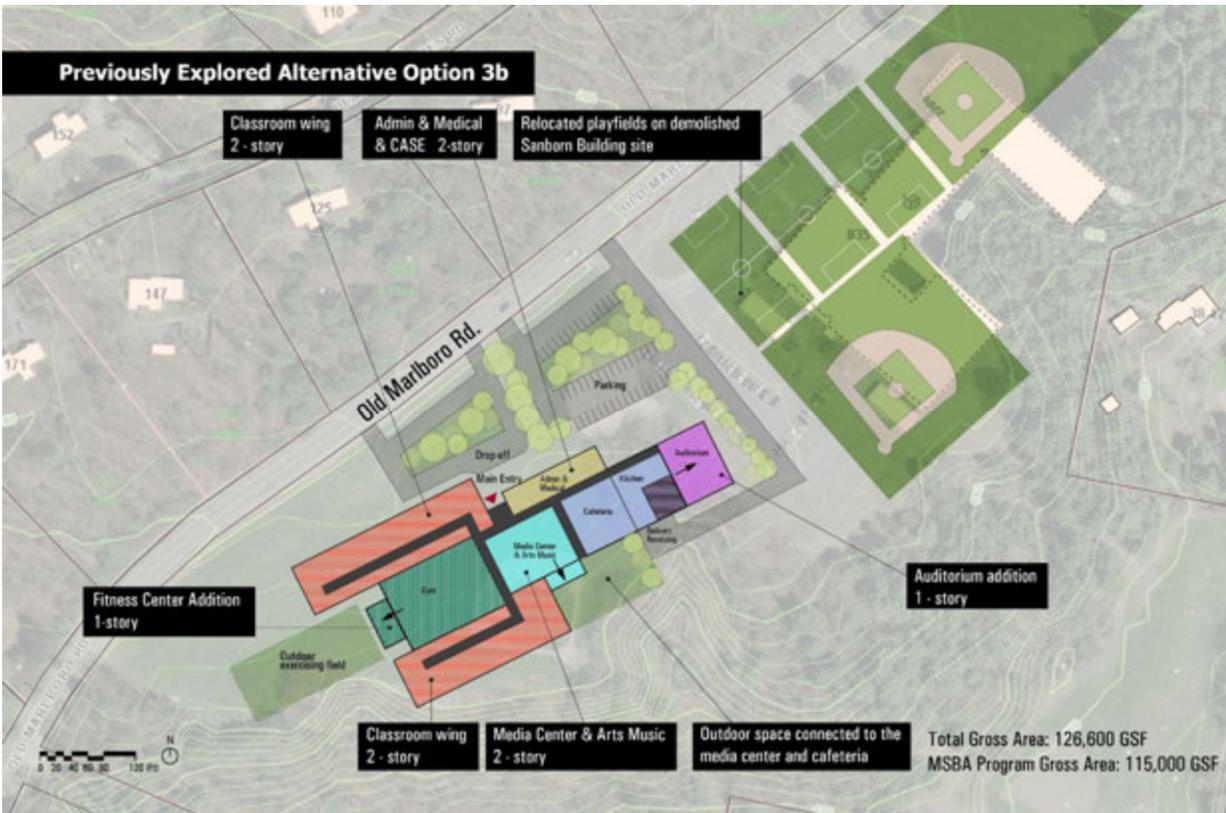
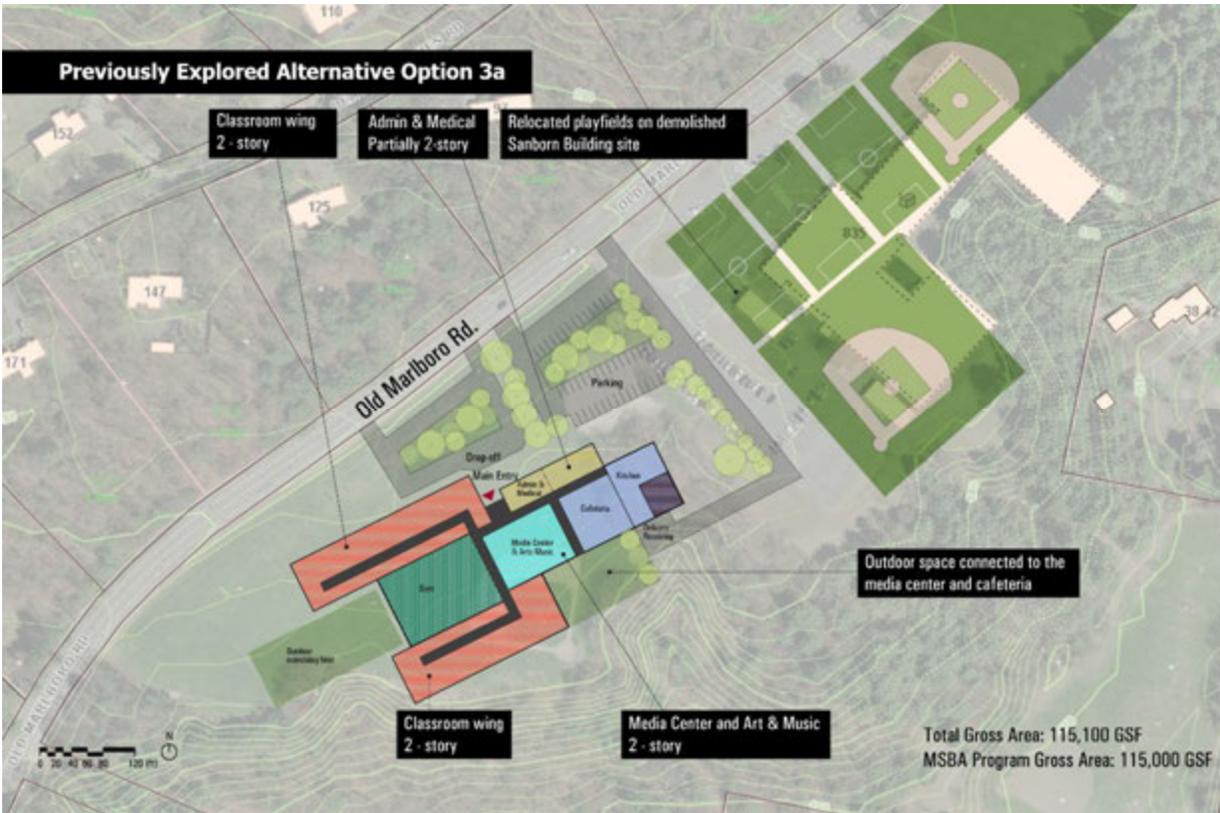
### **Appendix Section 7b**

#### Feasibility Study Cost Report

##### *Fennessy Consulting Services*

- 10-Year Maintenance Plan Concept Cost Estimate
- 50-Year Long Term Plan Concept Cost Estimate







# CONCORD PUBLIC SCHOOLS

## Concord Middle School

### FEASIBILITY STUDY COST REPORT



May 22, 2017



**Fennessy Consulting Services**

27 Glen Street, Suite 8 Stoughton, MA 02072. T: 781.344.4464 F: 781.344.4452  
[www.fennessyconsulting.com](http://www.fennessyconsulting.com)



May 22, 2017

Pat Morss  
**Finegold Alexander Architects**  
 77 North Washington Street  
 Boston, MA 02114

**CONCORD PUBLIC SCHOOLS - Concord Middle School , Concord, MA**

Dear Pat:

Please find enclosed our Construction Cost Report for the above referenced project based feasibility study information prepared by Finegold Alexander Architects dated December 23 2017

	Const. Start	Gross Floor Area	\$/sf	Estimated Cost
<b>0-2 Yr Plan (Required)</b>				
Peabody Required	Oct-17	56,388	\$14.13	\$796,557
Sanborn Required	Oct-17	84,054	\$11.09	\$931,953
				<b>\$1,728,510</b>
<b>0-10 Yr Plan (Recommended)</b>				
Peabody Recommended	Oct-17	56,388	\$191.66	\$10,807,240
Sanborn Recommended	Oct-17	84,054	\$174.26	\$14,647,041
				<b>\$25,454,281</b>
<b>0-10 Yr Plan (Optional)</b>				
Peabody Optional	Oct-17	56,388	\$160.41	\$9,045,108
Sanborn Optional	Oct-17	84,054	\$16.32	\$1,371,615
				<b>\$10,416,723</b>
<b>50 Yr Plan</b>				
Existing Renovate Sanborn & Peabody (New Gym & Aud.)	Apr-19	151,042	\$351.20	\$53,045,781
Opt1 Addition and Renovation to Sanborn	Apr-19	126,342	\$365.73	\$46,207,629
Opt2 Major Sanborn Reconfiguration & Additions	Apr-19	125,125	\$381.77	\$47,769,469
Opt3a New Building on Sanborn Site	Apr-19	115,430	\$434.82	\$50,190,958
Opt3b New Building on Sanborn Site - Larger	Apr-19	125,546	\$432.97	\$54,358,271

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*Bidding conditions are expected to reflect competitive bidding to pre-qualified general contractors, open bidding to prequalified sub-contractors, open specifications for materials and manufactures.*

*This estimate includes all direct construction costs, general contractor's overhead and profit and design contingency. Cost escalation assumes start dates indicated above.*

*Excluded from the estimate are: construction contingency, hazardous waste removal, loose furnishings and equipment, architect's and engineer's fees, moving, administrative and financing costs.*

*The estimate is based on prevailing wage rates for construction in this market and represents a reasonable opinion of cost. It is not a prediction of the successful bid from a contractor as bids will vary due to fluctuating market conditions, errors and omissions, proprietary specifications, lack or surplus of bidders, perception of risk, etc. Consequently the estimate is expected to fall within the range of bids from a number of competitive contractors or subcontractors, however we do not warrant that bids or negotiated prices will not vary from the final construction cost estimate.*

*If you have any questions or require further analysis please do not hesitate to contact us.*

*Sincerely,*

A handwritten signature in black ink that reads 'Seamus Fennessy'.

Seamus Fennessy MRICS  
Principal/Owner

Enclosures

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<i>Peabody Required</i>	5
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**Project:**

*This project in Concord MA comprises of selective renovations to two separate schools. The scope of work is intended to form the basis of a ten year master plan of repairs to the facilities.*

*The scope of work outlined in this feasibility study is segregated both by building and by work that is immediate, recommended and optional over a ten year period.*

*The study also includes a 50 year long term plan. Four options for this are considered. The first of these results in the maintaining and operating the two schools. Extensive renovation of both facilities will be required together with the construction of a new gymnasium and a new auditorium. The second alternative is to renovate the existing Sanborn facility together with the construction of an addition of approximately 42,300 gsf. Option 3 comprises of the demolition of approximately 42,700 gsf of the existing school and the construction of a new addition of approximately 83,800 gsf. The final option is a complete new building of approximately 115,429 gsf for Option 4a and 125,546 for Option 4B.*

<b>Cost Report Prepared From</b>	<b>Dated</b>	<b>Received</b>
<i>Feasibility study documentation</i>		
<i>Floor plans of both schools</i>	<i>12/23/16</i>	<i>01/15/17</i>
<i>Itemized scope of work</i>	<i>04/06/17</i>	<i>04/06/17</i>
<i>50 Yr Plan Options</i>	<i>Mar-17</i>	<i>04/06/17</i>
<i>Discussions with the Project Architect</i>		<i>01/25/17</i>

**Conditions of Construction**

*The pricing is based on the following general conditions of construction*

- *A start date of October 2017 for the immediate actions and April 2019 for the 50 year plan options*
- *A construction period of 6 months*
- *A construction period of 18 months for the 50 yr plan options*
- *The general contract will be competitively bid to qualified general contractors and subcontractors*
- *There will not be small business set aside requirements*
- *The contractor will be required to pay prevailing wage rates*

**The Cost Plan is based on the following conditions:**

*The costs in this report covers construction costs only calculated at current bidding price level (reflecting the current projected construction schedule) with a separate allowance for cost escalation.*

Cost escalation is included to the mid point of the construction schedule. Unit rates in the body of the report include appropriate escalation allowances to deliver specific trades within the prescribed schedule if the project were to commence today. Cost associated with additional escalation required for future start date are included as a below the line markup. This report has included this additional escalation to the scheduled start date of construction noted in this report.

#### **Bidding Process - Market Conditions**

This document is based on the measurement and pricing of quantities wherever information is provided and/or reasonable assumptions for other work not covered in the drawings or specifications, as stated within this document. Unit rates have been obtained from historical records and/or discussion with contractors. The unit rates reflect current bid costs in the area. All unit rates relevant to subcontractor work include the subcontractors overhead and profit unless otherwise stated. The mark-ups cover the costs of field overhead, home office overhead and profit and range from 15% to 25% of the cost for a particular item of work.

Pricing reflects probable construction costs obtainable in the project locality on the date of this statement of probable costs. This estimate is a determination of fair market value for the construction of this project. It is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the construction work for all subcontractors and general contractors, with a minimum of 5 bidders for all items of work. Experience and research indicates that a fewer number of bidders may result in higher bids, conversely an increased number of bidders may result in more competitive bids.

*The following cost items have been excluded from this report. Many of these will in fact be required and should be budgeted within the "Soft Cost" component of the project budget*

- *Owner supplied and installed furniture, fixtures and equipment*
- *Loose furniture and equipment except as specifically identified*
- *Security equipment and devices*
- *Compression of schedule, premium or shift work, and restrictions on the contractor's working hours*
- *Design, testing, inspection or construction management fees*
- *Architectural and design fees*
- *Scope change and post contract contingencies*
- *Assessments, taxes, finance, legal and development charges*
- *Environmental impact mitigation*
- *Builder's risk, project wrap-up and other owner provided insurance program*
- *Cost escalation beyond a start date of October 2017*

**CONCORD PUBLIC SCHOOLS**  
**Concord Middle School**  
 Concord, MA  
**FEASIBILITY STUDY COST REPORT**  
 May 22, 2017

## Short Term Summary

	<b>Total</b>	<b>sf</b>	<b>\$/sf</b>
<b>Peabody Required</b>	<b>\$796,557</b>	<b>56,388</b>	<b>\$14.13</b>
Trade Costs	\$536,317		
Markups	\$136,820		
Contingency/Escalation	\$123,420		
<b>Sanborn Required</b>	<b>\$931,953</b>	<b>84,054</b>	<b>\$11.09</b>
Trade Costs	\$627,479		
Markups	\$160,076		
Contingency/Escalation	\$144,398		
<hr/>			
<b>Peabody Recommended</b>	<b>\$10,807,240</b>	<b>56,388</b>	<b>\$191.66</b>
Trade Costs	\$7,276,454		
Markups	\$1,856,296		
Contingency/Escalation	\$1,674,490		
<b>Sanborn Recommended</b>	<b>\$14,647,041</b>	<b>84,054</b>	<b>\$174.26</b>
Trade Costs	\$9,861,770		
Markups	\$2,515,837		
Contingency/Escalation	\$2,269,434		
<hr/>			
<b>Peabody Optional</b>	<b>\$9,045,108</b>	<b>56,388</b>	<b>\$160.41</b>
Trade Costs	\$6,090,020		
Markups	\$1,553,625		
Contingency/Escalation	\$1,401,463		
<b>Sanborn Optional</b>	<b>\$1,371,615</b>	<b>84,054</b>	<b>\$16.32</b>
Trade Costs	\$923,500		
Markups	\$235,595		
Contingency/Escalation	\$212,520		

CONCORD PUBLIC SCHOOLS  
 Concord Middle School  
 Concord, MA  
**FEASIBILITY STUDY COST REPORT**  
 May 22, 2017

	Quantity	Unit	Rate	Subtotal	Item Total
<b><u>PEABODY REQUIRED</u></b>					
<b>Trade Costs</b>					
<b>1.0 Architectural</b>					
1.1 Paint is peeling a the underside of balcony and roof overhangs. These concrete surfaces should be stripped and/or repainted.					
					\$38,169
Scrape and remove existing paint	8,482	SF	2.50	21,205	
Paint exterior concrete structure	8,482	SF	2.00	16,964	
<b>5.0 Parking</b>					
5.1 To comply with Concord Zoning requirements an additional 22 parking spaces need to be located on the property. Additonal paving and striping are required.					
					\$71,264
Site earthwork					
Strip topsoil, store	326	CY	10.00	3,260	
Remove surplus excavated material from site	285	CY	20.00	5,700	
Fine grading	978	SY	0.75	734	
Silt fence/erosion control	200	LF	12.00	2,400	
Bituminous concrete paving					
Excavation to reduce levels	285	CY	10.00	2,850	
Remove off site	285	CY	20.00	5,700	
Gravel base	285	CY	37.00	10,545	
Bituminous concrete	172	T	115.00	19,780	
Precast concrete curb	300	LF	25.00	7,500	
Pavement markings					
Single solid lines, 4" thick	22	SPCE	100.00	2,200	
Concrete paving					
Excavation to reduce levels	37	CY	12.00	444	
Remove off site	37	CY	20.00	740	
Gravel base	37	CY	37.00	1,369	
Concrete paving, ? thick	1,000	SF	7.00	7,000	
Landscaping					
Re-spread topsoil	41	CY	12.00	492	
Seeding	1,100	SF	0.50	550	
5.2 Currently there are 3 existing ADA parking spaces, 2 of them van accessible. MAAB parking standards require 4 ADA spaces 1 van accessible space.					
					\$5,825
Demolition					
Remove curbing	25	LF	8.00	200	
Site earthwork					
Strip topsoil, store	19	CY	10.00	190	
Remove surplus excavated material from site	19	CY	20.00	380	
Fine grading	56	SY	0.75	42	
Bituminous concrete paving					
Excavation to reduce levels	15	CY	10.00	150	
Remove off site	15	CY	20.00	300	
Gravel base	15	CY	37.00	555	
Bituminous concrete	9	T	115.00	1,035	
Precast concrete curb	25	LF	25.00	625	

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	Quantity	Unit	Rate	Subtotal	Item Total
<i>Pavement markings</i>					
Single solid lines, 4" thick	1	SPCE	100.00	100	
Handicap parking hatching	1	LOC	180.00	180	
Signage	1	EA	750.00	750	
<i>Concrete paving</i>					
Excavation to reduce levels	5	CY	12.00	60	
Remove off site	5	CY	20.00	100	
Gravel base	5	CY	37.00	185	
Concrete paving, ? thick	125	SF	7.00	875	
<i>Landscaping</i>					
Re-spread topsoil	4	CY	12.00	48	
Seeding	100	SF	0.50	50	

6.0 Structure

6.1 There are cracks in the brick veneer in several locations that require repair.

\$7,500

Masonry repairs  
 Complete

1	LS	7,500.00	7,500
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6.2 Exterior, cantilevered balconies at the second floor do not appear to be draining properly. Balcony floors were intended to pitch to the outside edge and drain through weeps in the upturned concrete railing (at control joint locations); however, the weeps are only present at limited locations. Elsewhere, holes have been cored in the balcony slabs to allow water to drain. Ponded water has caused reinforcing to corrode and spall the concrete surface. Balcony slabs should be repaired and drainage issues addressed.

\$49,681

Concrete repairs

Chip existing concrete, remove rebar, insert new rebar, patch concrete

424	SF	60.00	25,440
4,241	SF	1.00	4,241

Rainwater scuppers

Create opening in balcony wall for new scupper  
 New prefabricated scupper, including sealants etc.  
 New drip pad

25	LOC	300.00	7,500
25	EA	250.00	6,250
25	EA	250.00	6,250

8.0 Fire protection and plumbing

8.1 The Kitchen gas header on the cooking line is not compliant with current Code. An interlock with the exhaust hood is required.

\$2,500

Add interlock with exhaust hood

1	LOC	2,500.00	2,500
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	Quantity	Unit	Rate	Subtotal	Item Total
<b>9.0 Electrical</b>					
9.1 The building is currently provided with a fire alarm system that includes smoke detection and notification appliances located in common spaces and corridors only. There are manual pull stations located at each exit. The system is required to have emergency voice/alarm communication capabilities in accordance with 780 CMR 907.5. This includes all spaces such as the cafeteria, gymnasium, classrooms, etc. It is recommended to upgrade the fire alarm system to comply with 780 CMR and NFPA 72. Minimum wired detection system and notification is required.					
					\$197,358
Add code compliant fire alarm system throughout	56,388	SF	3.50	197,358	
9.2 The existing building is provided with exit signage coverage in common spaces; however, it was observed that many large classrooms and miscellaneous rooms are provided with paper signage. Internally or externally illuminated exit signs as required.					
					\$12,000
Add exist signs to existing large spaces	30	EA	400.00	12,000	
<b>10.0 Technology</b>					
10.1 Telecommunications infrastructure does not comply with BICSI standards. Telecommunications cabling was observed to be unsupported or supported by conduits which are a code violation. Telecommunications equipment is not installed in dedicated rooms or closets and does not comply with clearances required by BICSI standards. The Telecom Room was cluttered with storage items and not adequately ventilated.					
					\$144,520
Demolition					
Demolition at locations of new closets	4	LOC	350.00	1,400	
Partitions, drywall					
Standard	672	SF	15.00	10,080	
Miscellaneous					
Sealants and caulking at partitions	192	LF	2.00	384	
Rough blocking	96	LF	3.00	288	
Wood doors					
Single leaf					
Complete	4	EA	2,400.00	9,600	
Paint to door and frame	4	EA	120.00	480	
Sealants and caulking	4	EA	90.00	360	
Wood blocking at openings	4	EA	80.00	320	
Specialties					
Signage/Directories	4	EA	150.00	600	
Backer panels in electrical closets	4	EA	150.00	600	
Wall finishes					
Paint to gwb	1,344	SF	1.00	1,344	

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	Quantity	Unit	Rate	Subtotal	Item Total
<i>Floor finishes</i>					
Bases to walls	96	LF	3.00	288	
<i>Ceiling finishes</i>					
Patching	4	LOC	350.00	1,400	
<i>Electrical</i>					
New lighting and controls	4	LOC	400.00	1,600	
Modifications to fire alarm and add indicator lights	4	LOC	750.00	3,000	
Rework - rewire teledate systems utilizing j hooks	56,388	SF GFA	2.00	112,776	
10.2 The telephone system is by Nortel, is no longer in business. The telephone system is operational but will require to be upgraded in the near future. Dedicating a room or system relocation is required.					\$7,500
<i>Electrical</i>					
Replace telephone system	1	LS	7,500.00	7,500	
<b>Subtotal</b>					<b>\$536,317</b>
<b>Markups</b>					
General conditions and project requirements					\$92,783
General conditions and requirements	15.00%		536,317	80,448	
Bond and Insurance	2.00%		616,765	12,335	
Building permit	0.00%		629,100		
<b>Overhead and Profit</b>					<b>\$44,037</b>
Contractors overhead and profit (Fee)	7.00%		629,100	44,037	
<b>Subtotal</b>					<b>\$136,820</b>
<b>Contingencies/Escalation</b>					
Contingencies					\$100,971
Design contingency	15.00%		673,137	100,971	
GMP contingency	0.00%		774,108		
Escalation					\$22,449
Escalation to Start Date (October 2017)	2.90%		774,108	22,449	
<b>Subtotal</b>					<b>\$123,420</b>
<b>TOTAL - PEABODY REQUIRED</b>					<b>\$796,557</b>

**PEABODY RECOMMENDED****Trade Costs**

## 1.0 Architectural

## 1.2 Building cleaning

\$88,010

Steam clean the entire exterior of the building.

27,080 SF 2.50 67,700

Minor selective repointing

1,354 SF 15.00 20,310

## 1.3 Roof replacement

\$1,562,726

Remove existing roofing

39,100 SF 2.50 97,750

Abatement associated with roofing

1 LS 50,000.00 50,000

New roofing, with additional insulation, flashing and edge trim, including temporary removing hvac systems on roof

39,100 SF 28.00 1,094,800

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	Quantity	Unit	Rate	Subtotal	Item Total
<b>1.4 Replace worn floor finishes</b>					<b>\$256,426</b>
Remove existing floor finishes	47,930	SF	0.75	35,948	
New carpet and vct	47,930	SF	4.00	191,720	
New wall base	1	LS	28,758.00	28,758	
<b>1.5 Remove VAT floor tile</b>					<b>\$63,750</b>
Remove existing vat floor tile	15,000	SF	4.25	63,750	
<b>1.6 Upgrade light-framed classroom partitions/doors</b>					<b>\$267,530</b>
Remove existing partitions and doors	15,002	SF	1.50	22,503	
New partitions	15,002	SF	11.40	171,023	
New interior doors	22	EA	2,000.00	44,000	
Paint to walls	30,004	SF	1.00	30,004	
<b>1.7 Replace exterior doors, including balcony exists</b>					<b>\$174,750</b>
Remove existing doors and frames	41	EA	150.00	6,150	
New single leaf doors, complete	23	EA	4,000.00	92,000	
New double leaf doors	9	EA	7,400.00	66,600	
Door operators	2	EA	5,000.00	10,000	
<b>2.0 Stormwater Management</b>					
<b>2.1 Clean all drainage structures and pipe network</b>					<b>\$5,000</b>
Allowance	1	LS	5,000.00	5,000	
<b>2.2 Repair minor areas where erosion scars have developed.</b>					<b>\$2,000</b>
Allowance	1	LS	2,000.00	2,000	
<b>3.0 Sewer</b>					
<b>3.1 Assess condition of existing building sewer grease trap, sewer and sewer manholes, septic tank, dosing chamber and distribution box.</b>					<b>\$1,000</b>
Allowance	1	LS	1,000.00	1,000	
<b>3.2 Siphon dosing appears to be the method of dosing the soil leaching system which is now prohibited under Title 5. Options for continued use should be discussed with the Concord Board of Health.</b>					<b>\$40,000</b>
Existing septic tank					
Replacement or modifications	1	LS	40,000.00	40,000	
<b>6.0 Structure</b>					
<b>6.3 Roof drainage appears to be minimal. Roof drainage issues should be evaluated and consideration be given to adding scuppers through the parapets.</b>					<b>\$39,200</b>
Create opening in parapet wall for new scupper (1#/30lf)	49	LOC	300.00	14,700	
New prefabricated scupper, including sealants etc.	49	EA	250.00	12,250	
New drip pad	49	EA	250.00	12,250	
<b>6.4 Control joints were provided in the exposed, reinforced concrete roof parapets; nonetheless, several vertical shrinkage cracks were noted (not significant). Areas of surficial spalling were observed. Ultimately, all such conditions should be properly repaired.</b>					<b>\$15,000</b>
Allow for crack repairs	1	LS	15,000.00	15,000	

	Quantity	Unit	Rate	Subtotal	Item Total
6.5 Reinforced concrete exterior stairs at the ends of the West and South Wings are in fair condition. Brick below the stair at the central support has deteriorated at several locations. Similarly, the slab in the loading area is showing signs of deterioration.					\$273,770
Repoint and selective masonry repairs/replacement at staircases Loading dock slab	6	LOC	1,000.00	6,000	
Remove existing slab and portion of loading dock apron wall	1	LS	3,600.00	3,600	
Replace portion of loading dock wall	204	SF	60.00	12,240	
New loading dock slab	300	SF	10.00	3,000	
6.6 The brick veneer requires repointing in limited areas.					\$60,930
Repointing existing building (assumed 15%)	4,062	SF	15.00	60,930	
6.7 The anchorage of CMU exterior masonry walls and interior masonry partitions (seismic clips) will need to be evaluated (per code) if a major renovation of the building is undertaken in the future.					\$188,000
Steel clip angles in seismic bracing	752	EA	250.00	188,000	
7.0 HVAC					
7.1 Miscellaneous systems: The main office has no local AC or ventilation. Add residential type system.					\$28,000
Hvac					
Ductless split system air conditioning systems (Fujisonic or similar)	1	LS	25,000.00	25,000	
Electrical					
Electrical work associated with split system hvac	1	LS	3,000.00	3,000	
7.2 Replace unit ventilators.					\$1,178,509
Hvac					
Remove unit ventilators, exhaust units, air handlers and heating & ventilating units.	56,388	SF	1.50	84,582	
New unit ventilators, exhaust units, air handlers and heating & ventilating units.	56,388	SF	13.40	755,599	
New controls			Included below		
Balancing, commissioning etc.	56,388	SF	1.00	56,388	
Rigging, shop drawings etc	56,388	SF	1.00	56,388	
Electrical					
Electrical work associated with new hvac equipment installatio	56,388	SF	1.50	84,582	
Other work					
Other buildiers work associated with hvac equipment replacement	56,388	SF	2.50	140,970	
7.3 Hot water piping distribution system: The 50-year old hot water piping systems have outlived their life expectancy, although are apparently operating satisfactorily. The perimeter systems are buried in largely inaccessible trenches and would likely be abandoned with a major system renovation. (Cost will be given for this item but it will not be included to the overall budget)					\$479,298
HVAC					
Replace piping	56,388	SF GFA	8.50	479,298	

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7.5 The original pneumatic control system is still largely functional, but support for servicing of these systems is getting more difficult to find.					\$239,649
HVAC					
New controls	56,388	SF GFA	4.25	239,649	
8.0 Fire protection and plumbing					
8.2 The building is currently not protected with automatic sprinklers. It is expected that sprinkler protection will be provided throughout the building as part of any major alteration project.					\$513,492
Sprinkler system					
Exposed sprinkler system throughout building	56,388	SF GFA	9.00	507,492	
Fire alarm connections to sprinkler system	1	LS	6,000.00	6,000	
8.3 Visible copper supply piping within the building appears to be in good condition; insulation, where provided, is showing signs of wear. Selectively replace insulation.					\$1,500
Replace insulation, including removal of existing	1	LS	1,500.00	1,500	
8.4 Visible cast iron piping inside the building shows signs of spot repairs and normal wear and tear. Check for repairs.					\$15,000
Allowance for repairs	1	LOC	15,000.00	15,000	
8.5 ADA compliant staff toilet rooms were not noted and are recommended. (assumed a pair of 2 fixture bathrooms are constructed to satisfy requirement)					\$91,058
Demolition					
Demolition at locations of new restrooms	2	LOC	2,500.00	5,000	
Partitions, drywall					
Standard	560	SF	15.00	8,400	
Miscellaneous					
Sealants and caulking at partitions	160	LF	2.00	320	
Rough blocking	80	LF	3.00	240	
Wood doors					
Single leaf					
Complete	2	EA	2,400.00	4,800	
Paint to door and frame	2	EA	120.00	240	
Sealants and caulking	2	EA	90.00	180	
Wood blocking at openings	2	EA	80.00	160	
Specialties					
Signage/Directories	2	EA	150.00	300	
Restroom accessories	2	RMS	1,500.00	3,000	
Wall finishes					
Tile to walls	512	SF	18.00	9,216	
Floor finishes					
Tile to floors	128	SF	18.00	2,304	
Marble threshold	2	EA	75.00	150	
Bases to walls	64	LF	18.00	1,152	
Ceiling finishes					
Ac ceilings	128	SF	7.00	896	

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	Quantity	Unit	Rate	Subtotal	Item Total
<i>Plumbing fixtures</i>					
New fixture, complete with wiring	4	FIX	7,800.00	31,200	
<i>HVAC</i>					
Restroom heating	2	RMS	4,500.00	9,000	
Restroom exhaust	2	RMS	3,500.00	7,000	
<i>Electrical</i>					
Allowance	1	LS	7,500.00	7,500	
8.6 Casework fixtures: ADA compliant arrangements were not noted and are recommended.					\$65,000
<i>Fixed furnishing</i>					
Modifications to existing casework to allow ADA access \	26	LOC	2,500.00	65,000	
8.7 Replace domestic hot water distribution					\$454,716
<i>Plumbing</i>					
Remove existing hot water system	56,388	SF GFA	1.00	56,388	
New hot water generation	1	LS	50,000.00	50,000	
Hot water distribution	56,388	SF GFA	3.00	169,164	
<i>Electrical</i>					
Electrical connections to new equipment	1	LS	10,000.00	10,000	
<i>General builders work</i>					
Allow for other builders work to accommodate hot water installation	56,388	SF	3.00	169,164	
9.0 Electrical					
9.3 Upgrade lighting levels and energy efficiency					\$521,589
<i>Lighting</i>					
Remove existing	56,388	SF GFA	1.50	84,582	
New lighting, utilizing existing wiring	56,388	SF GFA	6.00	338,328	
New lighting controls	56,388	SF GFA	1.25	70,485	
Shop drawing, permits, etc.	56,388	SF GFA	0.50	28,194	
9.4 Improved electrical distribution					\$126,874
<i>Power and distribution</i>					
Supplemental panelboards	56,388	SF GFA	0.70	39,472	
Added small power devices	56,388	SF GFA	1.35	76,124	
Shop drawing, permits, etc.	56,388	SF GFA	0.20	11,278	
10.0 Technology					
10.3 The intrusion detection system has limited coverage with motion sensors in main corridors and door contacts on exterior doors. A new intrusion detection system with door contact on all exterior doors and motions sensors in all rooms accessible from grade level is recommended. Motion detectors should be extended on the ground floor to the classrooms.					\$19,500
<i>Electrical</i>					
Add intrusion detection system to all doors accessible from outside	30	DRS	650.00	19,500	

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	Quantity	Unit	Rate	Subtotal	Item Total
10.4 The video surveillance system is outmoded Genetec system with IP cameras monitoring the front door. There are no other cameras in the school. An IP camera and network video recorder based video surveillance system is recommended. The system should monitor all entry and exits, corridors, cafeteria, gymnasium and building exterior. The system should be integrated with the access control system and the intrusion detection system.					\$98,000
Electrical					
Add security camera	1	LS	98,000.00	98,000	
10.5 The data communications system meets current programming requirements but should be considered for an upgrade due to age. The Wi-Fi system should be upgraded every five years.					\$140,970
Electrical					
Replace existing data system	56,388	SF GFA	2.50	140,970	
10.6 Upgrade front door intercom					\$6,000
Electrical					
New intercom at front door, complete	1	LS	6,000.00	6,000	
10.7 PA system: two emergency call switches should be located in classrooms. The PA system is not integrated to the telephone system. The PA system is dated and should be considered for an upgrade.					\$42,291
Electrical					
Replace existing pa system	56,388	SF GFA	0.75	42,291	
10.8 The wired clock system is no longer operational. The system clocks have been replaced by individual battery operated clocks. A new wired or wireless clock system with bell schedule are recommended.					\$16,916
Electrical					
Replace existing clock system	56,388	SF GFA	0.30	16,916	
10.9 Some of the speakers for the audio visual system are not functional. The audiovisual system appears to be dated and should be considered for an upgrade.					\$200,000
Electrical					
Replace audiovisual system with interactive system	1	LS	200,000.00	200,000	
<b>Subtotal</b>					<b>\$7,276,454</b>
<b>Markups</b>					
General conditions and project requirements					\$1,258,826
General conditions and requirements	15.00%		7,276,454	1,091,468	
Bond and Insurance	2.00%		8,367,922	167,358	
Building permit	0.00%		8,535,280		
Overhead and Profit					\$597,470
Contractors overhead and profit (Fee)	7.00%		8,535,280	597,470	
<b>Subtotal</b>					<b>\$1,856,296</b>

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	Quantity	Unit	Rate	Subtotal	Item Total
<b>Contingencies/Escalation</b>					
Contingencies					\$1,369,913
Design contingency	15.00%		9,132,750	1,369,913	
GMP contingency	0.00%		10,502,663		
Escalation					\$304,577
Escalation to Start Date (October 2017)	2.90%		10,502,663	304,577	
<b>Subtotal</b>					<b>\$1,674,490</b>
<b>TOTAL - PEABODY RECOMMENDED</b>					<b>\$10,807,240</b>
 <b>PEABODY OPTIONAL</b>					
<b>Trade Costs</b>					
<b>1.0 Architectural</b>					
1.8 Gymnasium was designed for elementary school students, rendering it severely undersized with a low ceiling, and essentially no out of bounds space around the basketball court. New gymnasium wing could be considered.					
					\$2,802,800
New gym with adjoining restrooms and storage rooms					
Allowance	8,000	SF GFA	350.35	2,802,800	
1.9 The Forum is severely undersized with a low ceiling, five downward, carpeted "steps" for sitting, and an open performance platform. New auditorium addition could be considered.					
					\$3,053,470
New auditorium addition					
Allowance	7,000	SF GFA	436.21	3,053,470	
<b>7.0 HVAC</b>					
7.4 Efficiency of the hot water pump variable flow control systems should be reviewed.					
					\$68,750
HVAC					
Replace hot water pumps including new variable frequency drives	1	LS	50,000.00	50,000	
New controls for pumps	1	LS	18,750.00	18,750	
<b>9.0 Electrical</b>					
9.5 Provide emergency generator.					
					\$150,000
Allowance	1	LS	150,000	150,000	
<b>11.0 Code</b>					
11.1 A complete building survey will be needed to determine full-building accessibility compliance, should a renovation project trigger this requirement.					
					\$15,000
Allowance	1	LS	15,000.00	15,000	
<b>Subtotal</b>					<b>\$6,090,020</b>

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<b>Markups</b>					
General conditions and project requirements					\$1,053,573
General conditions and requirements	15.00%		6,090,020	913,503	
Bond and Insurance	2.00%		7,003,523	140,070	
Building permit	0.00%		7,143,593		
Overhead and Profit					\$500,052
Contractors overhead and profit (Fee)	7.00%		7,143,593	500,052	
			<b>Subtotal</b>		<b>\$1,553,625</b>
<b>Contingencies/Escalation</b>					
Contingencies					\$1,146,547
Design contingency	15.00%		7,643,645	1,146,547	
GMP contingency	0.00%		8,790,192		
Escalation					\$254,916
Escalation to Start Date (October 2017)	2.90%		8,790,192	254,916	
			<b>Subtotal</b>		<b>\$1,401,463</b>
<b>TOTAL - PEABODY OPTIONAL</b>					<b>\$9,045,108</b>

Quantity Unit Rate Subtotal Item total

### SANBORN REQUIRED

#### Trade Costs

##### 1.0 Architectural

1.1 The two exit stairs from the Sanborn second floor classrooms do not have rated doors or automatic closers. \$25,050

###### Demolition

Remove existing doors and frames 5 EA 120.00 600

###### Interior doors

New doors frame and hardware 5 EA 2,600.00 13,000

Paint to door and frame 5 EA 120.00 600

Sealants and caulking 5 EA 90.00 450

Wood blocking at openings 5 EA 80.00 400

###### Electrical

Power to doors 5 LOC 750.00 3,750

Fire alarm interface 5 LOC 1,250.00 6,250

##### 2.0 Stormwater management

2.1 Re-grade both paved and unpaved areas of the eastern portion of the south parking area to direct runoff to the existing bioswale that is currently being bypassed. \$49,454

###### Demolition

Remove curbing 170 LF 8.00 1,360

Remove paving 9,000 SF 1.20 10,800

###### Site earthwork

Gravel base 167 CY 37.00 6,179

Fine grading 1,000 SY 0.75 750

###### Bituminous concrete paving

Bituminous concrete 201 T 115.00 23,115

Precast concrete curb 170 LF 25.00 4,250

###### Pavement markings

Single solid lines, 4" thick 30 SPCE 100.00 3,000

##### 5.0 Parking

5.1 There are currently 76 striped parking spaces, 21 spaces less than required. There is additional paved parking area that can be striped. \$2,100

###### Pavement markings

Single solid lines, 4" thick 21 SPCE 100.00 2,100

##### 6.0 Structure

6.1 There are cracks in the brick veneer in several locations that require repair. \$10,000

###### Masonry repairs

Complete 1 LS 10,000.00 10,000

6.2 The concrete exterior (site) stair at the northwest corner of the Classroom Wing has deteriorated and should be repaired. \$4,462

###### Demolition

Remove existing steps 30 SF 15.00 450

###### Concrete stair

###### Footing

Dowel existing to connect to new treads and risers 10 EA 35.00 350

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<i>Treads and risers</i>					
Gravel base at treads and risers	2	CY	50.00	100	
Formwork to risers	30	LF	27.00	810	
Reinforcement in treads and risers	100	LB	1.30	130	
Concrete in treads and risers	2	CY	180.75	362	
<i>Finishing</i>					
Rubbing exposed concrete	30	SF	2.00	60	
<i>Ancillaries</i>					
Rails @ steps and the like	11	LF	200.00	2,200	
<b>7.0 HVAC</b>					
7.1 Outside air ventilation louver at boiler room is being evaluated by installer to correct its operation. Complete modification.					
Allowance	1	LS	2,500.00	2,500	\$2,500
<b>8.0 Fire protection and plumbing</b>					
8.1 The kitchen gas header on the cooking line is not compliant with current Code. An interlock with the exhaust hood is required.					
Add interlock with exhaust hood	1	LOC	2,500.00	2,500	\$2,500
<b>9.0 Electrical</b>					
9.1 The building is currently provided with a fire alarm system that includes smoke detection and notification appliances located in common spaces and corridors only. There are manual pull stations located at each exit. The system is required to have emergency voice/alarm communication capabilities in accordance with 780 CMR 907.5. This includes all spaces such as the cafeteria, gymnasium, classrooms, etc. It is recommended to upgrade the fire alarm system to comply with 780 CMR and NFPA 72. Minimum wired detection system and notification is required.					
Add code compliant fire alarm system throughout	84,054	SF	3.50	294,189	\$294,189
9.2 The existing building is provided with exit signage coverage in common spaces; however, it was observed that many large classrooms and miscellaneous rooms are provided with paper signage. Internally or externally illuminated exit signs as required.					
Add exit signs to existing large spaces	35	EA	400.00	14,000	\$14,000

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	Quantity	Unit	Rate	Subtotal	Item total
<b>10.0 Technology</b>					
10.1 Telecommunications infrastructure does not comply with BICSI standards. Telecommunications cabling was observed to be unsupported or supported by conduits which are a code violation. Telecommunications equipment is not installed in dedicated rooms or closets and does not comply with clearances required by BICSI standards. The Telecom Room was cluttered with storage items and not adequately ventilated.					
					\$215,724
<i>Demolition</i>					
Demolition at locations of new closets	6	LOC	350.00	2,100	
<i>Partitions, drywall</i>					
Standard	1,008	SF	15.00	15,120	
<i>Miscellaneous</i>					
Sealants and caulking at partitions	288	LF	2.00	576	
Rough blocking	144	LF	3.00	432	
<i>Wood doors</i>					
<i>Single leaf</i>					
Complete	6	EA	2,400.00	14,400	
Paint to door and frame	6	EA	120.00	720	
Sealants and caulking	6	EA	90.00	540	
Wood blocking at openings	6	EA	80.00	480	
<i>Specialties</i>					
Signage/Directories	6	EA	150.00	900	
Backer panels in electrical closets	6	EA	150.00	900	
<i>Wall finishes</i>					
Paint to gwb	2,016	SF	1.00	2,016	
<i>Floor finishes</i>					
Bases to walls	144	LF	3.00	432	
<i>Ceiling finishes</i>					
Patching	6	LOC	350.00	2,100	
<i>Electrical</i>					
New lighting and controls	6	LOC	400.00	2,400	
Modifications to fire alarm and add indicator lights	6	LOC	750.00	4,500	
Rework - rewire teledate systems utilizing j hooks	84,054	SF GFA	2.00	168,108	
10.2 The telephone system is by Nortel, which is no longer in business. The telephone system is operational but will require to be upgraded in the near future. Dedicating a room or system relocation is required.					
					\$7,500
<i>Electrical</i>					
Replace telephone system	1	LS	7,500.00	7,500	
<b>Subtotal</b>					<b>\$627,479</b>
<b>Markups</b>					
General conditions and project requirements					
General conditions and requirements					\$108,554
Bond and Insurance					14,432
Building permit					736,033
Overhead and Profit					
Contractors overhead and profit (Fee)					\$51,522
<b>Subtotal</b>					<b>\$160,076</b>

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	Quantity	Unit	Rate	Subtotal	Item total
<b>Contingencies/Escalation</b>					
Contingencies					\$118,133
Design contingency	15.00%		787,555	118,133	
GMP contingency	0.00%		905,688		
Escalation					\$26,265
Escalation to Start Date (October 2017)	2.90%		905,688	26,265	
<b>Subtotal</b>					<b>\$144,398</b>
<b>TOTAL - SANDBORN REQUIRED</b>					<b>\$931,953</b>

**SANBORN RECOMMENDED**

**Trade Costs**

1.0 Architectural

1.2 Steam clean the entire exterior of the building.					\$88,725
Steam clean the entire exterior of the building.	27,300	SF	2.50	68,250	
Minor selective repointing	1,365	SF	15.00	20,475	
1.3 Roof replacement					\$2,993,562
Remove existing roofing	76,894	SF	2.50	192,235	
Abatement associated with roofing	1	LS	50,000.00	50,000	
New roofing, with additional insulation, flashing and edge trim, including temporary removing hvac systems on roof	76,894	SF	28.00	2,153,032	
1.4 Replace worn floor finishes					\$382,237
Remove existing floor finishes	71,446	SF	0.75	53,585	
New carpet and vct	71,446	SF	4.00	285,784	
New wall base	1	LS	42,867.60	42,868	
1.5 Remove VAT floor tile					\$63,750
Remove existing vat floor tile	15,000	SF	4.25	63,750	
1.6 Replace exterior doors					\$95,900
Remove existing doors and frames	22	EA	150.00	3,300	
New single leaf doors, complete	4	EA	4,000.00	16,000	
New double leaf doors	9	EA	7,400.00	66,600	
Door operators	2	EA	5,000.00	10,000	
1.7 Replace quarry tile at main entrance					\$36,408
Remove existing tile, including floor grinding	1,300	SF	8.00	10,400	
New quarry tile	1,300	SF	18.00	23,400	
New quarry tile base	163	LF	16.00	2,608	
1.8 Replace science lab casework					\$86,400
Remove existing casework	1	RM	2,000.00	2,000	
New casework	1	RM	18,000.00	18,000	
2.0 Stormwater management					
2.2 Clean all drainage structures and pipe network					\$5,000
Allowance	1	LS	5,000.00	5,000	
2.3 Repair minor areas where erosion scars have developed.					\$2,000
Allowance	1	LS	2,000.00	2,000	
3.0 Sewer					
3.1 Assess condition of existing building sewer, ejector pump system, septic tank, pump chamber and distribution boxes.					\$1,000
Allowance	1	LS	1,000.00	1,000	

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	Quantity	Unit	Rate	Subtotal	Item total
<b>6.0 Structure</b>					
6.3 Roof drainage appears to be minimal. Roof drainage issues should be evaluated and consideration given to adding scuppers through the parapets.					\$58,400
Create opening in parapet wall for new scupper (1#/30lf)	73	LOC	300.00	21,900	
New prefabricated scupper, including sealants etc.	73	EA	250.00	18,250	
New drip pad	73	EA	250.00	18,250	
6.4 Regrade concrete paving and lawn at the open courtyard in front of the cafeteria					\$23,904
Demolition					
Remove paving	1,420	SF	1.40	1,988	
Site earthwork					
Fine grading	158	SY	2.00	316	
Gravel base	26	CY	60.00	1,560	
Concrete paving					
Concrete	1,420	SF	12.00	17,040	
Topsoil and landscape modifications	1	LS	3,000.00	3,000	
6.5 The retaining wall at the open courtyard has absorbed moisture over time and has been damaged. Cleaning of the retaining wall is recommended.					\$3,580
Cleaning					
Remove paving	432	SF	2.50	1,080	
Repairs					
Allowance	1	LS	2,500.00	2,500	
6.6 The bases of approximately 10% of exterior (exposed) columns were improperly vibrated and consolidated; accordingly, deterioration has occurred. Correct column bases.					\$2,400
Repairs					
Allowance	8	LOC	300.00	2,400	
6.7 Repair non-structural crack on CMU at interior wall of Main Floor Classroom, northeast corner.					\$1,000
Repairs					
Allowance	1	LOC	1,000.00	1,000	
<b>7.0 HVAC</b>					
7.2 Replace unit ventilators.					\$1,756,729
Hvac					
Remove unit ventilators, exhaust units, air handlers and heating & ventilating units.	84,054	SF	1.50	126,081	
New unit ventilators, exhaust units, air handlers and heating & ventilating units.	84,054	SF	13.40	1,126,324	
New controls					Included below
Balancing, commissioning etc.	84,054	SF	1.00	84,054	
Rigging, shop drawings etc	84,054	SF	1.00	84,054	
Electrical					
Electrical work associated with new hvac equipment installati	84,054	SF	1.50	126,081	
Other work					
Other builders work associated with hvac equipment replacement	84,054	SF	2.50	210,135	

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	Quantity	Unit	Rate	Subtotal	Item total
7.3 Hot Water Piping Distribution System: The 50-year old hot water piping systems have outlived their life expectancy, although are apparently operating satisfactorily. The perimeter systems are buried in largely inaccessible trenches and would likely be abandoned with a major system renovation. (The cost of this item will be given but it will not be included in the overall budget)					
					\$714,459
HVAC					
Replace piping	84,054	SF GFA	8.50	714,459	
7.5 The original pneumatic control system is still largely functional, but support for servicing of these systems is getting more difficult to find.					
					\$357,230
HVAC					
New controls	84,054	SF GFA	4.25	357,230	
8.0 Fire protection and plumbing					
8.2 The building is currently not protected with automatic sprinklers. It is expected that sprinkler protection will be provided throughout the building as part of any major alteration project.					
					\$764,486
Sprinkler system					
Exposed sprinkler system throughout building	84,054	SF GFA	9.00	756,486	
Fire alarm connections to sprinkler system	1	LS	8,000.00	8,000	
8.3 Visible copper supply piping within the building appears to be in good condition; insulation, where provided, is showing signs of wear. Selectively replace insulation.					
					\$2,000
Replace insulation, including removal of existing	1	LS	2,000.00	2,000	
8.4 ADA compliant staff toilet rooms were not noted and are recommended. (assumed a pair of two fixture bathrooms are constructed to satisfy requirement					
					\$91,058
Demolition					
Demolition at locations of new restrooms	2	LOC	2,500.00	5,000	
Partitions, drywall					
Standard	560	SF	15.00	8,400	
Miscellaneous					
Sealants and caulking at partitions	160	LF	2.00	320	
Rough blocking	80	LF	3.00	240	
Wood doors					
Single leaf					
Complete	2	EA	2,400.00	4,800	
Paint to door and frame	2	EA	120.00	240	
Sealants and caulking	2	EA	90.00	180	
Wood blocking at openings	2	EA	80.00	160	
Specialties					
Signage/Directories	2	EA	150.00	300	
Restroom accessories	2	RMS	1,500.00	3,000	
Wall finishes					
Tile to walls	512	SF	18.00	9,216	

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	Quantity	Unit	Rate	Subtotal	Item total
<i>Floor finishes</i>					
Tile to floors	128	SF	18.00	2,304	
Marble threshold	2	EA	75.00	150	
Bases to walls	64	LF	18.00	1,152	
<i>Ceiling finishes</i>					
Act ceilings	128	SF	7.00	896	
<i>Plumbing fixtures</i>					
New fixture, complete with wiring	4	FIX	7,800.00	31,200	
<i>HVAC</i>					
Restroom heating	2	RMS	4,500.00	9,000	
Restroom exhaust	2	RMS	3,500.00	7,000	
<i>Electrical</i>					
Allowance	1	LS	7,500.00	7,500	
8.5 Casework fixtures: ADA compliant arrangements were not noted and are recommended.					\$80,000
<i>Fixed furnishing</i>					
Modifications to existing casework to allow ADA access\	32	LOC	2,500.00	80,000	
8.6 Replace domestic hot water distribution					\$648,378
<i>Plumbing</i>					
Remove existing hot water system	84,054	SF GFA	1.00	84,054	
New hot water generation	1	LS	50,000.00	50,000	
Hot water distribution	84,054	SF GFA	3.00	252,162	
<i>Electrical</i>					
Electrical connections to new equipment	1	LS	10,000.00	10,000	
<i>General builders work</i>					
Allow for other builders work to accommodate hot water installation	84,054	SF	3.00	252,162	
9.0 Electrical					
9.3 Upgrade lighting levels and energy efficiency					\$777,500
<i>Lighting</i>					
Remove existing	84,054	SF GFA	1.50	126,081	
New lighting, utilizing existing wiring	84,054	SF GFA	6.00	504,324	
New lighting controls	84,054	SF GFA	1.25	105,068	
Shop drawing, permits, etc.	84,054	SF GFA	0.50	42,027	
9.4 Improved electrical distribution					\$189,122
<i>Power and distribution</i>					
Supplemental panelboards	84,054	SF GFA	0.70	58,838	
Added small power devices	84,054	SF GFA	1.35	113,473	
Shop drawing, permits, etc.	84,054	SF GFA	0.20	16,811	
10.0 Technology					
10.3 The intrusion detection system has limited coverage with motion sensors in main corridors and door contacts on exterior doors. A new intrusion detection system with door contact on all exterior doors and motion sensors in all rooms accessible from grade level is recommended. Motion detectors should be extended on the ground floor to the classrooms.					\$7,150
<i>Electrical</i>					
Add intrusion detection system to all doors accessible from outside	11	DRS	650.00	7,150	

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	Quantity	Unit	Rate	Subtotal	Item total
10.4 The video surveillance system is outmoded Genetec System with IP cameras monitoring the front door. There are no other cameras in the school. An IP camera and network video recorder based video surveillance system is recommended. The system should monitor all entry and exits, corridors, cafeteria, gymnasium and building exterior. The system should be integrated with the access control system and the intrusion detection system.					\$75,000
Electrical					
Add security camera	1	LS	75,000.00	75,000	
10.5 The data communications system meets current programming requirements but should be considered for an upgrade due to age. The Wi-Fi system should be upgraded every five years.					\$210,135
Electrical					
Replace existing data system	84,054	SF GFA	2.50	210,135	
10.6 An access control Aiphone intercom is provided at the front door to communicate with the administration office and for front door release. The system is dated and should be considered for replacement.					\$6,000
Electrical					
Replace door access system	1	LS	6,000.00	6,000	
10.7 PA system: two emergency call switches should be located in classrooms. The PA system is not integrated into the telephone system. The PA system is dated and should be considered for an upgrade.					\$63,041
Electrical					
Replace existing pa system	84,054	SF GFA	0.75	63,041	
10.8 The wired clock system is no longer operational. The system clocks have been replaced by individual battery operated clocks. A new wired or wireless clock system with bell schedule is recommended.					\$25,216
Electrical					
Replace existing clock system	84,054	SF GFA	0.30	25,216	
10.9 Some of the speakers for the audio visual system are not functional. The audiovisual system appears to be dated and should be considered for an upgrade.					\$250,000
Electrical					
Replace audiovisual system with interactive system	1	LS	250,000.00	250,000	
<b>Subtotal</b>					<b>\$9,861,770</b>
<b>Markups</b>					
General conditions and project requirements					\$1,706,087
General conditions and requirements	15.00%		9,861,770	1,479,266	
Bond and Insurance	2.00%		11,341,036	226,821	
Building permit	0.00%		11,567,857		
Overhead and Profit					\$809,750
Contractors overhead and profit (Fee)	7.00%		11,567,857	809,750	
<b>Subtotal</b>					<b>\$2,515,837</b>

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	Quantity	Unit	Rate	Subtotal	Item total
<b>Contingencies/Escalation</b>					
Contingencies					\$1,856,641
Design contingency	15.00%		12,377,607	1,856,641	
GMP contingency	0.00%		14,234,248		
Escalation					\$412,793
Escalation to Start Date (October 2017)	2.90%		14,234,248	412,793	
<b>Subtotal</b>					<b>\$2,269,434</b>
<b>TOTAL - SANDBORN RECOMMENDED</b>					<b>\$14,647,041</b>

**SANBORN OPTIONAL****Trade Costs**

## 6.0 Structure

6.8 The brick veneer requires repointing in limited areas.					\$409,500
Repointing existing building (assumed 15%)	27,300	SF	15.00	409,500	
6.9 The anchorage of CMU exterior masonry walls and interior masonry partitions (seismic clips) will need to be evaluated (per code) if a major renovation of the building is undertaken in the future.					\$280,250
Steel clip angles in seismic bracing	1,121	EA	250.00	280,250	

## 7.0 HVAC

7.4 Efficiency of the hot water pump variable flow control systems should be reviewed.					\$68,750
HVAC					
Replace hot water pumps including new variable frequency drives	1	LS	50,000.00	50,000	
New controls for pumps	1	LS	18,750.00	18,750	

## 9.0 Electrical

9.4 Provide emergency generator.					\$150,000
Allowance	1	LS	150,000	150,000	

## 11.0 Code

A complete building survey will be needed to determine full-building accessibility					\$15,000
Allowance	1	LS	15,000.00	15,000	
<b>Subtotal</b>					<b>\$923,500</b>

**Markups**

General conditions and project requirements					\$159,766
General conditions and requirements	15.00%		923,500	138,525	
Bond and Insurance	2.00%		1,062,025	21,241	
Building permit	0.00%		1,083,266		
Overhead and Profit					\$75,829
Contractors overhead and profit (Fee)	7.00%		1,083,266	75,829	
<b>Subtotal</b>					<b>\$235,595</b>

**Sandborn School - Detail**

CONCORD PUBLIC SCHOOLS

Concord Middle School

Concord, MA

FEASIBILITY STUDY COST REPORT

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	Quantity	Unit	Rate	Subtotal	Item total
<b>Contingencies/Escalation</b>					
Contingencies					\$173,864
Design contingency	15.00%		1,159,095	173,864	
GMP contingency	0.00%		1,332,959		
Escalation					\$38,656
Escalation to Start Date (October 2017)	2.90%		1,332,959	38,656	
			<b>Subtotal</b>		<b>\$212,520</b>
<b>TOTAL - SANDBORN OPTIONAL</b>					<b>\$1,371,615</b>

## 50 Year Long Term Options - Summary

**CONCORD PUBLIC SCHOOLS**  
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	Total	sf	\$/sf
<b>Existing Renovate Sanborn &amp; Peabody (New Gym &amp; Aud.)</b>	<b>\$53,045,781</b>	<b>151,042</b>	<b>\$351.20</b>
Trade Costs	\$36,738,737		
Markups	\$6,278,797		
Contiingency/Escalation	\$10,028,247		
<hr/>			
<b>Opt1 Addition and Renovation to Sanborn</b>	<b>\$46,207,629</b>	<b>126,342</b>	<b>\$365.73</b>
Trade Costs	\$32,002,732		
Markups	\$5,469,395		
Contiingency/Escalation	\$8,735,502		
<hr/>			
<b>Opt2 Major Sanborn Reconfiguration &amp; Additions</b>	<b>\$47,769,469</b>	<b>125,125</b>	<b>\$381.77</b>
Trade Costs	\$33,084,439		
Markups	\$5,654,264		
Contiingency/Escalation	\$9,030,766		
<hr/>			
<b>Opt3a New Building on Sanborn Site</b>	<b>\$50,190,958</b>	<b>115,430</b>	<b>\$434.82</b>
Trade Costs	\$35,393,555		
Markups	\$5,308,857		
Contiingency/Escalation	\$9,488,546		
<hr/>			
<b>Opt3b New Building on Sanborn Site - Larger</b>	<b>\$54,358,271</b>	<b>125,546</b>	<b>\$432.97</b>
Trade Costs	\$38,332,253		
Markups	\$5,749,646		
Contiingency/Escalation	\$10,276,372		
<hr/>			

	Quantity	Unit	Rate	Total
<b><u>EXISTING RENOVATE SANBORN &amp; PEABODY (NEW GYM &amp;</u></b>				
<b>Trade Costs</b>				
<i>Foundations at additions</i>				
Shallow foundations at gym	8,000	SF	12.50	100,000
Shallow foundations at auditorium	5,000	SF	16.50	82,500
<i>Slab on grade</i>				
Standard slab on grade at gym	8,000	SF	9.00	72,000
Standard slab on grade at auditorium	5,000	SF	9.50	47,500
Patch existing slab on grade	67,161	SF	0.60	40,297
<i>Floor construction</i>				
Steel construction, including metal decking at auditorium	2,000	SF	40.00	80,000
Patching/infill existing structure	43,958	SF	0.40	17,583
<i>Roof construction</i>				
New roof structure to gym	8,000	SF	33.00	264,000
New roof structure to auditorium	5,000	SF	34.00	170,000
Patch/reinforce existing roof structure	92,084	SF	0.75	69,063
<i>Exterior walls</i>				
Exterior wall, windows and doors at gym	8,792	SF	75.00	659,400
Interior backup - CMU at gym	8,792	SF	28.00	246,176
Exterior wall, windows and doors at auditorium	6,600	SF	86.00	567,600
Interior backup - CMU with dry lining	6,600	SF	34.00	224,400
New dry lining insulation and air barrier to inside face of existing exterior wall	40,933	SF	14.40	589,435
Replace existing exterior windows	21,087	SF	92.50	1,950,548
New entrances	2	LOC	18,000.00	36,000
<i>Roofing</i>				
Roof membrane at gym	8,000	SF	23.00	184,000
Roof membrane at auditorium	5,000	SF	23.00	115,000
Replace existing roofing	96,484	SF	30.50	2,942,762
New entry canopy, complete	2	LS	25,000.00	50,000
<i>Interior construction</i>				
Interior partitions, doors, specialties, finishes, caework and equipment at existing	136,042	SF	65.00	8,842,730
Interior partitions, doors, specialties, finishes, caework and equipment at gym	8,000	SF	53.00	424,000
Interior partitions, doors, specialties, finishes, caework and equipment at auditorium	5,000	SF	120.00	600,000
<i>Staircases</i>				
New rails and finishes etc to existing	13	FLT	5,000.00	65,000
New starcases	2	FLT	22,000.00	44,000
<i>Conveying</i>				
Passenger elevators ( 2# elevators - one in each building)	5	STPS	40,000.00	200,000
<i>MEP systems</i>				
Plumbing, mechanical, electrical, and fire protection in existing building	136,042	SF GFA	95.00	12,923,990
Plumbing, mechanical, electrical, and fire protection in gym	8,000	SF GFA	74.00	592,000

	Quantity	Unit	Rate	Total
Plumbing, mechanical, electrical, and fire protection in auditorium	7,000	SF GFA	135.00	945,000
<b>Selective demolition</b>				
Interior demolition	136,042	SF GFA	8.50	1,156,357
Roof demolition				
Remove windows	21,087	SF	8.00	168,696
Partial building demolition	4,400	SF	10.00	44,000
Connection of auditorium to existing school	1	LS	30,000.00	30,000
Hazardous materials abatement - Peabody	1	LS	510,000.00	510,000
Hazardous materials abatement - Sanborn	1	LS	555,000.00	555,000
<b>Site preparation</b>				
Site demolition and earthwork at gym	24,000	SF	1.75	42,000
Site demolition and earthwork at auditorium	15,000	SF	1.75	26,250
<b>Paving</b>				
Roadways, walkways, terraces, etc at gym	24,000	SF	5.00	120,000
Roadways, walkways, terraces, etc at auditorium	15,000	SF	6.00	90,000
<b>Site development</b>				
Site development at gym	24,000	SF	1.70	40,800
Site at auditorium	15,000	SF	2.00	30,000
<b>Site landscaping</b>				
Site landscaping at gym	24,000	SF	0.60	14,400
Site landscaping at auditorium	15,000	SF	0.75	11,250
<b>Utilities</b>				
<b>Mechanical utilities</b>				
Water	1	LS	40,000.00	40,000
Sanitary	1	LS	65,000.00	65,000
Septic system expansion	2	LS	70,000.00	140,000
Storm water	2	LS	150,000.00	300,000
Gas	2	LS	15,000.00	30,000
<b>Electrical utilities</b>				
Service	2	LS	40,000.00	80,000
Site lighting	2	LS	50,000.00	100,000
<b>Markups</b>				
<b>General conditions and project requirements</b>				
General conditions and requirements	12.00%		36,738,737	4,408,648
Bond and Insurance	1.50%		41,147,385	617,211
Building permit	0.00%		41,764,596	
<b>Overhead and Profit</b>				
Contractors overhead and profit (Fee)	3.00%		41,764,596	1,252,938

## 50 Yr Long Term Options - Estimate Detail

**CONCORD PUBLIC SCHOOLS**  
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 Concord, MA  
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	Quantity	Unit	Rate	Total
<b>Contingencies/Escalation</b>				
Contingencies				
Design contingency	12.00%		43,017,534	5,162,104
GMP contingency	0.00%		48,179,638	
Escalation				
Escalation to Start Date (April 2019)	10.10%		48,179,638	4,866,143
<b>TOTAL - OPT 1</b>				<b>\$53,045,781</b>

### OPT1 ADDITION AND RENOVATION TO SANBORN

#### Trade Costs

##### Foundations at additions

Shallow foundations at addition	21,144	SF	12.50	264,300
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##### Slab on grade

Standard slab on grade at addition	21,144	SF	9.00	190,296
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Patch existing slab on grade	67,154	SF	0.60	40,292
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##### Floor construction

Steel construction, including metal decking at addition	21,144	SF	40.00	845,760
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Patching/infill existing structure	16,900	SF	0.40	6,760
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##### Roof construction

New roof structure to addition	21,144	SF	33.00	697,752
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Patch/reinforce existing roof structure	67,154	SF	0.75	50,366
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##### Exterior walls

Exterior wall, windows and doors at addition	15,456	SF	86.00	1,329,216
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Interior backup - drywall	15,456	SF	20.50	316,848
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New dry lining insulation and air barrier to inside face of existing exterior wall	24,042	SF	14.40	346,205
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Replace existing exterior windows	12,386	SF	92.50	1,145,705
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New entrances	1	LOC	18,000.00	18,000
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##### Roofing

Roof membrane at addition	21,144	SF	23.00	486,312
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Replace existing roofing	67,154	SF	30.50	2,048,197
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New entry canopy, complete	1	LS	25,000.00	25,000
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##### Interior construction

Interior partitions, doors, specialties, finishes, casework and equipment at existing	84,054	SF	75.00	6,304,050
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Interior partitions, doors, specialties, finishes, casework and equipment at addition	42,288	SF	75.00	3,171,600
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##### Staircases

New rails and finishes etc to existing	5	FLT	5,000.00	25,000
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New staircases	2	FLT	22,000.00	44,000
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##### Conveying

Passenger elevators	3	STPS	40,000.00	120,000
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##### MEP systems

Plumbing, mechanical, electrical, and fire protection in existing building	84,054	SF GFA	95.00	7,985,130
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	Quantity	Unit	Rate	Total
Plumbing, mechanical, electrical, and fire protection in addition	42,288	SF GFA	95.00	4,017,360
Selective demolition				
Interior demolition	84,054	SF GFA	8.50	714,459
Roof demolition				
Included with roof replacement				
Remove windows	12,386	SF	8.00	99,088
Connection of addition to existing school	1	LS	60,000.00	60,000
Hazardous materials abatement - Sanborn	1	LS	555,000.00	555,000
Site preparation				
Site demolition and earthwork at addition	63,432	SF	1.75	111,006
Paving				
Roadways, walkways, terraces, etc at addition	63,432	SF	6.00	380,592
Site development				
Site at addition	63,432	SF	2.00	126,864
Site landscaping				
Site landscaping at addition	63,432	SF	0.75	47,574
Utilities				
Mechanical utilities				
Water	1	LS	40,000.00	40,000
Sanitary	1	LS	65,000.00	65,000
Septic system expansion	1	LS	70,000.00	70,000
Storm water	1	LS	150,000.00	150,000
Gas	1	LS	15,000.00	15,000
Electrical utilities				
Service	1	LS	40,000.00	40,000
Site lighting	1	LS	50,000.00	50,000
<b>Markups</b>				
General conditions and project requirements				
General conditions and requirements			12.00%	32,002,732
Bond and Insurance			1.50%	35,843,060
Building permit			0.00%	36,380,706
Overhead and Profit				
Contractors overhead and profit (Fee)			3.00%	36,380,706
<b>Contingencies/Escalation</b>				
Contingencies				
Design contingency			12.00%	37,472,127
GMP contingency			0.00%	41,968,782
Escalation				
Escalation to Start Date (April 2019)			10.10%	41,968,782
<b>TOTAL - OPT 2</b>				<b>\$46,207,629</b>

	Quantity	Unit	Rate	Total
<b><u>OPT2 MAJOR SANBORN RECONFIGURATION &amp; ADDITIONS</u></b>				
<b>Trade Costs</b>				
<i>Foundations at additions</i>				
Shallow foundations at addition	41,883	SF	12.50	523,538
<i>Slab on grade</i>				
Standard slab on grade at addition	41,883	SF	9.00	376,947
Patch existing slab on grade	24,460	SF	0.60	14,676
<i>Floor construction</i>				
Steel construction, including metal decking at addition	41,883	SF	40.00	1,675,320
Patching/infill existing structure	16,900	SF	0.40	6,760
<i>Roof construction</i>				
New roof structure to addition	41,883	SF	33.00	1,382,139
Patch/reinforce existing roof structure	24,460	SF	0.75	18,345
<i>Exterior walls</i>				
Exterior wall, windows and doors at addition	17,976	SF	86.00	1,545,936
Interior backup - drywall	17,976	SF	20.50	368,508
New dry lining insulation and air barrier to inside face of existing exterior wall	12,012	SF	14.40	172,973
Replace existing exterior windows	6,188	SF	92.50	572,390
<i>Roofing</i>				
Roof membrane at addition	41,883	SF	23.00	963,309
Replace existing roofing	24,460	SF	30.50	746,030
New entry canopy, complete	1	LS	25,000.00	25,000
<i>Interior construction</i>				
Interior partitions, doors, specialties, finishes, casework and equipment at existing	41,360	SF	75.00	3,102,000
Interior partitions, doors, specialties, finishes, casework and equipment at addition	83,765	SF	75.00	6,282,375
<i>Staircases</i>				
New rails and finishes etc to existing	3	FLT	5,000.00	15,000
New staircases	2	FLT	22,000.00	44,000
<i>Conveying</i>				
Passenger elevators	3	STPS	40,000.00	120,000
<i>MEP systems</i>				
Plumbing, mechanical, electrical, and fire protection in existing building	41,360	SF GFA	95.00	3,929,200
Plumbing, mechanical, electrical, and fire protection in addition	83,765	SF GFA	95.00	7,957,675
<i>Selective demolition</i>				
Interior demolition	41,360	SF GFA	8.50	351,560
Roof demolition	Included with roof replacement			
Remove windows	6,188	SF	8.00	49,504
Connection of addition to existing school	1	LS	60,000.00	60,000
Partial demolition of existing building	42,695	SF	10.00	426,950
Hazardous materials abatement - Sanborn	1	LS	605,000.00	605,000

	Quantity	Unit	Rate	Total
<b>Site preparation</b>				
Site demolition and earthwork at addition	125,648	SF	1.75	219,884
<b>Paving</b>				
Roadways, walkways, terraces, etc at addition	125,648	SF	6.00	753,888
<b>Site development</b>				
Site at addition	125,648	SF	2.00	251,296
<b>Site landscaping</b>				
Site landscaping at addition	125,648	SF	0.75	94,236
<b>Utilities</b>				
<b>Mechanical utilities</b>				
Water	1	LS	40,000.00	40,000
Sanitary	1	LS	65,000.00	65,000
Septic system expansion	1	LS	70,000.00	70,000
Storm water	1	LS	150,000.00	150,000
Gas	1	LS	15,000.00	15,000
<b>Electrical utilities</b>				
Service	1	LS	40,000.00	40,000
Site lighting	1	LS	50,000.00	50,000
<b>Markups</b>				
<b>General conditions and project requirements</b>				
General conditions and requirements	12.00%		33,084,439	3,970,133
Bond and Insurance	1.50%		37,054,572	555,819
Building permit	0.00%		37,610,391	
<b>Overhead and Profit</b>				
Contractors overhead and profit (Fee)	3.00%		37,610,391	1,128,312
<b>Contingencies/Escalation</b>				
<b>Contingencies</b>				
Design contingency	12.00%		38,738,703	4,648,644
GMP contingency	0.00%		43,387,347	
<b>Escalation</b>				
Escalation to Start Date (April 2019)	10.10%		43,387,347	4,382,122
<b>TOTAL - OPT 3</b>				<b>\$47,769,469</b>

**OPT3A NEW BUILDING ON SANBORN SITE**

**Trade Costs**

**Foundations**

Shallow foundations	64,215	SF	13.50	866,903
<b>Slab on grade</b>				
Standard slab on grade	64,215	SF	9.00	577,935
<b>Floor construction</b>				
Steel construction, including metal decking	51,215	SF	40.00	2,048,600
<b>Roof construction</b>				
New roof structure	64,215	SF	33.00	2,119,095

	Quantity	Unit	Rate	Total
<b>Exterior walls</b>				
Exterior wall, windows and doors	35,310	SF	86.00	3,036,660
Interior backup - drywall	35,310	SF	20.50	723,855
<b>Roofing</b>				
Roof membrane	64,215	SF	23.00	1,476,945
New entry canopy, complete	1	LS	25,000.00	25,000
<b>Interior construction</b>				
Interior partitions, doors, specialties, finishes, casework and equipment	115,430	SF	75.00	8,657,250
<b>Staircases</b>				
New staircases	3	FLT	22,000.00	66,000
<b>Conveying</b>				
Passenger elevators	4	STPS	40,000.00	160,000
<b>MEP systems</b>				
Plumbing, mechanical, electrical, and fire protection	115,430	SF GFA	95.00	10,965,850
<b>Site preparation</b>				
Demolish existing school	84,054	SF	8.00	672,432
Hazardous materials abatement	1	LS	825,000.00	825,000
Site demolition and earthwork at addition	256,860	SF	1.75	449,505
<b>Paving</b>				
Roadways, walkways, terraces, etc at addition	256,860	SF	6.00	1,541,160
<b>Site development</b>				
Site at addition	256,860	SF	2.00	513,720
<b>Site landscaping</b>				
Site landscaping at addition	256,860	SF	0.75	192,645
<b>Utilities</b>				
<b>Mechanical utilities</b>				
Water	1	LS	40,000.00	40,000
Sanitary	1	LS	65,000.00	65,000
Septic system	1	LS	90,000.00	90,000
Storm water	1	LS	150,000.00	150,000
Gas	1	LS	15,000.00	15,000
<b>Electrical utilities</b>				
Service	1	LS	40,000.00	40,000
Site lighting	1	LS	75,000.00	75,000
<b>Markups</b>				
<b>General conditions and project requirements</b>				
General conditions and requirements	10.00%		35,393,555	3,539,356
Bond and Insurance	1.50%		38,932,911	583,994
Building permit	0.00%		39,516,905	
<b>Overhead and Profit</b>				
Contractors overhead and profit (Fee)	3.00%		39,516,905	1,185,507

	Quantity	Unit	Rate	Total
<b>Contingencies/Escalation</b>				
Contingencies				
Design contingency	12.00%		40,702,412	4,884,289
GMP contingency	0.00%		45,586,701	
Escalation				
Escalation to Start Date (April 2019)	10.10%		45,586,701	4,604,257
<b>TOTAL - OPT 4a</b>				<b>\$50,190,958</b>

**OPT3B NEW BUILDING ON SANBORN SITE - LARGER**

**Trade Costs**

Foundations

Shallow foundations 74,331 SF 13.50 1,003,469

Slab on grade

Standard slab on grade 74,331 SF 9.00 668,979

Floor construction

Steel construction, including metal decking 51,215 SF 40.00 2,048,600

Roof construction

New roof structure 74,331 SF 33.00 2,452,923

Exterior walls

Exterior wall, windows and doors 35,310 SF 86.00 3,036,660

Interior backup - drywall 35,310 SF 20.50 723,855

Roofing

Roof membrane 74,331 SF 23.00 1,709,613

New entry canopy, complete 1 LS 25,000.00 25,000

Interior construction

Interior partitions, doors, specialties, finishes, casework and equipment 125,546 SF 75.00 9,415,950

Staircases

New staircases 3 FLT 22,000.00 66,000

Conveying

Passenger elevators 4 STPS 40,000.00 160,000

MEP systems

Plumbing, mechanical, electrical, and fire protection 125,546 SF GFA 95.00 11,926,870

Site preparation

Demolish existing school 84,054 SF 8.00 672,432

Hazardous materials abatement 1 LS 825,000.00 825,000

Site demolition and earthwork at addition 297,324 SF 1.75 520,317

Paving

Roadways, walkways, terraces, etc at addition 297,324 SF 6.00 1,783,944

Site development

Site at addition 297,324 SF 2.00 594,648

Site landscaping

Site landscaping at addition 297,324 SF 0.75 222,993

**50 Yr Long Term Options -  
 Estimate Detail**

	Quantity	Unit	Rate	Total
<b>Utilities</b>				
<i>Mechanical utilities</i>				
Water	1	LS	40,000.00	40,000
Sanitary	1	LS	65,000.00	65,000
Septic system	1	LS	90,000.00	90,000
Storm water	1	LS	150,000.00	150,000
Gas	1	LS	15,000.00	15,000
<i>Electrical utilities</i>				
Service	1	LS	40,000.00	40,000
Site lighting	1	LS	75,000.00	75,000
<b>Markups</b>				
<i>General conditions and project requirements</i>				
General conditions and requirements	10.00%		38,332,253	3,833,225
Bond and Insurance	1.50%		42,165,478	632,482
Building permit	0.00%		42,797,960	
<i>Overhead and Profit</i>				
Contractors overhead and profit (Fee)	3.00%		42,797,960	1,283,939
<b>Contingencies/Escalation</b>				
<i>Contingencies</i>				
Design contingency	12.00%		44,081,899	5,289,828
GMP contingency	0.00%		49,371,727	
<i>Escalation</i>				
Escalation to Start Date (April 2019)	10.10%		49,371,727	4,986,544
<b>TOTAL - OPT 4b</b>				<b>\$54,358,271</b>

