REPORT
OF THE
NON-MSBA BUILDING PLAN SUBCOMMITTEE
OF THE MINUTEMAN SCHOOL BUILDING COMMITTEE

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MINUTEMAN HIGH SCHOOL
The "Do Nothing" Option
(or the Non-MSBA Partial Renovation Project)

INTRODUCTION

The Minuteman Non-MSBA Building Plan Subcommittee was created and voted on by the Minuteman Building Committee (09/29/2014) to operate under the following charge:

> "To define the projects that are necessary to complete to sustain the Building that will provide for life / safety of the students, faculty & staff, and that will support the educational plan voted on by the School Committee; to provide the best estimate of each project's cost and timeline as fairly and honestly as possible, and to assume funding from only the District member communities."

There was no funding provided for project management, architectural design or coordination, engineering advice, or any other professional consulting advice to produce this report. The Subcommittee referred only to the various existing reports found in the Appendix at the end of this report. If there are any disagreements or challenges to this report, we recommend that the documents in the Appendix first be reviewed.

The Subcommittee membership was comprised of current Minuteman School Building Committee members with the following professional backgrounds: Director of School Facilities in the City of Cambridge; Superintendent/Director of Minuteman, with previous school building experience; Project & Construction Manager; Superintendent of Construction Company Projects; Fire Chief Town of Belmont; Massachusetts Certified Public Purchasing Official; Director of Minuteman Facilities; member and former Chair of School Committee and Municipal Building Committees, and Licensed Architect.

This report describes the circumstances and consequences for Minuteman High School in the event the School District does not approve one of the MSBA-funded building project options that address the deteriorating conditions and inadequate facilities of the existing school building. This option can be described simply as 'self-funding' a portion of the proposed MSBA Renovation Project, but doing it more expensively, without MSBA, with serious disruptions in learning for students, and not accomplishing most of the new Education Program Plan.

Further analysis and study will require the expenditure of District funds.

SUMMARY

The Circumstances

The Minuteman facility is 40 years old. Its building systems – structure, electrical, mechanical, roofing, windows and exterior cladding – are at the end of their life and are failing fast. The facility falls far short of meeting today's standards for the facilities needed to support the planned educational curriculum, and it falls far short of meeting current requirements for energy efficiency, life safety, air quality, seismic loading (earthquake resistance) and handicap access, to name a few. The Minuteman School Building Committee deems these conditions to be unacceptable, and they should be considered intolerable to the District.

The Consequences of Doing Nothing and Self-Funding

THE MSBA has given the District a FINAL extension to the Feasibility Study. This extension expires June 30, 2016. The District is on the path to seek approval from all member towns for a project approval in the spring of 2016. Should the District communities fail to support the project, MSBA's involvement will end, and the District will need to move forward and the base level of 40% reimbursement will be lost. To call this a "Do Nothing" Scenario is a misnomer because, in the opinion of the Minuteman School Building Committee, doing nothing is not an option. These deteriorating conditions must be addressed to ensure the safety of the students and the quality of their education. A lot of work must be done, but, in this scenario, the cost of that work unfortunately won't be subsidized by the MSBA; the District member towns will have to pay for it all, and there will be far-reaching consequences to the quality of education for several years from the disruption caused by the ongoing work. The District has been placed on WARNING Status by the New England Association of Schools and Colleges (NEASC) for several years. The school will lose its accreditation if there is not an approved project in place to improve the school building conditions in a timely way.

EXISTING CONDITIONS and BACKGROUND

Constructed in 1974, this 40 year old building is at its end of life. While some work has been done over the past few years to repair and upgrade certain parts of the building, the majority of the structure still comprises original materials and systems.

In anticipation of a major upgrade of the facility to meet the newly approved Education Program Plan, spending on maintenance work has intentionally been limited to critical work only. Consequently, preventive maintenance has been deferred and has accumulated to the point where much of it must now be considered critical, presenting a risk to building integrity and life safety. Coupled with the requirement to bring the building up to code, the scope of work that will need to be done as quickly as possible is enormous.

Engineering studies were performed over the past few years to assess the building's condition. This is a partial list of building systems and functionality that are known to need substantial work. This listing does not consider what is required to support the Education Program Plan.

- **Accessibility** - Full compliance with handicapped accessibility guidelines, including:
  - Renovation of existing elevators
  - Replacement of toilets and locker rooms
  - Replacement of building and classroom doors and hardware
  - Modification of egress doors, corridors, stair railings and enclosures
  - Modification of existing casework
  - Improved access to exterior fields, including replacement of exterior paths and ramps
- **Life Safety** – code required:
  - Installation of a sprinkler system
  - Installation of a new fire alarm system
  - Abatement of hazardous lead and asbestos materials throughout
  - Modification of structural framing and masonry walls to meet seismic (earthquake) requirements
- **Building Envelope** – building longevity and quality of life for occupants:
  - Replacement of the existing membrane roof for watertight integrity and to meet energy codes (see below)
  - Addition of windows to provide sunlight and views to interior classrooms
  - Repair/replacement of deteriorating exterior masonry walls and steel supports
- **Energy Efficiency** – code required and operational cost savings:
  - Further modifications to the recently installed heating and ventilation system
  - Improvements to thermal insulation for walls and roof required by code
  - Replacement of all windows
  - Replacement of all lighting
- **Other work**:
  - Replacement of all parking area paving and sidewalks
  - Replacement of several roof penthouses
  - Replacement of interior floor, wall, and ceiling finishes throughout
  - Installation of a new electrical service (code required)
  - Cleaning and repairs of site drainage systems

These are the issues that have been identified during the limited exploration performed to date. Much more engineering study is required to determine the full extent of the needed repairs, as funding is secured through the current process identified in the Regional Agreement.

During these limited studies, several instances have been found of the building structure not having been constructed as designed, raising grave doubts about its overall integrity; the Committee is very concerned about additional items not yet discovered. Given the nature of these deficiencies, the engineers expect that many more issues will surface after further destructive testing and analysis is done. Given the severity of what has been uncovered to date, the scope of the unknowns is potentially far worse than what we already do know. The order-of-magnitude cost options of this work are outlined in Appendix I.

The condition of the school facilities has been a focused issue for the New England Association of Schools and Colleges (NEASC) since its visit to the school in 2009. It was the reason they scheduled a follow-up "Focused Visit" in 2011 to review the status of the areas of concern. Rather than finding improvement as they had expected, the conditions had continued to deteriorate. In its Fifth-Year Focused Visit report of that visit in May, 2014 (see Appendix II), NEASC's Commission on Technical and Career Institutions rated the school facilities as "Needs Improvement." This is the final step before withholding accreditation. **If there is not a serious plan to correct the situation, with obligated funds behind it, Minuteman will lose its accreditation in 2015.**

WHAT SELF FUNDING REPAIRS WILL LOOK LIKE

At a minimum, this option would have to include all the work listed above, but this extensive list of required renovation work does not begin to address the facility upgrades and expansions needed to accommodate the curriculum requirements in the new Education Program Plan. The following elements of the new Education Program Plan cannot be accommodated in this scenario:

The faculty, staff and administration believe the Academy Model of delivering rigorous and effective career and academic curriculum is a proven advantage, and since 2010 have been preparing for this transition. The current facility does not allow, and even if renovated would not support, an integrated Academy Model. The school was designed to separate academic disciplines one from another, as well as totally isolate CVTE programs from the academic. This does not support our fundamental belief that students learn better when academic and vocational curricula are deeply integrated.

The new Education Program Plan is founded on the Academy Model; therefore it is logical to examine the Self-Funded, 10 year repair option in light of its impact on this framework.

The Engineering, Construction and Trades Academy

Currently no appropriate facilities are available to open two new Chapter 74 approved programs in Advanced Manufacturing and Multi-Media Engineering.

The creation of these learning spaces would require substantial repairs and modifications and would likely not be co-located within the Academy in an effective manner. Multi-Media Engineering is a new and innovative program that prepares students for a multitude of emerging professions in technical and professional theater, performance, sound and lighting design, as well as set construction, project management, and applied digital engineering. These programs would not be supported, and although there is great demand, we would not be able to provide this training for many years.

The heart and soul of CVTE is the Trades (Plumbing, Carpentry, Electrical, Automotive, etc.). Although Minuteman's Trades Hall was partially renovated in 2011, due to the condemnation of the area by public fire and life safety officials, the underlying utilities and co-locations were not modified to support the Academy Model. Carpentry and Electrical still have no direct access to the outside, and Advanced Automotive post-graduate students must drive vehicles through another shop to get access to the lift and equipment. Robotics and Engineering, which would logically be co-located with Advanced Manufacturing, are separated by 3 floors and impractical distances.

The Life Sciences and Services Academy

CVTE programs in this academy have enjoyed serving the public through the student-operated restaurant, beauty salon, bakery, school store, child care center, and horticulture shop. Access by the public to these important learning exchanges is severely limited and does not meet code. It has long been reported to Administration that this is a major detriment to community involvement in the school. This option does little to resolve the efficient and security minded access to programs.

The learning opportunities from the co-location of Biotechnology, Environmental Technology, and Horticulture and Landscaping are perhaps the most compelling improvement that a fully-funded project would offer. Currently, the Environmental students and their related equipment are on the 3rd floor. They have no access to a greenhouse or the outside. The Horticulture shop, labs, classrooms and 40 year old greenhouse are inefficient both in design, function, and access.

Science Labs, currently on the 3rd floor, are isolated from these learning resources, and the teachers struggle to find time to plan together. Common Planning Time is the foundation of any Academy Model. The scale of the current building, even if repaired, is not conducive to the natural gathering that occurs in an Academy.

Many other examples can be described that have a negative impact on learning and simply do not allow the new Education Program Plan any reasonable pathway to implementation. Overall, less than 40% of the Education Program Plan could be achieved in this self-funded repair plan, and when viewed by a prospective student and parent, the chaos, and length of time to implement, are not seen as "worth the wait" when choosing Minuteman High School over our highly accomplished member town high schools.

In terms of its total scope, this partial-renovation approach is smaller than the MSBA-funded Renovation Option, so there is less resulting benefit to the facility. But in terms of cost and long-term impact to the students' education, it is largely detrimental. Clearly, this is the least cost-effective option and it falls far short of meeting the stated goals of the School Committee. It is an aspirin and a Band-Aid, when major corrective surgery or outright replacement is what is needed.

The scale of the looming maintenance and code compliance scope of work is a perfect storm, and this is no exaggeration. At a minimum, the building needs a wholesale renovation, urgently. If the District does not approve one of the proposed MSBA-funded projects to accommodate this, then a major renovation must happen nonetheless, and it can only be done in a piecemeal fashion. Because of the looming failure of many of the existing building systems, the work needs to be done as quickly as possible. The cost will have to be borne 100% by the District's towns. Unfortunately, doing it this way will be much harder and more costly than the more purposeful and coordinated option of an MSBA-funded project.

Here is what doing the work this way will look like:

- **Work done piecemeal**: The work will have to be broken into discrete smaller projects, focused on one trade at a time (mechanical systems, roofing, structure, etc.). Cross-discipline coordination will be lacking without a unified design and a single construction manager to orchestrate the work. Each project would have to be approved individually by the District, with the associated delays inherent in this process, which under the current Regional Agreement requires unanimous approval by all member towns.
- **More complicated phasing**: Performing a renovation on an occupied building is a major challenge under the best of circumstances. The work must be phased, after moving the occupants into temporary space. There is no temporary space available in the building, so

temporary structures must be provided. Existing building systems must be maintained as fully functional through the duration of the project, while replacement systems are constructed in phases and operated in parallel.

- **Longer duration**: It will take much longer to complete the work this way than if it were all part of one coordinated project. The students will be impacted throughout the work as specialized facilities are taken out of service. The engineers estimate that the work done this way will take twice as long as under the MSBA-funded Renovation Option; they estimate **ten years or more**.
- **More negative impact on students**: Because piecemeal repairs of the facility will take far longer to accomplish, they will have a negative impact, on more students, over a longer period of time.
- **Likely negative impact on enrollment**: Failing to address these pressing facility issues now will make Minuteman a less desirable option for students and parents. This will likely have a negative impact on applications from prospective students and on retention of students who are already enrolled.
- **Changing codes**: Building codes are continually changing, and it is a given that this will happen at least once over this ten year construction period. As is the case we find ourselves in now, when work of a significant scope is to be permitted, the codes require that the whole facility must be brought up to the new code. This would require that work done in the near future under current codes must be redone again in the later years of the project, under the new more stringent codes.
- **Lesser quality**: It will be harder to ensure quality of the construction work without a unified design and strong coordination across the disciplines.
- **Education Program Plan impact**: The Education Program Plan requires new and expanded special facilities that cannot be accommodated in the existing building. These will have to be omitted from the Education Program Plan.
- **Higher cost:** The District member towns will be funding 100% of the costs of this work; there will be no MSBA participation. Financial bonding for multiple small projects is much more costly and time consuming. The longer duration means higher inflation costs. The costs would be about 50% more for work done this way over work done under a unified design and construction contract, without considering inflation.
- **Inadequate planning:** It will be much more difficult for the School Administration to plan the work, as so much of its timing will be driven by system failures; the member towns will be unable to plan for their capital contributions to the District.

This is a very costly and inefficient way to do work like this. It is not a good use of our limited education funds.

CONCLUSION

Clearly, by any measure, this is the least desirable option for addressing the wide ranging problems and deficiencies confronting Minuteman High School, but it is what we are faced with if none of the other options are approved.

- ❖ It will not meet the educational needs of our children, since 60% of the new Education Program Plan cannot be implemented;
- ❖ It will cause the most disruption to the students, for the longest period, of any option;

- It will make Minuteman a less desirable educational option for students and parents, likely resulting in a negative impact on both enrollment and retention;
- The school will most likely lose its accreditation in the process;
- It is highly likely that proceeding this way will be 50% more expensive than the MSBA-funded Renovation Option, just considering what is already known of the project, and the fact that the District will have to bear the full burden of this cost; and finally
- It has the highest risks of any option – in terms of the extent of the unknowns and potential downside consequences.

It must be emphasized that, after doing all this, the District is still left with a predominantly 40 year old building, designed for 40 year old education needs, and one which (we surmise) was built to 40 year old standards. At best this work can be characterized as a Band-Aid when compared to the corrective surgery or outright replacement the facility really needs.

DISTRICT FUNDED UPGRADE COMPARISON

OPTION		Option 1	District Funded
Description		**Base Repair Project No Consideration for Ed Plan**	**10 Year Phased & Occupied Repair, Including Ed Plan**
Location		758 Marrett Road Lexington	758 Marrett Road Lexington
New Construction SF			$ 35,717.00
Renovation SF		$ 305,808.00	$ 301,467.00
Total Square Footage		$ 305,808.00	$ 337,184.00
Construction Cost adjusted 6% for 2014 - 1 year Escalation		$ 40,050,402.94	$ 69,755,582.18
Direct Trade Cost Subtotal		$ 40,050,402.94	$ 69,755,582.18
Design/Price Contingency 10%		$ 4,005,040.29	$ 6,975,558.22
Building Cost		$ 44,055,443.23	$ 76,731,140.40
Demolish Existing Building			
HAZARDOUS Waste Abatement		$ 1,142,400.00	$ 1,142,400.00
Trade Cost SubTotal 2014 $		$ 45,197,843.23	$ 77,873,540.40
General Conditions		$ 8,400,000.00	$ 16,800,000.00
General Requirements (GRs) 2%		$ 903,956.86	$ 1,557,470.81
Insurance 1.10%		$ 589,576.28	$ 1,041,408.94
GC Bonds 1.10%		$ 596,061.61	$ 1,052,864.44
Permit by Owner 1% w/Fees			
Fee 3%		$ 1,643,504.43	$ 2,903,034.41
Estimated Construction Cost		$ 57,330,942.42	$ 101,228,319.01
Escalation start of const. 10% + 6% per annum to Mid-Point of Construction		$ 14,332,735.61	$ 40,491,327.60
Construction Cost Escalated		$ 71,663,678.03	$ 141,719,646.61

NOTES ON THE ABOVE COMPARISON:

If the District funded option is the approved option, Owners Project Management professionals and Designers will need to be hired to formulate the costs associated with phasing, temporary space, fees, including OPM/Design/Permits, as well as soft costs and contingency. These costs could rise to +/ - 40% of the total construction cost with escalation. Site development is not included in either option; these costs are anticipated to be +/- $6M based on the Daedalus estimate.

We did not calculate any operating costs for this option. If this option is the fall back option because the Minuteman / MSBA proposal fails to gain unanimous approval from our member District communities, then operating costs will have to be calculated to incorporate an In District student population of 628 students into the current building and campus that has accommodated approximately 800 In and Out of District students.

APPENDICES

Appendix I – Order of Magnitude Cost Options for District Funded Upgrade

Appendix II – NEASC Focused Visit Evaluation Report, May 5-7, 2014

Appendix III – Odeh Engineering Seismic Evaluation Addendum, November 17, 2012

Appendix IV – Kaestle Boos List of Recommendations

Appendix V – Odeh Engineers Structural Evaluation, 2012 Update

Appendix VI – Universal Environmental Consultants HAZMAT Survey Report, May 6-10, 2013

Appendix VII – Siemens Existing MEP Conditions Report (undated)

Appendix VIII – Kaestle Boos Existing Conditions Survey Parts 1 and 2, November 4, 2013

Appendix IX – Daedalus Base Option Cost Estimate, August, 2013

Appendix X – Education Program Plan, approved by School Committee September 10, 2014

Appendix XI – Subcommittee Minutes and Meeting Dates

Referenced documents can be found on the School Building website:
http://minutemanschoolbuilding.org/2014-01-29-19-45-34/subcommittees-taskforces.