building CCHS
investing in our future

Concord-Carlisle Regional High School
Building Committee

In response to questions from the community and with the goal of clarifying information, the Building Committee compiled the following list of frequently asked questions and associated answers.

Responses to these questions are based on the formal submission of the August 15th Design Development (DD) submission to the MSBA. This is the definitive document that defines all details to date related to the CCHS building project. It includes the set of DD drawings, the DD specification, the DESE Educational Specifications and the DD budget. This document was reviewed by the Massachusetts School Building Authority (MSBA), the Department of Elementary and Secondary Education (DESE) and various Concord town boards, including the Planning Department and the Natural Resource Commission (NRC).

This is a working document that will be added to and updated over time.

1. MSBA Funding

What happened with the MSBA and where do we stand with regards to reimbursement from the state?

In a letter dated June 26th, 2012, the MSBA determined that the Project Scope, Schedule, and Total Project Budget deviated from the terms of the Project Funding Agreement (PFA) between the District and the MSBA signed on February 3rd, 2012. During the early iterations of the design development phase, cost estimates for certain design features that were considered in addition to elements in the Schematic Design, pushed budget estimates out of line. The MSBA became concerned that in this process, the scope of project had deviated from the Project Funding Agreement (PFA). On June 26th, we received a letter from the MSBA suspending our reimbursement. Grant payments from the MSBA were suspended until the District brought the project back into compliance with the PFA and until we demonstrated that our project was indeed inline in scope, schedule and budget with the PFA. We continued with the value engineering process and made design choices that accomplished our needs and closed the budget gap.

As requested by the MSBA, on July 26th we provided detailed responses to their requests for information and had several meetings with them to discuss and work through the concerns. Simultaneously the project team continued to refine the design. We submitted the completed DD package to the MSBA on August 15th.

After considerable review, on October 24th, the MSBA announced that our DD submission was indeed in compliance with the PFA and that our funding would be restored pending the completion of action items, primarily providing additional information, and signing the amendment to the PFA that revises the space summaries.

What changed? I heard this is not the building I voted for at Town Meeting.

In this project, as with all construction projects, changes occur as part of the design process. At Town Meeting, we voted on a Schematic Design (SD). Schematic Design is a high level

version of the building. Project cost in SD is determined by square footage. In the Design Development phase the building systems and materials are selected. The design is optimized, efficiencies are created and project cost estimates are conducted based on the materials and systems. Working through this process is called value engineering (VE) and a more thorough discussion of VE is included in this document. Many specific elements in the building, including technology and building materials are addressed later in this document.

SD (Town Meeting)	DD (Now)
238,326 gross square feet	236,495 gross square feet
225,826 gross sq. ft. main building	225,826 gross sq ft. main building
$92.6 M Total Project Cost	$92.6 M Total Project Cost
$82.5 M Building Cost (as depicted)	$74.9 M Building Cost
$ 7.5 M Targeted VE List	

It is a fact that the conceptual rendering slides of the building that were a portion of the Town Vote presentation were derived from the Schematic Drawings, valued at $82.5M. In retrospect, some of these concept slides did depict items that were contained on the Value Engineering list of $7.5M like the three cupolas structures for example. The cupolas were replaced with skylights, which serve the same purpose in a more energy efficient way.

In the letter dated October 25th, the MSBA and DESE's acceptance of the Developed Design demonstrates that the current design is materially the same as originally proposed, and that the project is in compliance with the project scope, budget, and schedule as agreed to in the PFA.

2. Model School

I have heard that Natick has a model school and it cost less than our proposed building. In fact, I have heard that we could save $20 million by opting for a model school design. Why didn't we build a model school?

When comparing prices between two projects, it is very important to ensure that the two amounts are compared on an apples-to-apples basis, taking into account the escalation factors for projects completed at different times.

A recent study of 10 current or recently completed model schools show an average for all 10 model schools that had a cost-per-gross square foot average that was 2.8% less than the Concord-Carlisle budget. This difference in savings for a $74.9M project cannot produce a cost savings anywhere near $20M.

A number of factors, play into the decision to apply for eligibility in the MSBA model school program. These include:

- A site with the ability to accept a model school footprint that may vary in size between 89,000 to 157,000 square feet with little or no cost premium.
- Site geotechnical characteristics that are suitable for building a shallow foundation system with little or no cost premium to accommodate a model school building.
- An early Planning process that concludes with an application for acceptance in the Model School program.

In our case, the Concord Carlisle Regional High School project does not have a site conducive to a Model School footprint and the results of guidance, at the time, from State officials and the results of nearly a decade of planning did not support the decision to apply for eligibility.

3. Reimbursement Rate

Why do other towns have higher MSBA reimbursement rates?

The reimbursement rate for a school project begins with a base rate and then additional reimbursement points can be added based on other project factors. The base rate is determined by the MSBA and encompasses many socioeconomic factors. The rate is built on a sliding scale based on the wealth of the towns that comprise the school district. The wealthier the towns that represent the school district, the lower the reimbursement. If you examine reimbursement rates for school projects across the state, this is clearly evident (Lowell, Springfield, and Natick have higher rates of reimbursement). Given that the Concord-Carlisle community is one of the wealthiest communities in the state, we received the lowest base rate (31%).

Our project has been designed to maximize the rate boosters. We garnered 2 additional points for building a green school, 1.5 additional points for having a maintenance plan, 1 additional point for using a construction manager-at-risk for a total reimbursement rate of 35.5%.

4. Cost per Square Foot

Why do we have the highest cost/sq ft project in the state?

This is not an accurate statement. When comparing our cost/sq ft. to other projects, it is important to note several factors. First, the comparison needs to be against all new schools, versus renovate/new or just a renovation. Second, older projects are not a good comparison because of construction cost inflation. The Duxbury middle/high school project, which recently broke ground, is a fair comparison.

Per KVA, the Owners Project Manager for Duxbury (and Concord-Carlisle,) the Duxbury project, a model school, is $313/sq.ft. versus our project which has an estimate of $316/sq.ft. For additional comparison, Wayland's recently completed project was $288/sq.ft. and Wellesley's was $381/sq.ft.

A table showing cost data for recent projects can be found on our website at:
http://www.cchsbuilding.org/pb/wp_d152c2ba/wp_d152c2ba.html

5. DEP Landfill Site

How was the landfill detected on the school campus and why was it not discovered before the town meeting vote?

Throughout the entire process, the building committee has adhered to the MSBA established protocol for conducting soil testing from the very beginning of the project. During the

Schematic Design phase of the project, and prior to the Town Meeting votes, soil testing was mainly focused on where the school would be located to avoid building on unsuitable or unsafe soils. Once the towns voted to move the project forward, we began the Design Development phase. During this phase the Comprehensive Site Assessment (known as Phase II) was conducted. Borings were taken throughout the school campus and contaminants were discovered around the current student parking lot. It was during this phase of the testing that the boundaries of the landfill were located, the contaminants were identified and the depth of the contamination in the soil was determined. The Phase II testing must be submitted to the Department of Environmental Protection (DEP) by February 6, 2013. In Phase III, alternatives for remediation will be evaluated. Phase IV is where the DEP will dictate the course of action for remediation and an implementation plan will be created. The Phase III and Phase IV reports are due to the DEP by February 6, 2016.

It is important to note that the soils around the new school location are clean and there are no issues with the building site.

If the school campus had an appropriate piece of land and curriculum that fit a model school design and the curriculum, could the landfill issue and cost been avoided?

No. Unfortunately, the school campus, purchased in the 1950's, contained a landfill. Irrespective of the type of project pursued, once discovered, it must be remediated.

When will remediation for the landfill begin?

The DEP dictates how the site will be remediated. However, if the DEP determines that we can pursue a capping option and the landfill does not pose an environmental threat that needs to be dealt with immediately, remediation work is expected to begin after the high school project is completed in 2016. The parking lot needs to be operational during school construction because there is nowhere else to park cars for teachers, students, and visitors.

Once the new school parking lot has been completed, remediation work can begin. Phase V, the final phase of remediation that reports the site presents no significant risk, is due February 6, 2018, 6 years from the identification of the site.

6. Bus Depot

Why weren't we told about impact the project would have on the bus depot?

From the time the site for the new building was selected, the Building Committee has discussed this in its forums and public meetings. Local media including the Concord Journal, The Carlisle Mosquito and the Concord Patch also had articles. The question was raised from the floor of Special Town Meeting in Concord. The bus drivers created a one-page handout (distributed at Town Meeting) describing the impact from their perspective.

While Building Committee is not responsible for determining how transportation will be delivered, we have been upfront that the buildings that constitute the bus depot would be impacted. Upon citizen request, we studied the feasibility of maintaining the depot in situ and found that doing so would be cost prohibitive.

7. Value Engineering

Has value engineering has resulted in a building that is different from what I voted for at Special Town Meeting?

Value Engineering is an important part of every building project. It is where the building is optimized and made efficient relative to the budget. Every building project goes through a value engineering process.

When the initial estimates for the architect's design development drawings were published, KVA, our owners project manager, and Turner, our construction manager, developed a matrix that compared different project cost construction categories (i.e. site work, exterior envelope, interior finishes) using their extensive database of school building projects to our project. Each building project cost category was compared against this matrix to generate cost savings ideas and bring each cost category in line with other building projects. The value engineering process we employed was well thought out and preserved the most critical building design elements.

The Value Engineering has been a source of concern for some members of the community. We have grouped some the questions raised into 8 categories outlined below: Auditorium, Building Material and Finishes, Building Systems, Campus, Classrooms, Furniture, Fixtures and Equipment, Gymnasium, Security and Technology.

AUDITORIUM

1. For a school our size, the MSBA guidelines allow for seating of 750. Our auditorium has only 600 seats. Was this part of the VE process?

The seating size of the auditorium was 600 seats in the Schematic Design and that has not changed. It is true that for a school our size, we could have up to 750 seats per the MSBA guideline. During the feasibility study, our original auditorium was 750 seats versus the 600 seat auditorium in the existing building. However, in user group meetings with the drama and music departments, it was requested that the size of the auditorium not be changed from the 600 seat size because a smaller auditorium is better for performances. It was requested that the space that was freed up from a smaller auditorium be used for a dedicated drama room. That educational request was granted and it is reflected in the current plan.

2. The auditorium is being configured to a "square," greatly compromising acoustics and sightlines

Per Acentech Consultants, "there is nothing inherently 'bad', acoustically, about a rectangular shape for a performance space -- actually quite the opposite is true -- think of Boston's Symphony Hall, for example."

It also true that the fan-shaped floor plans that were so popular in high schools of the 50s, 60s and 70s, with their splayed-out side walls, actually concentrated critical sound energy toward the rear corners of the seating areas, thereby depriving much of the audience of beneficial lateral sound reflections. The current CCHS plan and section have well-placed bowed sound diffusing shapes on both the sidewalls and the ceiling. This will help to distribute sound more evenly across the seating areas. The bowed wall areas and "eyebrow" ceiling reflectors that flank the proscenium opening constitute an effective "sending end" to help project both musical and

spoken word sound energy," reports Acentech Consultants.

There are no obstructions or other elements to interrupt sight lines in the CCHS auditorium design.

3. The lighting, electrical and sound systems needed in the auditorium have been dramatically reduced and/or eliminated

CCHS will have a superb theatrical system on opening day at the new high school.

- Reducing the rigging from 24 to 28 manual line sets will be more than adequate for this size stage; the 4 automated lines set will provide a total of 28 lines., 24-28 lines is a very common setup for an "excellent" high school stage.

- There are 162 dimmers which is more than sufficient. Theater lighting consultant had noted that the reduction of dimmers on the stage budget will not be an issue for future capacity because less dimmers will be required in the future due to the advancement of LED technology. In the future, when/if CCHS wants to expand the lighting rig, stage lighting technology be with LED's and the School would actually end up using FEWER dimmers than the current quantities in the budget for MORE lights.

- Existing lighting will be re-used into the drama lab. The existing rig is in great shape and serves the purpose. This saved $40,500.

- Orchestra pit will have manual platform fillers Original estimate included a hydraulic lift system for the orchestra pit, which was deemed excessive.

BUILDING MATERIALS AND FINISHES

1. Interior concrete block is being deleted and substituted with lesser quality material

The amount of interior brick has been reduced to save money as part of the VE exercise. In March of 2012, the Design Development drawings showed a scope of 4,755 square feet of interior brick and the current DD quantity has been reduced to 900 square feet. In lieu of the interior brick, ground face masonry block and abuse-resistant dry wall framed partitions have been indicated. These materials are of sufficient high quality to have been used in abundance on similar high school projects within Massachusetts.

2. Exposed polished concrete is being proposed for floor finishes in many areas

Polished concrete is attractive, economical, is easy to maintain and clean. That saves on material and adhesion costs, is therefore sustainable, and is not uncommon in similar facilities.

3. All brick is being removed and substituted with lesser quality materials

This statement is not true. Brick will still be used in the building. During the value engineering phase, the proportion of brick, metal panel and curtain wall glazing changed. All materials were optimized to assure efficiency and the maximum number of MA CHPs points possible. Of the building materials impacted, the biggest change was a reduction of curtain wall glazing and an increase of metal panel, DAFS and ground faced masonry.

The following are the exterior surface areas of the major envelope materials:

Material	SD	DD
Brick	31,517	29,865
Ground Faced Block	13,998	17,782
Metal Panel	16,205	23,646
Curtain Wall	26,361	15,481
DAFS*		3,249

* Direct Applied Finish Systems – A cementicious enclosure system that will be used on the soffits and other overhangs for horizontal surfaces.

BUILDING SYSTEMS

1. Are the mechanical systems (HVAC) being converted to less expensive, less efficient systems that are more costly to operate?

Actually, efficiency has increased, and lifecycle costs have decreased through the value engineering process. The current building is more efficient and less expensive to operate than as designed at schematic documentation.

Further, the types of roof mounted air conditioning systems in our design development package (Directed Expansion units) are similar to types used on Model Schools and other high schools in Massachusetts.

2. What changes were made to the buildings addressable lighting system? Why was the original "addressable lighting system" removed from the plan? Has lighting functionality and efficiency decreased?

Through the value engineering process, the lighting systems were improved. It is true that the "addressable lighting system" was changed. However, it contained microprocessors, occupancy sensors and photo sensors in each individual light fixture making every light individually controllable. In addition, each light fixture was a node on a specialized data network, controlled individually by a proprietary Computer System. This type of lighting system not only added $400,000 to the budget, but the Building Committee could find no school project in Massachusetts that had ever specified or installed such an elaborate system.

The current design development contains an addressable lighting control system that is similar in scope and functionality to those installed recently in Wayland and Wellesley. It provides state-of-the-art lighting control and energy efficiency features. It ties to photosensors and allows individual classrooms and zones within larger spaces (rather than each light fixture) to be automatically dimmed to harvest daylighting and save energy. It is completely in line with other high school projects.

CAMPUS

1. How were the required parking lots, sidewalks and drives impacted by the value engineering and design development phase?

Parking, sidewalks, and drives fall outside the project's reimbursable expenses and must be district funded. These elements, therefore offered an opportunity to make reasonable reductions in the project cost in order to put maximum value into the educational building. Other school building projects have taken a similar approach (including model schools).

The drop off areas of the front of the building and main entry areas will have granite curbing, and the balance of the outlying parking areas have bituminous curbs, Cape Cod berm, and sectional concrete curbing.

The DD parking count remains slightly above Concord zoning bylaws. The sidewalk systems were simplified and are designed to provide for proper flow of users to and from the buildings.

The drives have been made as efficiently as possible and have been actively reviewed and approved from the site permitting process with all applicable Town authorities, including the fire and police departments. Per request of the Concord Fire Department, access roads are 24 feet wide and are actually wider than the Town requires.

CLASSROOMS

1. Classroom, art room, music room, band room and other critical spaces are losing exterior window area

In a typical classroom, there are 96 square feet of window area in an 850 square foot classroom. In each typical laboratory, there are 192 square feet of glass area for each 1,500 square foot lab.

This results in a metric of 11.2% of window area in each typical classroom, and 13.3% in each typical lab. These metrics compare to an MSBA guideline of 5% window area to classroom net square footage. In both cases, the high school design is more than double the guidelines.

2. Marker boards and tack boards are being deleted from classrooms

Marker boards will be purchased during the project FF&E buy-out that will occur during the construction phase. The physical real estate for the marker boards on the teaching wall have been defined in the design development set of drawings. The school administration made the decision to delete tack boards in the classrooms.

FURNITURE, FIXTURES AND EQUIPMENT

1. **Were student lockers eliminated or greatly reduced during the design phase?**

There are 900 new lockers being provided in the design development documents, approximately the same number of lockers that are currently in use, today.

2. What gym equipment (such as the dividing curtain for the gym) and what music equipment was eliminated?

We have not yet purchased furniture, fixtures and equipment (FFE) for the project. It is anticipated that many equipment related items will be reused from the existing high school, and that the budget of $1200 per student should be sufficient to fulfill the FF&E needs of a 21st century high school. Wayland high school recently outfitted its entire facility for that sum of money, by being prudent in its purchasing decisions (not buying custom furniture) and by reusing existing, equipment that was still well within it's useful life cycle. During the construction phase, the CCHS Building Committee will adopt a similar prudent approach to its FF&E procurement.

GYMNASIUM

1. The second gymnasium is 2,180 square feet smaller than it was. Why?

During DD, the Team Rooms were moved from the alternate or "second" gym to the main building's performance gym. This allowed space for restrooms to be added to the second gym. The building committee felt this change was important and necessary as it allows the second gym to be used completely independent of the main building. During weekend and evening recreational use of the second gym, the main building can be locked up.

SECURITY

1. CCTV cameras have been reduced to unacceptable levels

The Building Committee disagrees with this opinion. The current design development drawings contain 40 cameras that are purchased new for the project, complete with the technology infrastructure to support them. In addition, the school administration has recently purchased 24 additional cameras which can be relocated and used in the new high school. The total number of cameras, 64, has been reviewed by the school administration and project team and it has been determined to be sufficient. As a basis of comparison, the new Wayland a high school contains 5 security cameras, and Wellesley contains 70 cameras.

2. Card reader access controls are being deleted for multiple locations

The design team determined that the system was over-scoped so the numbers of card readers were reduced to 20, to both provide acceptable functionality and safety, as well as fit into a budget. This is similar to other such facilities and deemed appropriate by all parties. By comparison, Wayland has half of the card readers (10) and Wellesley has a very similar scope for card access control (21 readers). It should be noted that there is not a single card reader in the existing high school, today.

PROJECT	SQAURE FOOTAGE	# OF CAMERAS	# OF CARD READERS	SECURITY COST	SECURITY COST/SQFT
Duxbury	325,000	ALLOWANCE	ALLOWANCE	$260,950	$0.80
Wayland	154,171	5	10	$90,904	$0.59
Wellesley	280,000	70	21	$404,000	$1.45
Concord-Carlisle Regional	237,068	64*	20	$319,840	$1.35

TECHNOLOGY

1. Critical technology infrastructure is being deleted.

In both formal submissions, the project budget has retained the MSBA guideline of $1200 per student for technology. It should be noted that any amount above this amount is not reimbursable. The school administration has indicated that it has a Technology Stabilization Fund that is forecast to provide $900,000 of expenditures in the two to three years prior to the new school opening. That results in an additional $735 per student forecast expenditure.

Together, these two budget items add up to $1934 per student for technology. With the existing base of current and usable Technology Equipment added in, the district believes that it will exceed $2000 per student of technology value and believe this is an adequate amount with which to open a 21st century technology building.

2. Critical classroom instructional technology tools like interactive white boards and LCD projectors and classrooms have not been included

These instructional technology tools have been purchased by other projects with a budget of $2000 per student. We believe the technology budget, outlined, above, will be sufficient to provide these tools.

3. Audiovisual cabling is being removed from classrooms and the cost has been transferred into an already insufficient technology budget

Cabling to connect AV Devices to each other has been moved into a scope of work outside the $75M hard cost construction contract. This is viewed as a prudent for procurement strategy as it makes sourcing this equipment a one stop shopping scope for one single vendor. In the absence of this strategy, the base building electrical contract would provide a portion of the work to be used by the audiovisual equipment vendor. Under this scenario, if there were an issue, this represents an opportunity for finger pointing between two different vendors.

The base building electrician will provide empty conduits to a predetermined location. The projector vendor will supply the ceiling mounted projector and a wall manage greener smart port.

The cabling between the two devices will be installed by and will be the responsibility of the projector vendor. As a result, if there's an issue with the projector, the school administration need only call the projector vendor. The budget as outlined above, should be sufficient to include the audiovisual cabling.

4. Voice, video, and data outlets are being removed from the classrooms

The telephone drop at a teacher's desk was removed as it became unnecessary with the procurement of a voice over IP (VOIP) telephone system. Voice signals are carried in the data wiring, making a two pair dedicated telephone drop unnecessary.