Narrative
Option B.2 – Site and Architectural Drawings a
Option C.1 – Site and Architectural Drawings b
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3.3.3

FINAL EVALUATION OF ALTERNATIVES

Description of Options

In order to develop the most cost-effective, educationally appropriate solution for this project, the District considered a comprehensive range of options. These included:

Analysis of school district student school assignment practices and available space in other schools in the district:
Northeast Metro Tech is a regional school district that has only one school facility; they do not own any additional property. There are no alternative locations.

Tuition agreements with adjacent school districts:
Northeast Metro Tech is a regional school district offering a unique technical education for students in 12 communities just North of Boston. There are no adjacent school districts with possible tuition agreements to provide a comparable education.

Rental or Acquisitions of existing buildings that could be available for school use:
There are no possible available properties/ structures in the Region that could house the specialized technical education programs offered by Northeast Metro Tech.

In light of the above, the District and Design Team determined that the up to four "families of options" should be considered. Each family may have one or more conceptual design alternative. The families include:

Family	*Description*
Family "A"	**Renovation only**
Family "B"	**Renovation /Addition and/or partial Demolition**
Family "C"	**New Construction On- Site**
Family "D"	**New Construction partially or totally Off- Site**

Please note that the District enrollment certification agreement for this Feasibility Study identified three potential enrollments: 1. 1250 students (current), 2. 1722 students, 3. Between 1250 and 1722 students. The District and Design Team expanded option 3 to be more specific by including enrollments of 1400, 1600, and 1660 students, resulting in five enrollment options:

Enrollment Options
1250 students
1400 students
1600 students
1660 students
1722 students

Therefore, the initial matrix of conceptual design options looked like this:

Northeast Metro Tech

Matrix of Options *DRAFT*

Updated: *DRAFT 7.22.2020*

Families of Options:			Families of Conceptual Options							
			A	B		C			D	
		MSBA Required	Renovation	Add/Reno		New Construction On-Site			New Construction Off-Site	
	Enrollment	Base Repair	A.1	B.1	B.2	C.1	C.2.1	C.3.1	C.2.A	?D.1?
a.	1,250 Students	doesn't address any educational deficiencies	A.1a	B.1a	B.2a	C.1a	C.2.1a	C.3.1a	C.2.Aa	D.1a
b.	1,400 Students	X	A.1b	B.1b	B.2b	C.1b	C.2.1b	C.3.1b	C.2.Ab	D.1b
c.	1,600 Students	X	A.1c	B.1c	B.2c	C.1c	C.2.1c	C.3.1c	C.2.Ac	D.1c
d.	1,660 Students	X	A.1d	B.1d	B.2d	C.1d	C.2.1d	C.3.1d	C.2.Ad	D.1d
e.	1,722 Students	X	A.1e	B.1e	B.2e	C.1e	C.2.1e	C.3.1e	C.2.Ae	D.1e

After preliminary analysis, several of these options were quickly dismissed, as follows:

Base Repair: This option does not address the educational or space deficiencies of the existing building.

Renovation: The size of the existing building precluded consideration on any of the Renovation-only options. The Initial Space Summary for even the lowest enrollment required approximately 300,000 square feet. The existing building is only 240,000 sf.

Addition/ Renovation: The initial option studied in this category, **B.1**, minimized the relocation or reconfiguration of the CTE shops. While this design strategy had advantages of minimizing disruption, it could not support the higher enrollment options that require larger shop areas.

New Construction C.1: This conceptual option is located behind the existing school on a very constricted portion of the site with significant topographic variations. These limitations made it unfeasible for this design option to accommodate all of the high-bay CTE shops that require at-grade service access for the higher enrollment options.

New Construction Off-Site C.2.A: This conceptual option attempted to incorporate a portion of adjacent land belonging to the Town of Wakefield with the Northeast Metro Tech property in order to provide a larger, more flexible parcel of land. Unfortunately, further investigation discovered that the property in question had significant wetland restrictions that made this option not feasible.

New Construction Off-Site D.1: As noted above, the District does not own any additional property. Furthermore, they were not aware of any appropriate available properties to develop a new school. Lastly, the District administration and School Committee did not endorse the idea of relocating the school, so this option was deemed not feasible.

Thus, after incorporating these findings into the matrix, the conceptual design options that were investigated more thoroughly are shown on the updated matrix and described on the following pages:

Matrix of Options *DRAFT*

Updated: *DRAFT 7.22.2020*

Families of Options:

			Families of Conceptual Options							
			A	B		C			D	
		MSBA Required	Renovation	Add/Reno		New Construction On-Site			New Construction Off-Site	
	Enrollment	Base Repair	A.1	B.1	B.2	C.1	C.2.1	C.3.1	C.2.A	?D.1?
a.	**1,250** Students	doesn't address any educational deficiencies	X	B.1a	B.2a	C.1a	C.2.1a	C.3.1a	~~C.2.Aa~~	~~D.1a~~
b.	**1,400** Students	X	X	B.1b	B.2b	C.1b	C.2.1b	C.3.1b	~~C.2.Ab~~	~~D.1b~~
c.	**1,600** Students	X	X	~~B.1c~~	B.2c	C.1c	C.2.1c	C.3.1c	~~C.2.Ac~~	~~D.1c~~
d.	**1,660** Students	X	X	~~B.1d~~	B.2d	C.1d	C.2.1d	C.3.1d	~~C.2.Ad~~	~~D.1d~~
e.	**1,722** Students	X	X	~~B.1e~~	B.2e	C.1e	C.2.1e	C.3.1e	~~C.2.Ae~~	~~D.1e~~

Base Repairs

This option will determine the minimum level of repairs and capital improvements necessary to meet code and prolong the useful life of the existing Northeast Metro Tech building. Based upon the Existing Conditions Report, this scope of work will include at least: Window and Roof replacement, exterior skin repairs, seismic upgrades, virtually complete M-E-P systems replacement including new Fire protection sprinklers throughout, accessibility upgrades including at least 2 new elevators or lifts, extensive new finishes and sitework repairs including grading, drainage, utility and pavement upgrades.

This Base option would include only minimal re-configuration of interior partitions and would not improve educational areas, accommodate projected enrollments, nor address educational deficiencies.

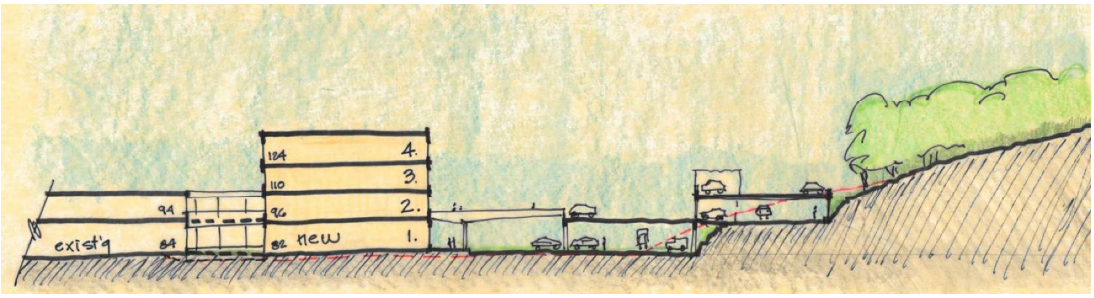
Family of Options "B" Renovation /Addition

These Alternatives each include partial demolition, the full renovation of the remaining existing building and an addition of new construction of varying sizes. The renovation scope would include all of the Base Repairs as well as significant reconfiguration of the interior to accommodate the educational program and to address deficiencies. Significant phasing, temporary facilities, and swing space would be required to implement these options. Two major core areas of the existing building, the Gymnasium and Cafeteria, would essentially remain as is, with renovations performed during the summer months.

Two renovation/addition options were developed: B.1 and B.2. in order from smallest addition (B.1) to most new construction (B.2). Option B.1 was subsequently eliminated from consideration when it was determined that it could accommodate all of the projected enrollment options. Each would involve extensive phasing, temporary accommodations, and significant off-hours and summer work.

Due to the limited site area adjacent to the existing building, each renovation option also requires significant sitework to accommodate the proposed program, most notably a new parking structure and significant ledge removal.

Option B.2 Renovation/ Addition



This Option (similar to the original Option B.1), includes additions to the high-bay career technical shops, additional classrooms, and an expanded parking structure to accommodate the higher enrollment options of 1600 to 1722 students.

The major new addition in front of the existing building is on an identical footprint as Option B.1, but has an additional (fourth) floor to accommodate the additional classrooms and science labs required by the higher enrollment options. The higher enrollment options would also require additional parking spaces, so this option has an additional parking deck level on the hillside.

To provide additional CTE shop space, two separate additions are required to the existing shop wings expanding the Automotive, Carpentry, and Electrical programs. Other shops are expanded by converting adjacent classroom space. The higher enrollments would also require expanding the existing Cafeteria with a small addition into the adjacent courtyard.

This Option also provides the same Auditorium and Gymnasium spaces as Option B.1 for all enrollment options.

Depending upon the enrollment option, this option adds approximately 85 to 135,000 sf of new construction, and renovates the entire 240,000 sf existing building for a total completed building (including out-building) of approximately 325,000 to 375,000 square feet.

Family of Options "C" New Construction

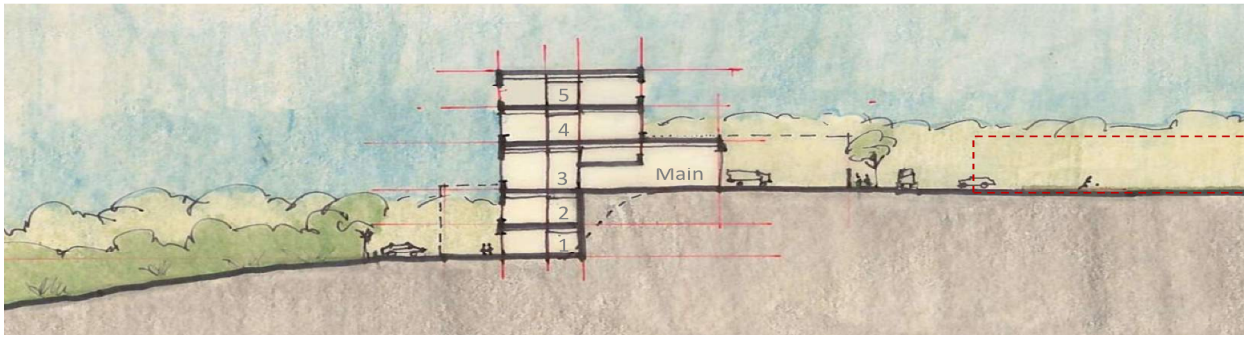
These Alternatives would include the construction of an entirely new High School of between 300,000 to 400,000 square feet to entirely replace the existing building. Each alternative would involve two phases construction- the new school would be constructed in Phase One while the existing school remains in operation. Once completed and occupied, the demolition of the existing school and finished sitework would be completed in Phase Two.

Each of these alternatives locates the new school on a different portion of the site (1, 2, and 3). In each case, the athletic fields and parking areas that would be displaced by the building construction would be reconstructed in the new area created by the demolition of the existing school building.

Each option safely separates bus and car drop-off areas and provides appropriate parking and service areas as identified in the site development requirements. Please also refer to the attached site plan and floor plan diagrams.

Potential Construction Zones

Option C.1 New Construction

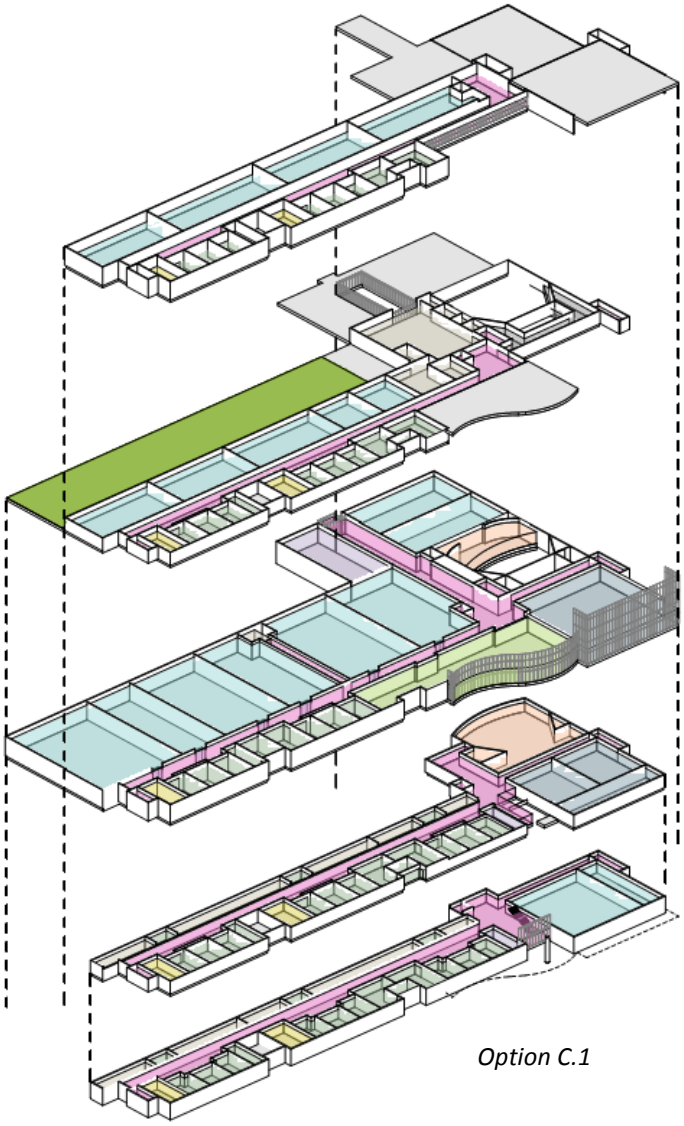


The new school is arranged in a linear fashion north o the existing school, on the lower athletic fields near the northern property line. To fit the entire educational program on this limited site and to accommodate the existing topography, the building is configured onto five floor levels. The primary circulation is tee-shaped with the main entrance lobb dividing the more public areas to the west from the academic areas to the east.

The main entrance level, level 3, would be located approximately at the existing grade level of the current service area/ bus drop-off area behind the existing CTE shops. This main level would accommodate the high-bay shops & classrooms of the Transportation and Construction clusters, administration area, and the public areas of the program including Culinary Arts, Cosmetology, Cafeteria, and Auditorium.

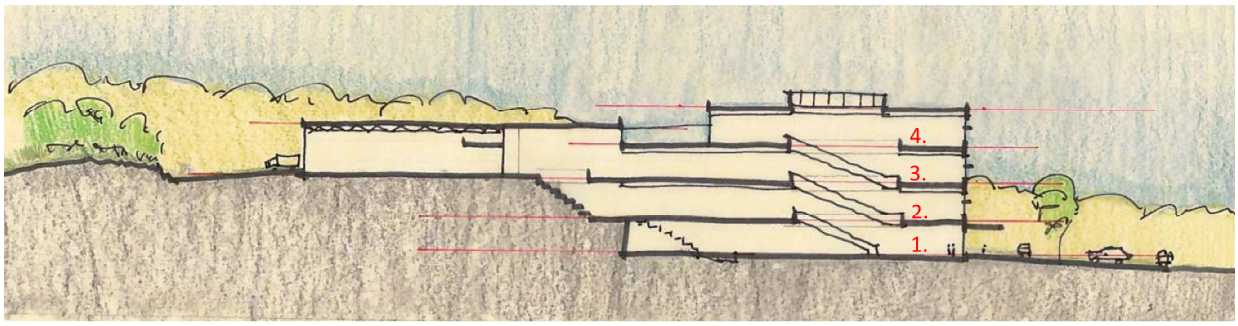
The two upper floors of the building (4 & 5) are double-loaded corridors with low-bay CTE shops on one side of the corridor and related academic classrooms, science labs, and collaborative areas on the other side in accordance with the District's Educational vision. The Design & Communications cluster, along with the Media Center would be on the 4th floor and the Health Services cluster would be on the 5th floor.

The lower two floors provide similar classroom, science, and collaborative areas as the upper floors on one side of the linear corridor with service and support areas on the windowless southern side of the corridor that is built into the hillside.



Option C.1

Option C.2 New Construction



This option sites the new school on the two flat portions of the site to the west of the existing school- the football field/ track and the baseball field. These two areas are approximately 28 feet apart in elevation which coincidentally is equal to two floor levels. This results in a building with minimal blasting as it steps up the hillside. A multi-level Main Street connects the main entrance on level 1 with the high-bay CTE shops on level 3. The balance of the educational program is distributed on the four levels of the southern portion of the new school located on the baseball field.

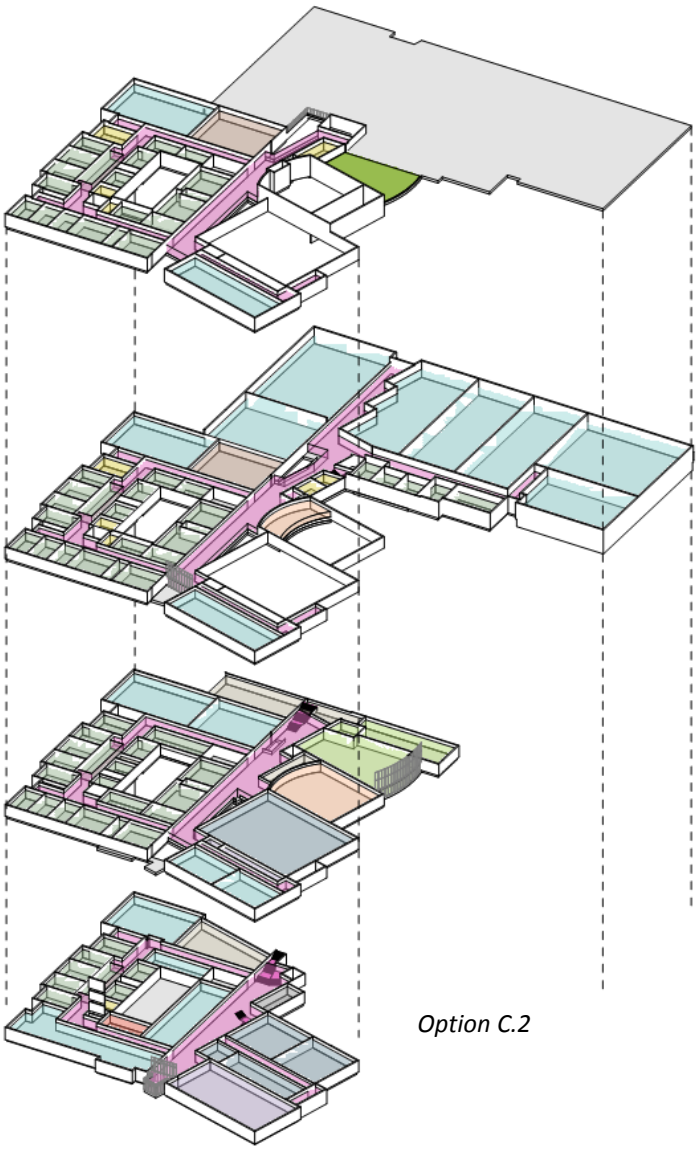
The site circulation provides a bus/ service loop up and around the proposed building while visitor and car-drop-off remains separate on the lower level.

The southern, four-story portion of the school is organized around a courtyard with CTE shops in close proximity to academic classrooms and science labs as requested in the Educational Program.

The multi-level Main Street is both a circulation device connecting the primary public spaces and a light well to bring natural light down through the center of the building. Administration is located adjacent to the main entrance on level 1. Culinary Arts and Cosmetology are also conveniently located here for visitor access.

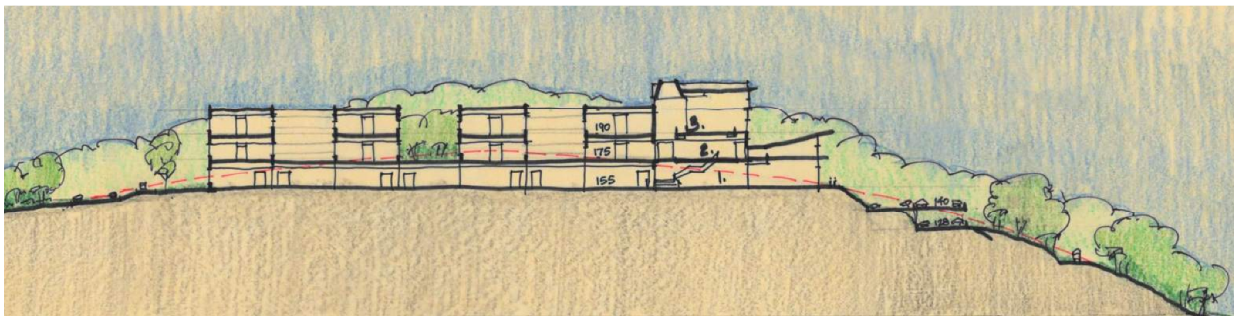
The Gymnasium is found at the top of an open stair on level two over the Locker Rooms. Also, on this level off the Main Street are the large public spaces of Auditorium and Cafeteria.

Level three of the Main Street connects to the high-bay CTE shops and bus entrance. Also centrally located on this level is the Media Center.



Option C.2

Option C.3 New Construction



This option sites the new building on the undeveloped hillside area south of the existing school. This area is wooded with a significant amount of ledge outcroppings. The proposal calls for the creation of a flat building pad through a mass blasting operation. The pad would be large enough to accommodate the footprint of a three-story building with related service area, car & bus drop-off areas, and related parking. This portion of the site would be accessed by a new access road from Farm Road to the south near the property's southern boundary. This road would continue past the new school to connect with the existing Hemlock Road in the existing school parking area.

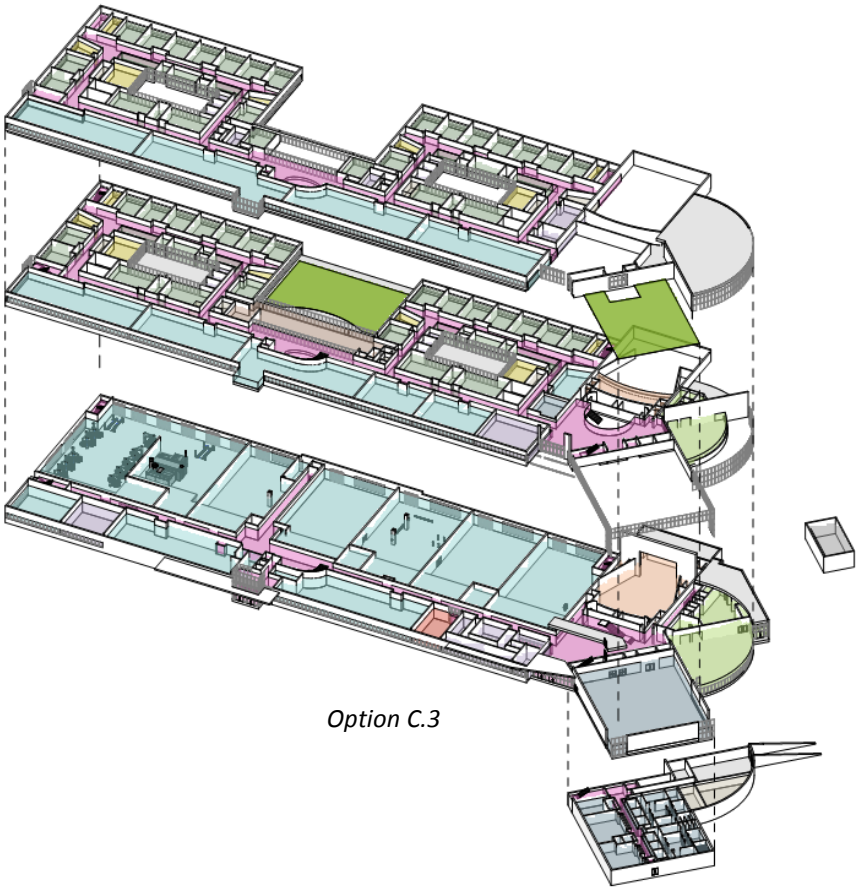
The proposed building is organized in clusters with academic areas in close proximity to career technical areas on each floor. Also the large public areas are clustered at the north end of the building off of the main entrance separated from the academic areas to the south.

The first floor houses the administration area adjacent to the main entrance, and the Auditorium, Cafeteria, Construction cluster, and Transportation cluster. There is also a secondary "customer entrance" providing direct access to the Culinary Arts restaurant and the Cosmetology salon. At the south end of the building is the car drop-off entrance with direct access to the Early Education program.

The second floor is constructed on top of the high-bay shops and configured as a double courtyard. It houses the Design & Communications cluster and the Consumer Services cluster. Also, the double-height Media Center is centrally located here adjacent to a potential vegetated roof.

The third floor mirrors the second-floor configuration and houses the Health Services cluster.

Due to the significant topography of the site, some of the parking may be terraced and/or located on a parking deck.



Option C.3

Final Evaluation of Options

Analysis of school district student school assignment practices and available space in other schools in the district: ***Evaluation: NOT FEASIBLE***
Northeast Metro Tech is a regional school district that has only one school facility; they do not own any additional property. There are no alternative locations.

Tuition agreements with adjacent school districts: ***Evaluation: NOT FEASIBLE***
Northeast Metro Tech is a regional school district offering a unique technical education for students in 12 communities just North of Boston. There are no adjacent school districts with possible tuition agreements to provide a comparable education.

Rental or Acquisitions of existing buildings that could be available for school use: ***Evaluation: NOT FEASIBLE***
There are no possible available properties/ structures in the Region that could house the specialized technical education programs offered by Northeast Metro Tech.

Please also refer to the Evaluation Matrix for a summary of the comparative evaluations.

Base Repairs

This option will determine the minimum level of repairs and capital improvements necessary to meet code and prolong the useful life of the existing Northeast Metro Tech building.

Advantages:
Though not truly an option, this scope of work would address virtually all of the physical deficiencies of the bring the existing building and bring it up to code and current standards. It would prolong the useful life of the current facility.

Disadvantages:
Base Repair is not truly an option as it does not improve educational areas, does not accommodate current or projected enrollment, and does not address educational deficiencies. These repairs would need to be performed during summers or off-hours to avoid being very disruptive to the on=going educational environment.

Evaluation: ***Not Feasible*** *(but continue to utilize as a Baseline for cost comparison)*

Family of Options "A" Renovation Only

This Alternative would attempt to implement the Educational Program within the existing building, while also addressing the building's facility needs. The Renovation scope would necessarily include all of the Base Repairs, as well as significant reconfiguration of the interior to accommodate the educational program and to address deficiencies.

However, the existing building is only 240,000 square feet (including the pool), which is significantly smaller than the 315,000 square feet required by the proposed Space Summary program for even the lowest enrollment option of 1250 students. Therefore, without an addition, this Renovation-only option was deemed **unfeasible** and not recommended for further development.

Option B.1 Renovation/ Addition

This Option proposes a three-story addition of approximately 85 to 100,000 sf in front of the existing school centered on the existing main entrance and renovation of the entire existing building to accommodate enrollments of 1250 to 1400 students.

Educational Program Requirements
Option B.1 falls short of the educational vision of creating small learning communities based upon career clusters. Many of the existing career technical shops remain in their current location and do not achieve the desired adjacencies with other CTE shops or with academic classrooms. Similarly, many administrative functions and teacher planning spaces are centralized and not distributed to small learning communities.

Initial Space Summary
Although the majority of spaces are right-sized through renovation or new construction, a few key spaces fall short of the space goals proposed in the initial Space Summary. The Gymnasium would remain undersized by almost 4,000 sf and the Auditorium in the converted Natatorium would only accommodate 450- 500 seats versus the desired 750 seats.

Site & Facility Goals
This option accomplishes a major goal of making the facility handicap-accessible, although still not achieving the goal of more universal design. The building envelope and infrastructure would be significantly improved, but not quite to the level of new construction. The access for visitors and security would be greatly improved.
The site circulation would remain generally as it is today with a separation of drop-off areas and a single access drive via Hemlock Road. Athletic fields would be renovated, but would remain in their current locations and not achieve the desired quantity of fields.

Construction Phasing & Temporary Facilities
This renovation option requires significant investment in temporary parking facilities to allow the construction of the new addition on the current front parking lot. This would result in the loss of the baseball field for the duration of the project. Also, the new maintenance garage must be constructed first to allow the expansion and reconfiguration of the CTE shops. Together with the required phasing of the interior renovations, this option will have an extended construction duration.

Advantages
Option B.1 maximizes renovation of the existing building and minimizes reconfiguration in order to minimize construction cost. It would prolong the useful life of the facility and improve access and security.

Disadvantages
Option B.1 falls short of the District's educational vision; in particular, academic classrooms would continue to be separated from CTE shops and the CTE programs would not be configured into career clusters. The shortcomings of the Gym and Auditorium spaces is significant. Although the construction cost might be slightly lower and the reimbursement rate slightly higher, the long-term ***value*** would be significantly less than all new construction. The construction of this option would also be very disruptive and protracted. This option does not accommodate the higher enrollments.

Evaluation: ***Not recommended*** *for continued study*

Option B.2 Renovation/ Addition

This Option is very similar to Option B.1, but also includes additions to the high-bay career technical shops and additional classrooms to accommodate the higher enrollment options of 1600 to 1722 students. The major new addition in front of the existing building is on an identical footprint as Option B.1, but has an additional (fourth) floor to accommodate the additional classrooms and science labs required by the higher enrollment options. The higher enrollment options would also require additional parking spaces, so this option has an additional parking deck level on the hillside.

Educational Program Requirements

Option B.2 has similar shortfalls as B.1, but fails to meet the educational vision of creating small learning communities based upon career clusters with academic classrooms in closer proximity to the CTE shops. Many administrative functions and teacher planning spaces remain centralized and are not distributed to small learning communities.

Initial Space Summary

Although the majority of spaces are right-sized through renovation or new construction, a few key spaces fall short of the space goals proposed in the initial Space Summary. The Gymnasium would remain undersized by almost 4,000 sf and the Auditorium in the converted Natatorium would only accommodate 450- 500 seats versus the desired 750 seats.

Site & Facility Goals

This option accomplishes a major goal of making the facility handicap-accessible, although still not achieving the goal of more universal design. The building envelope and infrastructure would be significantly improved, but not quite to the level of new construction. The access for visitors and security would be greatly improved.
The site circulation would remain generally as it is today with a separation of drop-off areas and a single access drive via Hemlock Road. Athletic fields would be renovated, but would remain in their current locations and not achieve the desired quantity of fields.

Construction Phasing & Temporary Facilities

This renovation option requires significant investment in temporary parking facilities to allow the construction of the new addition on the current front parking lot. This would result in the loss of the baseball field for the duration of the project. Also, the new maintenance garage must be constructed first to allow the expansion and reconfiguration of the CTE shops. Together with the required phasing of the interior renovations, this option will have an extended construction duration.

Advantages

Option B.2 maximizes renovation of the existing building in order to minimize construction cost and increase the reimbursement rate. It would prolong the useful life of the facility and improve access and security. This option can accommodate the full range of enrollment options being considered by the District.

Disadvantages

Option B.2 falls short of the District's educational vision; in particular, academic classrooms would continue to be separated from CTE shops and the CTE programs would not be configured into career clusters. The shortcomings of the Gym and Auditorium spaces are significant. Although the construction cost might be slightly lower and the reimbursement rate slightly higher, the long-term ***value*** would be significantly less than all new construction. The construction of this option would be very disruptive to teaching and learning and the construction duration would be protracted.
The final site arrangement is compromised with less-than-ideal separation of car and bus traffic and continued poor accessibility to the existing playing fields.

Option C.1 New Construction

The new school is arranged in a linear fashion north of the existing school, on the lower athletic fields near the northern property line. To fit the entire educational program on this limited site and to accommodate the existing topography, the building is configured onto five floor levels. The primary circulation is tee-shaped with the main entrance lobby dividing the more public areas to the west from the academic areas to the east.

Educational Program Requirements
Option C.1 closely follows the Educational Program and to a great extent meets the District's educational vision. The Career Technical programs are organized into career clusters and academic classrooms are in close proximity to the CTE shops. Teacher planning and small group spaces are distributed to each of the small learning communities and project break-out areas can be created throughout. Due to some site restrictions not all of the CTE shops can be co-located with their Career Clusters.

Initial Space Summary
This new construction option meets all of the initial Space Summary net area requirements. However, with the long corridors and windowless spaces on the lower levels, this option may have difficulty meeting the grossing factor of 1.50.

Site & Facility Goals
Option C.1 safely separates bus and car traffic while maintaining a single, secure point of entrance. This option continues to utilize Hemlock Road as the primary access drive. The site layout can provide separate, identifiable parking for the public accessing Breakheart Reservation. There is also an appropriate service yard for the high-bay CTE shops. New, larger athletic fields will replace those displaced by construction.
As new construction, the building will provide an energy efficient facility with durable, low-maintenance materials.

Construction Phasing & Temporary Facilities
The new school in Option C.1 can be constructed in a single phase. However, its close proximity to the existing building will require some significant adjustments to the current bus and service circulation patterns and the need for extensive temporary parking areas. Construction access is also challenging with this option; it may also require some negotiation with DCR in order to utilize some Breakheart Reservation property. Location of the building footprint also requires temporary relocation of the existing sewer line.

Advantages
Option C.1 closely follows the Educational Program to achieve the District's goals. The existing school can remain in operation throughout the new school construction, with some significant disruption.

Disadvantages
The close proximity of the proposed construction to the existing school makes this option the most disruptive of the new construction options. The building configuration with long corridors on five floors results in an inefficient layout. By being built into the hillside, this option requires tall retaining walls and results in a large amount of windowless spaces.
The athletic facilities are somewhat improved, but the football field and track will have less than ideal accessibility.

Option C.2 New Construction

This option sites the new school on the two flat portions of the site to the west of the existing school- the football field/ track and the baseball field. These two areas are approximately 28 feet apart in elevation which coincidentally is equal to two floor levels. This four-story building steps up the hillside with a multi-level Main Street connecting the main entrance on level 1 with the high-bay CTE shops on level 3, while also providing access to the large public spaces in the program.

Educational Program Requirements
Option C.2 attempts to follow the Educational Program and generally meets the District's educational vision. Academic classrooms are generally in close proximity to the shops. The Career Technical programs are attempted to be organized into career clusters, but are somewhat limited by the building configuration. Teacher planning and small group spaces are distributed throughout the building, however each of the small learning communities are somewhat loosely defined. Project break-out areas can be created throughout.

Initial Space Summary
This new construction option meets all of the initial Space Summary net area requirements. With the long multi-level "Main Street" circulation space, this option may have difficulty meeting the grossing factor of 1.50.

Site & Facility Goals
Option C.2 safely separates bus and car traffic while providing a secure point of entrance adjacent to the administration area. This option continues to utilize Hemlock Road as the primary access drive. The site layout can provide separate, identifiable parking for the public accessing Breakheart Reservation. There is also an appropriate service yard for the high-bay CTE shops. New, larger athletic fields will replace those displaced by construction. As new construction, the building will provide an energy efficient facility with durable, low-maintenance materials.

Construction Phasing & Temporary Facilities
The new school in Option C.2 can be constructed in a single phase well away from the existing building and without the need for temporary facilities. Some provisions will need to be made to compensate for the lack of athletic fields and the Early Education playground for the duration of construction.

Advantages
Option C.2 generally follows the Educational Program to achieve the District's goals. The location of the new school allows construction to occur with minimal disruption to the existing school.

Disadvantages
The current baseball field, football field, and track will be displaced for the entirety of the construction project. The building configuration with the long multi-level "Main Street" circulation space results in a somewhat inefficient layout. By being built into the hillside, this option requires blasting, tall retaining walls, and results in some windowless spaces.

Option C.3- *Preferred Option* New Construction

This option sites the new building on the District's undeveloped hillside area south of the existing school. The three-story building would sit on a level building pad created by a mass-blasting operation. This portion of the site would be accessed by a new access road from Farm Road on the property's southern boundary. The proposed building is organized in clusters with academic areas in close proximity to career technical areas on each floor with the large public areas clustered at the north end of the building.

Educational Program Requirements
Option C.3 follows the Educational Program closely and meets virtually all of the District's educational vision. The Career Technical programs are organized into career clusters with academic classrooms are in close proximity. Teacher planning and small group spaces are distributed to each of the small learning communities and project break-out areas can be created throughout.

Initial Space Summary
This new construction option meets all of the initial Space Summary requirements.

Site & Facility Goals
Option C.3 safely separates bus and car traffic while providing a secure point of entrance adjacent to the administration area. This option creates a new primary access driveway that will relieve the daily congestion on Hemlock Road. There is also an appropriate service yard for the high-bay CTE shops. New, larger athletic fields will be constructed after the demolition of the existing school to expand the school's inventory of fields.
As new construction, the building will provide an energy efficient facility with durable, low-maintenance materials in a fairly compact configuration.

Construction Phasing & Temporary Facilities
The new school in Option C.3 can be constructed in a single phase well away from the existing building and without the need for temporary facilities. Due to the large amount of ledge removal required, an early site preparation package might be considered.

Advantages
Option C.3 most closely follows the Educational Program of any option. The proposed layout, adjacencies, and building configuration achieve the District's educational goals and vision. The location of the new school allows construction to occur with the least amount of disruption to the existing school of any option. The district gains additional athletic fields with this option and maintains the potential of reserving the current football field/ track for future development as a hockey rink.
Public traffic to Breakheart Reservation is totally separate from daily school traffic.

Disadvantages
Due to high site costs, this option may be slightly more expensive than other new construction options (although the District does gain additional athletic fields). The athletic fields are located a significant distance down the hill from the new school.

Enrollment Options

Preliminary Enrollment Options
1250 students
1400 students
1600 students
1660 students
1722 students

In addition to the design options, the District evaluated five enrollment options as identified in the Preliminary Design Phase of the Feasibility Study. Please note that the District enrollment certification agreement for this Feasibility Study identified three potential enrollments: 1. 1250 students (current), 2. 1722 students, 3. Between 1250 and 1722 students. The District expanded this list to be more specific for option 3 by including enrollments of: 1400 students, 1600 students, and 1660 students.

After initial consideration the District, Building Committee, and School Committee decided that based upon the District's consistent waiting list of applicants and projection of future growth, that the lowest reasonable enrollment for this project going forward should be at least 1400 students; approximately 10% greater than the school's current enrollment.

Upon further consideration of the estimated construction costs and input from several of the key member communities, the District determined that 1600 students is the optimal desired enrollment for this Project. It strikes a balance between the need for expanded capacity while also be realistic about affordability.

Conclusion

After carefully considering a full range of options, evaluating the advantages and disadvantages of each design option, and determination of the optimal target enrollment, the District has determined that **Option C.3 for 1600 students** is the preferred option.

Preliminary Evaluation Matrix - Northeast Metro Tech - Concept Options - WORKING DRAFT

Updated: 6/22/2020

	Concept Options						
	MSBA Required	Renovation	Add/ Reno Options		New Construction Options		
	Base Repair	A	B.1	B.2	C.1	C.2	C.3
Evaluation Criteria	Code Renovation						
Construction Duration:	multiple years	multiple years	3+ years	3+ years	2+ years	2+ years	2+ years
Ed Plan Accomodation Compliance w/ Vision	doesn't address any educational deficiencies	not large enough to address space needs	difficult to accommodate Ed Plan; no Small Learning Communities; poor adjacencies of shops to academic spaces	difficult to accommodate Ed Plan; no Small Learning Communities; poor adjacencies of shops to academic spaces	good Ed Plan conformance; good adjacencies of CTE and academic spaces; no expansion potential; cannot accommodate highest enrollment	fair Ed Plan conformance with Small Learning Communities; uneven distribution of CTE shops; some flexibility and expansion potential	best Ed Plan conformance with Small Learning Communities, adjacencies & project spaces; some flexibility; limited expansion potential
Project Cost Reimbursable Cost Temporary Costs Long-term Value			high temporary costs; structrured parking required; slightly higher reimbursement for renovation	high temporary costs; structrured parking required; slightly higher reimbursement for renovation	temporary sewer relocation required; tall retaining walls required;	lowest new construction cost	highest blasting & site development (roadwork, utilities) costs; highest long-term value
Disruption Impact on Students Construction Duration Phasing			phased construction adjacent to occupancy; long construction schedule; requires temporary parking	phased construction adjacent to occupancy; long construction schedule; requires temporary parking	some impact to adjacent occupancy; service and utility interruptions	minimal impact to adjacent occupancy; loss of athletic fields during construction; shortest building construction schedule	virtually no impact to existing occupancy; significant sitework requires early construction packages
Flexibility Enrollment Accommodation Expansion Potential			limited flexibility; limited expansion potential; doesn't accommodate higher enrollments	limited flexibility; limited expansion potential; can accommodate higher enrollments	limited flexibility; limited expansion potential; can't accommodate highest enrollments	some flexibility; limited expansion potential; can accommodate higher enrollments	good flexibility; limited expansion potential; can accommodate higher enrollments
Operating Costs Maintenance			most renovation areas will have limited envelope improvements; not all existing utilities will be replaced with new; parking garage has limited longevity	most renovation areas will have limited envelope improvements; not all existing utilities will be replaced with new; parking garage has limited longevity	all new construction & MEP systems; good solar orientation, good thermal envelope	all new construction & MEP systems; good thermal envelope	all new construction & MEP systems; best thermal envelope/ compact footprint
Site Access Safety & Security Circulation			existing car & bus separation and service access; limited parking by event entrance; limited separation of Breakheart traffic	existing car & bus separation; limited parking by event entrance; reduced service access; limited separation of Breakheart traffic	good car & bus separation; parking divides fields; convenenient visitor parking, good service access; limited separation from Breakheart traffic	good car & bus separation; convenenient visitor parking, good service access; limited separation from Breakheart traffic	new primary access road; good car & bus separation; good separation from Breakheart traffic
Final Site layout Site amenities			all existing fields to be reconstructed within limited area; less than desirable accessibility to fields	all existing fields to be reconstructed within limited area; less than desirable accessibility to fields	New multi-purpose/soccer field, new softball field; renovated track, football, baseball fields. Some accessibility issues remain to upper fields	New track, football, & baseball fields; renovated softball & practice fields. Some accessibility issues remain to lower fields	All new and expanded athletic fields; accessibility from school is less than ideal
Totals							

Legend
5 positive / most advantageous
4
3 neutral
2
1 negative / least advantageous

Narrative for Major Building Structural Systems

Please refer to **Appendix A, tab "e"**, for Structural Assessment prepared by Engineers Design Group.

Narratives for Major Building Systems

Please refer to **Appendix A, tab "f"**, for Fire Protection, Plumbing, Mechanical & Electrical Narratives prepared by BALA.

Cost Estimates

Please refer to **Appendix B**.

Table 1 – Summary of Preliminary Design Pricing

To follow on next page.

Table 1 – Summary of Preliminary Design Pricing

Option	Preliminary Design Program		Preferred Schematic Report		
	Total Gross Square Feet	Estimated Total Construction (cost*/sf)	Total Gross Square Feet	Estimated Total Construction (cost*/sf)	Estimated Total Project Costs (cost*/sf)
Option 1A (Repair) 1250 Students (Referred to as Base Repair in PSR)	240000 SF	$94,900,000 $395.42 /SF	240000 SF	$ 94,900,000 $395.42 /SF	$ 115,000,000 $479.17 /SF
Option 2A (Renovation) 1250 Students (Referred to as Option A.1 in PSR)	N/A	N/A N/A	N/A	N/A N/A	N/A N/A
Option 3A (Addition/ Renovation) 1250 Students (Referred to as Option B.1a in PSR)	305000 SF	$ 183,260,000 $600.85 /SF	N/A	N/A N/A	N/A N/A
Option 3A (Addition/ Renovation) 1400 Students (Referred to as Option B.1b)	333000 SF	$ 203,390,000 $610.78 /SF	N/A	N/A N/A	N/A N/A
Option 3B (Addition/ Renovation) 1250 Students (Referred to as Option B.2a)	305000 SF	$ 184,250,000 $604.1 /SF	314923 SF	$ 180,904,613 $574.44/SF	$ 244,351,332 $775.91/SF
Option 3B (Addition/ Renovation) 1400 Students (Referred to as Option B.2b)	333000 SF	$ 204,380,000 $613.75 /SF	343349 SF	$ 196,231,933 $571.52/SF	$ 264,746,976 $771.07/SF
Option 3B (Addition/ Renovation) 1600 Students (Referred to as Option B.2c)	373000 SF	$ 233,090,000 $624.91 /SF	363974 SF	$ 211,078,047 $579.93/SF	$ 284,606,678 $781.94/SF
Option 3B (Addition/ Renovation) 1660 Students (Referred to as Option B.2d)	383000 SF	$ 240,240,000 $627.26 /SF	393327 SF	$ 216,376,740 $550.12/SF	$ 291,673,043 $741.55/SF
Option 3B (Addition/ Renovation) 1722 Students (Referred to as Option B.2e)	394000 SF	$ 248,160,000 $629.85 /SF	403554 SF	$ 223,259,827 $553.23/SF	$ 300,821,949 $745.43/SF
Option 4A (New) 1250 Students (Referred to as Option C.1a)	315000 SF	$ 197,100,000 $625.71 /SF	314923 SF	$ 206,980,685 $657.24/SF	$ 270,283,911 $858.25/SF
Option 4A (New) 1400 Students (Referred to as Option C.1b)	343000 SF	$ 214,500,000 $625.36 /SF	343349 SF	$ 221,207,759 $644.27/SF	$ 288,666,949 $840.74/SF
Option 4A (New) 1600 Students (Referred to as Option C.1c)	383000 SF	$ 239,300,000 $624.8 /SF	382653 SF	$ 243,503,186 $636.36/SF	$ 317,408,333 $829.49/SF

Option 4A (New) 1660 Students (Referred to as Option C.1d)	393000 SF	$ 245,600,000 $624.94 /SF	393327 SF	$ 247,577,311 $629.44/SF	$ 322,705,100 $820.45/SF
Option 4A (New) 1722 Students (Referred to as Option C.1e)	404000 SF	$ 252,400,000 $624.75 /SF	403554 SF	$ 252,789,087 $626.41/SF	$ 329,452,775 $816.38/SF
Option 4B (New) 1250 Students (Referred to as Option C.2a)	315000 SF	$ 200,700,000 $637.14 /SF	314923 SF	$ 200,778,855 $637.55/SF	$ 262,395,184 $833.2/SF
Option 4B (New) 1400 Students (Referred to as Option C.2b)	343000 SF	$ 218,600,000 $637.32 /SF	343349 SF	$ 215,677,312 $628.16/SF	$ 281,632,221 $820.25/SF
Option 4B (New) 1600 Students (Referred to as Option C.2c)	383000 SF	$ 244,000,000 $637.08 /SF	382653 SF	$ 236,628,140 $618.39/SF	$ 308,663,274 $802.41/SF
Option 4B (New) 1660 Students (Referred to as Option C.2d)	393000 SF	$ 250,400,000 $637.15 /SF	393327 SF	$ 241,999,081 $615.26/SF	$ 315,609,591 $802.41/SF
Option 4B (New) 1722 Students (Referred to as Option C.2e)	404000 SF	$ 257,400,000 $637.13 /SF	403554 SF	$ 247,456,794 $613.19/SF	$ 322,670,098 $799.57/SF
Option 4C (New) 1250 Students (Referred to as Option C.3a)	315000 SF	$ 202,200,000 $641.9 /SF	314923 SF	$ 208,829,188 $663.11/SF	$ 272,635,207 $865.72/SF
Option 4C (New) 1400 Students (Referred to as Option C.3b)	343000 SF	$ 219,900,000 $641.11 /SF	343349 SF	$ 223,352,903 $650.51/SF	$ 291,395,573 $848.69/SF
Option 4C * (New) 1600 Students (Referred to as Option C.3c)**	**383000 SF**	**$ 245,100,000 $639.95 /SF**	**382653 SF**	**$ 243,514,418 $636.38/SF**	**$ 317,422,620 $829.53/SF**
Option 4C (New) 1660 Students (Referred to as Option C.3d)	393000 SF	$ 251,400,000 $639.69 /SF	393327 SF	$ 249,015,085 $633.1/SF	$ 324,533,948 $825.1/SF
Option 4C (New) 1722 Students (Referred to as Option C.3e)	404000 SF	$ 258,400,000 $639.6 /SF	403554 SF	$ 254,335,941 $630.24/SF	$ 331,420,373 $821.25/SF