

# 3.3.1

## INTRODUCTION

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This Preferred Schematic Report is being submitted to the Massachusetts School Building Authority (MSBA) to finalize the Preliminary Design Program, summarize the process and conclusions of the Preliminary Evaluation of Alternatives, and substantiate and document Northeast Metropolitan Regional Vocational School District's selection of a preferred solution for the future of Northeast Metropolitan Regional Vocational High School.

### **Overview of Process** *(since Preliminary Design Program submission on August 14, 2020)*

The process leading up to the completion of this "Preferred Schematic Report" has included the following activities:

- The Owner's Project Manager, PMA Consultants, and the Design Team, led by DRA have convened regular meetings with the Owner to focus on developing and analyzing the options, scrutinizing the advantages and disadvantages of each. These meetings have included:
  - Weekly meetings with the Owner, OPM & Design Team
  - Bi-Weekly meetings with the OPM, Design Team & Working Group
  - Monthly meetings with the Building Committee
  - Programming interviews with all department heads and key staff personnel
  - Preliminary discussions with local officials regarding traffic, utility, & engineering considerations

The Project Stake Holders were specifically focused on the development of the list of objective criteria to be utilized for evaluation of each option. DRA has worked with the School Superintendent and School Principal as necessary to update and expand the Educational Program information. This series of meetings with the Owner produced the following criteria to evaluate each option:

- Educational Program Outcome
  - Initial and Continuing Costs
  - Impact / Disruption of Proposed Construction on the Ongoing School Activities
  - Flexibility and Enrollment Accommodation
  - Site Access, Safety, Security, and Traffic Issues
  - Site Layout & Amenities
- Further Development of the Options has continued to illustrate the function and requirements of each of the alternatives. Narratives and diagrams were prepared to assist the cost estimating efforts.
  - Conceptual Order-of-Magnitude Construction Cost Estimates were prepared by two independent professional Cost Estimators for each design option and for each enrollment option (20 estimates).

## Overview of Community Outreach *(since Preliminary Design Program submission on August 14, 2020)*

Community Support is an important consideration of this project. The school is sensitive to the varying concerns of the 12 member communities in its regional district. To keep the citizens and local officials informed of the Project, the District has:

- Maintained a comprehensive project website linked to the Northeast Metro Tech home page. This site has a record of project meetings, key project documents, and a schedule of key milestones & upcoming activities.
- The Superintendent and District leadership has begun the process of visiting all 12 towns to update community leaders on the Project's status and to respond to their questions and concerns. To date, such meetings have been held with the leaders of the four largest sending communities: Revere, Chelsea, Saugus, and Woburn.
- The Project Team presented the project status to a meeting of the District's School Committee which has representatives from all twelve communities.
- Information on the project was made available to parents and families on the Project website during virtual open-house sessions this Fall.

Key project documents and presentations have been recorded on the project website for public viewing. This information can be found at:

<http://northeastbuildingproject.com/>

## Summary of Updated Project Schedule

This Report is being submitted in anticipation of approval of the Preferred Alternative for Northeast Metropolitan Regional Vocational High School by the MSBA's Board of Directors at their meeting scheduled for February 11, 2021.

We understand that this schedule would include a meeting with the Board's Facility Assessment Subcommittee (FAS) on either January 13 or 20, 2021.

July 7, 2021	MSBA Module 4, Schematic Design Submittal
August 25, 2021	Projected MSBA Board of Directors Meeting for the Approval of Schematic Design / Project Scope and Budget Agreement
Fall 2021	Projected District Votes in each community for Project Scope and Budget
Nov. 2021 – May 2023	Design Development & Completion of Construction Documents
June 2022 – Nov. 2022	Early Site Enabling Construction
August 2023	Anticipated Start of Construction
September 2025	Completion and Occupancy of the New Construction
Fall 2026	Target Completion Date for Fields & Remaining Sitework

This project Schedule is based upon the **Preferred Option C.3 – New Construction**. It is presumed that after an Early Site Enabling package, the construction of the new school will take approximately two years to complete with minimal impact to the existing school and its daily functions. Once complete, the students and staff would transfer to the new building while demolition of the existing school and construction of the new athletic fields and parking are completed.

## Summary of the Final Evaluation of Existing Conditions

There have been no substantial changes to the evaluation of existing conditions information since the submission of the Preliminary Design Program.

As requested in the MSBA's comments to the PDP, the design team did confirm with the District that there are no additional safety or regulatory deficiencies in any of the shop areas beyond the space limitations noted in the Existing Conditions report.

## Summary of the Final Evaluation of Alternatives

The options identified and studied in Chapter 3.3.3 of this report are as follows:

<b>Base Repair</b>	Code Upgrade for existing enrollment (1250 students)
<b>Option B.2</b>	Renovation / Addition for enrollments of 1250, 1400, 1600, 1660 & 1722 students
<b>Options C.1, C.2 &amp; C.3</b>	New Construction for enrollments of 1250, 1400, 1600, 1660 & 1722 students

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### Base Repair

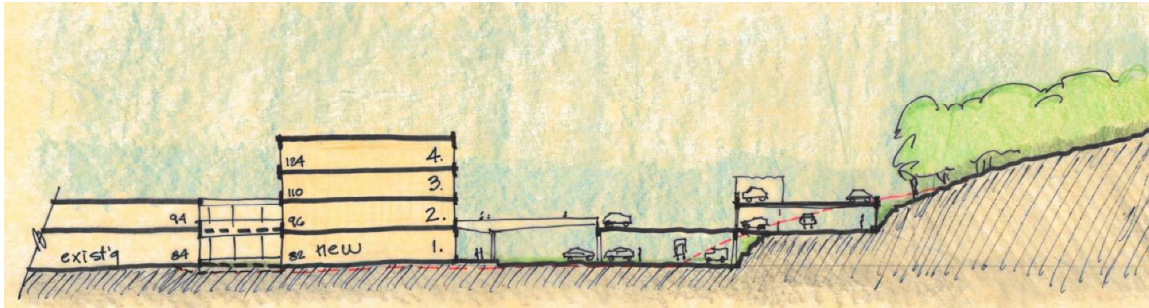
This option will determine the minimum level of repairs and capital improvements necessary to meet code and prolong the useful life of the existing Northeast Metro Tech building. Based upon the Existing Conditions Report, this scope of work will include at least: Window and Roof replacement, exterior 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 or address educational deficiencies.



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### Option B.2 – Renovation / Addition



This Alternative includes 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 this option. Two major core areas of the existing building, the Gymnasium and Cafeteria, would essentially remain as is, with renovations performed during the summer months.

Alternative would involve extensive phasing, temporary accommodations, and significant off-hours and summer work.

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

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### Options C.1, C.2 and C.3 – 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.



*Potential Construction Zones*

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 diagram

## Option C.1

## New Construction

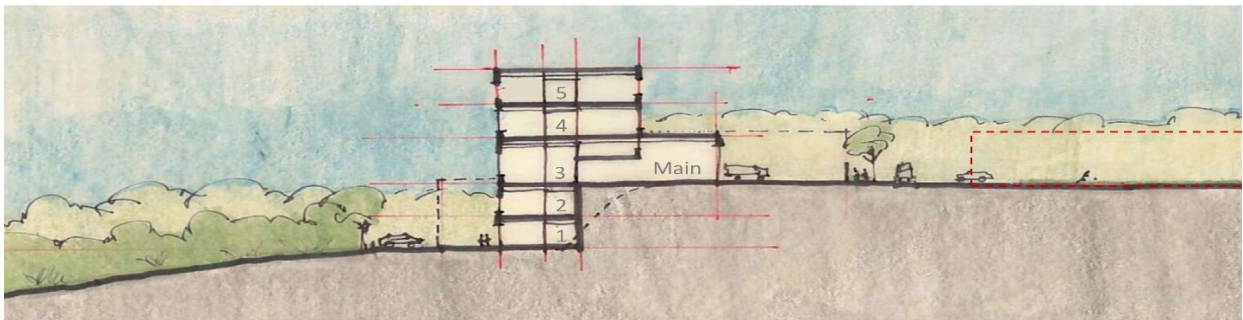


The new school is arranged in a linear fashion north of the existing school, on the lower athletic fields near the northern property line. To fit the entire educational program on this limited site and to accommodate the existing topography, the building is configured onto five floor levels. The primary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

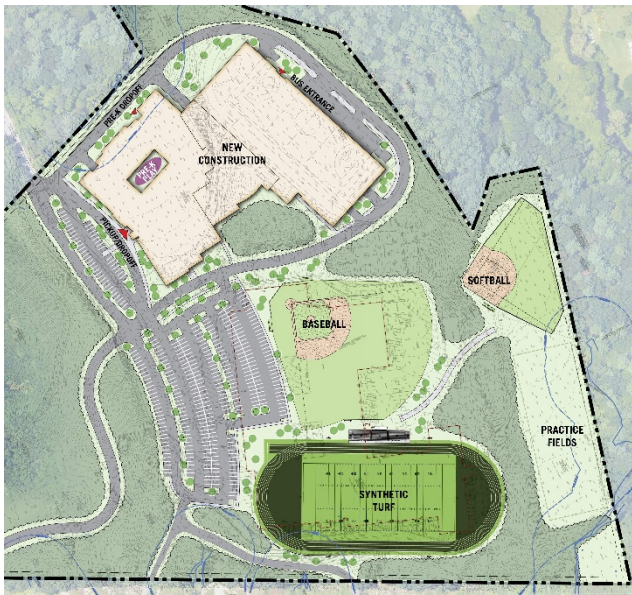
The main entrance level, level 3, would be located approximately at the existing grade level of the current service area/ bus drop-off area behind the existing CTE shops. This main level would accommodate the high-bay shops & classrooms of the Transportation and Construction clusters, administration 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 4<sup>th</sup> floor and the Health Services cluster would be on the 5<sup>th</sup> 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.

New athletic fields would be constructed on the footprint of the former school. The existing football field, track, and baseball fields would be renovated in their current locations.







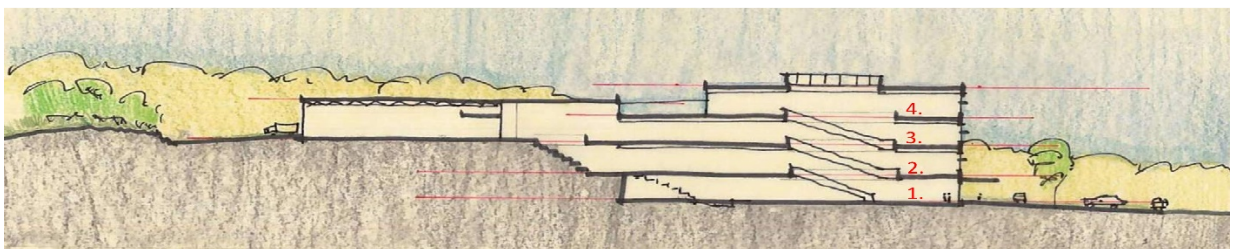
This option sites the new school on the two flat portions of the site to the west of the existing school- the football field/ track and the baseball field. These two areas are approximately 28 feet apart in elevation which coincidentally is equal to two floor levels. This results in a building with reduced 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.

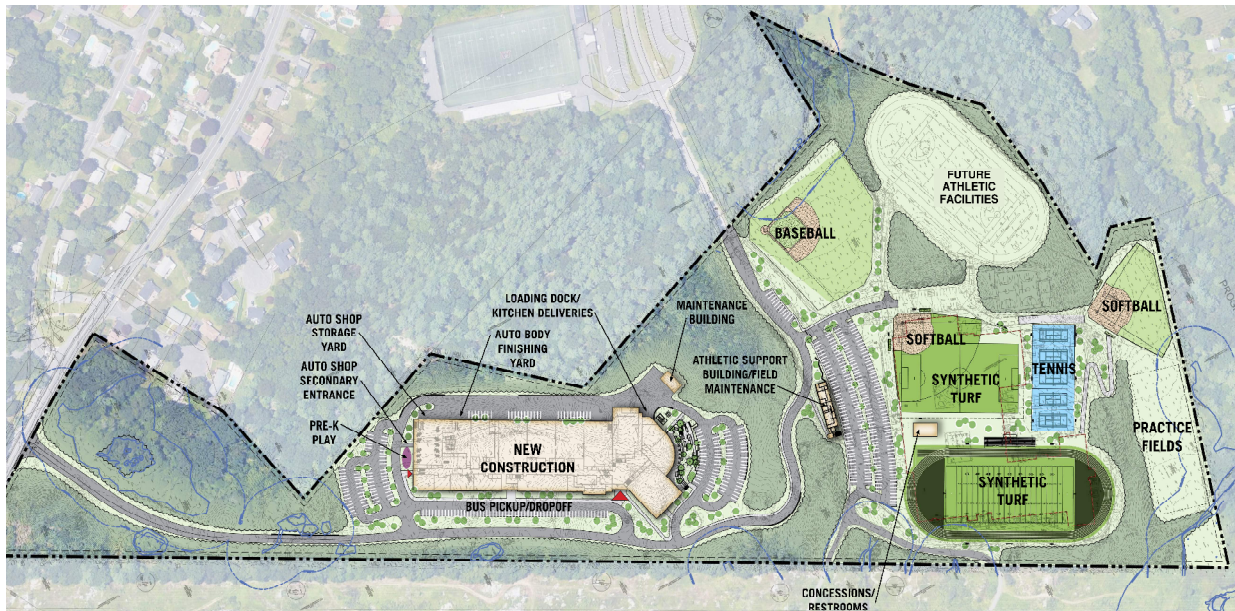
The site circulation is provided by a bus/ service loop up and around the proposed building while a separate visitor and car-drop-off serves the lower level.

The southern, four-story portion of the school is organized around a courtyard with CTE shops distributed among 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 assembly spaces (Gym, Cafeteria, Media Center) 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.

New parking areas and athletic fields to replace the baseball & football fields would be constructed on the footprint of the former school.

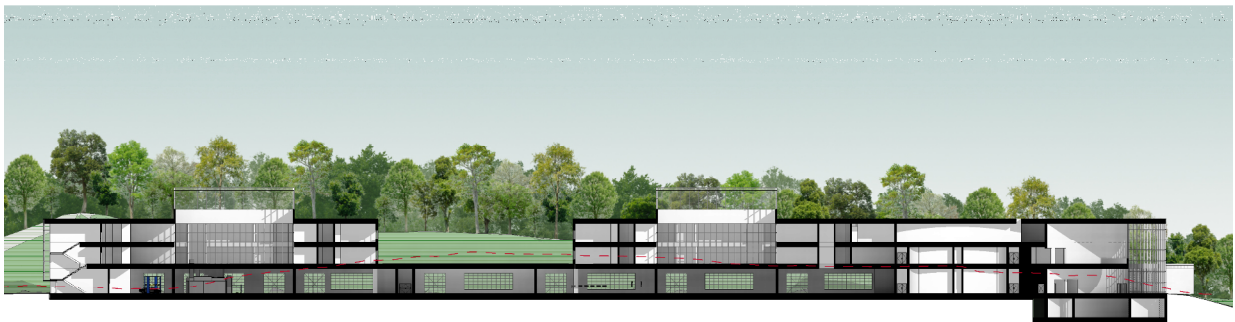




The C.3 option sites the new building on the undeveloped hillside area south of the existing school. This area is wooded with a significant amount of ledge outcroppings. The proposal calls for the creation of a flat building pad through a mass blasting operation in an early site enabling phase. The pad would be large enough to accommodate the footprint of a three-story building and 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 new road would continue past the new school to connect with Hemlock Road near the current guard shack location to the west of the existing school parking area.

The proposed three-story building is organized in clusters with academic areas in close proximity to career technical clusters on each floor as called for in the Educational Program. Also, the large public areas are clustered at the north end of the building adjacent to the main entrance and separated from the academic areas to the south.

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






The District utilized this matrix of criteria to summarize the analysis of the four final design options:

Updated:

6/22/2020

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



Evaluation Criteria	Concept Options						
	MSBA Required	Renovation	Add/ Reno Options		New Construction Options		
	Base Repair	A	B.1	B.2	C.1	C.2	C.3
Construction Duration:	Code Renovation multiple years	multiple years	3+ years	3+ years	2+ years	2+ years	2+ years
Ed Plan Accommodation 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			high temporary costs; structured parking required; slightly higher reimbursement for renovation	high temporary costs; structured 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
Reimbursable Cost							
Temporary Costs							
Long-term Value							
Disruption			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
Impact on Students							
Construction Duration							
Phasing							
Flexibility			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
Enrollment Accommodation							
Expansion Potential							
Operating Costs			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
Maintenance							
Site Access			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 divider fields; convenient visitor parking; good service access; limited separation from Breakheart traffic	good car & bus separation; convenient visitor parking; good service access; limited separation from Breakheart traffic	new primary access road; good car & bus separation; good separation from Breakheart traffic
Safety & Security							
Circulation							
Final Site layout			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
Site amenities							
Totals							

Legend

5

positive / most advantageous

4

3

neutral

2

1

negative / least advantageous

New Construction Option C.3 scored highest overall and ranked highest in 6 of the 7 criteria categories established by the District. It clearly provides the best value for Northeast Metropolitan Regional Vocational High School. It will, among other attributes, provide the best educational outcome, result in lower operating and maintenance costs, minimize disruption during construction, provide better site access and additional athletic fields than all other options.



## Summary of the District's Preferred Solution

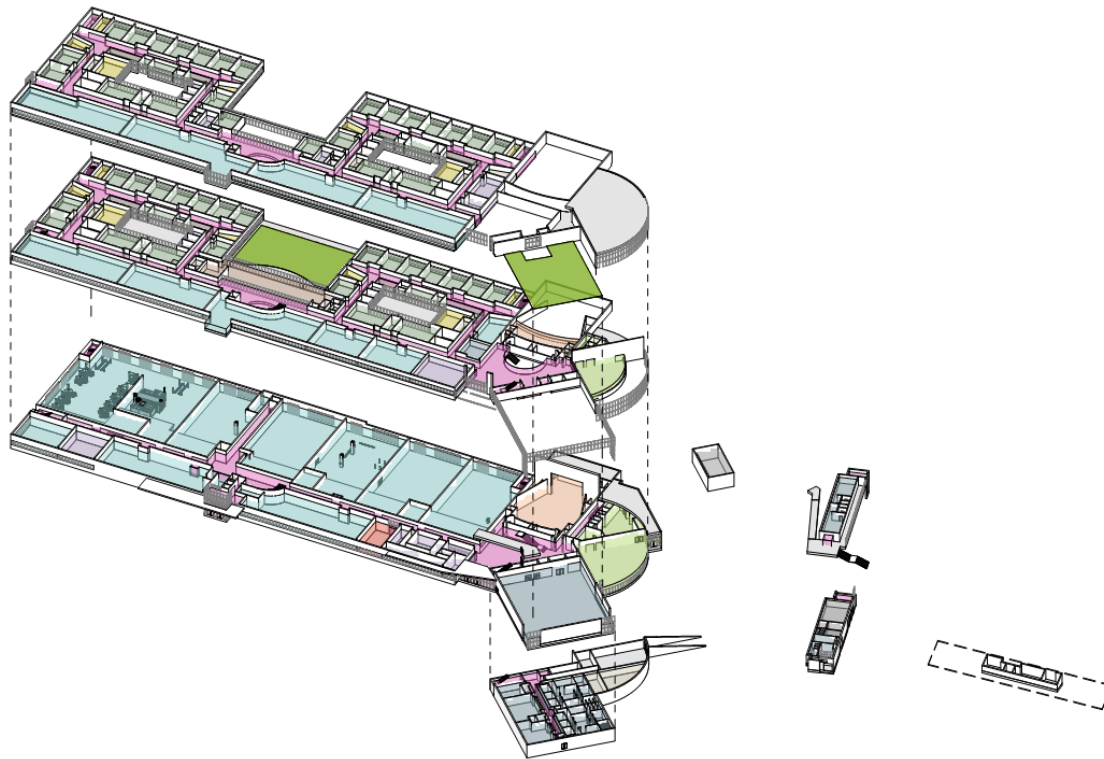
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The proposed building is organized in clusters with academic areas in close proximity to career technical areas on each floor as called for in the Educational Program. Also, the large public areas are clustered at the north end of the building adjacent to the main entrance and 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.



See Section 3.3.4 for plans of Option C.3.

## MSBA Preliminary Design Program Review & District's Response

Please refer to **Appendix D**.