

5. Preferred Solution | BHS Campus Expansion

New Cypress Building with BHS New STEM-Wing Addition & 3rd Floor Renovation

Existing Area to Remain at BHS Greenough Building

335,000 sf

New Construction Area at BHS Greenough Building

51,650 sf

Total Area at BHS Greenough Building

386,650 sf

New Construction Area at Cypress Building

112,700 sf

Total Project Area

499,350 sf

Total Project Cost

\$136,612,807

Note that construction and project costs for the Optional Projects at Tappan Gym, the Unified Art Building, and the Cypress Park Field and Playground Renovations are not included in the Preferred Solution - Option 4D costs indicated above.

A Unified Campus

The Preferred Solution, Option 4D, places a significant new building for the Brookline High School on the corner of Cypress Street, Brington Road, and Tappan Street. This 9th Grade academic building becomes a gateway to the Brookline High School campus, whether approaching the campus from Cypress Street or from Route 9.

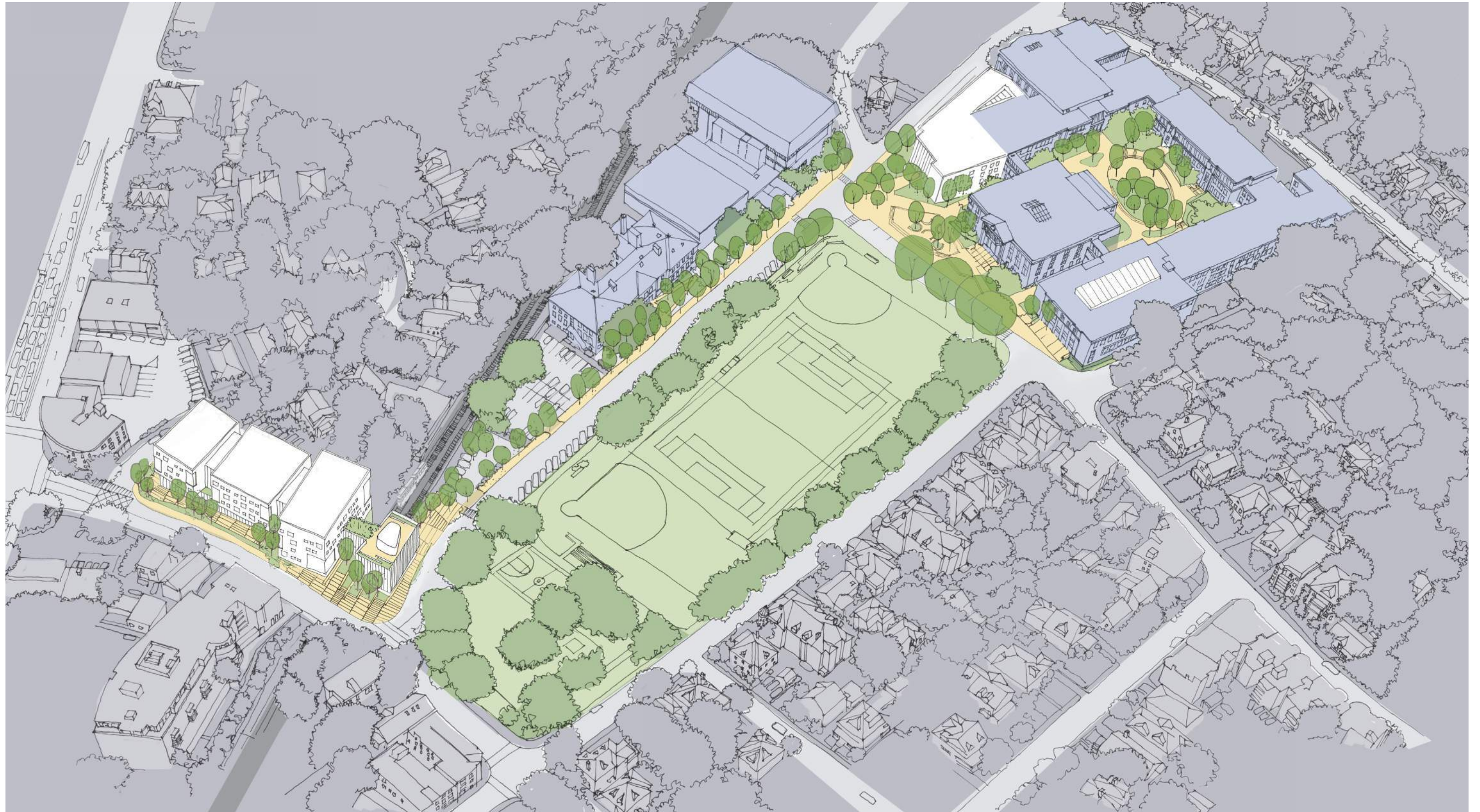
Bookending the Cypress Building is the second component of Option 4D – the new STEM wing addition to the Roberts Wing of the Greenough building, on the corner of Greenough Street and Tappan Street.

The 9th Grade academic building spans the MBTA Green Line to front on Tappan Street, extending the face of the Brookline High School from the academic building on Greenough Street to Cypress Street. The building completes the campus edge along Cypress Field established by the Tappan Gym, Kirrane Pool, and the Unified Arts Building.

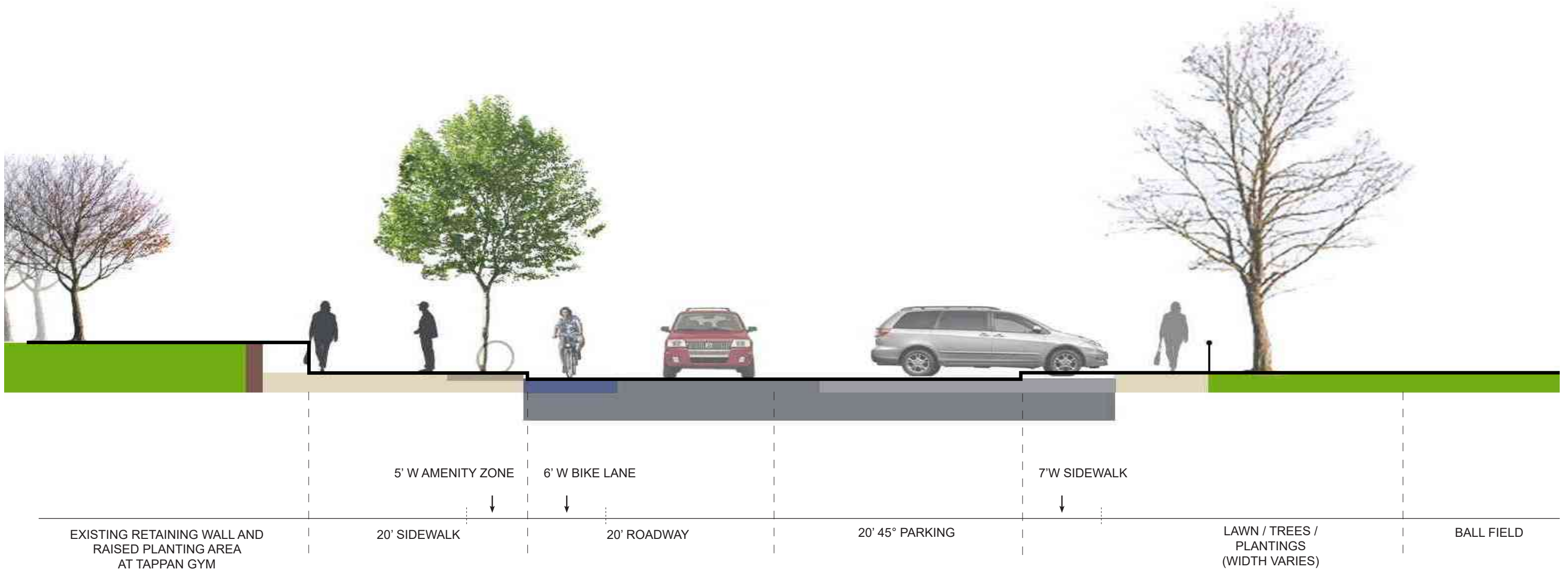
The campus site plan proposes the development of an active pedestrian way that ties the distinct campus buildings and Cypress Field into an open unified Brookline High School campus.

Other potential projects within Option 4D may include additional BHS -Greenough Building improvements such as window replacement, roof repairs resulting from renovations, and minor systems repairs, as well as additional optional projects at Tappan Gym, the Unified Art Building, and Cypress Park Field and Playground Renovations.

5. Preferred Solution | BHS Campus Plan Overview Massing
Option 4D - New Cypress Building with
BHS New STEM-Wing Addition & 3rd Floor Renovation



5. Preferred Solution | BHS Campus Expansion Campus Site Section at Tappan St.



NOTE: AMENITY ZONE COULD INCLUDE STREET TREES, BENCHES, BIKE RACKS, AND TRASH RECEPTACLES.

TAPPAN STREET TYPICAL SECTION OPTION 1

5. Preferred Solution | BHS Campus Expansion
Campus Site Plan

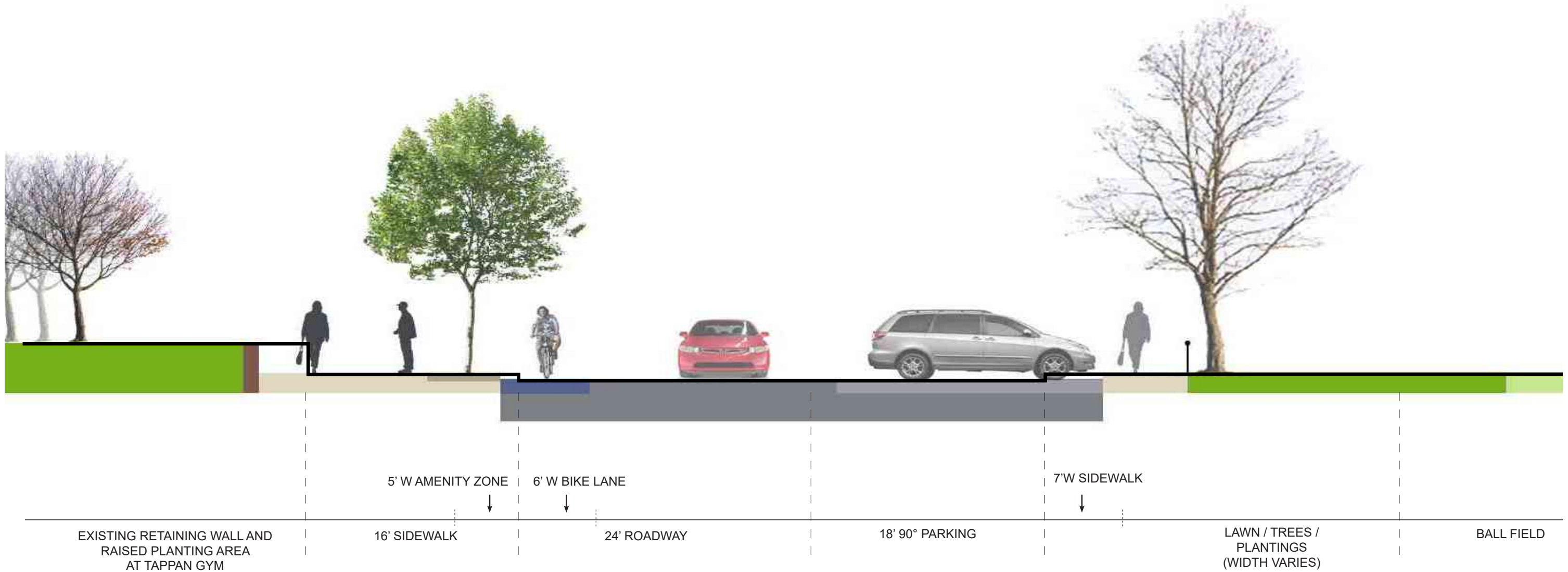
OPTION 4D | Campus Plan
with Cypress Field Renovation Option 1

- (A) MAIN BUILDING ENTRY- EXISTING STAIR TO REMAIN. RECONFIGURED RAMP AND NEW RETAINING WALLS
- (B) NEW ACCESSIBLE STEM WING ENTRY
- (C) GREENOUGH STREET - EXISTING LAYOUT TO REMAIN. 20' WIDE WITH 7 PARALLEL PARKING SPACES
- (D) TABLE-TOP CROSSING ZONES WITH SPECIAL PAVING
- (E) CYPRESS FIELD PLAZA - OPEN PLAZA WITH SEATING AND TREES IN TREE PITS, THREE EXISTING TREES NEAR SOFTBALL FIELD TO REMAIN
- (F) TAPPAN GYM ENTRY PLAZA WITH NEW STAIR AND RAMP. RETAINING WALLS TO REMAIN.
- (G) TAPPAN ST ROADWAY AND SIDEWALK - RECONFIGURE TAPPAN STREET BETWEEN CYPRESS ST AND GREENOUGH STREET TO INCLUDE A 20' ONE-WAY TRAVEL LANE, A NEW 20' TREE LINED SIDEWALK ALONG TAPPAN GYM, THE UAB, CAMPUS AND MBTA PARKING LOT TO THE EAST.(40) 45-DEGREE PARKING SPACES AND A NEW 7' SIDEWALK TO THE NORTH ALONG CYPRESS FIELD.
- (H) UAB - REALIGN PLANTING EDGE AND SLOPED WALKWAY
- (I) CAMPUS PARKING LOT - 26 PARKING SPACES WITH WIDENED TRAFFIC ISLAND ALONG TAPPAN STREET TO ALLOW PEDESTRIAN MOVEMENT
- (J) MBTA TICKET BOOTH AND PARKING LOT - WIDEN TRAFFIC ISLAND ALONG THE ROADWAY TO ALLOW PEDESTRIAN MOVEMENT. RELOCATE TICKET BOOTH TO THE EAST.
- (K) NORTHERN ENTRY PLAZA OF NEW 111 CYPRESS STREET BUILDING - SPECIAL PAVING WITH SEATING ELEMENTS
- (L) OUTDOOR TERRACE AT THE INTERSECTION OF CYPRESS STREET AND TAPPAN STREET - SPECIAL PAVING, RETAINING WALLS AND SEAT WALLS. GRADE FLUSH WITH EXISTING BRIDGE
- (M) DAVIS AVENUE - EXISTING CURB AND SIDEWALK TO REMAIN. REPLACE 4'H CHAIN-LINK FENCE AT EXISTING FENCE LINE.
- (N) CYPRESS FIELD PLAYGROUND AND WATER PLAY AREA WITH BENCHES
- (O) CYPRESS FIELD OPEN LAWN WITH PICNIC TABLES AND CHAIRS
- (P) CYPRESS FIELD BASKETBALL COURT WITH 15'H PERIMETER FENCE
- (Q) CYPRESS FIELD SPORT FIELDS - INCLUDING TWO SOFTBALL FIELDS AND ONE SOCCER FIELD / LACROSSE FIELD WITH ARTIFICIAL TURF, BACKSTOP FENCE, DUGOUT BENCHES, AND PERIMETER SIDE FENCES.
- (R) EXISTING TREES AT CYPRESS FIELD ALONG TAPPAN STREET AND DAVIS AVENUE TO REMAIN WITH NATURAL LAWN UNDERNEATH.
- (S) 111 CYPRESS STREET BUILDING SOUTH OUTDOOR CAFE - SPECIAL PAVING WITH SEATING, SEAT WALLS, AND RETAINING WALLS.
- (T) 111 CYPRESS STREET BUILDING PARKING LOT- 6 SPACES
- (U) 111 CYPRESS STREET BUILDING DRIVEWAY
- (V) COURTYARD AT MAIN BUILDING- ELEVATED OPEN LAWN AND PLAZA AT THE CENTRAL AREA WITH SEAT WALLS AND MOVABLE TABLE AND CHAIRS. STAIRS, RAMPS, RETAINING WALL AND BENCHES AT THE PERIMETER.

NOTE: DARKER GREEN COLOR AT CYPRESS FIELD REPRESENTS SYNTHETIC TURF AND LIGHT GREEN REPRESENTS NATURAL PLANTING MATERIALS.



5. Preferred Solution | BHS Campus Expansion Campus Site Section at Tappan St.



NOTE: AMENITY ZONE COULD INCLUDE STREET TREES, BENCHES, BIKE RACKS, AND TRASH RECEPTACLES.

TAPPAN STREET TYPICAL SECTION OPTION 2

5. Preferred Solution | BHS Campus Expansion
 Campus Site Plan

OPTION 4D | Campus Plan
 with Cypress Field Renovation Option 2 Re-Alignment of Greenough St.

- (A) MAIN BUILDING ENTRY- EXISTING UPPER STAIRCASE TO REMAIN. NEW SET OF LOWER STAIRCASE AND RAMPS ARE ADDED FOR ACCESSIBILITY.
- (B) NEW ACCESSIBLE STEM WING ENTRY
- (C) GREENOUGH STREET - RECONFIGURE STREET LAYOUT WITH 10 PARALLEL PARKING SPACES.
- (D) TABLE-TOP CROSSING ZONES WITH SPECIAL PAVING
- (E) NEW PLAZA IN FRONT OF MAIN BUILDING - ELEVATED PLAZA WITH SPECIAL PAVING AND VARIOUS SEATING ELEMENTS - BENCHES, SEAT WALLS AND STAIR.
- (F) TAPPAN GYM ENTRY PLAZA WITH NEW STAIR AND RAMP. RETAINING WALLS TO REMAIN.
- (G) TAPPAN ST ROADWAY AND SIDEWALK - RECONFIGURE TAPPAN STREET BETWEEN CYPRESS ST AND GREENOUGH STREET TO INCLUDE A ONE-WAY TRAVEL LANES, A NEW 17' TREE LINED SIDEWALK ALONG TAPPAN GYM, THE UAB, CAMPUS AND MBTA PARKING LOT TO THE EAST.(53) 90-DEGREE PARKING SPACES AND A NEW 7' SIDEWALK TO THE NORTH ALONG CYPRESS FIELD.
- (H) UAB - REALIGN PLANTING EDGE AND SLOPED WALKWAY
- (I) CAMPUS PARKING LOT - 26 PARKING SPACES WITH WIDENED TRAFFIC ISLAND ALONG TAPPAN STREET TO ALLOW PEDESTRIAN MOVEMENT
- (J) MBTA TICKET BOOTH AND PARKING LOT - WIDEN TRAFFIC ISLAND ALONG THE ROADWAY TO ALLOW PEDESTRIAN MOVEMENT. RELOCATE TICKET BOOTH TO THE EAST.
- (K) NORTHERN ENTRY PLAZA OF NEW 111 CYPRESS STREET BUILDING - SPECIAL PAVING WITH SEATING ELEMENTS
- (L) OUTDOOR TERRACE AT THE INTERSECTION OF CYPRESS STREET AND TAPPAN STREET - SPECIAL PAVING, RETAINING WALLS AND SEAT WALLS. GRADE FLUSH WITH EXISTING BRIDGE
- (M) DAVIS AVENUE - EXISTING CURB AND SIDEWALK TO REMAIN. REPLACE 4'H CHAIN-LINK FENCE AT EXISTING FENCE LINE.
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- (U) 111 CYPRESS STREET BUILDING DRIVEWAY
- (V) COURTYARD AT MAIN BUILDING- ELEVATED OPEN LAWN AND PLAZA AT THE CENTRAL AREA WITH SEAT WALLS AND MOVABLE TABLE AND CHAIRS. STAIRS, RAMPS, RETAINING WALL AND BENCHES AT THE PERIMETER.

NOTE: DARKER GREEN COLOR AT CYPRESS FIELD REPRESENTS SYNTHETIC TURF AND LIGHT GREEN REPRESENTS NATURAL PLANTING MATERIALS.



5. Preferred Solution | BHS Campus Expansion

BHS Improvements STEM-Wing Addition and 3rd Floor Science Renovation as Classrooms & Collaborative Learning Spaces

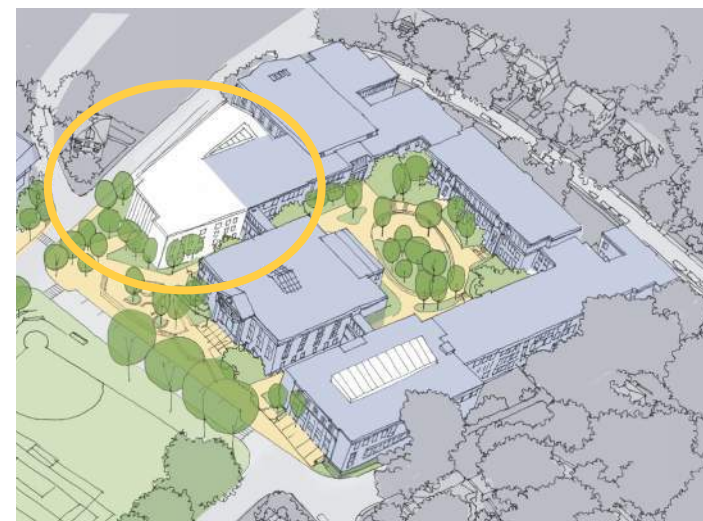
BHS New STEM-Wing at the Roberts Wing

Option 4D addresses the priority for a transformation of the Science Department facilities, currently undersized and inadequately equipped, with new construction of a STEM Wing addition to a portion of the existing Roberts Wing of the Greenough Building.

Six (6) Science classrooms/ labs are stacked on each of three floor levels, supported by two Maker Spaces, teacher offices, and two collaborative Learning Commons. The proximity of the six Science classrooms/ labs encourages collaboration between the Science classrooms. The location of clusters of Science classrooms/ labs on three levels distributes Science within the largerschool to encourage more interdisciplinary work.

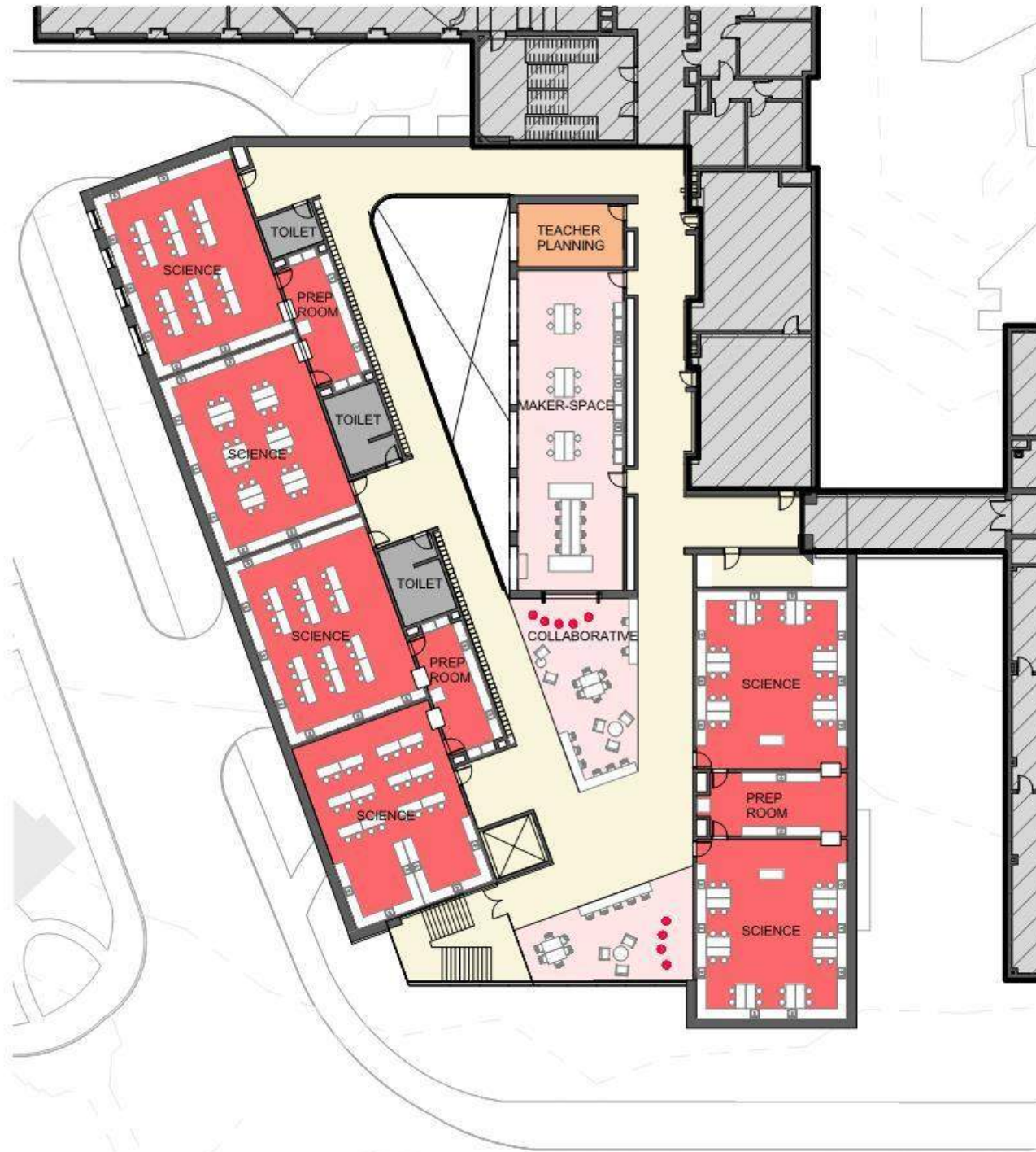
Portions of the existing Robers Wing are demolished to provide a new open and accessible entrance at the corner of Greenough and Tappan Streets, further promoting an open and connected campus.

A new Culinary Arts Kitchen/ Café on the first floor enhances this program by providing the opportunity to serve the public. The Café and adjacent collaborative space encourage informal gatherings.



5. Preferred Solution | BHS Campus Expansion

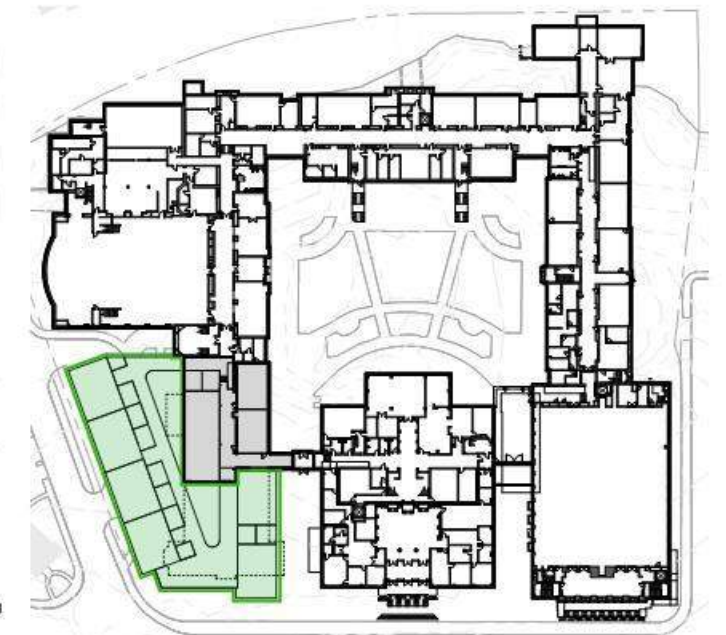
BHS Improvements STEM-Wing Addition and 3rd Floor Science Renovation as Classrooms & Collaborative Learning Spaces



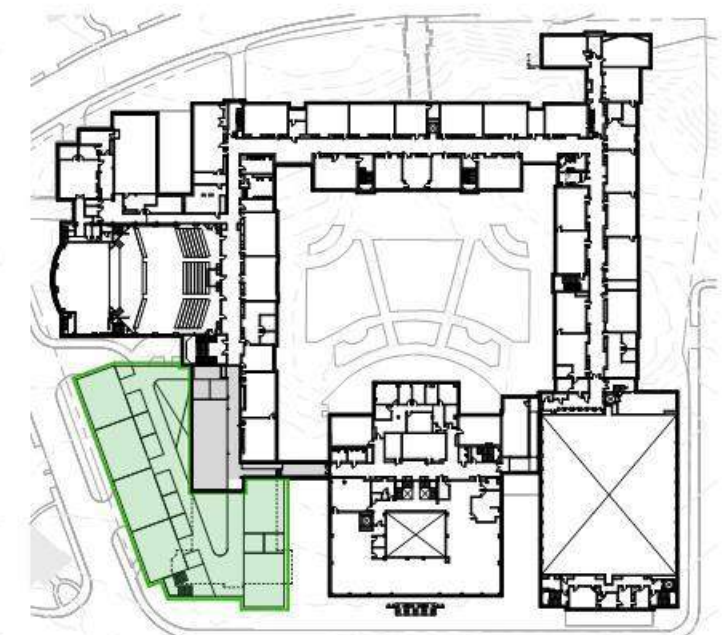
First Floor - Program Plan



Second Floor - Program Plan



First Floor - Key Plan



Second Floor - Key Plan



- Outline Existing to be Demolished
- Existing to Remain
- Intensive Renovation
- New Construction

5. Preferred Solution | BHS Campus Expansion

BHS Improvements STEM-Wing Addition and 3rd Floor Science Renovation as Classrooms & Collaborative Learning Spaces

BHS 3rd Floor Science Renovation

With all Science classrooms/labs housed in new facilities either at the Cypress Building or the STEM Wing, the existing Science classrooms/labs are renovated and reconfigured into classrooms and collaborative space.

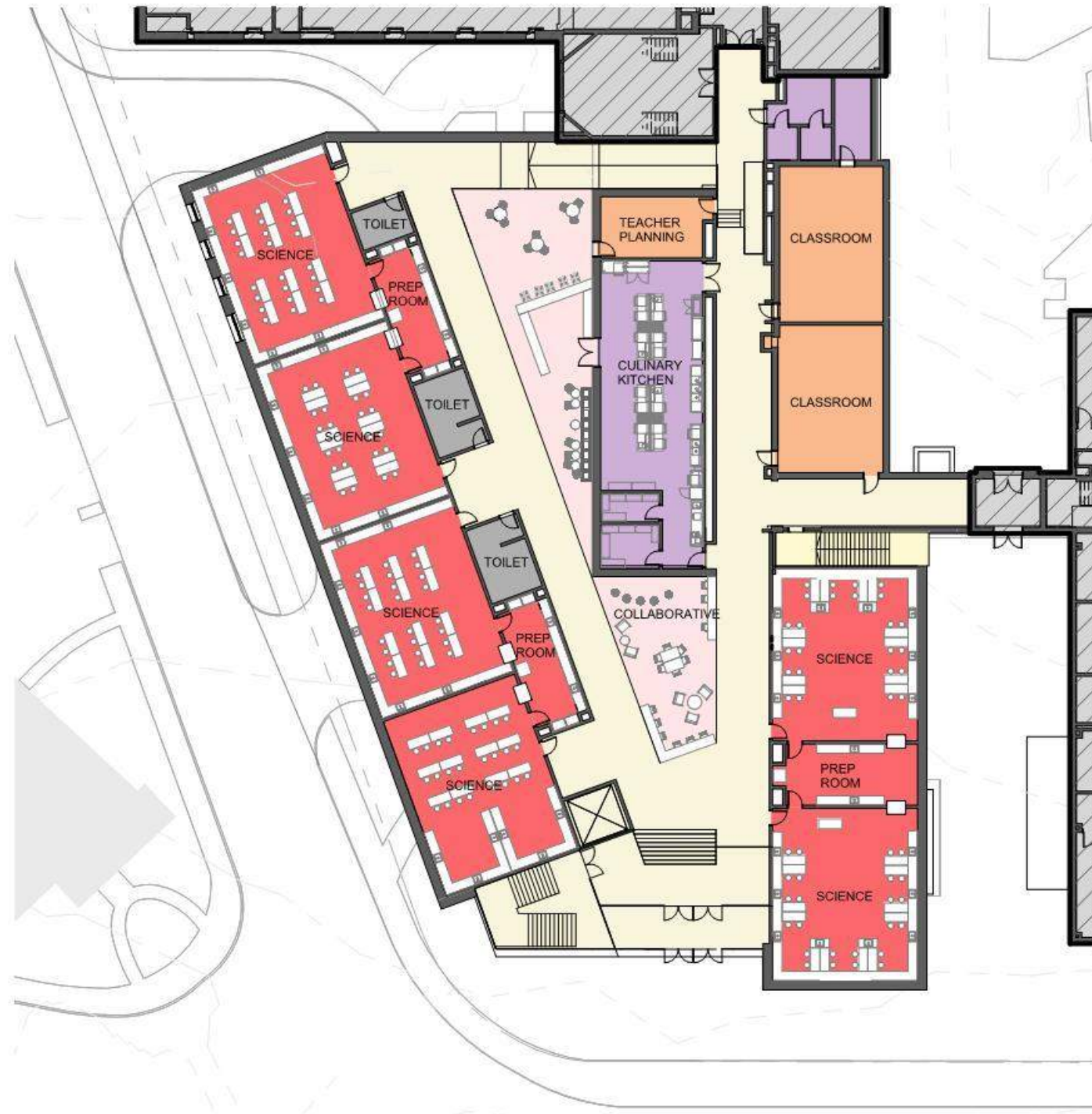
The third floor, above the Schluntz Gym wing, is renovated into a variety of collaborative learning spaces, including a Small Group Room, a Learning Commons, and renovated classrooms, including several flexible classrooms. In these classrooms, dividing walls open to allow two or three classes to meet together.



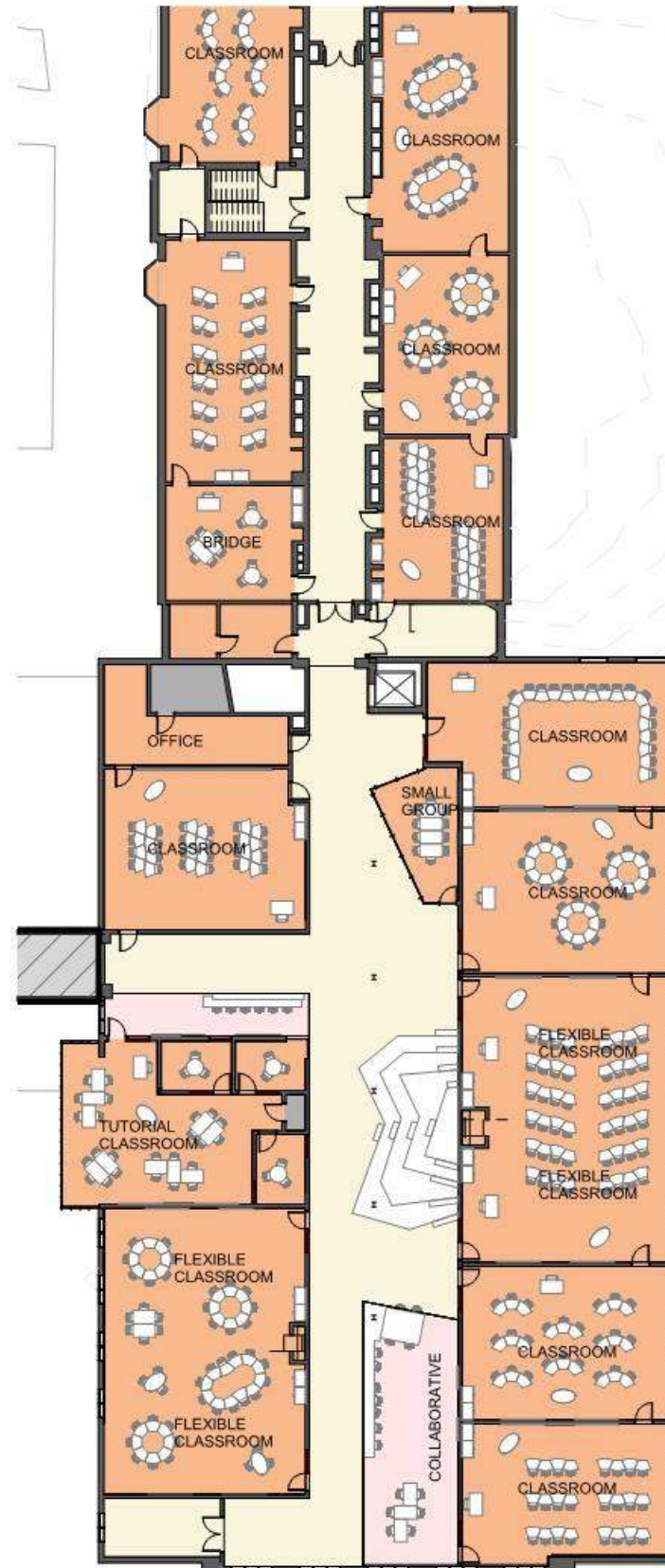
Massing Concept Perspective Views

5. Preferred Solution | BHS Campus Expansion

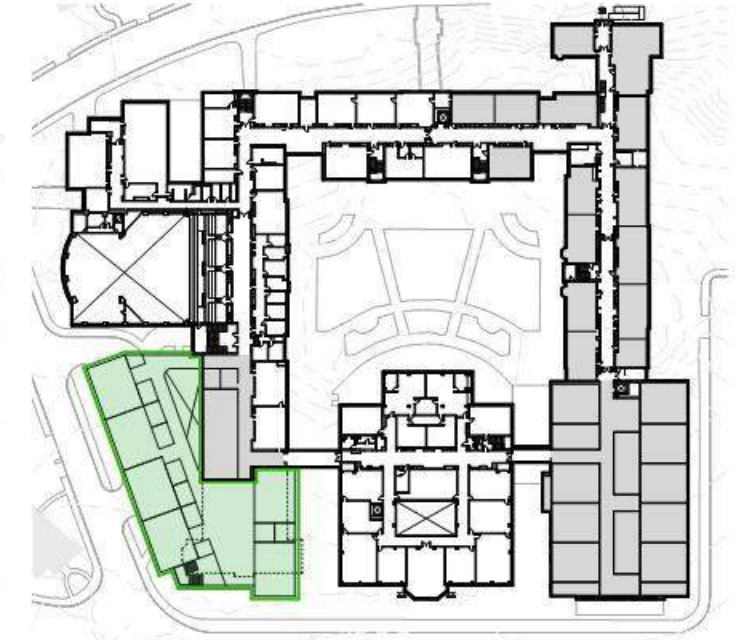
BHS Improvements STEM-Wing Addition and 3rd Floor Science Renovation as Classrooms & Collaborative Learning Spaces



Third Floor - Program Plan



Third Floor - Program Plan Existing Science Renovated as Collaborative Learning Classrooms



Third Floor - Key Plan

- Outline Existing to be Demolished
- Existing to Remain
- Intensive Renovation
- New Construction



5. Preferred Solution | BHS Campus Expansion New Cypress Building - 9th Grade Academic Building

9th Grade Academic Building

The concept of a free-standing 9th Grade academic building supports a goal of the BHS Ed Plan to create a “Big School Small Feel”. The building will serve as a transition between the neighborhood elementary schools and the single Brookline High School.

The building contains the academic, administrative, and community spaces, including Dining/ Kitchen, Art, Music, and the Library, necessary to support the 9th Grade enrollment. 9th Grade students will travel to the Tappan Gym for athletics, to the Unified Arts Building for Visual Arts and Consumer Education classes, and to the Greenough building for performance and advanced classes. Some students in upper grades may participate in mentoring activities or multi-grade level classes in the Cypress building.

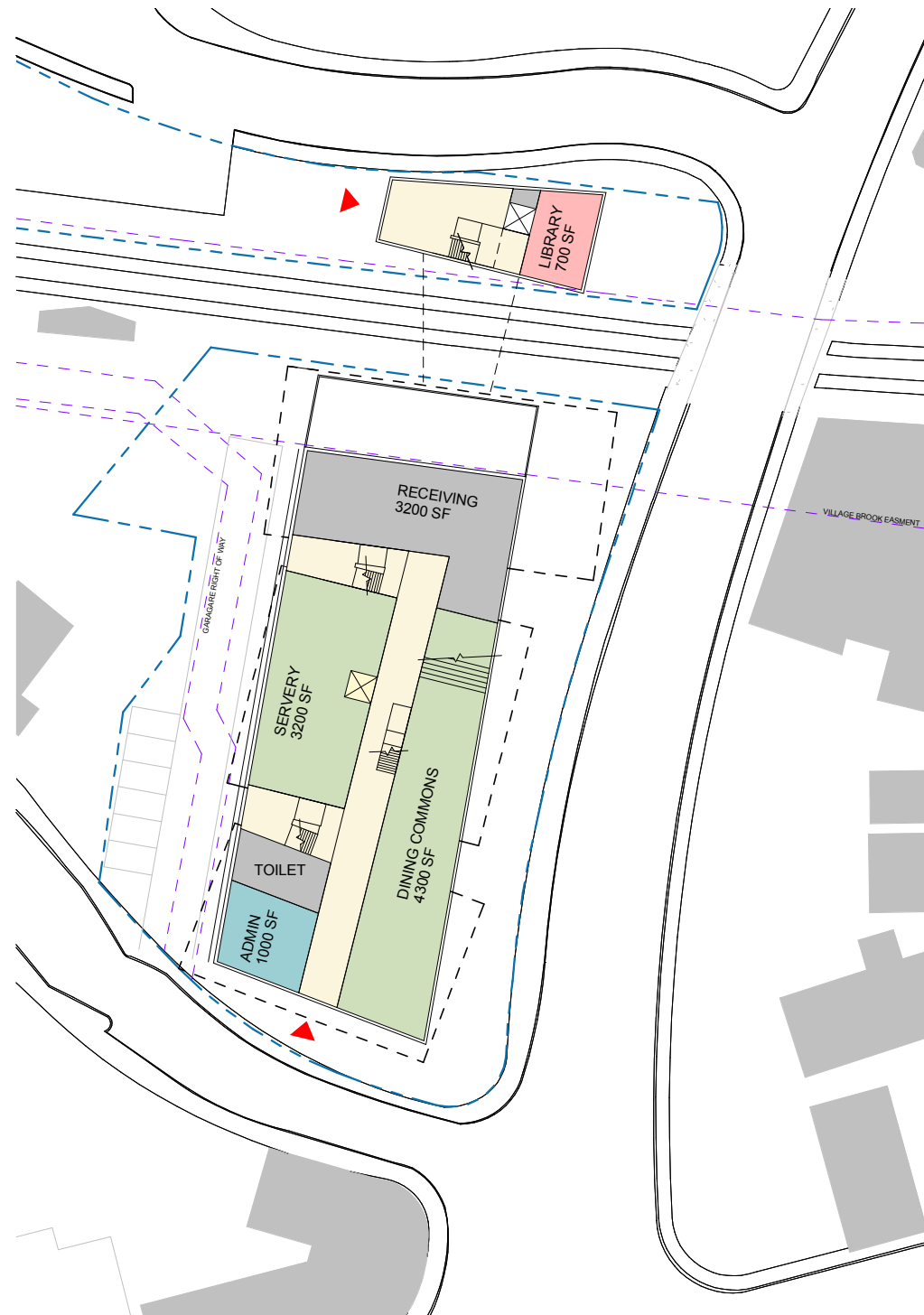
The site is encumbered not only by the MBTA Green Line but by several existing easements. At the corner of Tappan Street and Cypress Street, Tappan Road rises steeply. Along Cypress Street, there is an approximately six-foot change in grade from the MBTA overpass and the corner of Brington Road and Cypress Street.

Site development on the Brington Street level includes vehicular access from Brington Road for building service and for several parking spaces. In response to comments from the neighborhood, a pedestrian connection to the MBTA Brookline Hills stop passes through the site.

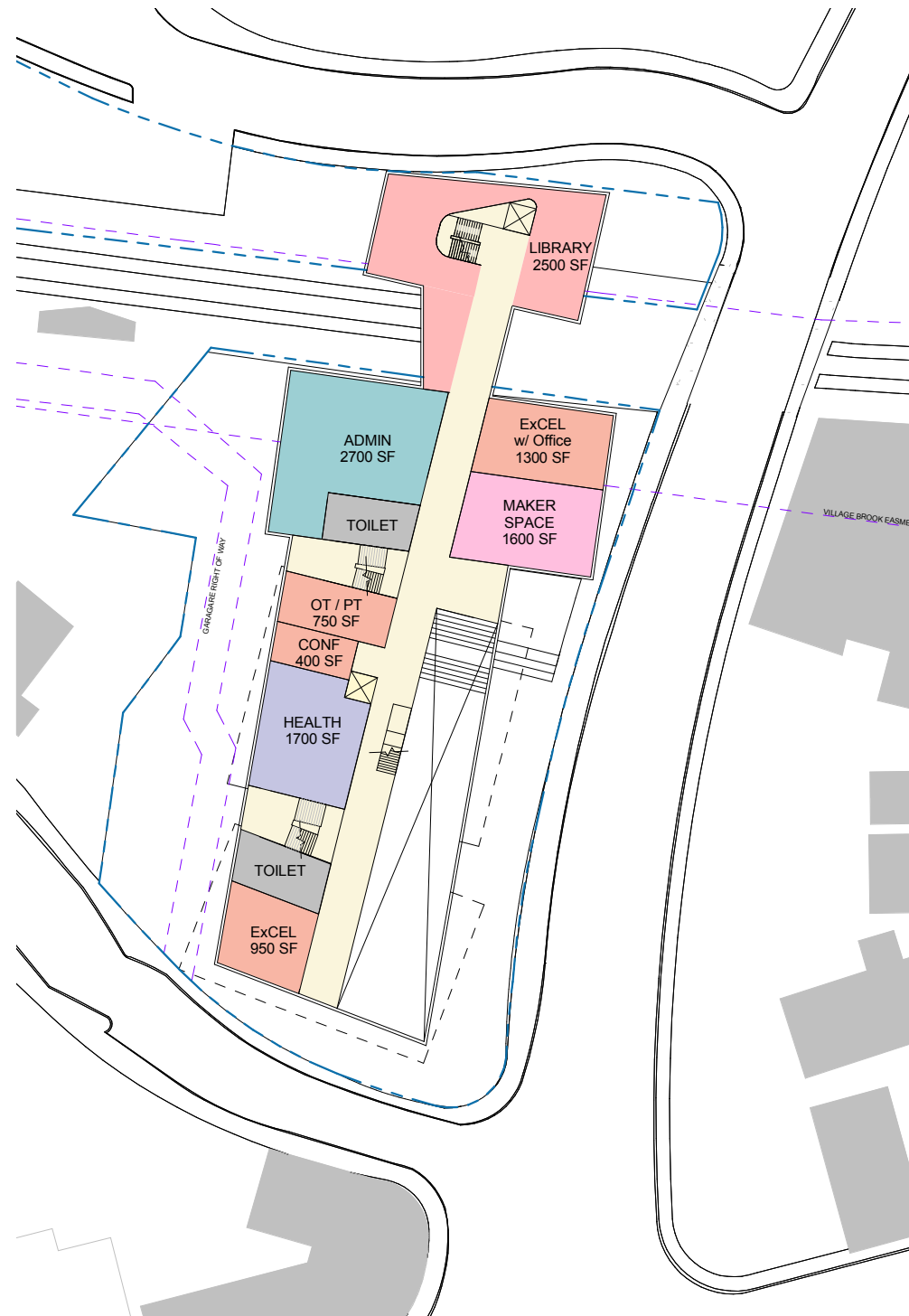


Massing Concept Perspective Views

5. Preferred Solution | BHS Campus Expansion New Cypress Building - 9th Grade Academic Building



Ground Level - First Floor - Program Plan



Second Floor - Program Plan

There are two entrances to the new school, responding to the site conditions and encouraging neighborhood engagement. The entrance from Brington Road leads into the Dining Commons, which will also serve as a large gathering space. An outdoor terrace directly accessed from the Dining Commons enlivens the Cypress Street edge of the school site.

At Tappan Street, the entrance to the school is directed to the pedestrian campus path. To negotiate the grade change, and to clear the MBTA Green Line tracks, one enters the building and then travels by stair or elevator through the Learning Commons to bridge across the tracks. The volume of the Learning Commons and Library above this entrance announces the campus at the corner of Tappan Street and Cypress Street.

9th Grade Academic Building

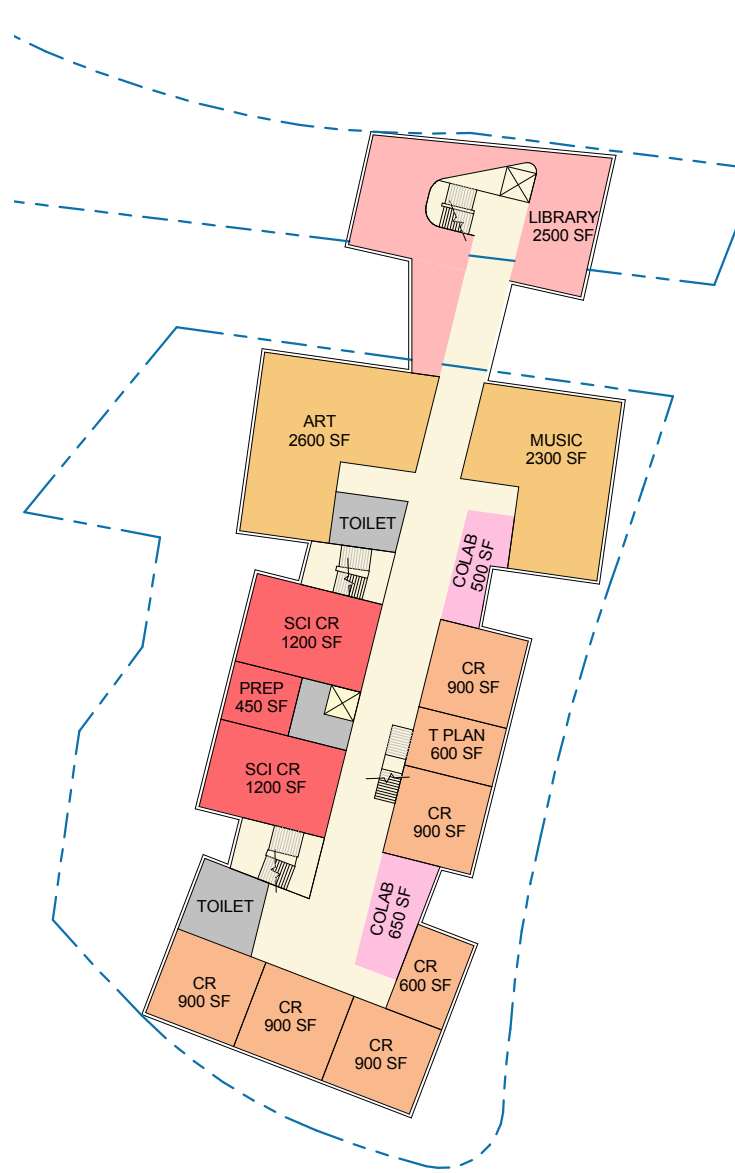
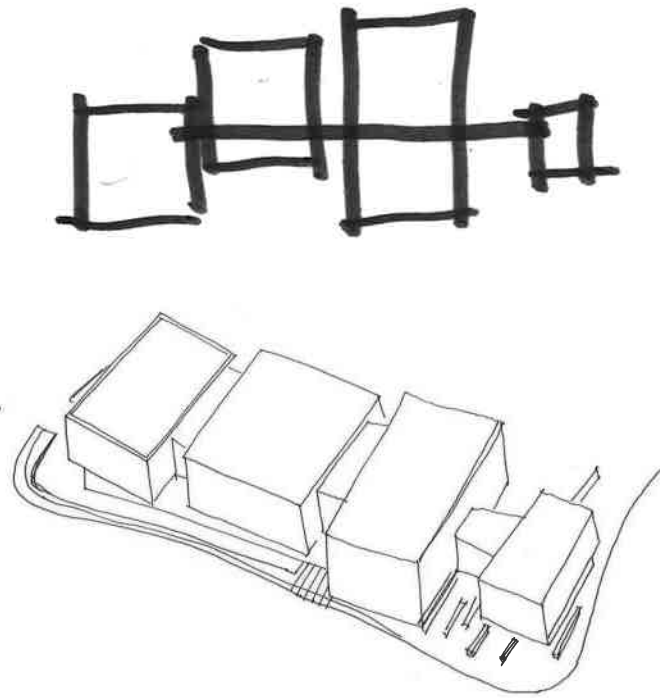
The upper three academic floors are designed to support the goal of interdisciplinary learning and collaboration. Two Science classroom/ labs with Preparation rooms are stacked in a central location on each academic floor near the classrooms for other disciplines. On each floor level, classrooms are grouped around collaborative spaces.

Dedicated spaces for Art, Music, Health Education, Maker Space, and student services support the 9th Grade curriculum.

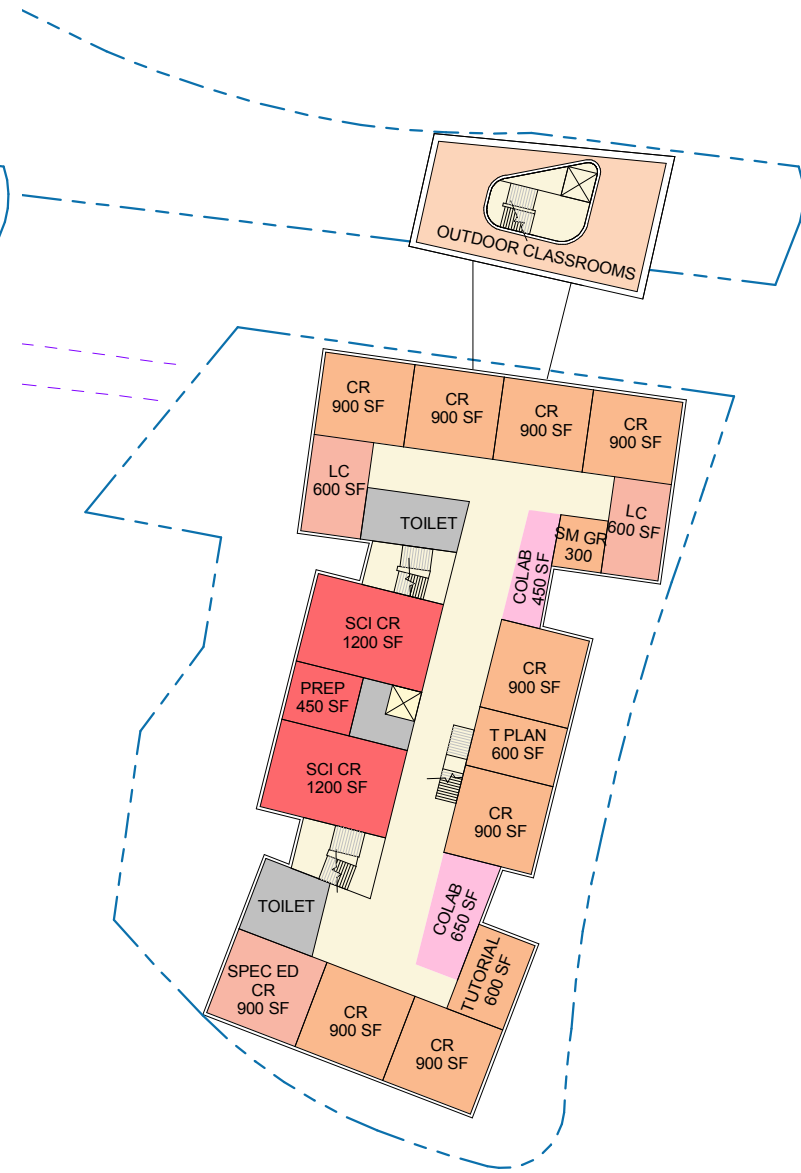


5. Preferred Solution | BHS Expansion and New Cypress Building - 9th Grade Academic Building

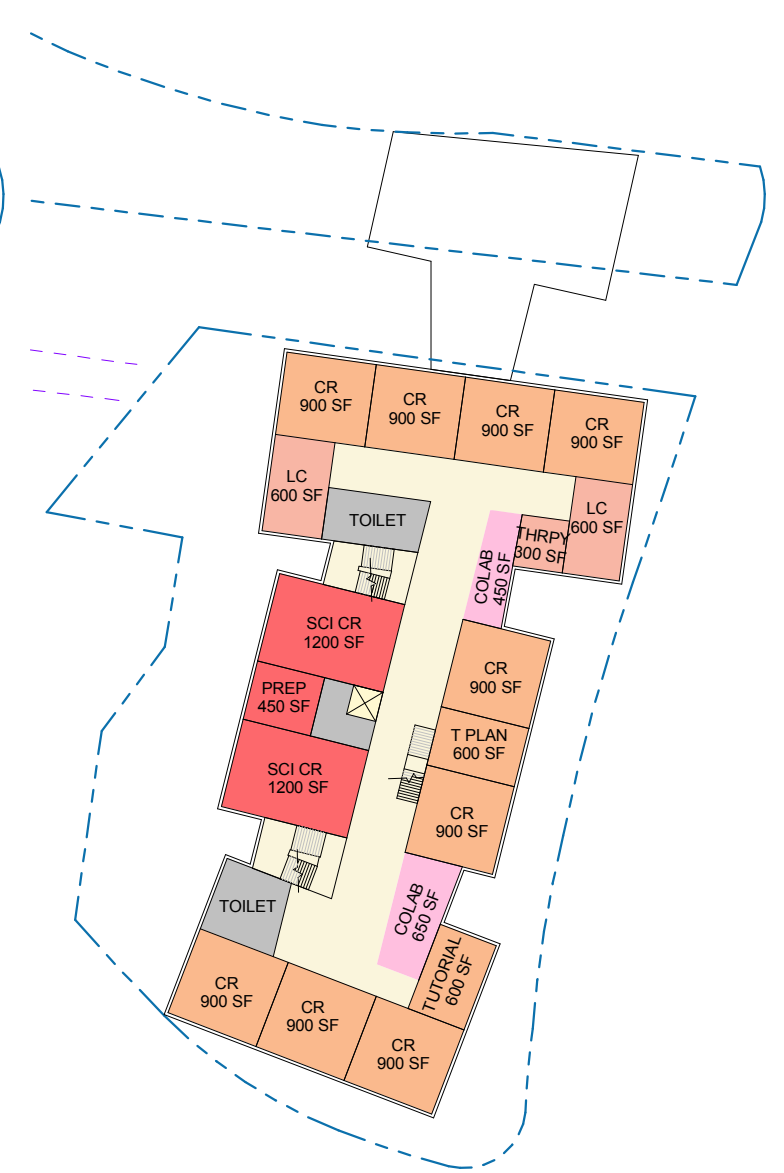
Massing Concept Sketches



Third Floor - Program Plan



Fourth Floor - Program Plan



Fifth Floor - Program Plan



5. Preferred Solution | BHS Campus Expansion

Option 4D - Building Code and Accessibility Compliance Narrative

The Preferred Solution, Option 4D, is comprised of two projects – the BHS Greenough building with New STEM wing and the 9th Grade academic building on Cypress Street. Building Code and Accessibility Regulations compliance will require different approaches for each project.

BHS Greenough Building with New Science STEM Wing

New STEM Wing

The New STEM Wing proposes a new Culinary Arts Kitchen/Café, Science classrooms/ labs, Maker Spaces, teacher planning areas, and collaborative space within a new addition to the Roberts Wing of the Greenough academic building.

The total footprint of the existing Greenough building exceeds the maximum area limits for its varied construction types. The increase of the building footprint for the STEM Wing will require the separation of the addition from the existing building by a fire wall. Since the proposed STEM wing is a three-story addition that connects to the existing building at two locations – at the stair near the Cafeteria and Auditorium and at the connecting corridors to the central Administration, Library, and Academic building – the addition will be separated at these two locations, through all floor levels.

As a separate building, the New STEM Wing will then be required to comply fully with all Building Code and Accessibility regulations, including the 780 CMR 9th Edition of the Massachusetts State Building Code and 521 CMR Rules and Regulations of the Massachusetts Architectural Access Board (MAAB).

BHS Greenough Building

With the new STEM Wing considered a separate building, the remaining BHS Greenough Building will also be treated a separate building for code analysis.

As described above, the new STEM Wing will contain the New Science classrooms/ labs. As a result, the existing Science classrooms/ labs will be available for renovation into classrooms and collaborative spaces. Other modifications to the existing building may include window replacement, replacement of portions of the roof impacted by the construction of the addition, and minor repairs or system upgrades.

In Option 4D the extent of modifications to the existing building will be limited by thresholds for full code compliance.

- Seismic Requirements /Triggers are discussed in the Evaluation of Existing Conditions section of this report. Refer also to the Existing Conditions Narrative – Structure in Appendix A for a more detailed description of the level of seismic retrofit/upgrades triggered by incrementally larger work areas.
- As discussed in the Building Code and Accessibility Narrative of the Evaluation of Existing Conditions, full compliance with the MAAB regulations is triggered when the cost of proposed renovations exceeds 30% of a building's assessed value. Note that the assessed value of the remaining Greenough Building will be reduced proportionally to the loss of area at the Roberts Wing for the STEM Wing.

9th Grade Academic Building on Cypress Street

The free-standing academic building on Cypress Street will be new construction. As such, full compliance with all Building Codes and Accessibility regulations will be required.

Accommodating the architectural program for the 9th Grade academic building within the Cypress Street site will require a multi-story building. The building height will affect the type of construction permitted, and potentially, additional requirements for high-rise construction.

5. Preferred Solution | BHS Campus Expansion

Building Systems Narrative / Summary of Cost Estimate

Building Systems Narrative

With the selection of Option 4D as the Preferred Solution, the HMFH consultant team developed narratives of the proposed site development, structural requirements, and building systems for the approved option. These narratives formed the basis of the cost estimate of Option 4D.

McPhail Associates, Inc. outlined the geotechnical scope for a subsurface exploration program for Option 4D, including exploration of Cypress Field as a potential site for a storm water management system related to the project.

Refer to Volume 2 of 3
Appendix D - Preferred Solution Building Systems
Narratives

Summary of Cost Estimate

The Option 4D Preferred Solution order of magnitude construction costs, projected project costs and miscellaneous additional items, a total of \$136,612,807, was approved by the Town of Brookline stakeholders as the Preferred Solution, for the Schematic Design phase.

Refer to the previous section 4.
pages 4.236 through 4.240

Refer to Volume 3 of 3
Appendix E - Cost Estimates

5. Preferred Solution | BHS Campus Expansion Preliminary Phasing Approach and Project Schedule

Important considerations in the selection of the Preferred Solution included the extent of student displacement and relocation, the impact of construction on school operations, the length of the construction period, and the potential for neighborhood disruption.

All Option 4 variations were considered more favorably for these factors than Options 1, 2, or 3. The free-standing 9th Grade Academic Building on the Cypress Street site offers flexibility in the phasing approach. Options 1, 2, or 3 involve the demolition and replacement with new construction of increasingly larger areas of the existing building. All three options require student displacement and relocation with significant impact on school operations. With Option 4, major construction occurs on an adjacent site to the existing campus, minimizing disruption to the school. On completion, an entire grade level of the high school will occupy the new building, freeing up space in the remaining buildings of the BHS campus to facilitate the phasing of renovations.

Pending future collaboration with the Town of Brookline, BHS administration, and the Construction Manager-at-Risk, two possible phasing approaches have been discussed. Critical to the choice between these two approaches is the feasibility of relocating programs and classes housed in the Roberts wing of the Greenwood Street academic building.

Phasing Approach 1 for the Preferred Solution -Option 4D

Students and programs in the Roberts Wing are relocated off-site or to temporary classrooms on the campus. The Cypress Academic building and new STEM Wing are constructed concurrently.

- Hazardous materials removal and partial demolition of Roberts Wing: 3 months
- Construction of the 9th Grade academic building on Cypress Street: 24 – 30 months
- Construction of the new STEM Wing (concurrently with new academic building on Cypress Street): 18 months
- Renovation of existing Science classrooms/ labs into classrooms and collaborative space: 6 months, (after completion of major construction.)

Total Major Construction Period: 30 months

Phasing Approach 2 for the Preferred Solution -Option 4D

No students or programs are displaced. The existing BHS campus remains fully operational for all students. Projects are constructed consecutively.

- Construction of the 9th Grade academic building on Cypress Street: 24 – 30 months.
- Cypress Street academic building completed and occupied.
- Hazardous materials removal and partial demolition of Roberts Wing: 2 months (Concurrently completed during final summer of 9th Grade academic building construction.)
- Construction of new STEM Wing: 18 months
18 new Science classrooms completed while Science classes remain in existing classroom/ labs.
- Renovation of existing Science classrooms/ labs into classrooms and collaborative space: 6 months, (after completion of major construction.)

Total Major Construction Period: 42 – 48 months

5. Preferred Solution | BHS Campus Expansion

Option 4D - Preliminary Phasing Approach and Project Schedule

Option 4D and the MBTA

Option 4D proposes that the 9th Grade Academic Building will extend across the MBTA Green Line tracks to face on Tappan Street. With a presence on Tappan Street, the new academic building will extend the Brookline High School campus to Cypress Street. Site development along Tappan Street will improve the pedestrian connection between the distinct buildings to reinforce the concept of a unified campus.

It is possible that negotiations for air rights above the MBTA Green Line will be lengthy and could delay the completion of the new academic building. A strategy to maintain the schedule is that the design of the building accommodates two phases. The first phase is the construction of a significant portion of the building completely within the 111 Cypress Street site without encroachment on the MBTA land. This building would include the essential classrooms and programs to allow the 9th Grade to operate. With a successful negotiation with the MBTA, a second phase of the project would be the construction of the entry on Tappan Street and additional program areas, for example, a Library or other program area.

Option 4D - Preliminary Project Schedule

