3.3.3 FINAL EVALUATION OF ALTERNATIVES

C. Preliminary Design Options

2. Renovation/Addition Option

a. Narrative
b. Site Plan
c. Floor Plans
d. Massing
e. Phasing Plans
f. Design/Construction Schedule

SUMMARY:

The Renovation/Addition Option faces two challenging conditions that also resurface for new construction options. The first is the site and the second is the absence of swing space options. The site is already constrained in its current state and any construction would compromise daily activities. Additionally, the topography of adjacent Newton Hill limits site development opportunities. The strategic use of modular classrooms to facilitate the construction sequence while maintaining the existing school operation is included for this option with the understanding that relocation may be required in the sequence.

With those factors in mind, the design approach aims to keep the classrooms in both academic wings, and replace the core/community spaces. Although the existing academic wings have a low floor to floor height, these spaces would account for approximately 75% of the typical classroom space needs after completion. To accomplish this, a large addition built on the easterly side of the site would have to be built first. This addition would also build-in swing space capacity that would kick-off the multi-phased renovation of the school, however, temporary modular classrooms have been incorporated into the budget as a precaution when renovating the existing classrooms, since, the schedule to abate the hazardous materials and complete the "gut/renovation" of those spaces is aggressive. The next sequence would involve occupying newly constructed space, demolition of antiquated spaces and rebuilding new in place. This process would repeat until complete, with varying degrees of addition / renovation scope. The unavoidable detriment to this scheme is that the academics are split between the core spaces with the 9th Grade Teams, Science Labs, and Engineering Technology Academy in a building wing opposite from the math and humanity departments. The completed project would account for all spaces in the educational program, but its organization is compromised. The scope would include complete replacement of all systems, while maintaining the existing systems at areas until renovated where possible. The following Renovation / Addition scope of work is based on a thorough assessment of existing building systems by the Design Team. Proposed SF areas for this option are approximately as follows:

- **Renovation (existing building) = 101,000 GSF**
- **Demolition (existing building) = 66,000 GSF**
- **Addition = 319,000 GSF**

Total = 420,000 GSF

RENOVATION/ADDITION PHASING:

Enabling Early Site Package (3/2022 to 8/2022):

- excavation of practice fields for new construction, parking, and contractor staging
- adding temporary retaining along Highland street for temporary parking
- Excavation and installation of permanent retaining walls at the rear of the building for temporary parking and permanent perimeter access.
- Perform sitework scope including new utilities/infrastructure

PHASE 1 (6/2022 to 7/2024):

This phase is primarily focused on the bulk of addition scope of work involving a multi-level addition on the east end of the existing school. The existing school is to remain with limited to no internal impact this phase.

- Mobilize on site; create a fenced dedicated construction access driveway around easterly portion of existing building; prepare former practice field as CM/Subcontractor area for temporary facilities, storage, parking, etc.
- Construct multi-level (up to 4-story) addition at east end of building; refer to drawing graphics section 3.3.3.C.2.b-e for additional information
- Build out new mechanical/electrical rooms to serve entire building (including additions)
- Create a temporary link through the Music Department to the Addition; refer to drawing graphics section 3.3.3.C.2.b-e for additional information
- Perform sitework scope including new utilities (continued)

PHASE 2 (6/2024 to 8/2025):

This phase is three-fold and is summarized as follows:

1. Sequence 2A will involve occupancy of phase 1 constructed spaces for the Fall of 2024
2. Sequence 2B involves hazardous material abatement and selective demolition of the existing building during the Summer 2024; refer to drawing graphics section 3.3.3.C.2.b-e for additional information
3. Sequence 2C involves new construction addition to the former easterly end of the building, the new center of the school building; refer to drawing graphics section 3.3.3.C.2.b-e for additional information

Phase 2 Notes:

- Receive and install FF&E in the Summer prior to Fall 2024 occupancy

- Hazardous abatement and demolition to occur during summer months of 2024. Double shifts to be utilized to minimize these types of activities during active school sessions. Perform associated structural/exterior envelope work following demolition activities.
- Perform related sitework scope during 2025 summer vacation including vehicular access driveway to new main school entry and site prep for new additions at west end of building

PHASE 3 (6/2025 to 12/2025):

This phase is three-fold and is summarized as follows:

1. Sequence 3A will involve occupancy of phase 2 constructed spaces for the Fall of 2025
2. Sequence 3B involves hazardous material abatement and selective demolition of the existing building during the Summer 2025; refer to drawings for additional information
3. Sequence 3C involves renovation of both floors to north academic wing with a small addition to the western end

Phase 3 Notes:

- Hazardous abatement and demolition to occur during summer months of 2025. Double shifts to be utilized to minimize these types of activities during active school sessions. Perform associated structural/exterior envelope work following demolition activities.
- Construct new additions at west end of building
- Renovate north academic wing; abate, demolish and renovate into new academic spaces; refer to drawing graphics section 3.3.3.C.2.b-e for additional information
- Perform sitework scope including new driveway to Construction Craft Laborer Shop Addition

PHASE 4 (1/2026 to 8/2026):

This phase is three-fold and is summarized as follows:

1. Sequence 4A will involve occupancy of phase 3 constructed spaces for the Fall of 2026
2. Sequence 4B involves hazardous material abatement and selective demolition of the existing building during the Summer 2026; refer to drawings for additional information
3. Sequence 4C involves renovation of both floors to south academic wing with a small addition to the western end; refer to drawing graphics section 3.3.3.C.2.b-e for additional information

Phase 4 Notes:

- Hazardous abatement and demolition to occur during summer months of 2026. Double shifts to be utilized to minimize these types of activities during active school sessions. Perform associated structural/exterior envelope work following demolition activities.
- Construct new additions at west end of building

- Renovate north academic wing; abate, demolish and renovate into new academic spaces; refer to drawing graphics section 3.3.3.C.2.b–e for additional information
- Perform final sitework scope
- Demobilize
- Receive and install remainder of FF&E
- Occupy final phase, south wing, over the summer of 2027

ABILITY TO MEET BUILDING PROGRAM: The Renovation/Addition Option will satisfy the majority of Educational Program/Space Summary objectives. Several items of note include the following:

- To meet the Education Program, due to all the existing spaces being deficient in size, this scheme is close to a complete reconstruction of the building in mix of additions and renovations
- Academic areas are split into two areas and on opposite ends of the building layout as a result of site constraints.
- The Site Program, circulation, practice fields and parking will be displaced throughout construction activities and change as the project delivery evolves.
- The efficiency factor of a Renovation/Addition solution will be less than that of New Construction due to existing structure (particularly low 11'–4" floor to floor height), in the north and south academic wings
- Sustainability goals are more readily achieved with New Construction than with the Renovation/Addition of an existing building.
- Full building code compliance, in terms of structure, accessibility, energy and life safety, will be more difficult to achieve in an existing building than with New Construction. Variances and/or compliance alternatives may be warranted if full compliance with applicable codes is impractical.
- Adjacencies between spaces and to the exterior may not meet ideal program goals, but are not seen as detrimental to the extent that a Renovation/Addition solution should be dismissed

COMPARATIVE STAFF AND STUDENT IMPACTS:

- There is a high level of structural, building system and exterior envelope work associated with the selective demolition proposed for this option; it will be an intensive effort to coordinate and accomplish that work while adjacent areas are occupied.
    - For example, at the gym and auditorium are proposed to be demolished, removed and replaced. This work cannot be performed while adjacent spaces are occupied; occupants should be relocated into the new primary addition or elsewhere in the existing building. The existing structure that remains will need significant

improvements (i.e. seismic bracing and expansion joints) in order to maintain structural capacity as an integral element of an occupied building.

- Another impact related to demolition is the creation of new exposed-to-exterior structure at previously interior locations. Existing interior columns typically bear on pier footings that generally do not extend below frost depth or have continuous frost walls. When those previously interior footings are made part of an exterior wall assembly, they require frost protection; either by adding continuous reinforced concrete frost walls or by changing the exterior grade to provide additional depth. The columns, beams and slabs along the lines of newly-created exterior walls will also require modifications (i.e. steel bent plates, clips, reinforcing dowels, slab extensions, etc.) to support the new exterior envelope systems. Refer to the updated Structural Basis of Design Narrative for more information.
- Existing building systems that pass through an area slated for demolition must be temporarily rerouted or replaced to avoid service interruptions. Examples include sanitary and roof drain piping (risers and below grade), electrical/communication conduits and wiring, ductwork, domestic water supplies, etc.
- Egress routes must remain in place for the occupant loads served. Temporary fire-rated partitions, corridors, stairs and life safety systems may be required to comply with code requirements.

- This option requires abatement of hazardous cavity wall damp proofing where existing exterior walls are removed.
- For purposes of developing phasing plans and cost estimating, we have assumed that the existing Kitchen/Serving spaces will remain in operation until new Kitchen/Serving/Cafeteria spaces are complete and functional.
- During Phase 1, parking and site circulation will be impacted the most
- Many outdoor spaces including parking and PE/Athletic fields will be unavailable for the full duration of construction.

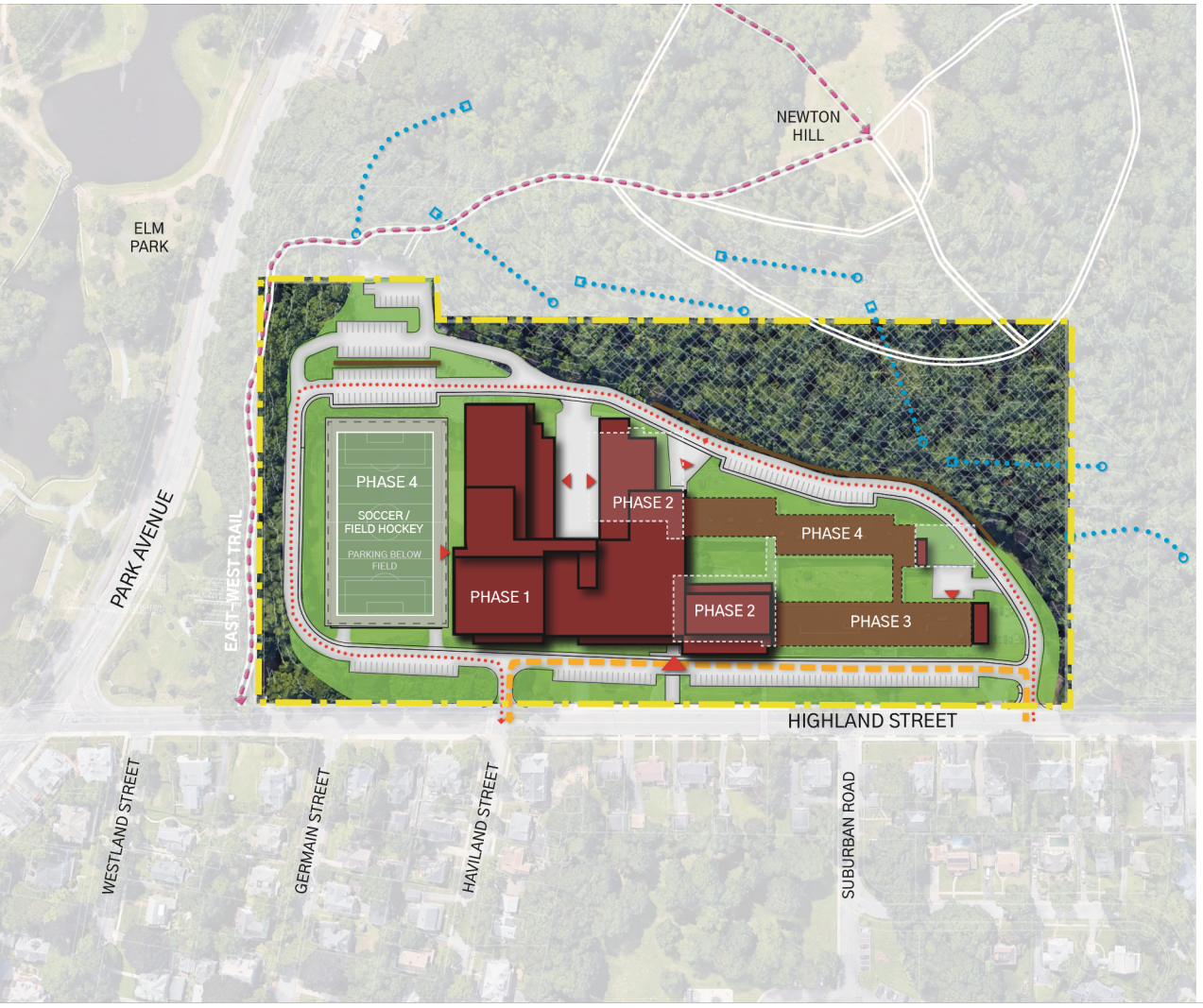
ADDITIONAL CITY COSTS (NOT ELIGIBLE FOR MSBA REIMBURSEMENT):

LPA|A reviewed opportunities to supplement Doherty's athletic fields, both during construction and after completion. One option for expansion is the addition of a rectangular football/soccer/field hockey field at the existing nearby Duffy Softball Field. Other City offsite scope may include improvements for traffic management and pedestrian crosswalks.

Additional considerations include:

- Temporary Off-Site parking through construction
- Newton Hill trail improvements
- Improved Access to Foley Field (land cost of rear land of three Abbott Street parcels)
    - Development of added land with new basketball or tennis courts and Surface Parking
- Beaver Brook practice field improvements (underdrains)
- Foley Stadium Improvements to Rear Fields

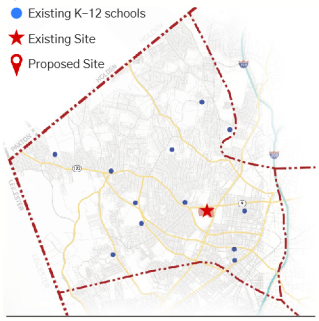
The total added city costs for this Option would range between $6-11 Million. Refer to Section 3.3.3.D.3 Offsite improvements for more information.



NOTES:

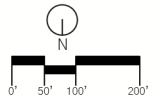
- Compromised educational program
- Extended Construction Schedule (4–5 Years)
- Parking deck below field
- Greatest impact to staff and students

QUADRANT KEY PLAN:



LEGEND:

- Parcel Property Line
- Potential acquisition
- New Construction
- New Athletic Field
- Existing Building to be demolished
- Existing Building to be renovated
- Retaining Wall
- Steep Topography
- Entrance
- New Roadway
- Bus Circulation
- Parent Circulation
- Connection
- Utility



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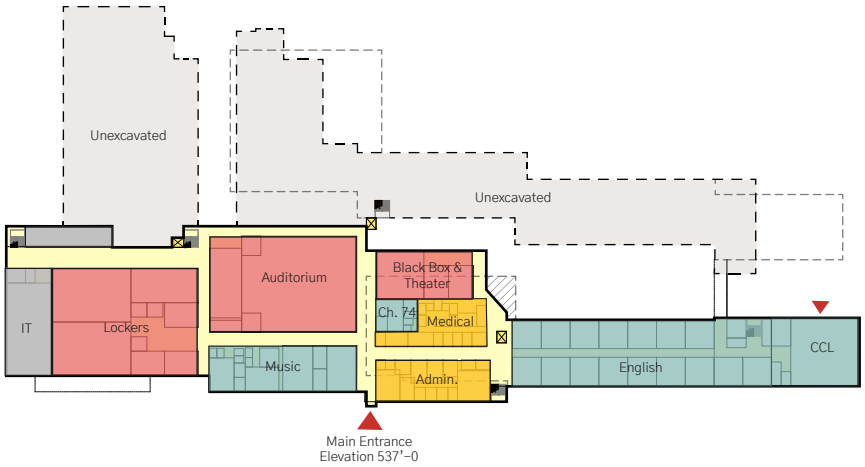

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BUILDING SERVICE
CIRCULATION
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Doherty Memorial High School
299 Highland Street, Worcester MA

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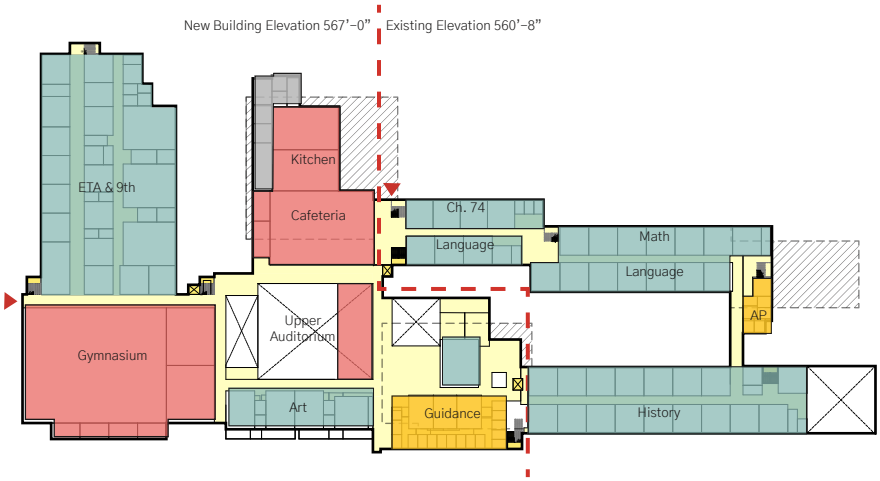

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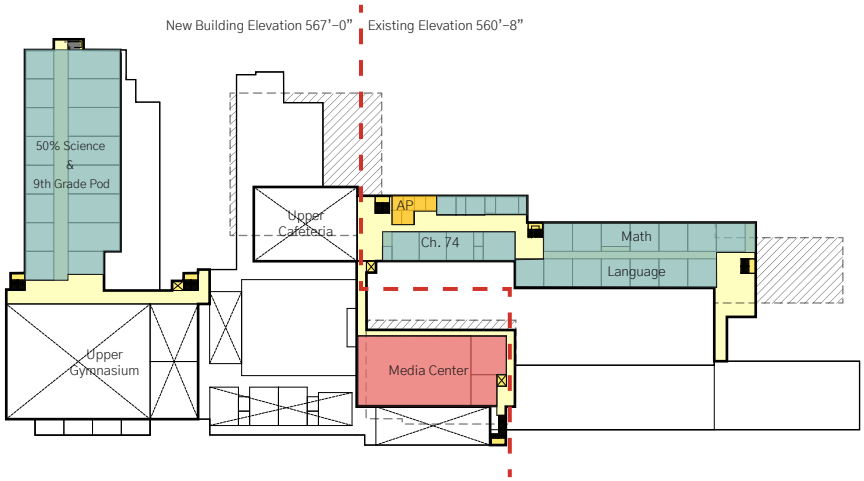

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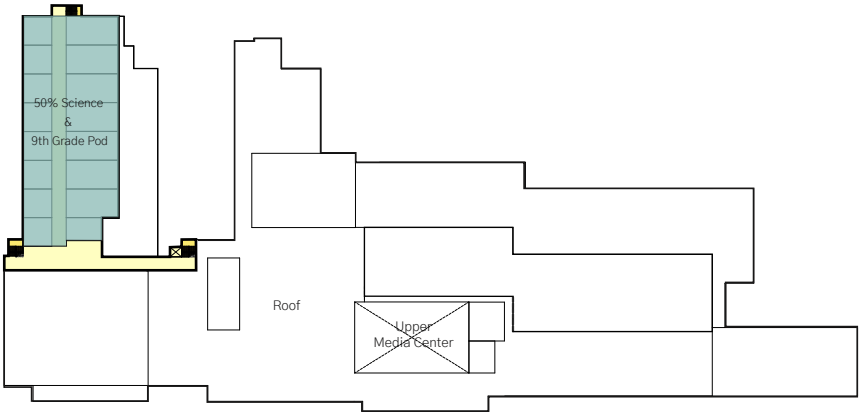

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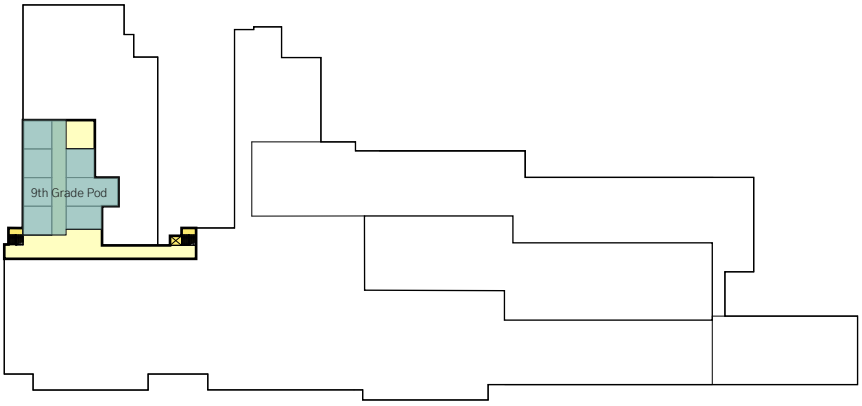

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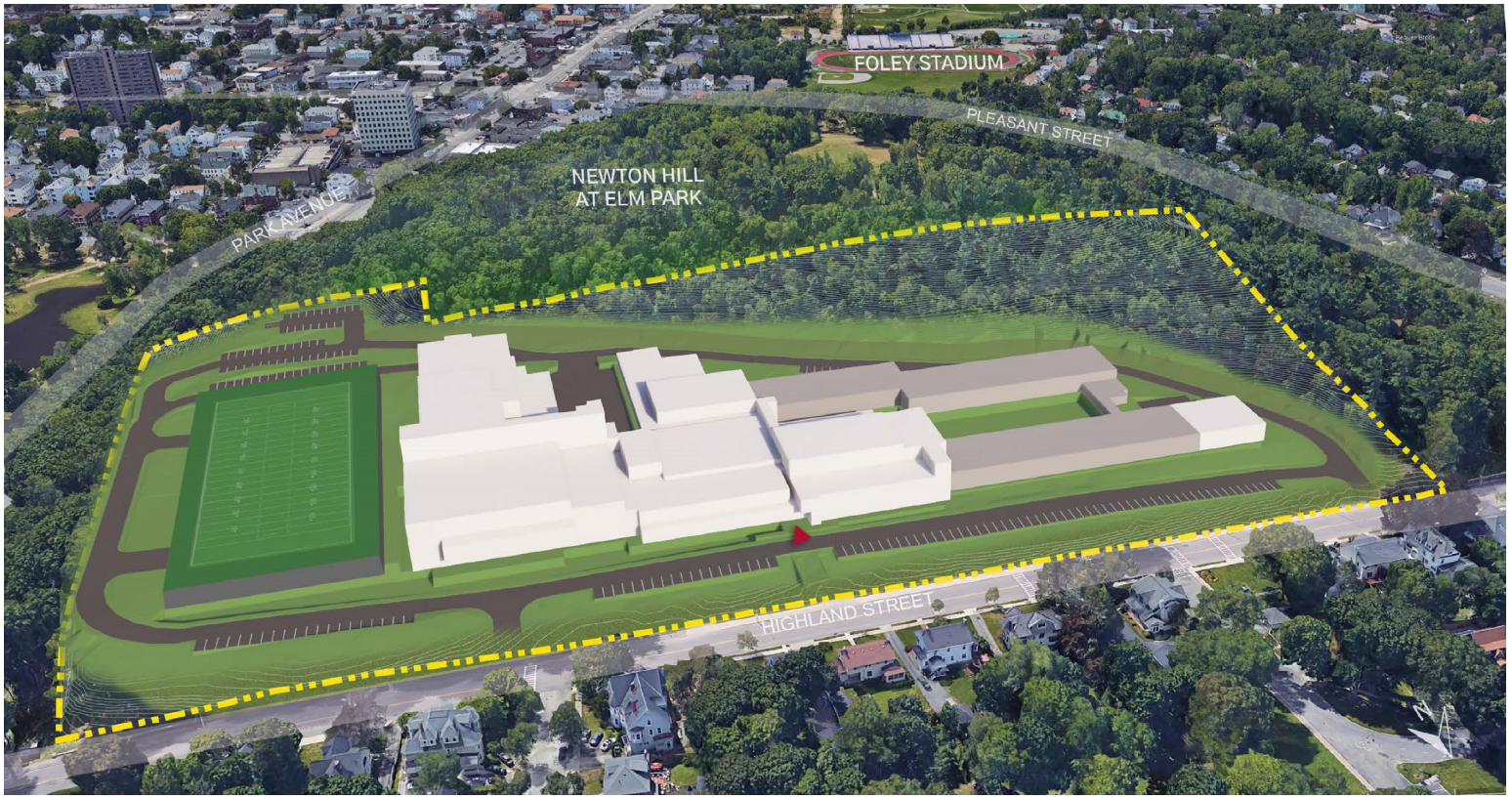
FOLEY STADIUM
PLEASANT STREET
NEWTON HILL
AT ELM PARK
PARK AVENUE
HIGHLAND STREET