



TOWN OF BELMONT

WEST OF HARRIS FIELD SITE CONCEPT STUDY

Perkins&Will

MAY 07, 2021



TOWN OF BELMONT SITE CONCEPT STUDY

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STUDY INTRODUCTION

West of Harris Field Site Concept Design Study

The Town of Belmont retained Perkins&Will to perform a site concept design study for the 5.5 acre portion of the current High School Campus West of Harris Field.

The study site currently contains several athletic fields, surface parking, the White Field House and the Town's Vigliolo Ice Skating Rink. The goal of the study was to develop a site concept design that is responsive to the Town's programmatic needs and to provide a conceptual estimate for the associated design and construction costs. The study is intended to serve as a basis for discussion by Town bodies and the public and to be a starting point for preparation of an RFP for subsequent design.





SCOPE OF WORK & FINDINGS

Expected Outcomes and Study Requirements

The program elements in the study included playing fields, a hockey rink, tennis courts, parking, and infrastructure. We present two distinct options: 1) construction of a new ice rink and 2) renovation and expansion of the existing ice rink.

The scope of work comprised the following:

1. Program and project requirements review including previous studies for the ice rink and traffic analysis. This effort included existing conditions observations and site visits.

2. Meetings with the Town (Administration, Middle and High School Building Committee and School Administration) and other Town representatives as needed to understand the project's program and requirements.

3. Evaluation of two approaches.

A. Construction of a new ice rink (and demolition of existing rink), reconfiguration of playing fields, and layout of new parking and tennis courts.

B. Renovation and expansion of the existing ice rink to include a similar level of program and functionality as new construction scheme,

including reconfiguration of the site parking, infrastructure, playing fields, and tennis courts. This dual approach was used to advance site concept alternatives and cost estimates.

4. Three alternatives were developed (two new construction, one renovation) and presented to the Town that included a pro/con, cost, and schedule comparison.

Preliminary discussions with the Town indicate a preference for what is referred to below as Scheme O2: New Construction (East) from the proposed alternatives.

The following categories of work outline the deliverables :

EVALUATION AND ASSESSMENT OF EXISTING CONDITIONS: UNDERSTAND FACILITY AND SITE HISTORY



The ice rink facility was built in 1968. Starting in 2002, five reports have been created to evaluate the existing conditions of the rink and site. In general, the facility does not meet current building codes, fire & life safety requirements, or accessibility regulations. The building's systems, structure and enclosure are all failing and exceed their anticipated 30-35 year useful life span. While the primary structure may be renovated the cost and time to do so will exceed replacement value.

**PROGRAM ANALYSIS AND DEVELOPMENT:
IDENTIFY APPROPRIATE SPACES AND SITE
ELEMENTS TO MEET NEEDS**



A key program direction used for the study was a single ice sheet ice facility which would minimize lot coverage in an effort to accommodate all of the athletic fields, site and support program requirements. In addition to the rink, three regulation Junior Varsity fields (baseball, softball and soccer), two throwing circles (shot put and discus), 110 parking spots and tennis courts were test fit on the site to evaluate the feasibility and focus priorities.

**STUDY RESULTS : CREATE SOLUTIONS THAT
MAXIMIZE PROGRAM OPPORTUNITIES**



Site design alternatives were developed for both new construction and renovation/addition to existing rink schemes. Each alternative was evaluated on site layout, pedestrian and traffic circulation in and around the site, relationship to the High School and neighborhood, field configurations, site infrastructure and rink functionality. Attributes of the two alternatives were compared and based on findings a new construction approach was the preferred direction.

**STATEMENT OF PROBABLE COSTS : MAXIMIZE
FINANCIAL RESOURCES**



Cost estimates were provided to evaluate the future design, construction and project cost for both alternatives. The estimated costs included escalation, design and construction contingencies and overall project costs based on a mid-point of construction in the spring of 2023. The estimates also considered a phased approach to the project starting with site and fields development which would be followed by the ice rink construction.

PROGRAM SUMMARY

Site and Building Components for Concept Design

The specific program requirements, as described in the RFP, govern this study are organized in two categories: building components and site components.

The building/rink facility is a single sheet of ice to minimize building lot coverage and sited so as to best accommodate all of the site program identified. In order to house the high school hockey program the rink facility will contain the following:

- Two (2) home locker rooms each containing 35 lockers for the Belmont Junior Varsity and Varsity girl's teams
- Two (2) home locker rooms each containing 45 lockers for the Belmont Junior Varsity and Varsity boy's teams
- Two (2) visiting locker rooms, one for girls and one for boys teams

Two (2) field sports locker rooms (one home and one visitor) each sized for 75 athletes and have direct access to exterior

- One (1) Referee locker room
- Spectator seating for a minimum of 150 people and a "warm room" viewing area
- Public amenities: rest-rooms, skate rental, food concession

- 600 sq.ft. of storage for Belmont DPW equipment with separate access from the exterior

All locker rooms to have dedicated rest-rooms that are not used by public

Additionally, given the rink's proximity to other athletic facilities (fields, throwing circles and Harris Stadium) the Town expects the locker rooms and associated spaces will also be able to be used by fall and spring sports (fall: football, field hockey, boys and girls soccer; spring: boys and girls outdoor track, boys and girls lacrosse and boys and girls rugby). The rink's public rest-rooms should be located in/off an entry vestibule to be made accessible for fall and spring seasons when the rink may be closed.

In addition to the ice rink program elements, other components to be included in the basic site design are the following:

- Three (3) regulation natural grass Junior Varsity athletic fields:
 1. Baseball
 2. Softball
 3. Soccer

- Two (2) throwing circles (shot put and discus) for track & field practice and competition

- 110 parking spaces (90 for student use and 20 for daytime use of the rink)

The study also evaluated the feasibility of including some number of tennis courts within the site. For high school competition the minimum number would be five courts (three singles play and two doubles play).

It was acceptable and necessary to overlap fields in order to fit the desired number on the site. When combined on the site the overall program limited ideal orientation (sun and natural elements) and simultaneous use of the fields.

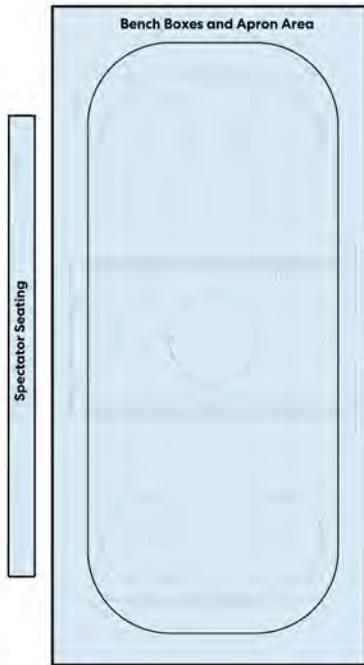
All program elements used meet the National Federation of High School (NFHS) dimensional requirements.

Aerial Rendering : Existing Conditions

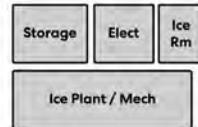


PROGRAM SUMMARY

Site and Building Components for Concept Design



**SINGLE ICE SHEET
& SEATING**
ICE : 200' X 85'



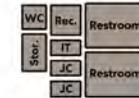
ICE SUPPORT



LOCKER ROOMS

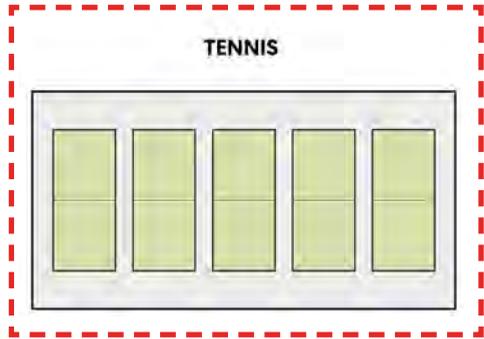


**LOBBY
AMENITIES**

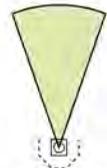
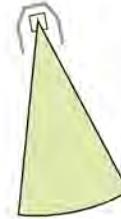


**LOBBY
SUPPORT**

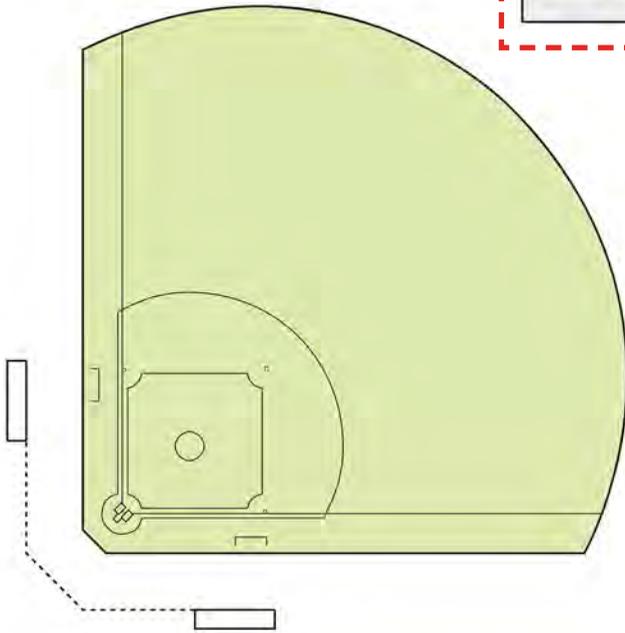
Alternate Program



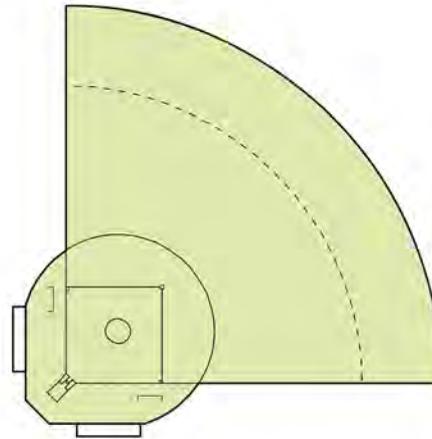
DISCUS



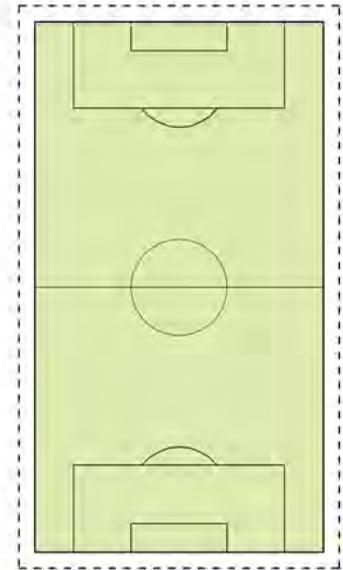
SHOT PUT



BASEBALL FIELD
300' (FOUL LINE) , 300' (CENTER FIELD)



SOFTBALL FIELD
(FAST PITCH): FOUL LINE (185'-235'), CENTER FIELD (185'-350')



SOCCER FIELD
SOCCER : 180' X 300'

PROGRAM SUMMARY

Providing a Comprehensive Vision for Expanded Facilities

Division / Space Type	SPACE PROGRAM						
	OCC ea	Qty	Net Area/Unit (sq.ft)	Net Area (sq.ft)	Efficiency Factor	Net Assignable Area (sq.ft)	Comments
Arena							
Recommended NFHS rink		1	17,000	17,000	1.00	17,000	200' x 85'
Benches, Boxes & Apron		1	6,135	6,135	1.00	6,135	team benches, penalty box, timekeeper, circulation
Home Locker Rooms	40	4	1,000	4,000	1.11	4,440	30" wide bench & shelf, includes 1 WC, 1 sink, 2 showers per room
Field Sport Locker Rooms	75	2	1,800	3,600	1.11	3,996	24" wide lockers, includes 3 WC, 2 sink, 4 showers per room
Visitor Locker Rooms	40	2	680	1,360	1.11	1,510	benches and hooks, includes 1 WC, 1 sink, 1 shower per room
Referee/Coaches Locker Room	4	2	280	560	1.11	622	lockers and 2 inclusive change rooms, 1 WC, 1 sink, 1 shower per room
Family Locker Room	4	1	280	280	1.11	311	lockers and 2 inclusive change rooms, 1 WC, 1 sink, 1 shower per room
Spectator Seating Area	175	1	1,400	1,400	1.00	1,400	lower and/or upper level, 150-200 bench seats anticipated
Arena Skate Rental/Sharpening		1	120	120	1.11	133	
First Aid Room		1	120	120	1.11	133	
Ice Resurfacing Room		1	300	300	1.11	333	
Video/Sound Booth/AV Space	2	1	75	75	1.11	83	back of seating
Arena Storage		1	500	500	1.00	500	dasher boards, nets, goals, maintenance equipment
Area Totals				35,450		36,596	
Ice Plant and Mechanical		1	1,200	1,200	1.00	1,200	
Electrical/Comm. Room		1	400	400	1.00	400	
Support Area Totals				1,600		1,600	
Assigned Area Sub-Total				37,050		38,196	

Definitions

Net Area/Unit (sq ft) net area calculated in sq feet per unit of program component. Useable and accessible space within walls

Net Area (sq ft) net area calculated in sq feet of program component. Useable and accessible space within walls

Net Assignable SF calculated sf inclusive of immediate interior circulation, interior walls

Efficiency Factor: varies dependent upon component. GFA factors are higher for programs that include many smaller cellular spaces. Larger spaces have lower gross up factors.

Gross Floor Area calculated sf inclusive of surrounding exterior walls, interior walls, shafts, stair cases, elevator chases, general circulation etc.

Division / Space Type	SPACE PROGRAM						
	OCC ea	No.	Net Area/Unit (sq.ft)	Net Area (sq.ft)	Efficiency Factor	Net Assignable Area (sq.ft)	Comments
Public and Support Spaces							
Main Lobby		1	300	300	1.00	300	
Reception Counter and Support		1	80	80	1.11	89	information and entry control
Warm Room	24	1	600	600	1.11	666	multipurpose room, behind seating or off lobby
Arena Management Office		1	120	120	1.11	133	off main lobby, security, lost & found
Retail Space/Ticketing		1	100	100	1.11	111	team and/or booster club use, field access
Concession/Snack bar		1	150	150	1.11	167	no cooking, warm and prepare, sinks and refridgerator, field access
Public Space Area Totals				1,350		1,466	
Facility General Storage		1	100	100	1.00	100	
Janitorial Supply Closet		2	50	100	1.00	100	
Recycling/Garbage		1	80	80	1.00	80	LEED requirement
Inclusive WC		1	64	64	1.11	71	family/gender neutral rest-room, 1 WC and 1 sink
Public Restrooms		2	300	600	1.11	666	spectator use, field access, 3 WC and 2 sinks per room
DPW Storage		1	600	600	1.00	600	
IT Server Closet		1	50	50	1.00	50	
Support Area Totals				1,594		1,667	
Assigned Area Sub-Total				2,944		3,133	

Division / Space Type	SPACE PROGRAM SUMMARY						
	Qty	No.	Net Area/Unit (sq.ft)	Net Area (sq.ft)	Efficiency Factor	Net Assignable Area (sq.ft)	Comments
Arena				37,050		38,196	
Public and Support Spaces				2,944		3,133	
Subtotal				39,994		41,328	
Total Building Gross Floor Area					1.11	45,874	90% building efficiency

EXISTING SITE & FACILITIES ASSESSMENT

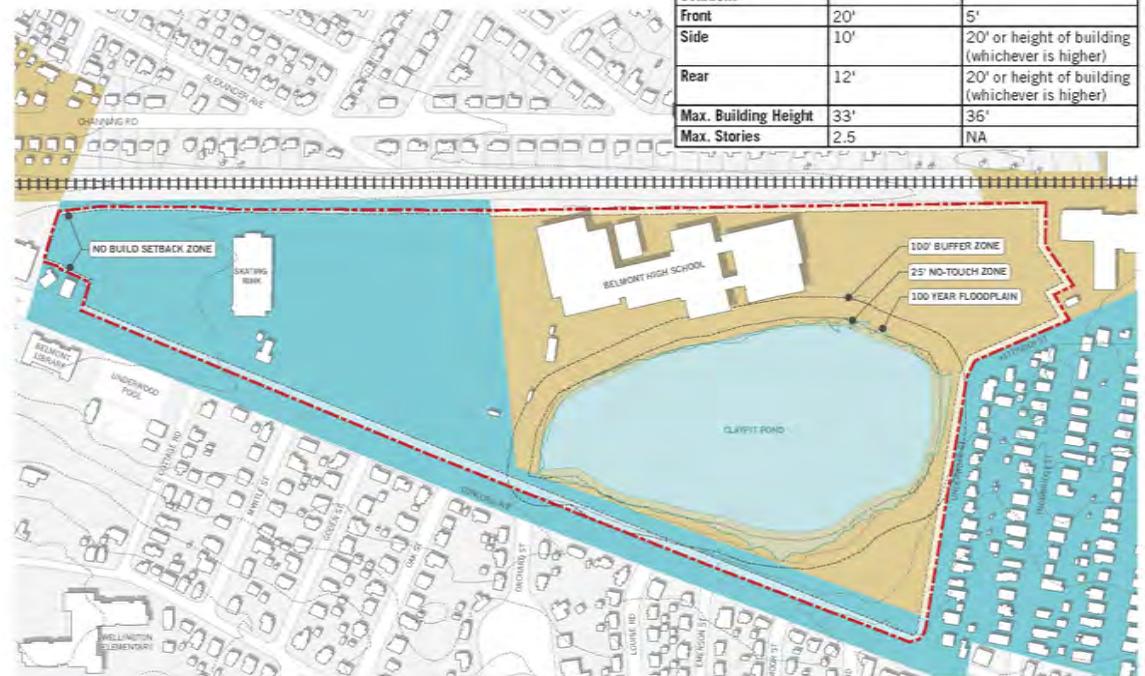
Current Conditions West of Harris Field

The study project site occupies the high school property west of Harris Field which is bounded by Concord Avenue to the south, MBTA commuter rail to the north and commercial properties to the west. The site currently contains the Vigliolo Ice Rink, White Field House and natural grass athletic fields. The existing ice rink serves Belmont High School and is open to the community for recreational and club use.

Based on traffic studies, preferred site access off Concord Avenue should be located opposite Cottage Street which would be incorporated into the existing pedestrian signal.

Prior to this design study an overall schematic site plan was developed and included a proposed athletic field configuration and parking but did not consider a new ice rink. The schematic site plan is included for reference on the following pages.

REGULATORY CONSTRAINTS



ZONING SUMMARY		
	General Residential	General Business
Setbacks		
Front	20'	5'
Side	10'	20' or height of building (whichever is higher)
Rear	12'	20' or height of building (whichever is higher)
Max. Building Height	33'	36'
Max. Stories	2.5	NA

- GENERAL RESIDENCE ZONE
- GENERAL BUSINESS ZONE

**SITE PLAN:
SCHOOL PROJECT MASTERPLAN**

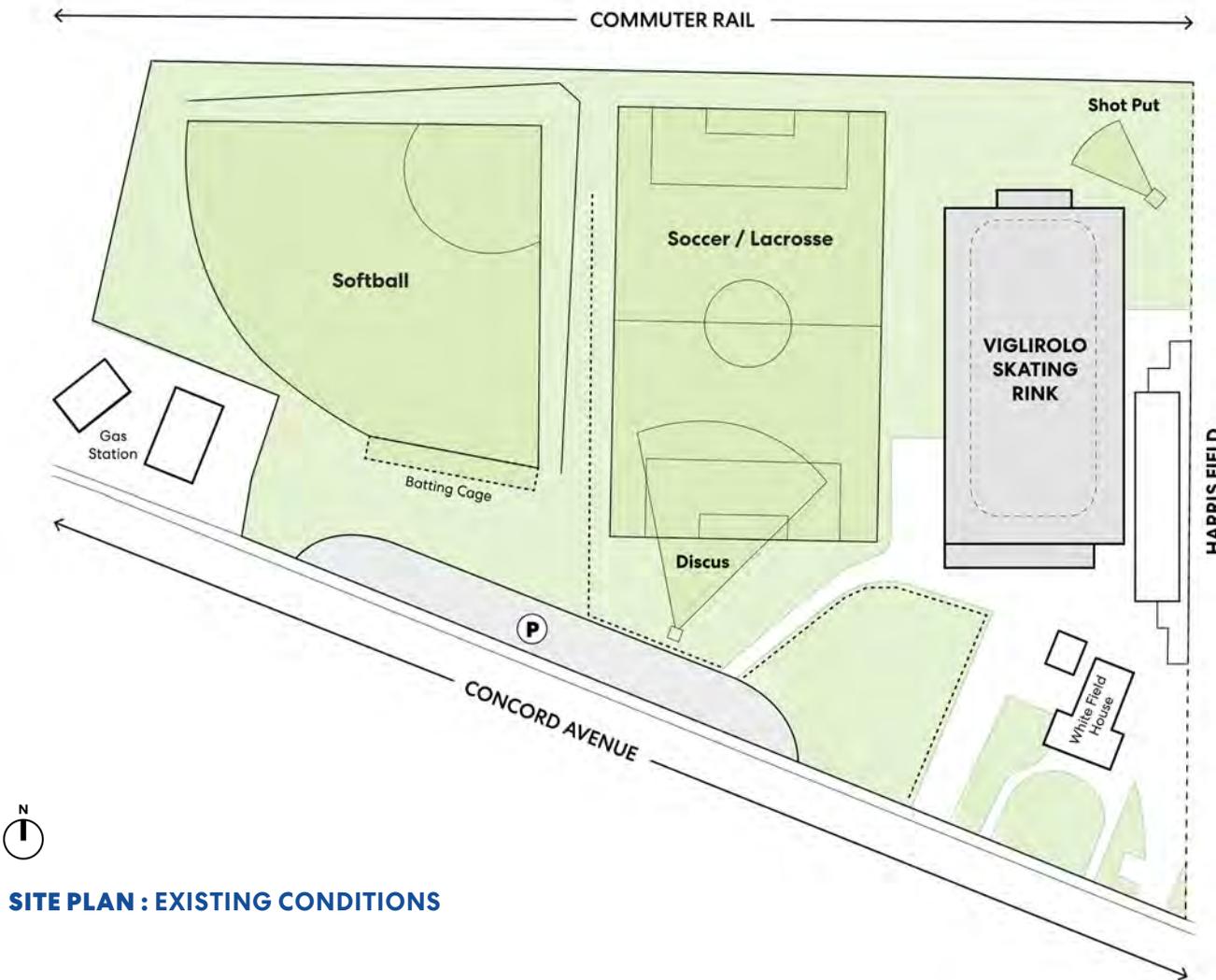


**SITE PLAN:
CURRENT PROGRESS**

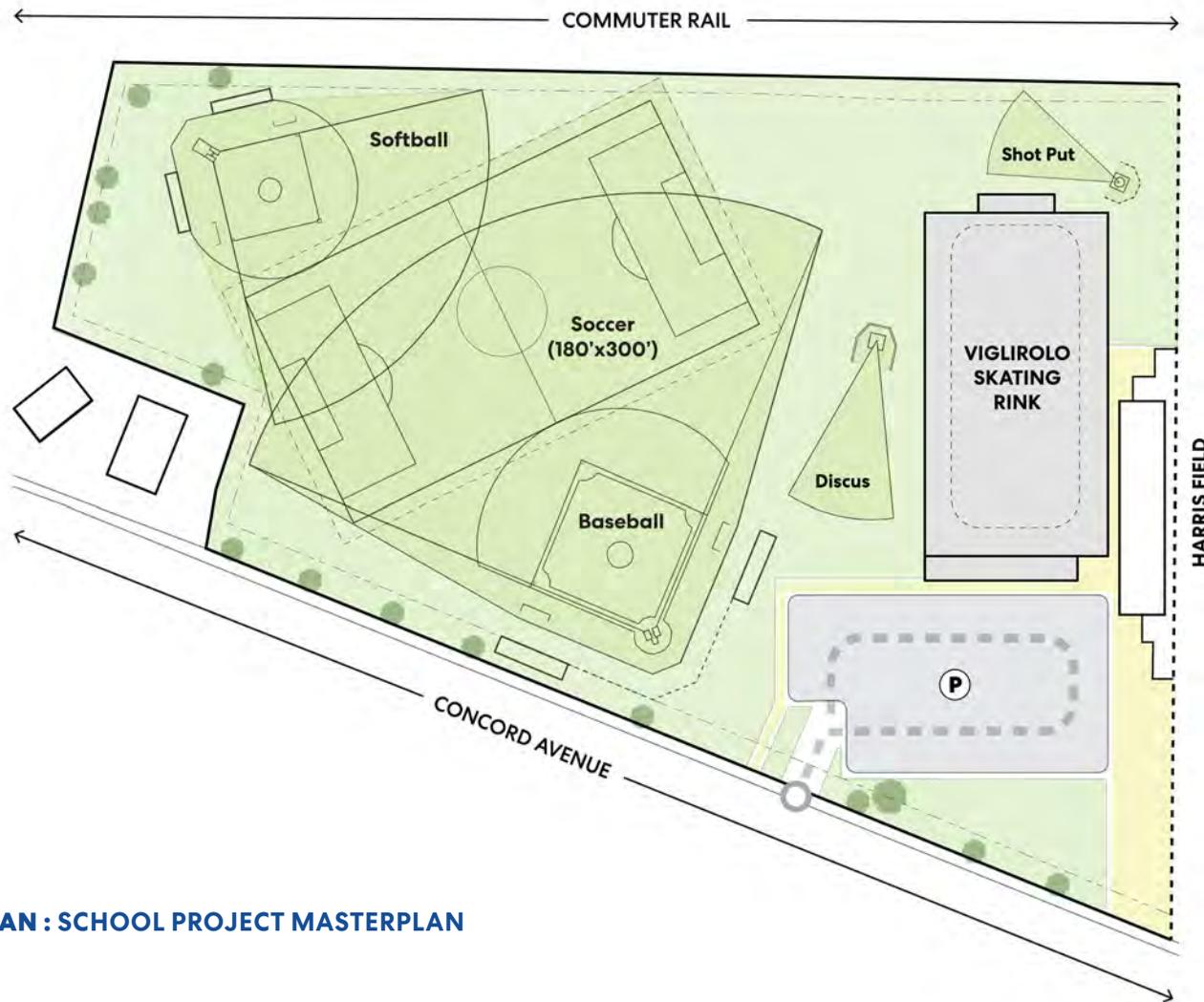


EXISTING FACILITIES ASSESSMENT

History of the Site Design



SITE PLAN : EXISTING CONDITIONS



SITE PLAN : SCHOOL PROJECT MASTERPLAN

EXISTING SITE & FACILITIES ASSESSMENT

Ice Rink Beyond its Useful Life

For this effort the design team reviewed previous studies and evaluations, toured the ice rink and made visual assessments based on experience with similar facilities of this type. The following is a summary of the findings.

The building's mechanical, electrical and plumbing systems are inefficient and undersized to accommodate desired uses. The systems have been extended beyond their useful life and in danger of failing.

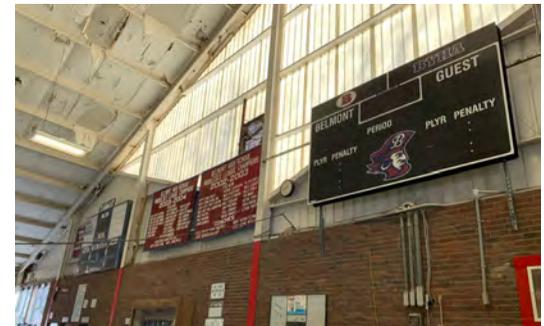
Due to the facilities age and deterioration the only component possible to salvage would be the primary steel structural frames.

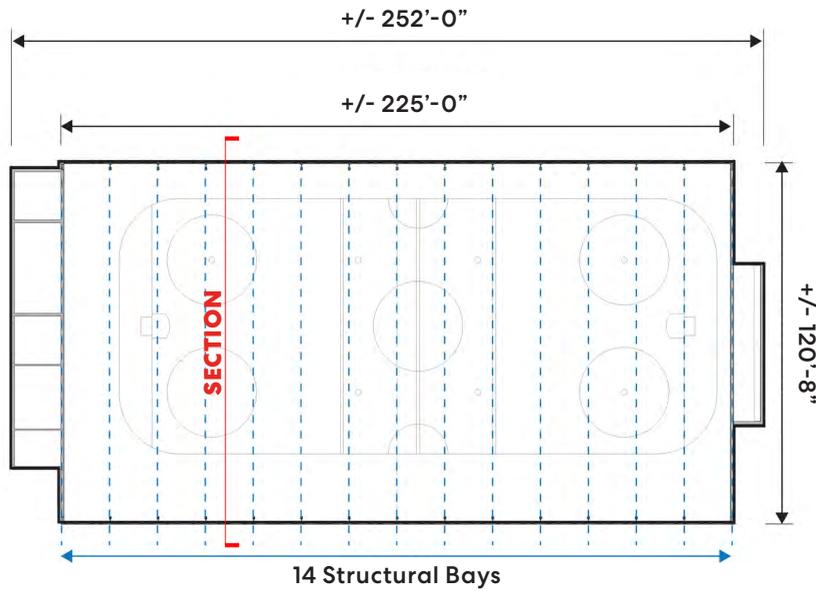
The rink was built before the First Edition of the Massachusetts State Building Code. Using current code for wind, snow and seismic loads the existing structure capacity would not meet requirements. In any scenario the existing structure would need to be significantly reinforced to comply with current design loads. Assessment would need to be made once the structural steel has been sandblasted to determine loss of material due to corrosion. Stability of the existing frames is an issue during removal of the roof structure and secondary framing – a line of shoring towers would be required for support during construction until the permanent secondary framing is completed.

Based on this evaluation and the five previous studies, it is our recommendation to demolish the existing facility as it has exceeded its useful life span.

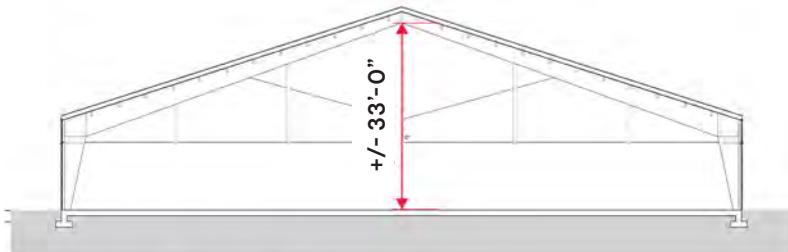
EXISTING STRUCTURE CONDITIONS

- **Not climate controlled, no building insulation**
- **No mechanical ventilation**
- **Exterior enclosure failing - needs to be replaced**
- **Accessibility issues throughout**
- **Lacks sufficient space to accommodate uses**
- **Moisture/water issues throughout**
- **Structural steel corroded and rusting**
- **Secondary roof/wall structure failing**
- **Fire-alarm systems need to updated**
- **Beyond expected life-span**

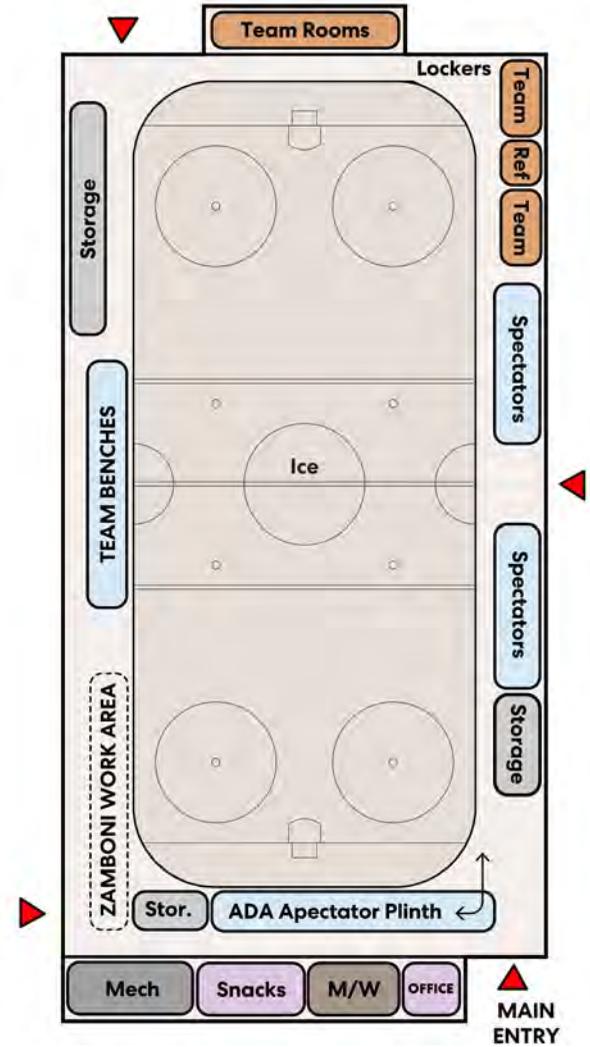




STRUCTURAL PLAN



EAST-WEST SECTION



PLAN DIAGRAM : EXISTING ICE RINK

SITE DESIGN STUDIES

Overview

DESIGN DRIVERS

- 1 Identify largest contiguous field area
- 2 Preferred field orientation (foul balls, player safety)
- 3 Consolidated and efficient parking
- 4 Clear drop-off and pick-up for rink, fields and stadium
- 5 Limit building frontage to Concord Ave.
- 6 Improve relationship to existing stadium
- 7 Shared program use between rink and field activities
- 8 Flexibility with construction schedule and phasing
- 9 Sustainability (orientation and re-use)
- 10 Value of investment

OVERVIEW

The goal of the design concept site study was first to evaluate the best possible building location that would maximize the site area to accommodate athletic fields, throwing areas, tennis courts and parking. The second goal of the study was to consider both renovation and new construction scenarios. Though based on the existing facility assessment the recommendation is to demolish the existing structure it was still evaluated as a design option.

PROCESS

The first step in the process was to evaluate the previous site layout created with the new High School design and evaluate was it possible to renovate the existing rink while maintaining the proposed field and parking configuration. The following two diagrams illustrate that a renovated rink's increased size, larger parking and access would require a new site layout for the fields.

The next steps in the site design process involved the evaluation of various alternatives and considered site layout, pedestrian and traffic circulation, field configurations, site infrastructure, rink functionality, operation, sustainability and relationship to the Harris Field Stadium. Each alternative was evaluated

based on opportunities, constraints, cost, construction duration and phasing.

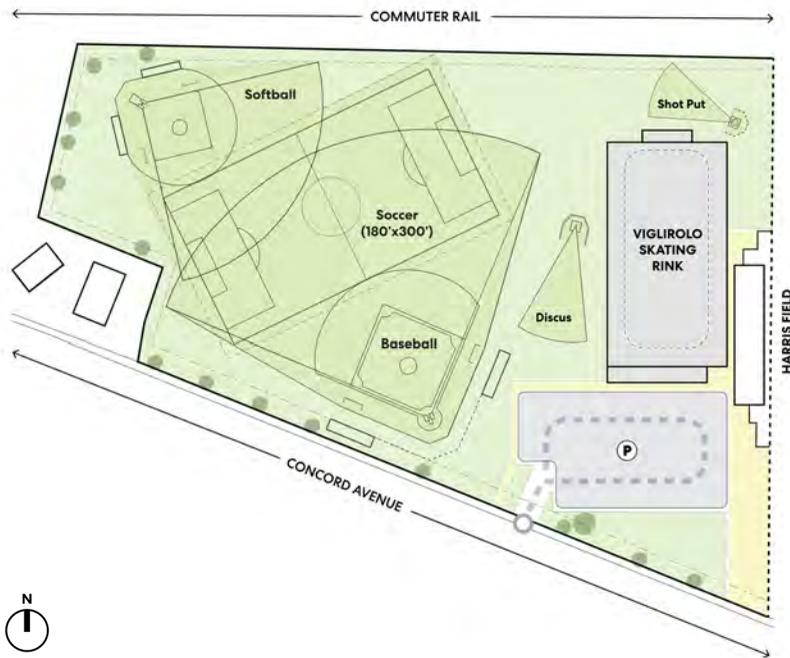
STUDY RESULTS

Three schemes were ultimately considered as possible concept design site solutions. A renovation scheme and two new construction schemes, one on the east side of the site and one on the west. The two new schemes' footprints were based on a two level facility. A lower level for locker rooms and ice rink support with an upper level dedicated for spectator seating and a warm room viewing area. This approach was used to maximize available site area. A single level facility would be considered as a next step in the design process and may provide cost benefits by reducing stairs and elevator.

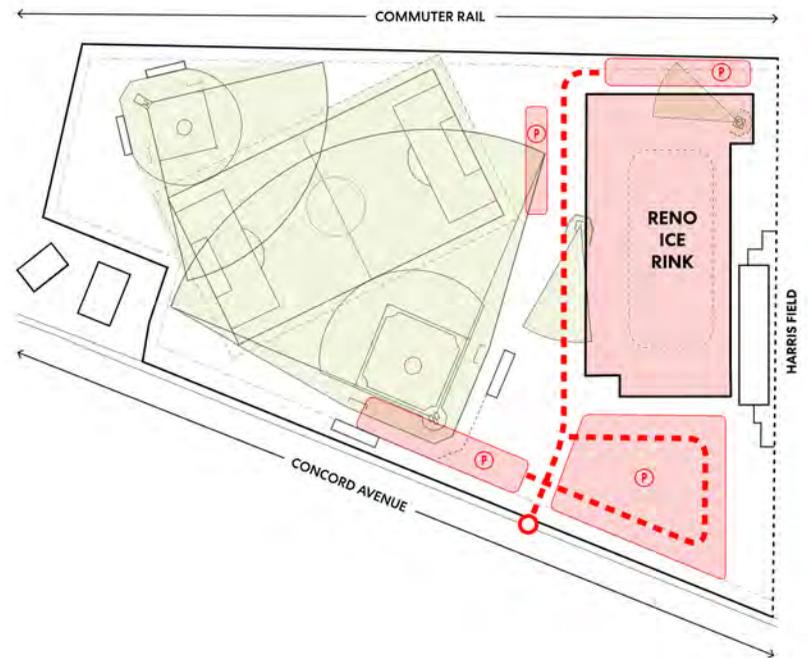
The following solutions were evaluated and scored based on priorities and attributes which are summarized in a comparative matrix. The schemes and findings were presented to the Town and based on review and comments a "preferred" scheme was selected:

SCHEME 02 NEW CONSTRUCTION (EAST)

School Project Masterplan

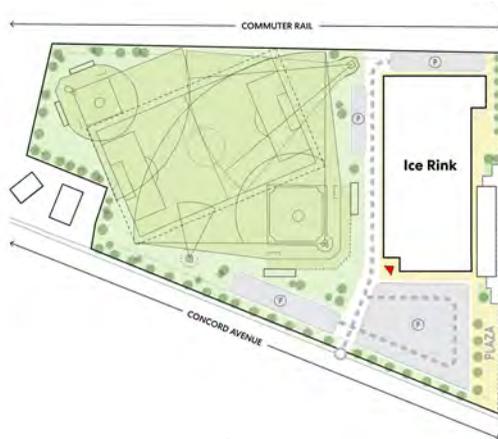


Overlay: Renovation Scheme



SITE DESIGN STUDIES

Overview



SCHEME 01: Renovation

The first concept required expanding the existing rink to the west and north while splitting parking lots located to the south and to the north connected by a service drive. The softball and baseball fields are positioned to the edge of the remaining site with the soccer field overlapping the two outfields.



SCHEME 02: New Construction (East)
PREFERRED SCHEME

The second concept located a new rink to the north-east corner of the site allowing for a single parking lot while maximizing the available field area. Similar to Scheme 01, The softball and baseball fields are positioned to the edge of the remaining site with the soccer field overlapping the two outfields, but in a north-south orientation.



SCHEME 03: New Construction (West)

The third concept located a new rink to the north-west corner of the site and required splitting parking lots to the south and to the north connected by a service drive. The softball and baseball fields are positioned to the edge of the remaining site with the soccer field overlapping the two outfields.



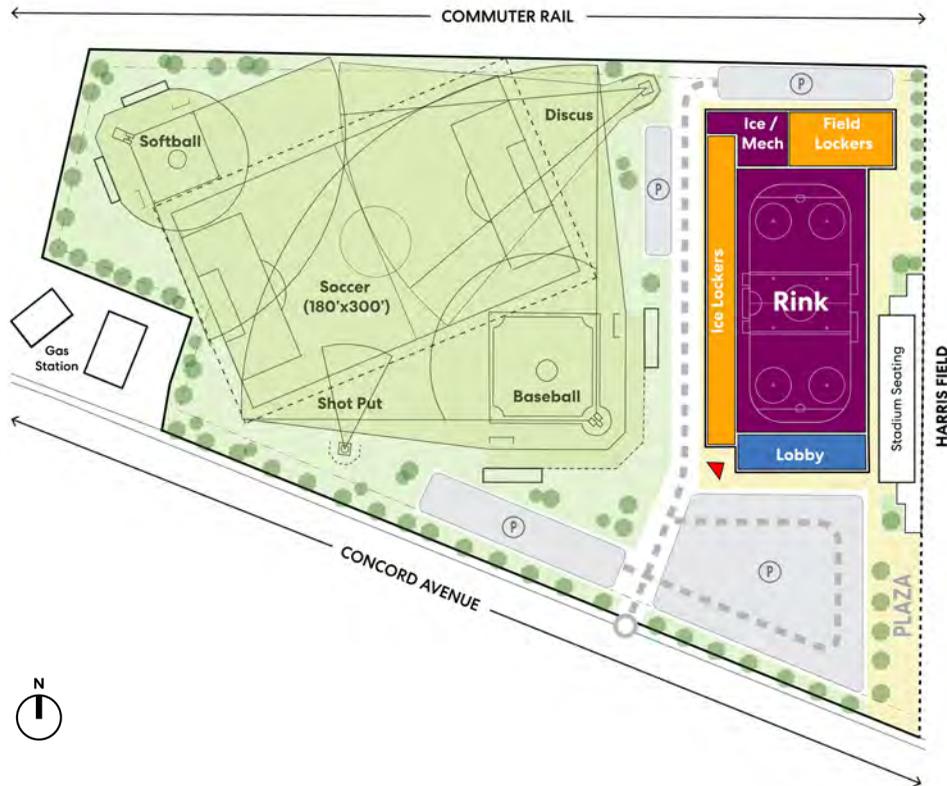
SITE DESIGN COMPARISON

ATTRIBUTES	SCHEME 01: Renovation	SCHEME 02: New Construction (East)	SCHEME 03: New Construction (West)
Carbon Footprint	+	○	○
Efficient Parking Layout	-	+	○
Field Configuration	○	○	-
Construction Duration	-	○	○
Construction Phasing	-	-	+
Pedestrian Circulation	○	○	-
Vehicular Circulation / Drop-Off	○	+	○
Rink Optimization	-	+	+
Building Orientation / Natural Lighting	-	+	+
Lowest Cost / Value	-	+	○
TOTAL	-5	4	1

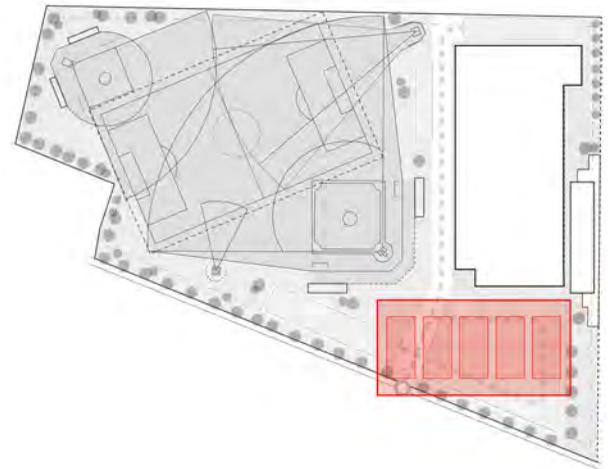
- + Positive Attribute
- Negative Attribute
- Neutral

SCHEME 01: RENOVATION

Site Design Studies



Tennis Fit Study



SCHEME 01: Renovation (Not Recommended)

The renovation scenario maintains the existing primary structural frame and expands the overall footprint with rink functions gathered around three sides of the facility. Locker rooms to support high school field sports would be located to the north of the rink. Due to the original size of the structure more area is required to house the program desired and thus making for a less than ideal interior layout.

Scheme Attributes

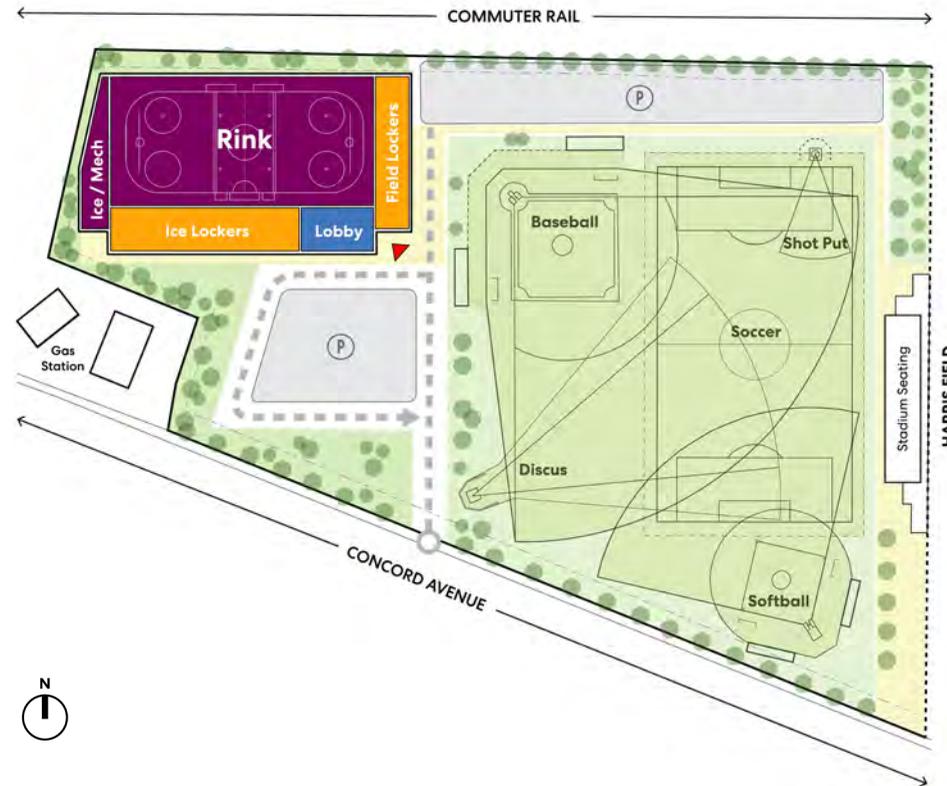
PROS	CONS
<ul style="list-style-type: none"> • Re-Use of Existing Structure • Proximity to Harris Field 	<ul style="list-style-type: none"> • Most Expensive • Construction Duration • Inefficient Parking • Solar Orientation

Aerial Rendering : Renovation Scheme



SCHEME 03 : NEW CONSTRUCTION (WEST)

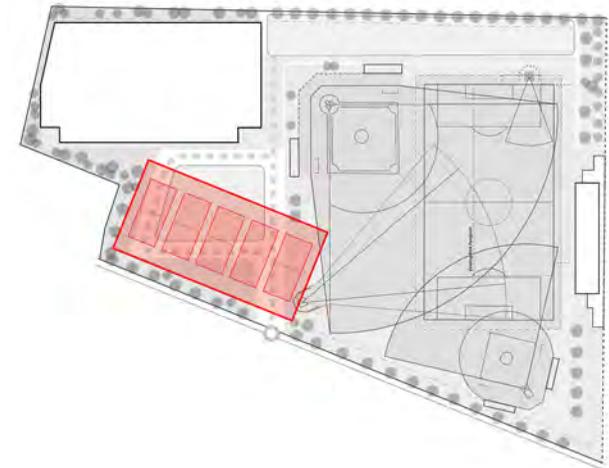
Site Design Studies



SCHEME 03 : New Construction (West)

The new construction scenario offers the ability to create an ideal layout for the rink program. By locating the new rink on the west side of the site it allows for the existing rink to remain open until construction is complete. Parking is split to the south and east of the rink with the fields occupying the south-east corner. The field configuration has the greatest overlap with this layout.

Tennis Fit Study



Scheme Attributes

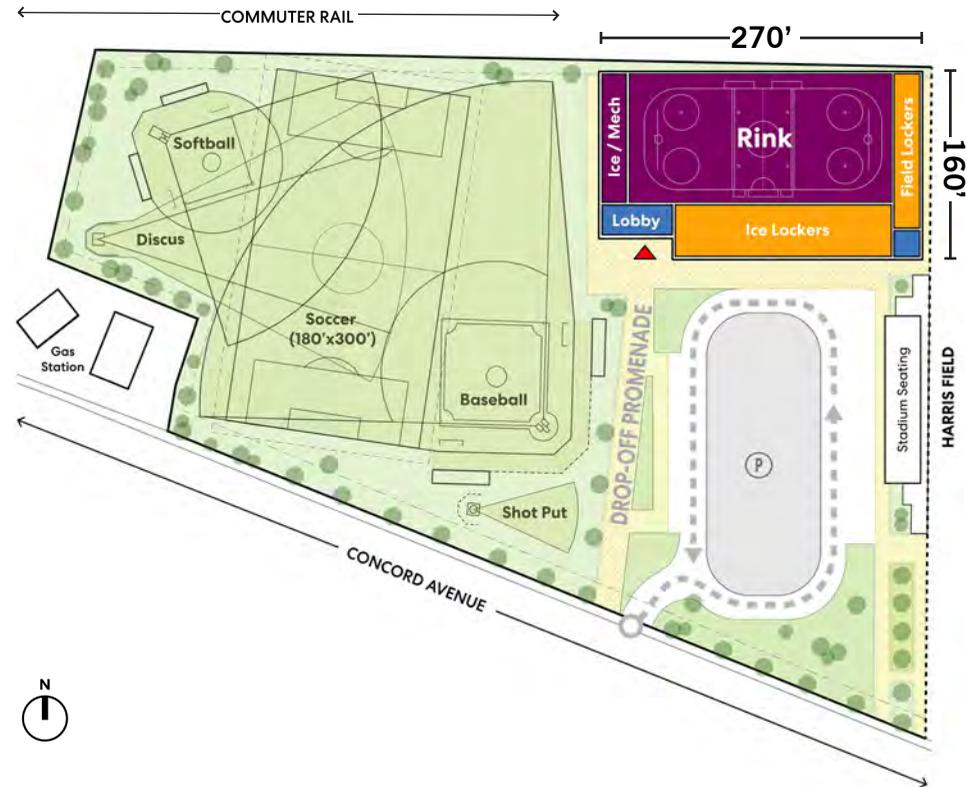
PROS	CONS
• Construction Phasing	• Distance to Harris Field
• Distance from Concord Avenue	• Inefficient Parking
• Solar Orientation	• Field Configuration

Aerial Rendering : New Construction (West) Scheme



SCHEME 02 : NEW CONSTRUCTION (EAST)

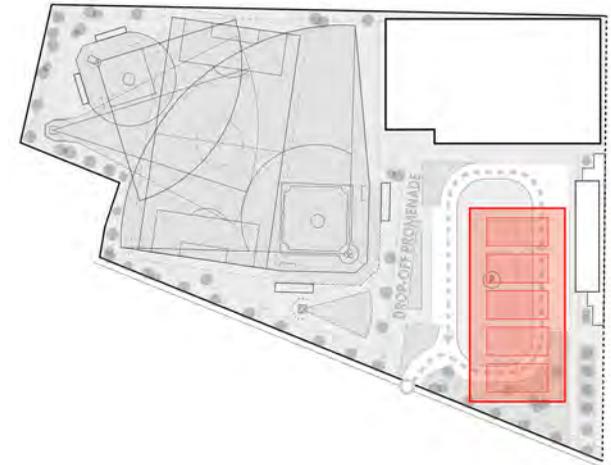
Preferred Site Scheme



SCHEME 02 : New Construction (East)

The new construction scenario offers the ability to create an ideal layout for the rink program. Rink functions are gathered around three sides of the facility. Ice use locker rooms to the south and field use locker rooms located to the east adjacent to Harris Field. This scenario offers the most efficient site circulation for both pedestrians and vehicles, creating ample drop-off and pick-up for rink, fields and stadium use.

Tennis Fit Study



Scheme Attributes

PROS

- Proximity to Harris Field
- Distance from Concord Avenue
- Solar Orientation
- Efficient Parking

CONS

- Construction Phasing
- Field Configuration

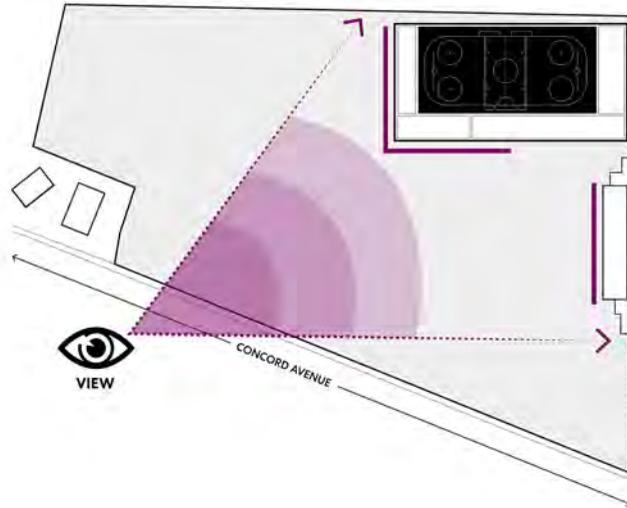
Aerial Rendering
SCHEME 02 : New Construction (East)



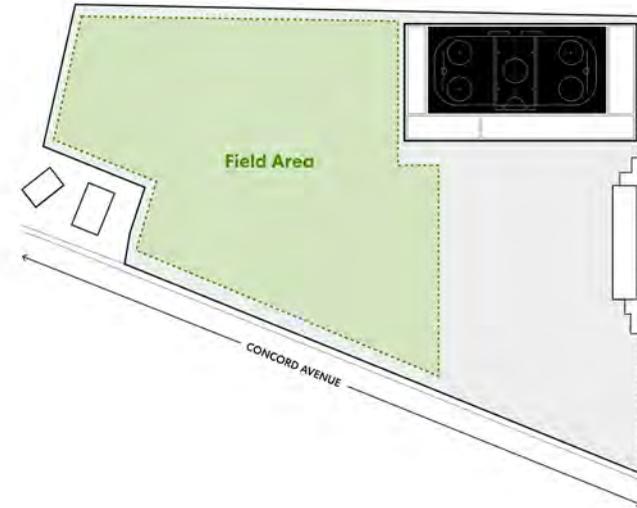
SITE ANALYSIS

Scheme 02: Preferred Site Scheme

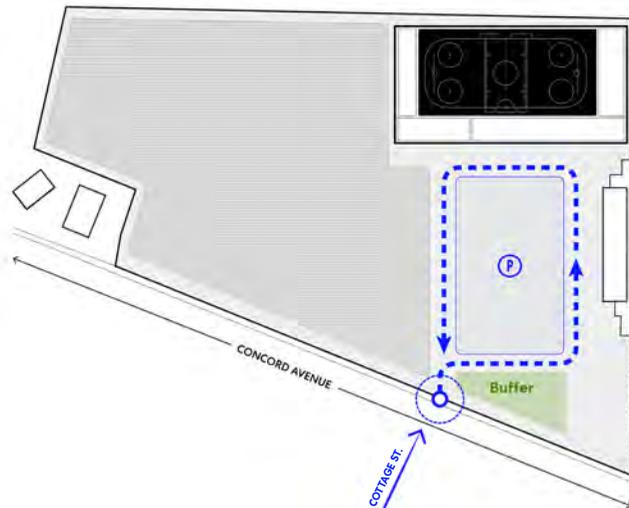
01 Facade Frontage



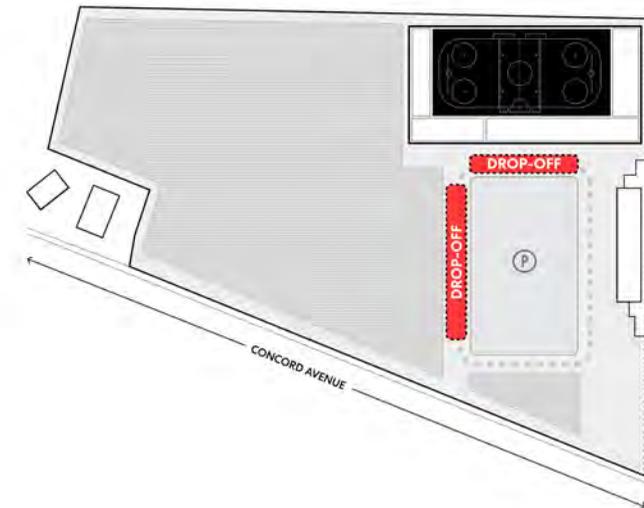
02 Maximize Field Area



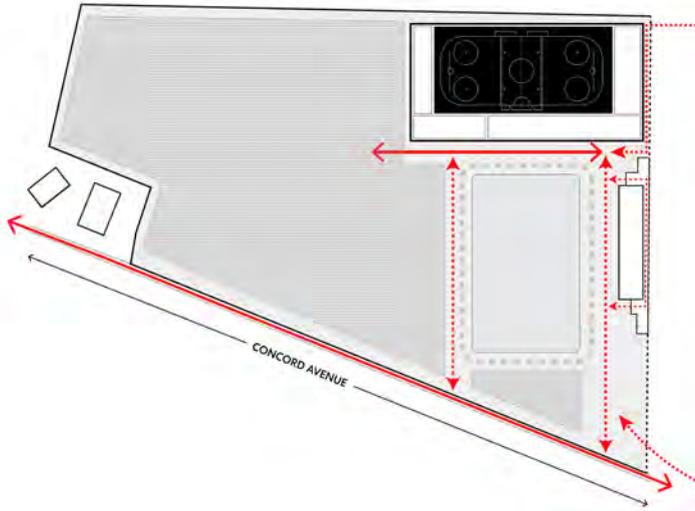
03 Parking Area + Circulation



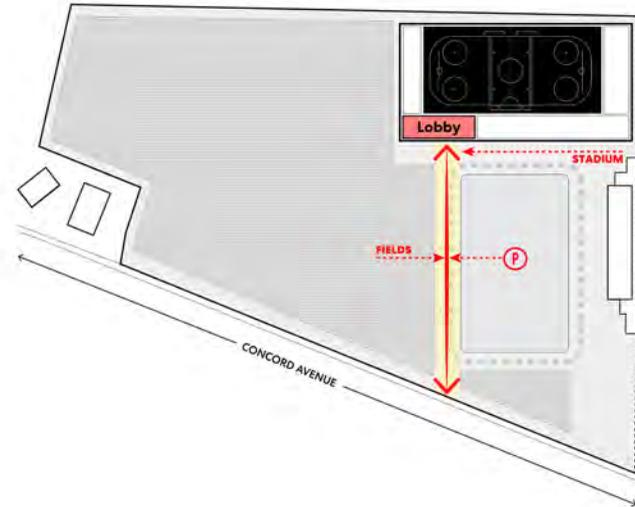
04 Drop-Off Locations



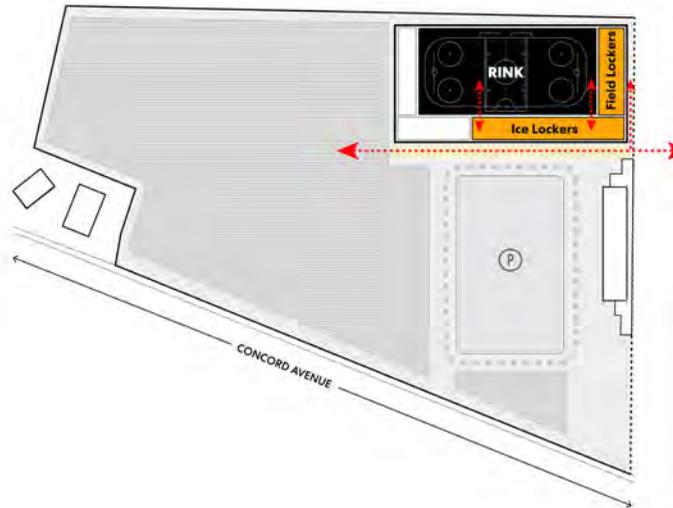
05 Pedestrian Access



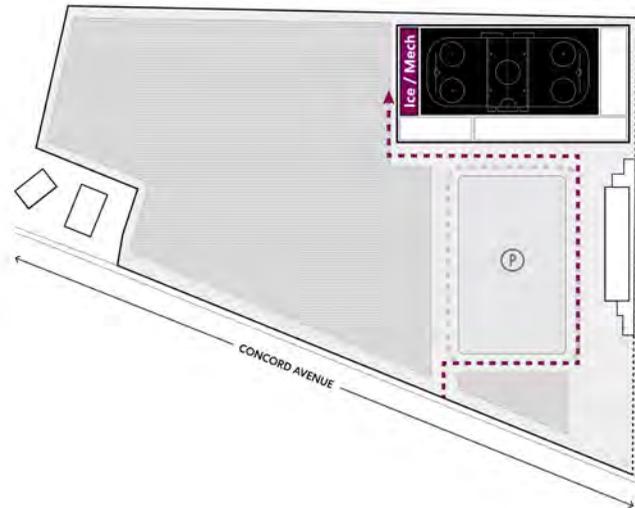
06 Building Entry



07 Locker Adjacency



08 Service Access

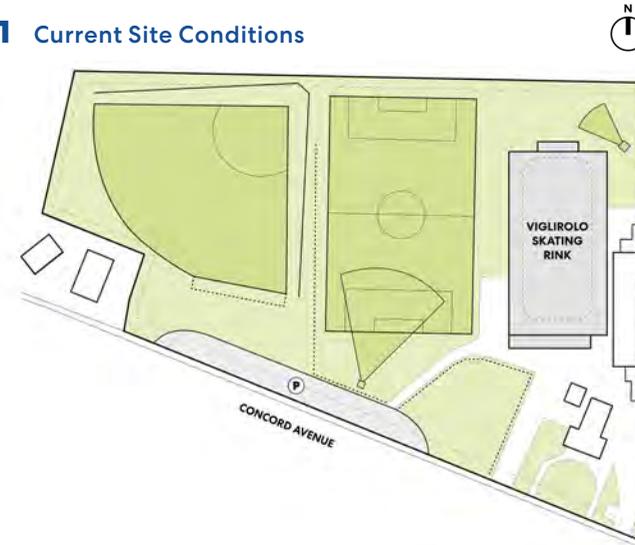


SITE PHASING

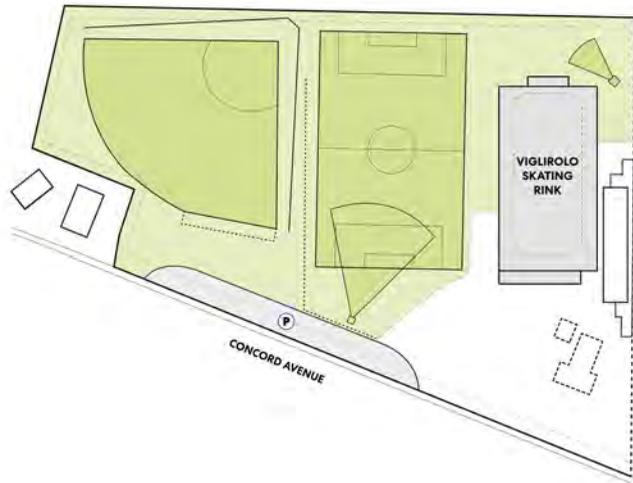
Scheme 02: Preferred Site Scheme

The site concept and configuration for Scheme 02 allows for flexibility in project phasing. Construction of the fields and 90 parking spaces can be completed prior to construction of the new rink. The following diagrams illustrate the sequencing of construction and complete build-out of the site design.

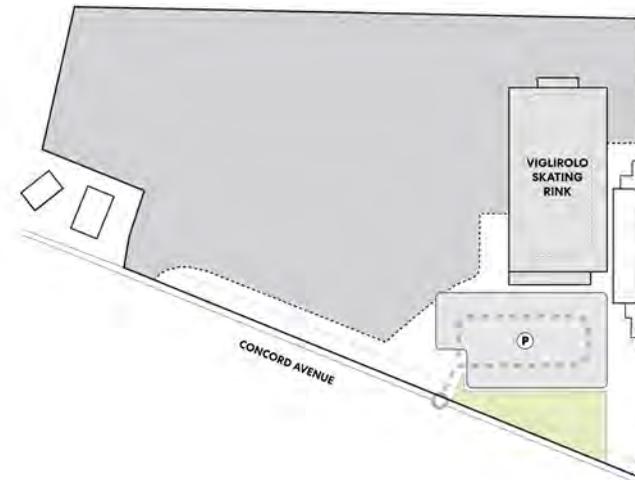
01 Current Site Conditions



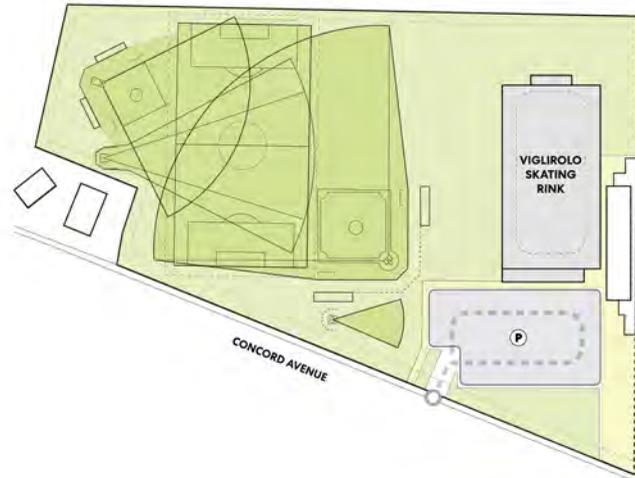
02 Demo White Field House and Adjacent Site Work



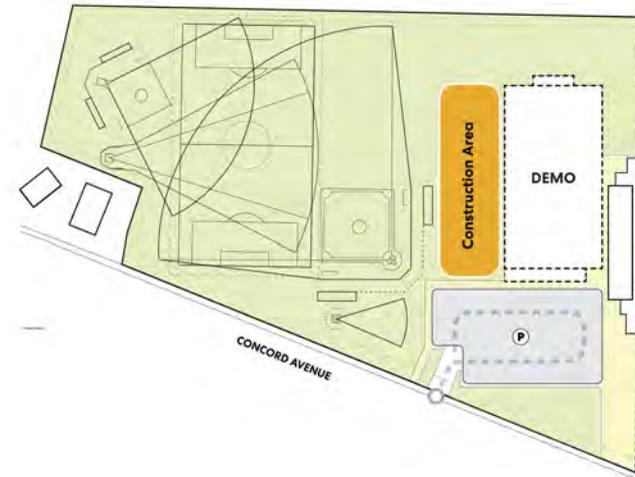
03 Remediate Existing Field Area, Add New Parking



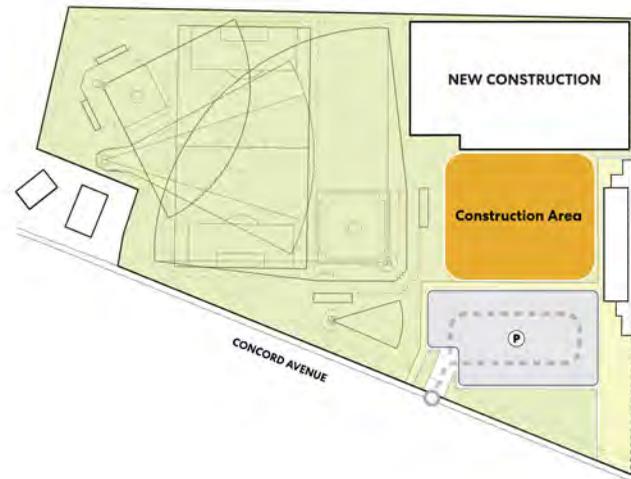
04 New Site Work and Athletic Fields



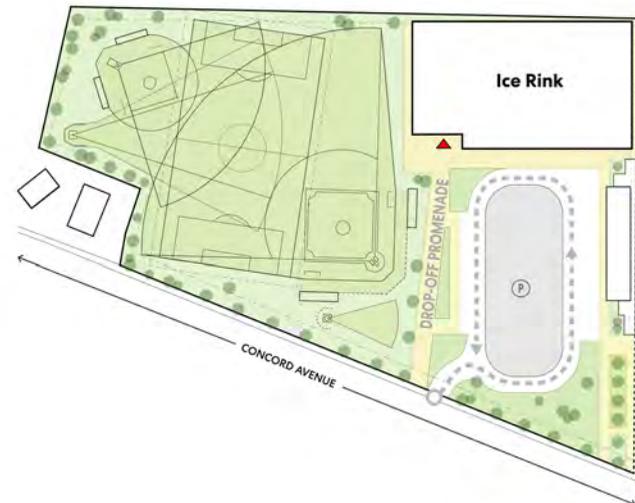
05 Demo Existing Ice Rink



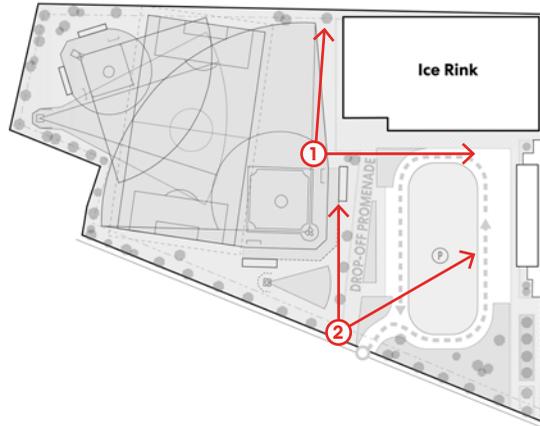
06 Build New Ice Rink



07 Extend New Parking, Complete Site Work



SCHEME 02 : NEW CONSTRUCTION (EAST)



01 : View of Entry Corner from Athletic Fields



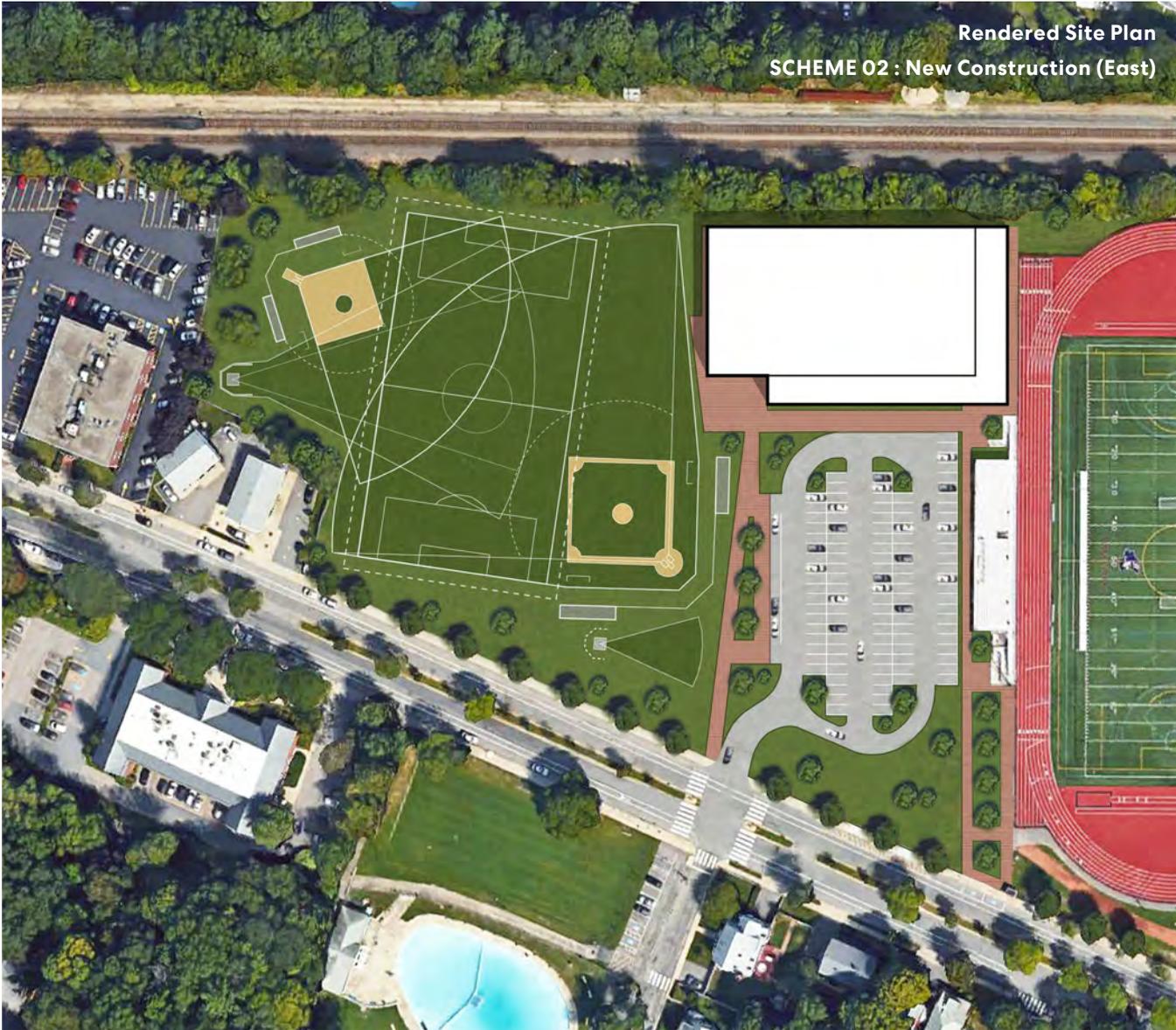
02 : View from Concord Avenue



SUSTAINABILITY

The following are potential sustainability strategies to consider with a new ice rink:

- Heat pump refrigeration system for efficient use of ice making waste heat
- Geo-exchange system to heat and cool building
- LED lighting
- Optimize solar orientation for natural day-lighting and photovoltaic panel array on roof



Rendered Site Plan
SCHEME 02 : New Construction (East)



COST ESTIMATION

Project Budget

DESIGN SCHEME (Construction Cost)	CONSTRUCTION SCHEDULE	AREA (SF)	COST	TOTAL (POSSIBLE COST 20% HIGHER / LOWER)
SCHEME 01: Renovation				
Building (rink, parking & demo)	18 months	47,898	\$13,780,000	\$17,405,000
Site (fields, parking & demo)			\$1,715,000	
Design & Construction Contingency (10%)			\$1,360,000	
Escalation (2023)			\$550,000	
SCHEME 02: New Construction (East)				
Building (rink, parking & demo)	15 months	45,874	\$12,465,000	\$15,615,000
Site (fields, parking & demo)			\$1,750,000	
Design & Construction Contingency (7.5%)			\$940,000	
Escalation (2023)			\$460,000	
SCHEME 03: New Construction (West)				
Building (rink, parking & demo)	15 months	45,874	\$12,525,000	\$16,460,00
Site (fields, parking & demo)			\$2,460,000	
Design & Construction Contingency (7.5%)			\$990,000	
Escalation (2023)			\$485,000	

- A. "Site" cost includes work to reconfigure and reconstruction of natural grass athletic fields, associated High School parking (90 spots), and demolition of existing White Fieldhouse.
- B. "Building" cost includes new or renovated ice rink, associated parking (20 spots), hardscape, landscape and demolition of existing rink.
- C. Current High School funds for site work project stated above is \$2.25M

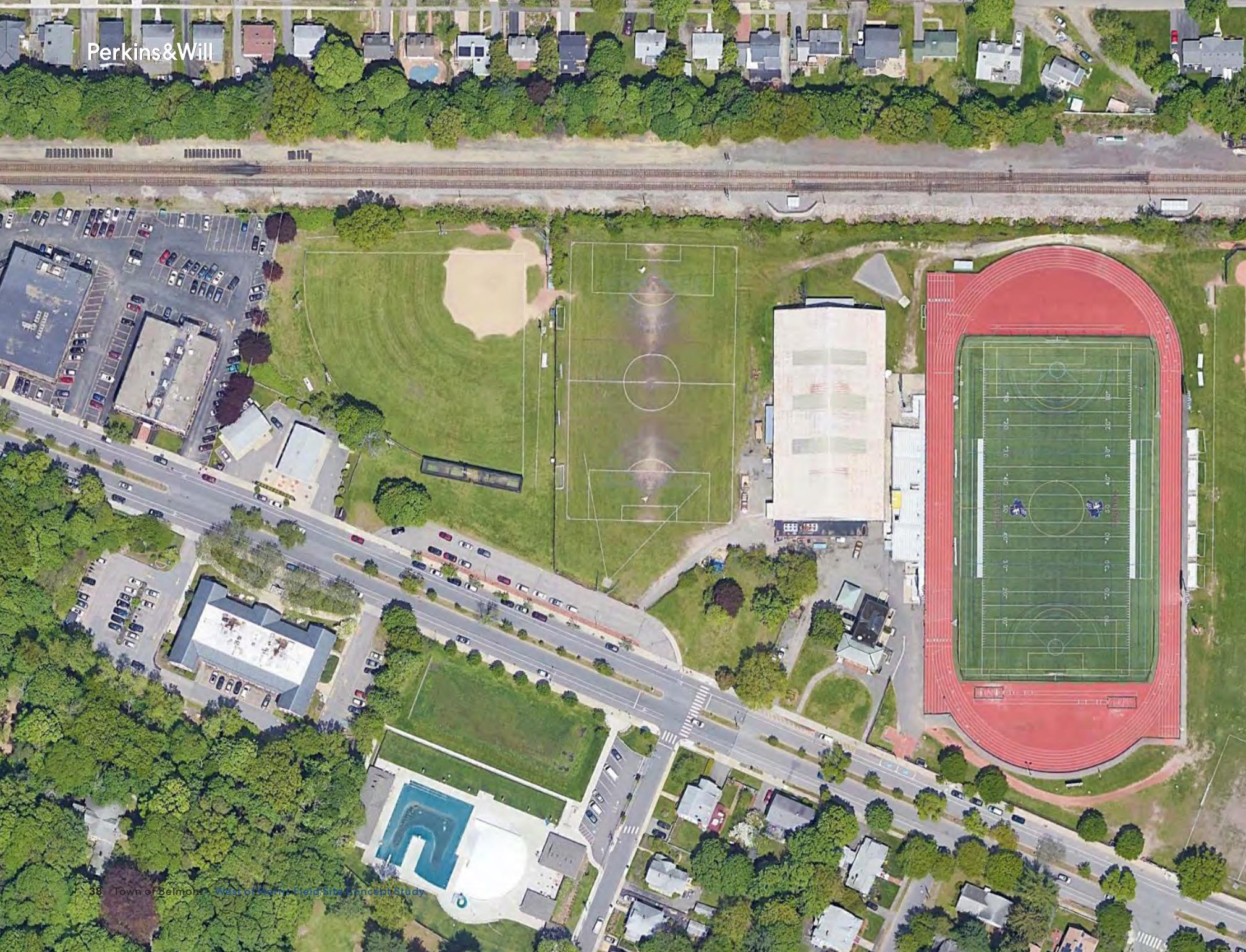
DESIGN SCHEME (Project Costs)	CONSTRUCTION SCHEDULE	TOTAL (POSSIBLE COST 20% HIGHER / LOWER)
SCHEME 01: Renovation		
Total Construction Cost	18 months	\$17,405,000
Project Cost (30%)		\$22,626,500
Site Work Funds		-\$2,250,000
Total Rink Project Cost		\$20,376,500
SCHEME 02: New Construction (East)		
Total Construction Cost	15 months	\$15,615,000
Project Cost (30%)		\$20,299,500
Site Work Funds		-\$2,250,000
Total Rink Project Cost		\$18,049,500
SCHEME 03: New Construction (West)		
Total Construction Cost	15 months	\$16,460,00
Project Cost (30%)		\$21,398,000
Site Work Funds		-\$2,250,000
Total Rink Project Cost		\$19,148,000

COST ESTIMATE – KEY ASSUMPTIONS

Due to the conceptual nature of the study, a conservative approach has been taken with the cost estimate. This approach provides a design contingency that allows for the town to make choices and vet possible value engineering options during with the next phase of design.

The following assumptions were used for the estimate:

- 12 months for design & planning
- Construction to start April 2022
- Escalation calculated at annual 1.85% rate compounded to mid point of construction
- Construction cost include:
 - A. Subcontractor Default Insurance 1.50%
 - B. General Requirements 4.00%
 - C. Design Contingency 7.50%
 - D. Construction & Phasing Contingency 3.00%
 - E. General Conditions 6.00%
 - F. Fees 3.00%
5. Typical project costs (30% plus of construction cost) include:
 - A. LEED certification
 - B. Site planning (surveys, soils reports, environmental reports, traffic studies, regulatory agency fees)
 - C. Professional fees (design consultants, management)
 - D. Fixtures, furnishings and equipment
 - E. Legal fees
 - F. Owner’s contingency



APPENDIX

TENNIS STRUCTURE



SCHEME 02 ALTERNATIVE* : New Construction

The feasibility of accommodating tennis courts were studied on each option. Unless other program requirements are changed tennis courts could not be fit at grade on the site. An alternative option for Scheme 02 would be to elevate five courts above parking on grade. With this approach it may be possible to use the existing stadium elevator to provide access to the upper level.



COST ESTIMATION

Scheme 02: Alternative

DESIGN COMPONENTS	CONSTRUCTION SCHEDULE	AREA (SF)	CONSTRUCTION COST	TOTAL PROJECT COST (POSSIBLE COST 20% HIGHER / LOWER)
Alternates				
Elevated Tennis Courts (5)	8 months	30,720	\$3,120,000	\$4,517,500
Design & Construction Contingency (7.5%)			\$235,000	
Escalation (2023)			\$120,000	

The cost includes an elevated post-tensioned concrete structure, required stairs, elevator and lighting necessary to meet code and accessibility requirements. The upper tennis area includes a hard court playing surface, netting and fencing required for use. Please see page 37 for additional assumptions related to construction and project costs.

COMPARISON

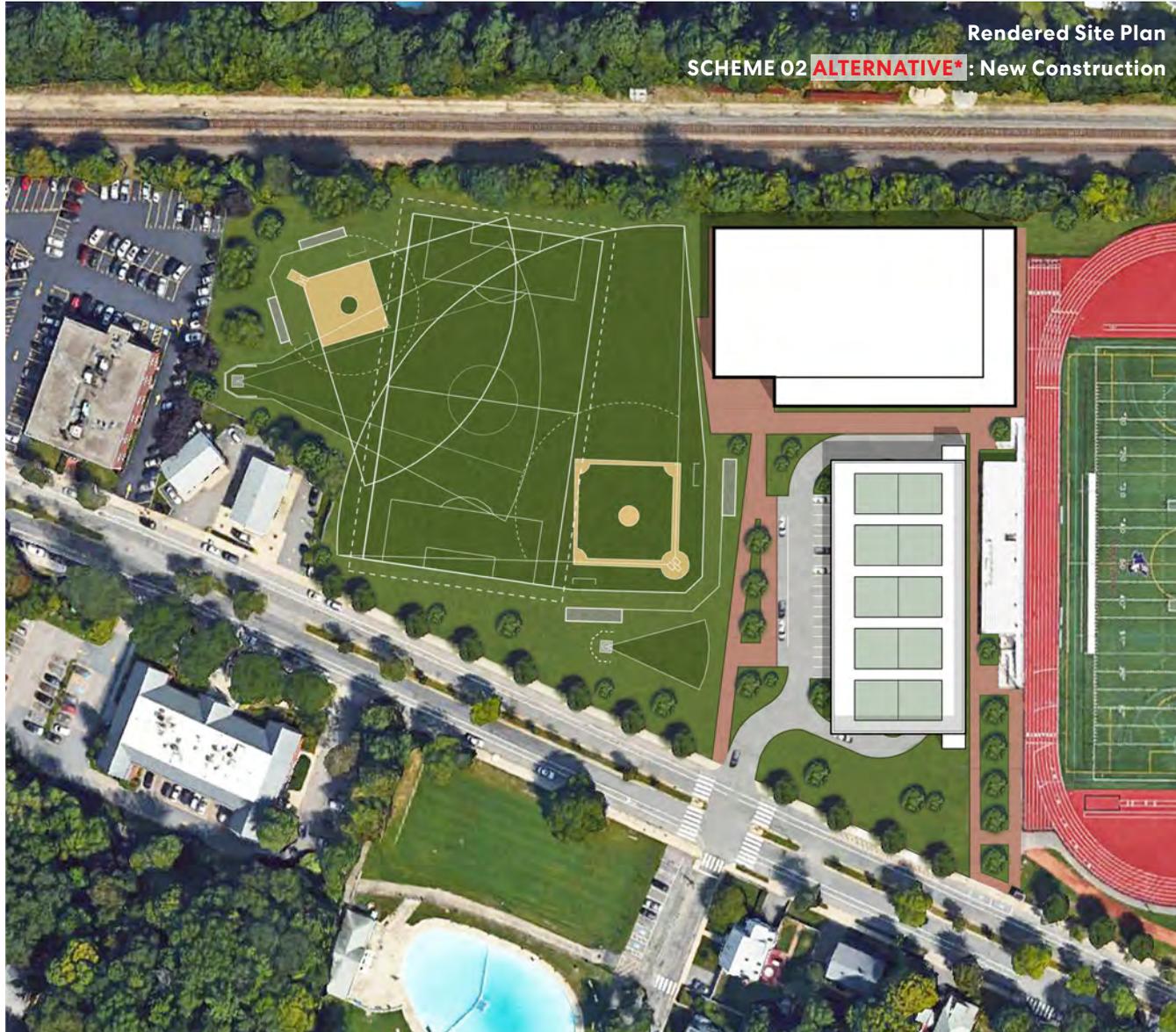
Aerial Rendering
SCHEME 02 **ALTERNATIVE*** : New Construction

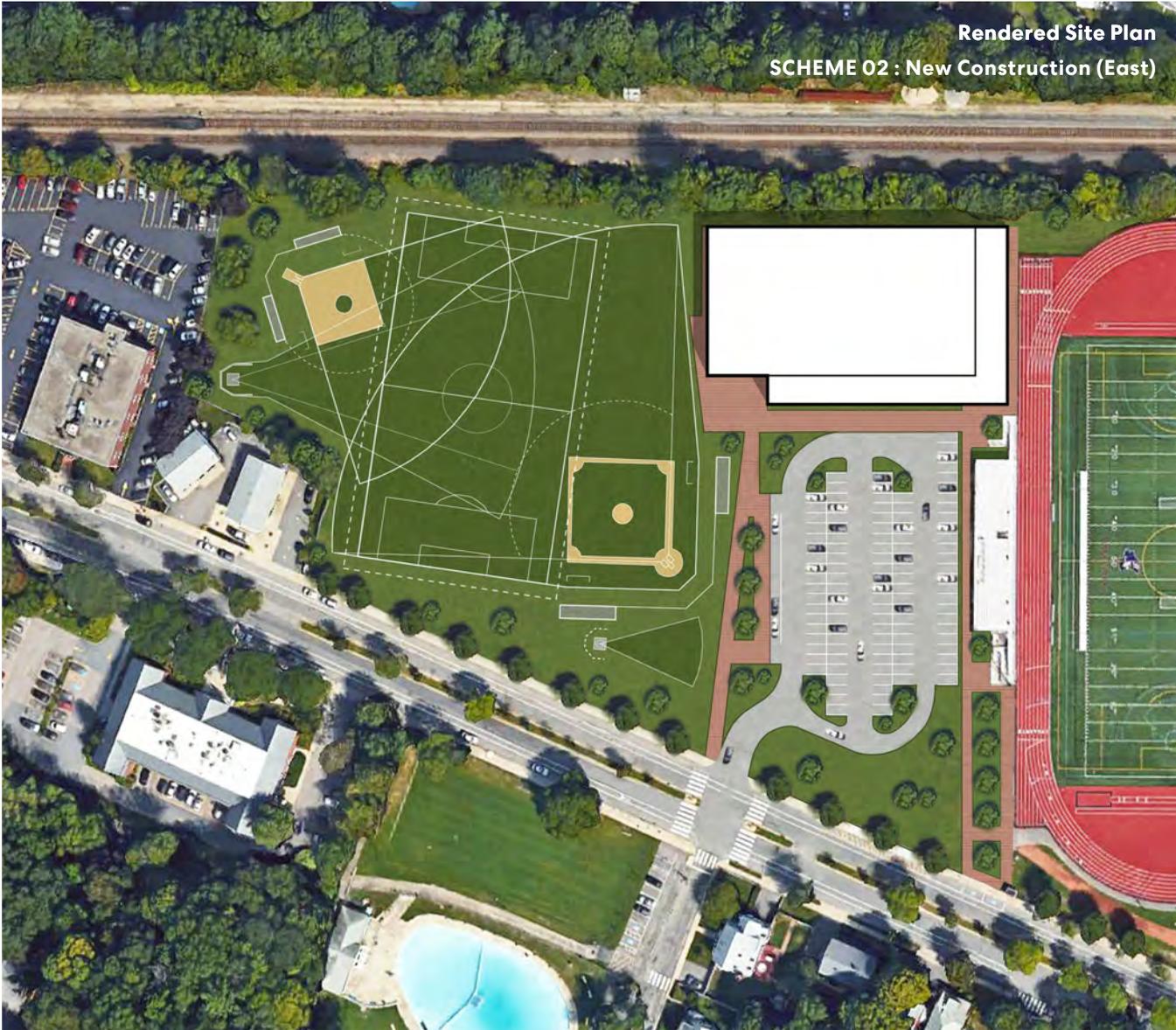


Aerial Rendering
SCHEME 02 : New Construction (East)



COMPARISON





Rendered Site Plan
SCHEME 02 : New Construction (East)



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