

BELMONT ICE RINK SITE STUDY

03.15.2021

SELECT BOARD JOINT
MEETING WITH THE
SCHOOL COMMITTEE

Perkins&Will



AGENDA

Belmont Ice Rink Site Study

I. Study Goals

II. Schedule & Meetings

III. Program Review

- Space Inventory
- Ice Rink Diagram (Optimal)
 - Precedents
- Field Diagrams & Parking

IV. Existing Conditions Analysis

V. Site Test Fits

- Renovation Option
- New Construction Options

PROJECT GOALS

1. New ice rink and reconfigured site (fields, parking, infrastructure, landscape and demolition of existing)
2. Renovation of existing rink with additions and reconfigured site as required
3. Develop site concept design that is responsive to towns/HS program and requirements
4. Conceptual cost estimate for future design and construction costs
5. Support preparation of future RFP

SCHEDULE & APPROACH

- **Stakeholders & Meetings** (who and when)

Town Administration, School Building Committee, and Town Representatives (operations, maintenance, high school, clubs/leagues, and special events)

1. February 23

- Goals, schedule confirmation, Site and program verifications

2. March 2

- Analysis, initial program inventory and site test fit alternatives (two approaches)

3. March 9

- Refinements of two alternatives – tennis possible

4. March 15

- Select Board Meeting with School Committee

5. March 23

- Refined preferred direction(s) and cost estimate

6. March 30

- Final report

PROGRAM REVIEW

Belmont Ice Rink

LOCAL/REGIONAL HIGH SCHOOL PLAY

MA North Division 1 Ice Hockey Standings

State: Massachusetts Season: Varsity 20-21 Teams in Division: 28

School Name	*W-L	*Pct.	*GF	*GA	W-L-T	Pct.	GF	GA	Strk
Belmont	3-0-1	0.875	7	3	4-0-2	0.833	11	5	2 W
Woburn Memorial	1-0	1.000	4	2	3-1-0	0.750	14	10	1 L
Reading Memorial	6-1-1	0.812	32	12	6-1-1	0.812	32	12	5 W
Melrose	2-1-1	0.625	13	13	2-1-1	0.625	13	13	1 L
Winchester	2-1	0.667	9	4	7-3-2	0.667	34	19	1 L
Arlington	4-3	0.571	20	12	4-5-1	0.450	26	24	1 L
St. John's	0-0	0.000	0	0	1-0-0	1.000	3	2	1 W
Andover	0-0	0.000	0	0	0-1-0	0.000	1	4	1 L
St. Mary's	0-0	0.000	0	0	0-1-1	0.000	7	9	1 L
Arlington Catholic	0-0	0.000	0	0	0-4-0	0.000	4	16	4 L
Chelmsford	0-0	0.000	0	0	0-0-0	0.000	0	0	0 0
Matignon	0-0	0.000	0	0	0-0-0	0.000	0	0	0
Revere	0-0	0.000	0	0	0-0-0	0.000	0	0	0 0
St. John's Prep	0-0	0.000	0	0	0-0-0	0.000	0	0	0 0
Westford Academy	0-0	0.000	0	0	0-0-0	0.000	0	0	0 0
St. Peter-Marian	0-0	0.000	0	0	0-0-0	0.000	0	0	0
Shrewsbury	0-0	0.000	0	0	0-0-0	0.000	0	0	0
Medford	0-0	0.000	0	0	0-0-0	0.000	0	0	0 0
Malden Catholic	0-0	0.000	0	0	0-0-0	0.000	0	0	0 0
Lexington	0-5	0.000	4	28	0-6-0	0.000	6	32	6 L
Burlington	0-3	0.000	4	11	0-3-0	0.000	4	11	3 L
Bishop Fenwick	0-0	0.000	0	0	0-2-0	0.000	1	7	2 L
Billerica Memorial	0-0	0.000	0	0	2-3-0	0.400	14	18	2 W
Central Catholic	0-0	0.000	0	0	1-0-0	1.000	4	1	1 W
Acton-Boxborough	0-0	0.000	0	0	3-1-0	0.750	12	10	3 W
Austin Prep	0-0	0.000	0	0	4-0-2	0.833	23	9	1 T

Massachusetts Middlesex Ice Hockey Standings

State: Massachusetts Season: Varsity 20-21 Teams in League: 13

School Name	*W-L	*Pct.	*GF	*GA	W-L-T	Pct.	GF	GA	Strk
Woburn Memorial	1-0	1.000	4	2	3-1-0	0.750	14	10	1 L
Belmont	3-0-1	0.875	7	3	4-0-2	0.833	11	5	2 W
Reading Memorial	6-1-1	0.812	32	12	6-1-1	0.812	32	12	5 W
Winchester	2-1	0.667	9	4	7-3-2	0.667	34	19	1 L
Melrose	2-1-1	0.625	13	13	2-1-1	0.625	13	13	1 L
Arlington	4-3	0.571	20	12	4-5-1	0.450	26	24	1 L
Wakefield Memorial	2-3	0.400	11	8	2-4-0	0.333	11	14	1 L
Stoneham	1-2-1	0.375	9	9	1-2-1	0.375	9	9	2 L
Watertown	2-4	0.333	12	21	2-4-0	0.333	12	21	1 L
Wilmington	0-1	0.000	1	3	0-1-0	0.000	1	3	1 L
Burlington	0-3	0.000	4	11	0-3-0	0.000	4	11	3 L
Lexington	0-5	0.000	4	28	0-6-0	0.000	6	32	6 L
Bishop Fenwick	0-0	0.000	0	0	0-2-0	0.000	1	7	2 L

* Denotes league data.

BURBANK ICE ARENA (READING, MA)

Massachusetts Middlesex League

Capacity: Unknown

Opened: 1994

Reading Memorial
High School



FIDELITY BANK ICE CENTER (WORCESTER, MA)

Local Precedents

Capacity: 250 seats

Worcester Academy High School

Opened: 2017



CRONIN ICE ARENA (REVERE, MA)

Local Precedents

Capacity: Unknown

Revere High School

Opened: 2017

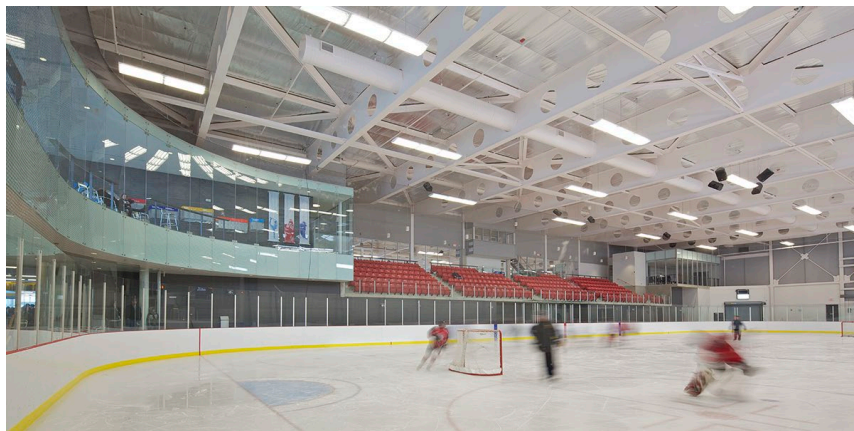


COMPARISON SHEET

Local Ice Rinks



Ice Rink Precedents



PROJECT PROGRAM

Proposed Ice Rink - 53,500 SF

Existing Ice Rink - 29,500 SF

Definitions

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

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

Net Assignable SF calculated if 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 if inclusive of surrounding exterior walls, interior walls, shafts, stair cases, elevator chases, general circulation etc.

Division / Space Type		SPACE PROGRAM						Comments
		GCC sq ft	Qty	Net Area/Unit (sq.ft)	Net Area (sq.ft)	Efficiency Factor	Net Assignable Area (sq.ft)	
Arena								
	Recommended NFHS rink		1	17,000	17,000	1.00	17,000	200' x 85'
	Benches Boxes & Apron		2	6,135	12,270	1.00	12,270	team benches, penalty box, timekeeper, circulation
	Home Locker Rooms	40	4	1,200	4,800	1.11	5,328	30" wide bench & shelf, includes wet area, JV and V, 35 F and 45 M ea
	Field Sport Locker Rooms	75	2	2,000	4,000	1.11	4,440	24" wide lockers, includes wet area, 75 F and 75 M
	Visitor Locker Rooms	40	2	680	1,360	1.11	1,510	benches and hooks, includes wet area, 35 F and 45 M
	Referee/Coaches Locker Room	4	2	280	560	1.11	622	lockers and 2 inclusive change rooms ea
	Family Locker Room	4	1	280	280	1.11	311	lockers and 2 inclusive change rooms ea
	Spectator Seating Area	175	1	1,400	1,400	1.00	1,400	rink or second 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	ice melt pit, zamboni
	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				42,785		44,063	
	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				44,385		45,663	

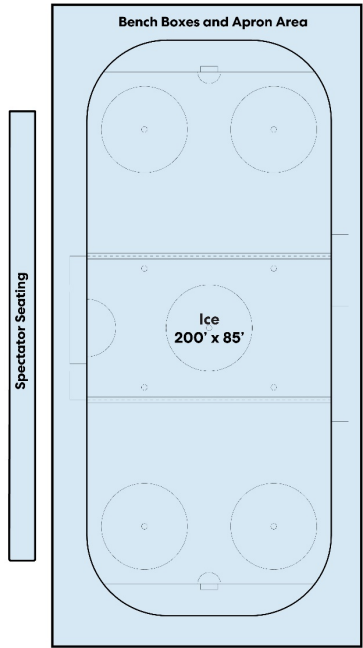
Division / Space Type		SPACE PROGRAM						Comments
		GCC sq	No.	Net Area/Unit (sq.ft)	Net Area (sq.ft)	Efficiency Factor	Net Assignable Area (sq.ft)	
Public and Support Spaces								
	Main Lobby		1	300	300	1.00	300	
	Reception Counter and Support		1	80	80	1.11	89	information and entry control
	Warm 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 refrigerator, field access
	Public Space Area Totals				1,380		1,466	
	Facility General Storage		1	100	100	1.00	100	
	Junk/raffal Supply Closet		2	50	100	1.00	100	
	Recycling/Garbage		1	100	100	1.00	100	LEED requirement
	Inclusive WC		1	64	64	1.11	71	
	Public Restrooms		2	300	600	1.11	666	spectator use, field access
	IT Server Closet		1	50	50	1.00	50	
	Support Area Totals				1,014		1,087	
	Assigned Area Sub-Total				2,364		2,553	

Division / Space Type		SPACE PROGRAM SUMMARY						Comments
		Qty	Nr.	Net Area/Unit (sq ft)	Net Area (sq ft)	Efficiency Factor	Net Assignable Area (sq ft)	
	Arena				44,385		45,663	
	Public and Support Spaces				2,364		2,553	
	Subtotal				46,749		48,215	
	Total Building Gross Floor Area					1.11	53,519	90% building efficiency

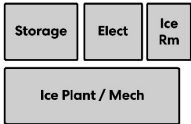
RINK PROGRAM

Building Components

SINGLE ICE SHEET & SEATING



ICE SUPPORT



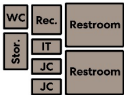
LOCKER ROOMS








LOBBY AMENITIES

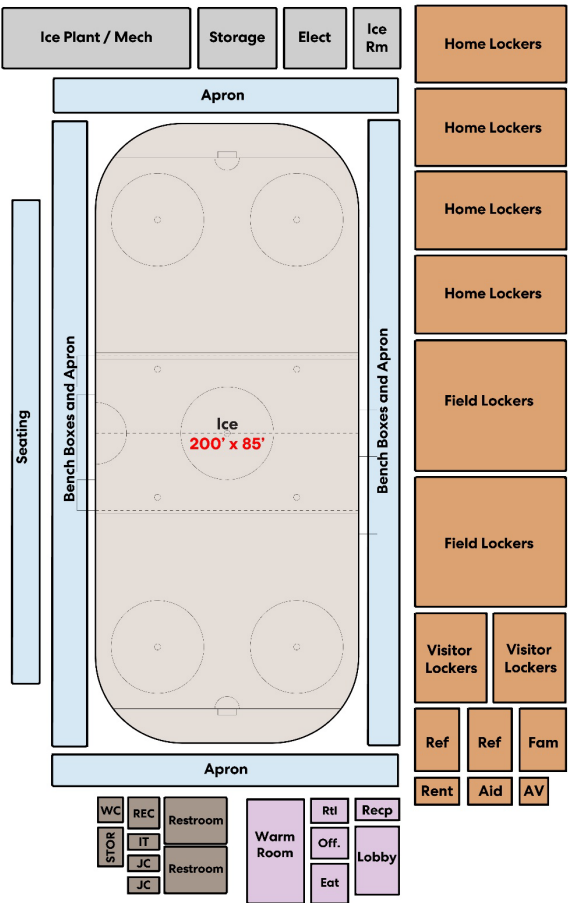


LOBBY SUPPORT



PROJECT PROGRAM
Space Adjacency

-  **Single Ice Sheet**
-  **Locker Rooms**
-  **Team Benches / Seating / Apron**
-  **Lobby / Amenities**
-  **Support / Mech.**



Ice Rink Precedents

Summer/Multipurpose Use



SITE PROGRAM

A. Baseball (1)

- Size – Jr. Varsity/HFHS

B. Softball (1)

- Size – Jr. Varsity/HFHS

C. Soccer (1)

- Size – Jr. Varsity/HFHS

D. Throwing Area (Track & Field)

- Discus
- Shot put

E. Tennis (5)

- HFHS - three singles + two doubles (7 players)

E. Spectator Amenities

- See ice rink program

F. Storage

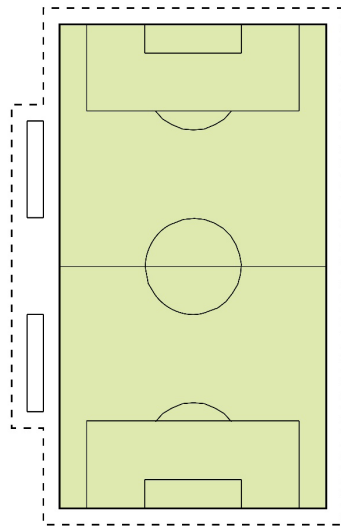
- Equipment, goals, fencing

G. Parking (110)

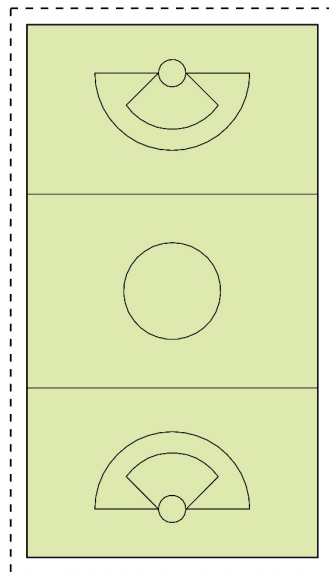
- 90 (students)
- 20 (day use/rink)

PROJECT PROGRAM

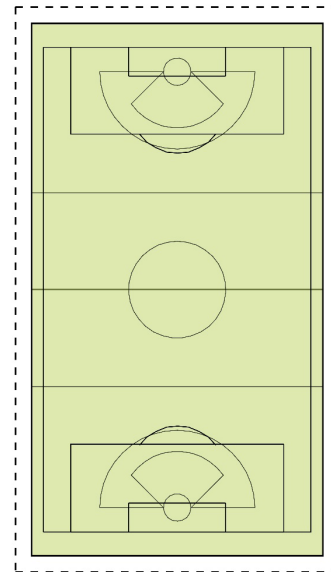
Hybrid Field Solution



SOCCER FIELD
MIN 165' X 300'



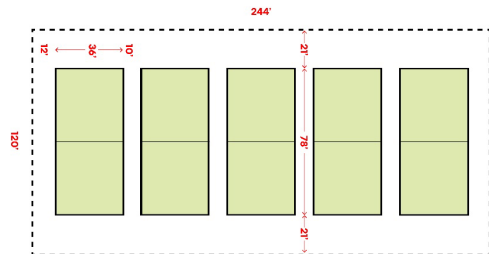
LACROSSE FIELD
180' X 330'



HYBRID FIELD
SOCCER (MIN) 165 X 300'
LACROSSE 180' X 330'

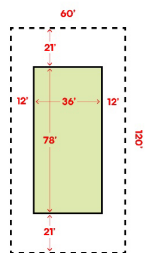
PROJECT PROGRAM

Baseball / Softball Layouts (per NFHS)



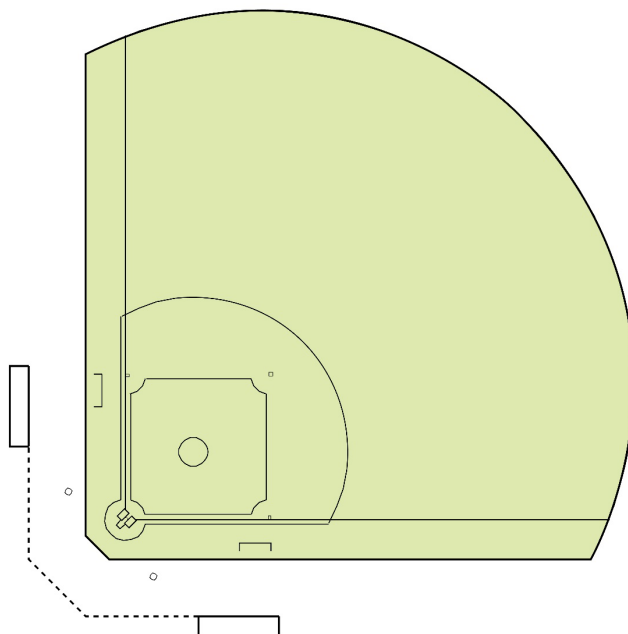
TENNIS COURTS (COMPETITION)

120' x 244'



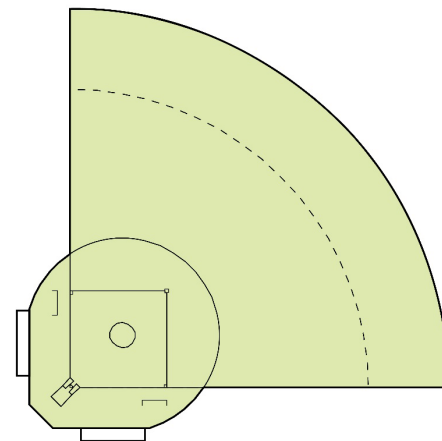
SINGLE TENNIS COURT

120' x 60'



BASEBALL FIELD

NFHS : 300' (FOUL LINE) , 350' (CENTER FIELD)



SOFTBALL FIELD

**NFHS (FAST PITCH): FOUL LINE (185'-235'),
CENTER FEILD (185'-350')**

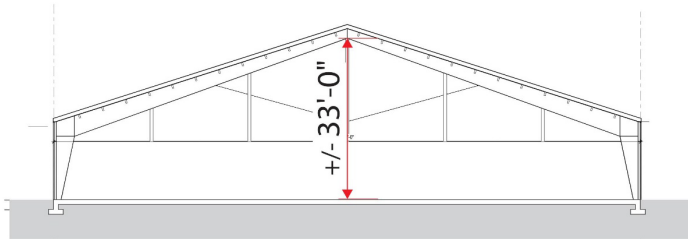
EXISTING ANALYSIS

Belmont Ice Rink

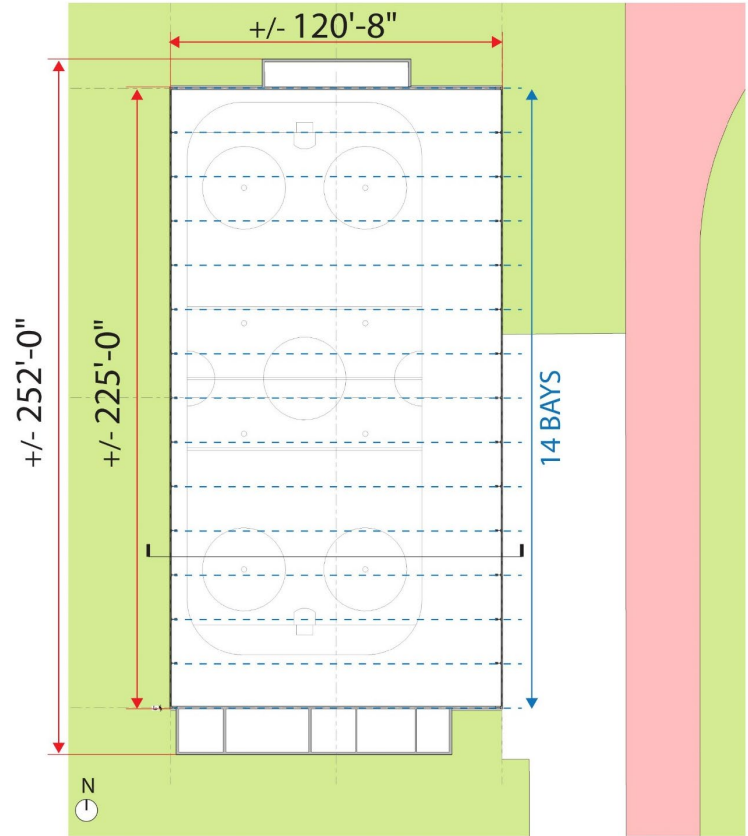
EXISTING ICE RINK

Building Footprint – 29,500 SF

- Not climate controlled
- No mechanical ventilation
- Exterior enclosure failing and 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 be updated
- Beyond expected life-span

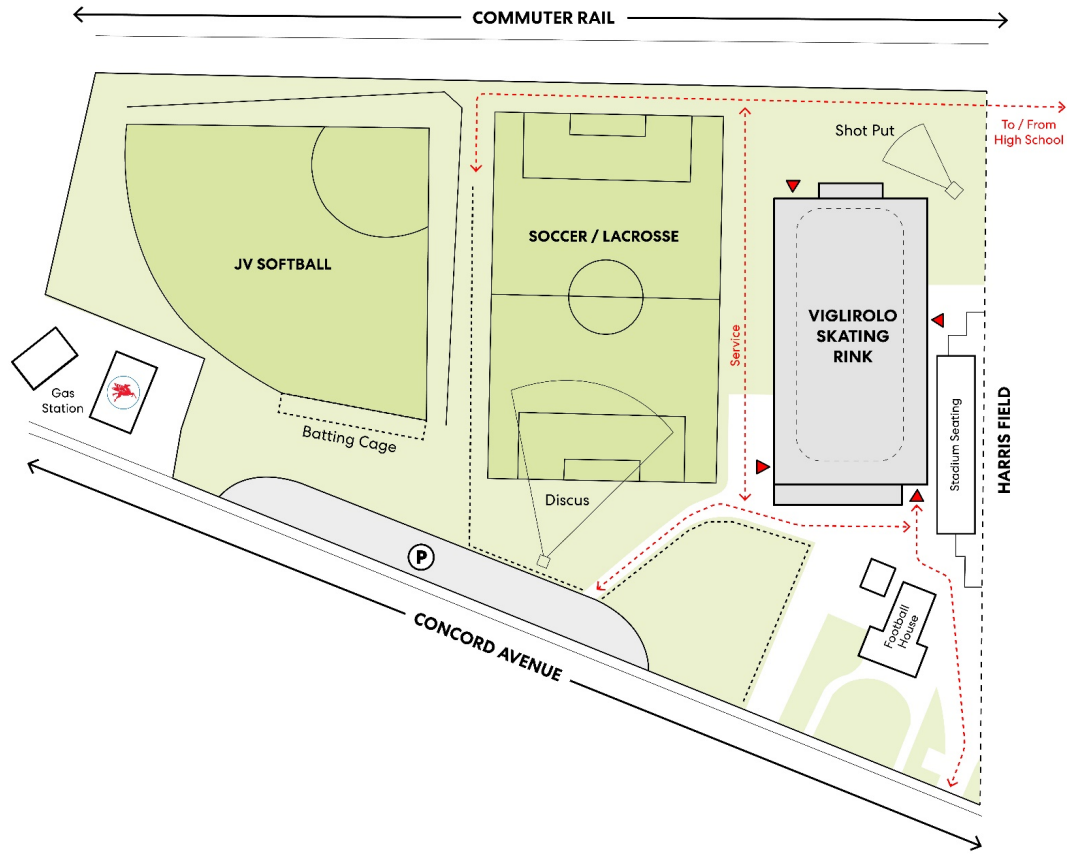


EAST WEST SECTION



PLAN

SITE ANALYSIS
Existing Site Area



TEST FITS

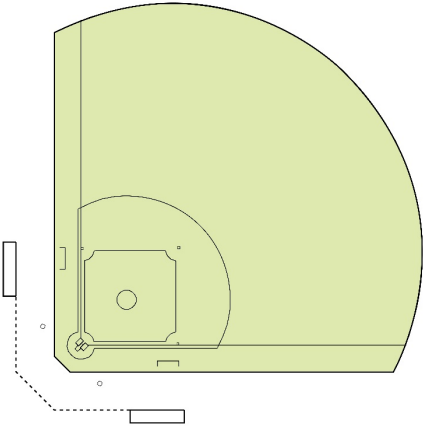
Belmont Ice Rink

SITE DESIGN DRIVERS

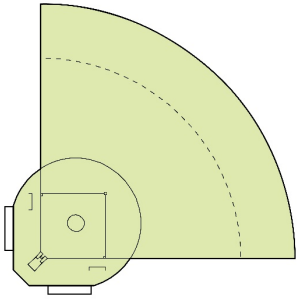
1. Identify largest contiguous field area
2. Preferred field orientation (foul balls, player safety)
3. Consolidated and efficient parking
4. Clear drop-off and pick-up for rink, fields and stadium
5. Limit building frontage to Concord Ave.
6. Improve relationship to existing stadium
7. Shared program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

SITE ANALYSIS

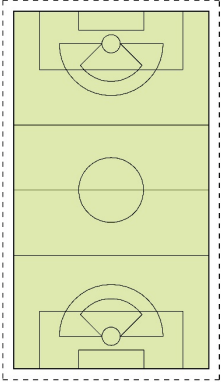
Required Site Program



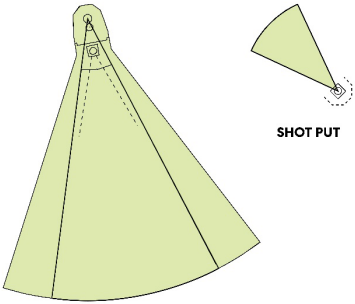
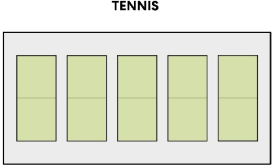
BASEBALL FIELD
NFHS : 300' (FOUL LINE) , 350' (CENTER FIELD)



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



HYBRID FIELD
SOCCER 180' X 330'
LACROSSE 180' X 330'



DISCUS

SITE PRECEDENTS

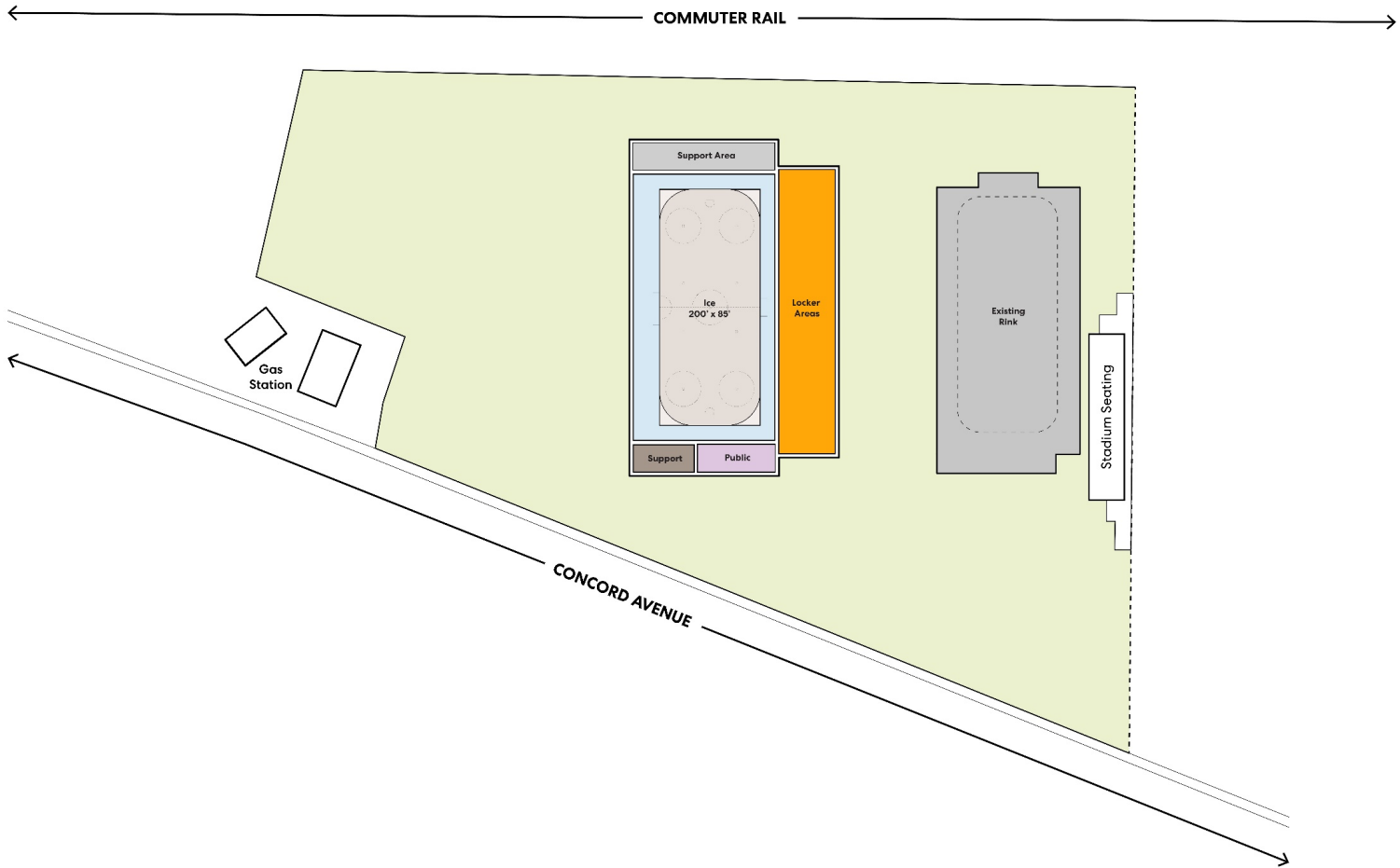
Overlapping Fields

Belmont Hill High School



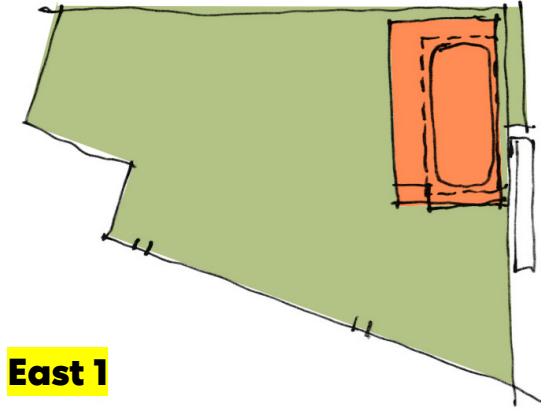
SITE ANALYSIS

Rink Program on Site – Existing vs. Proposed

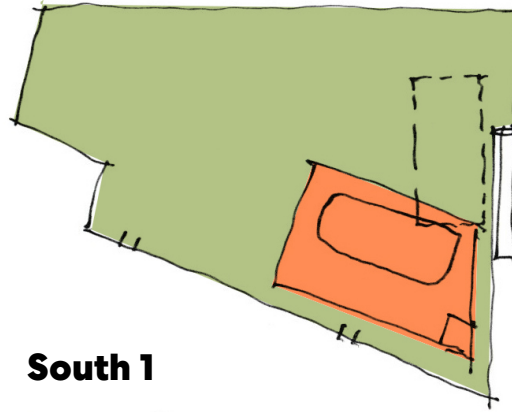


TEST FIT

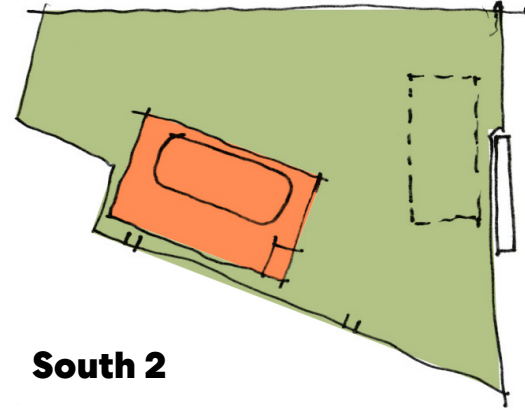
New & Renovation – Building Locations



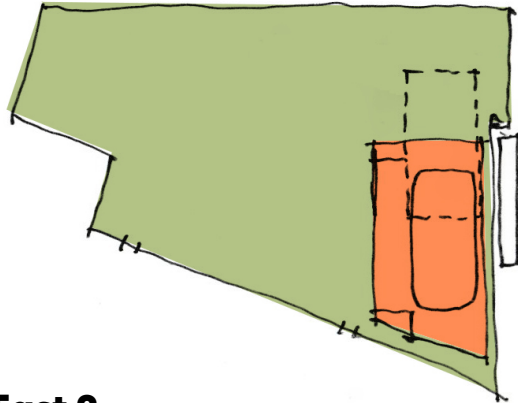
East 1



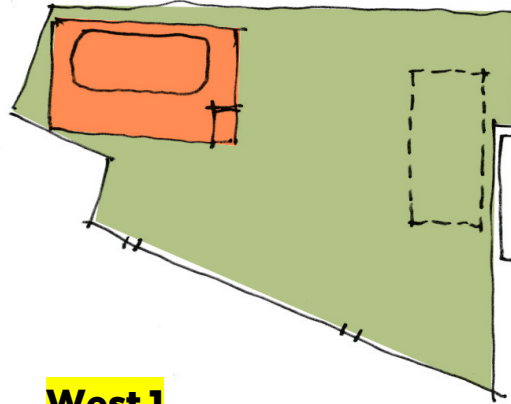
South 1



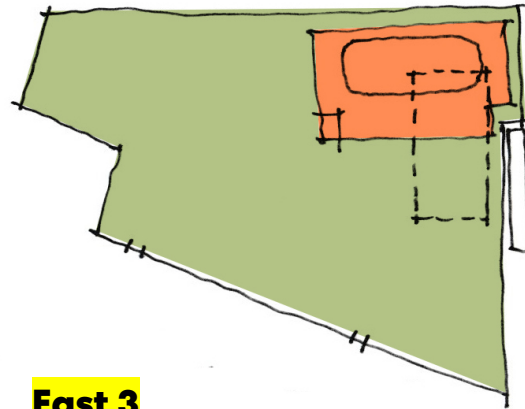
South 2



East 2



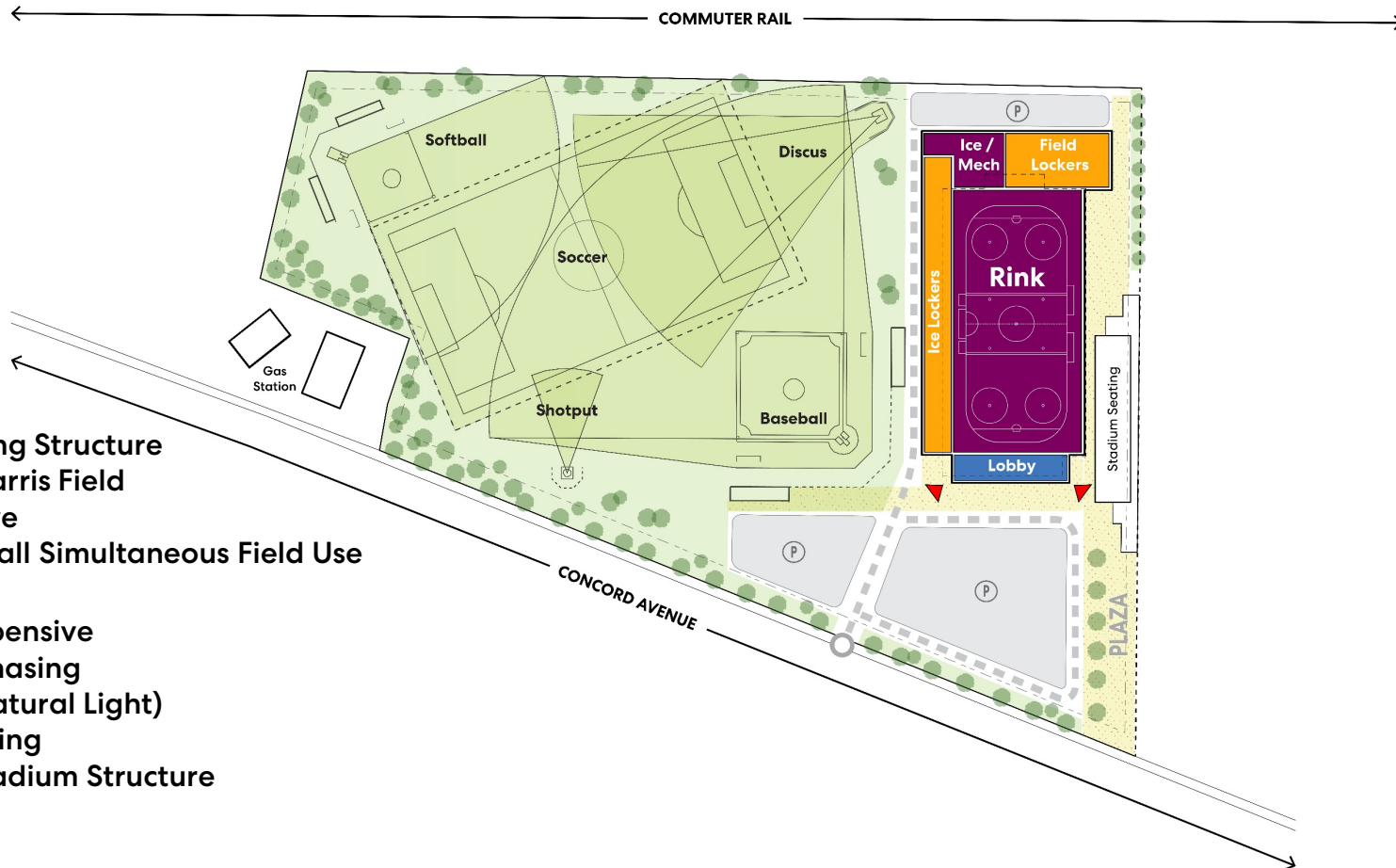
West 1



East 3

TEST FIT

Renovation – East



PROS

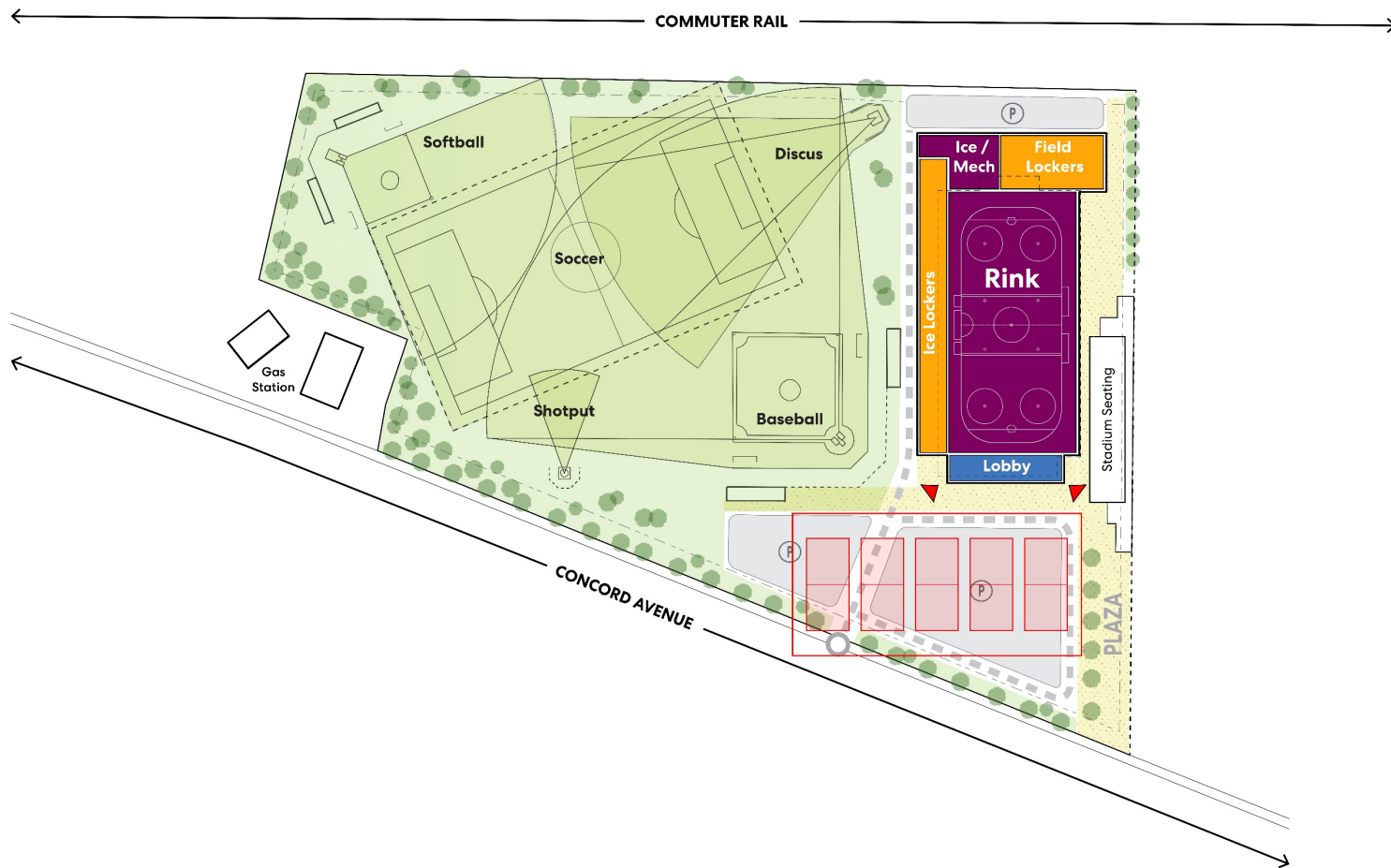
- Reuse Of Existing Structure
- Proximity To Harris Field
- Off Concord Ave
- Softball/Baseball Simultaneous Field Use

CONS

- Likely More Expensive
- Construction Phasing
- Orientation (Natural Light)
- Inefficient Parking
- Proximity to Stadium Structure

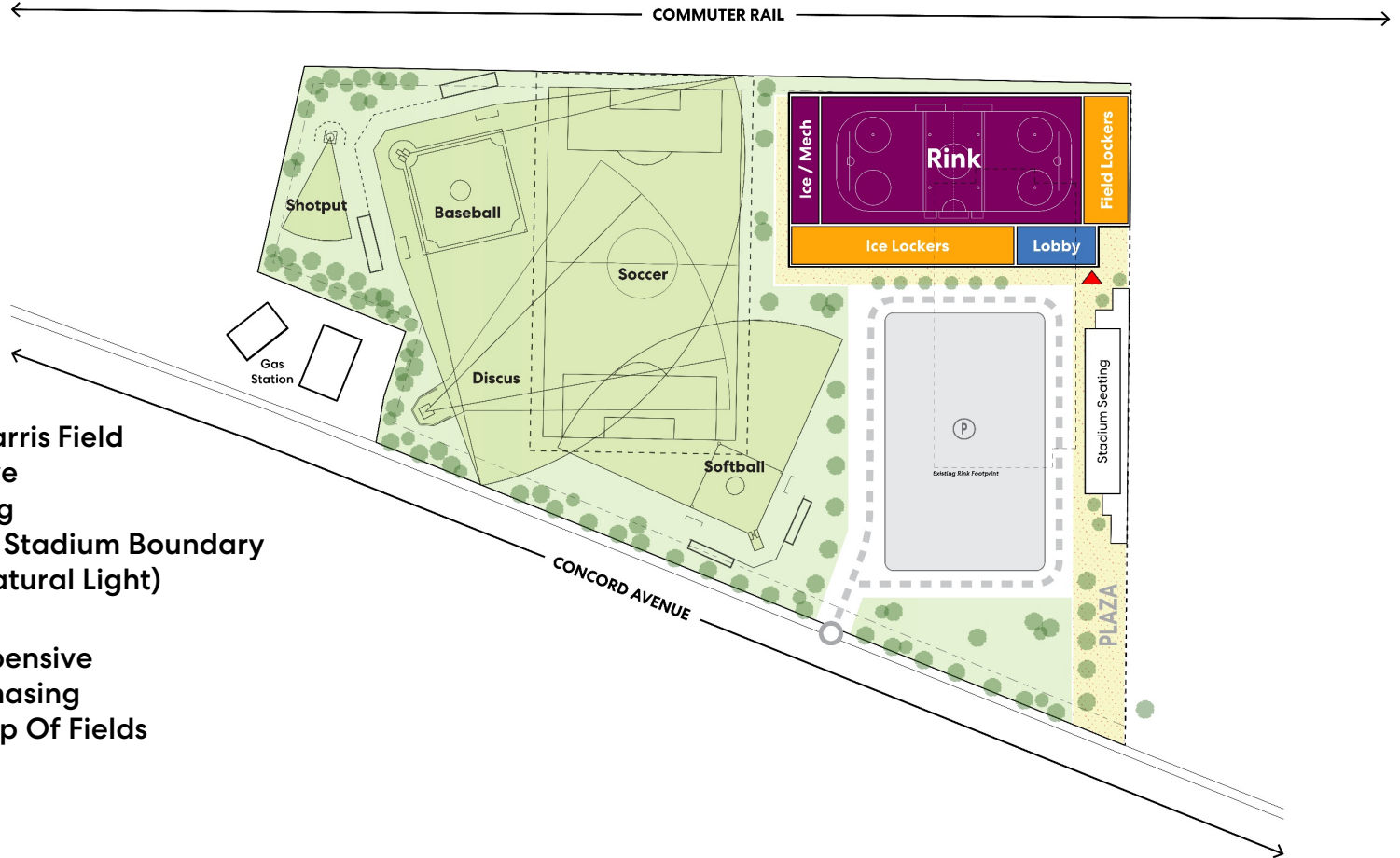
TEST FIT

Renovation – East (tennis overlay)



TEST FIT

New Construction – East



PROS

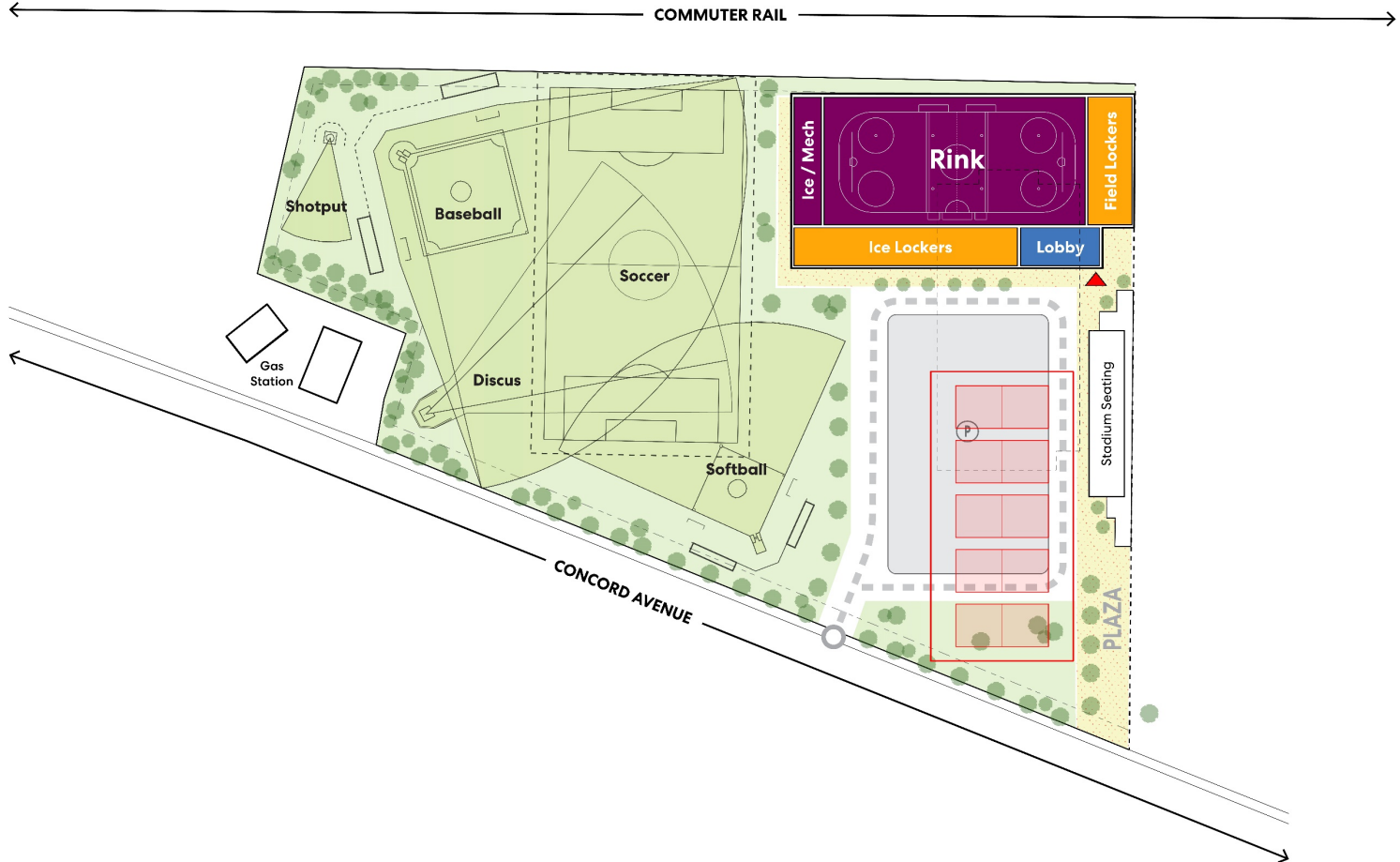
- Proximity To Harris Field
- Off Concord Ave
- Efficient Parking
- Relationship to Stadium Boundary
- Orientation (Natural Light)

CONS

- Likely More Expensive
- Construction Phasing
- Greater Overlap Of Fields

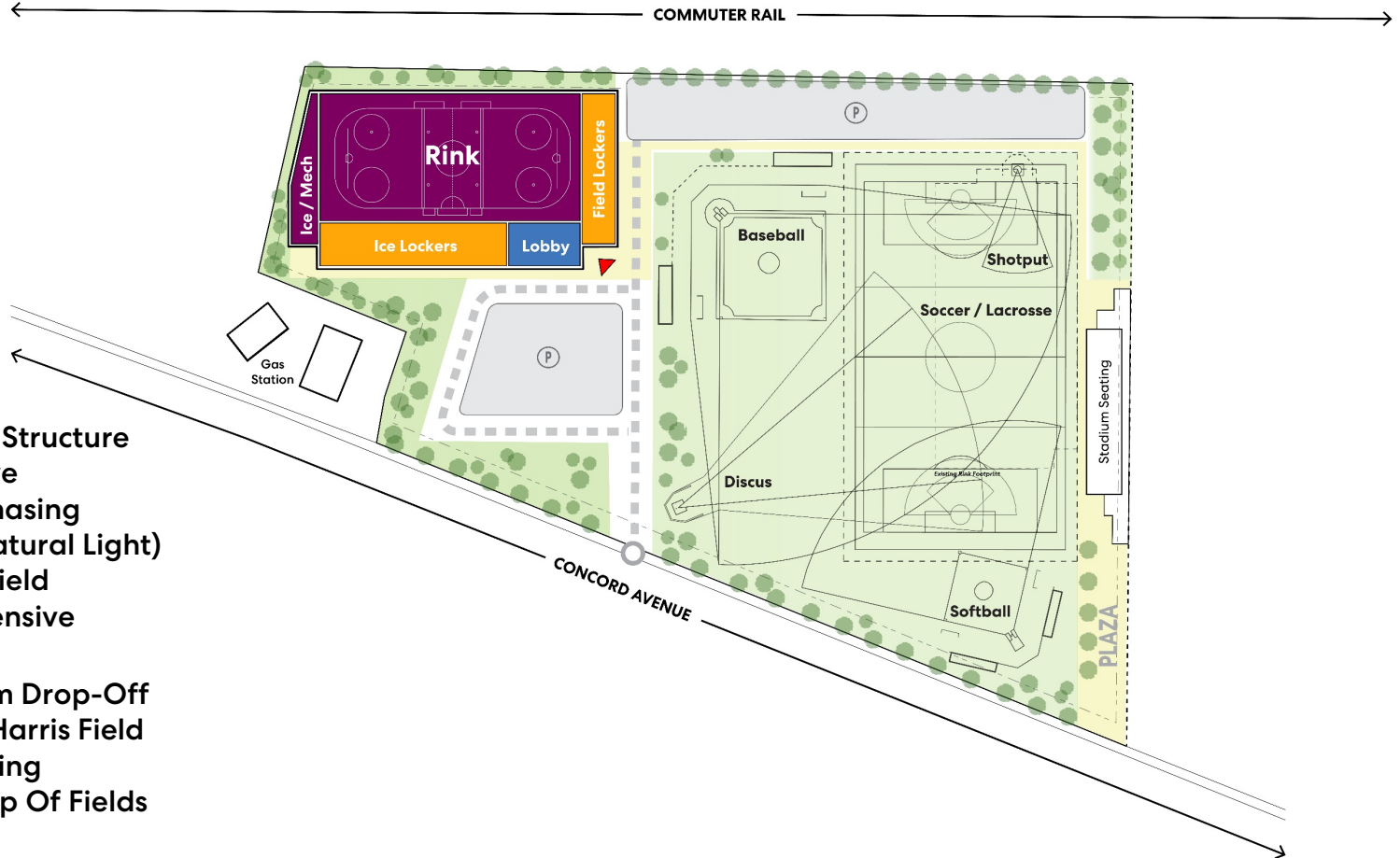
TEST FIT

New Construction – East (tennis overlay)



TEST FIT

New Construction – West



PROS

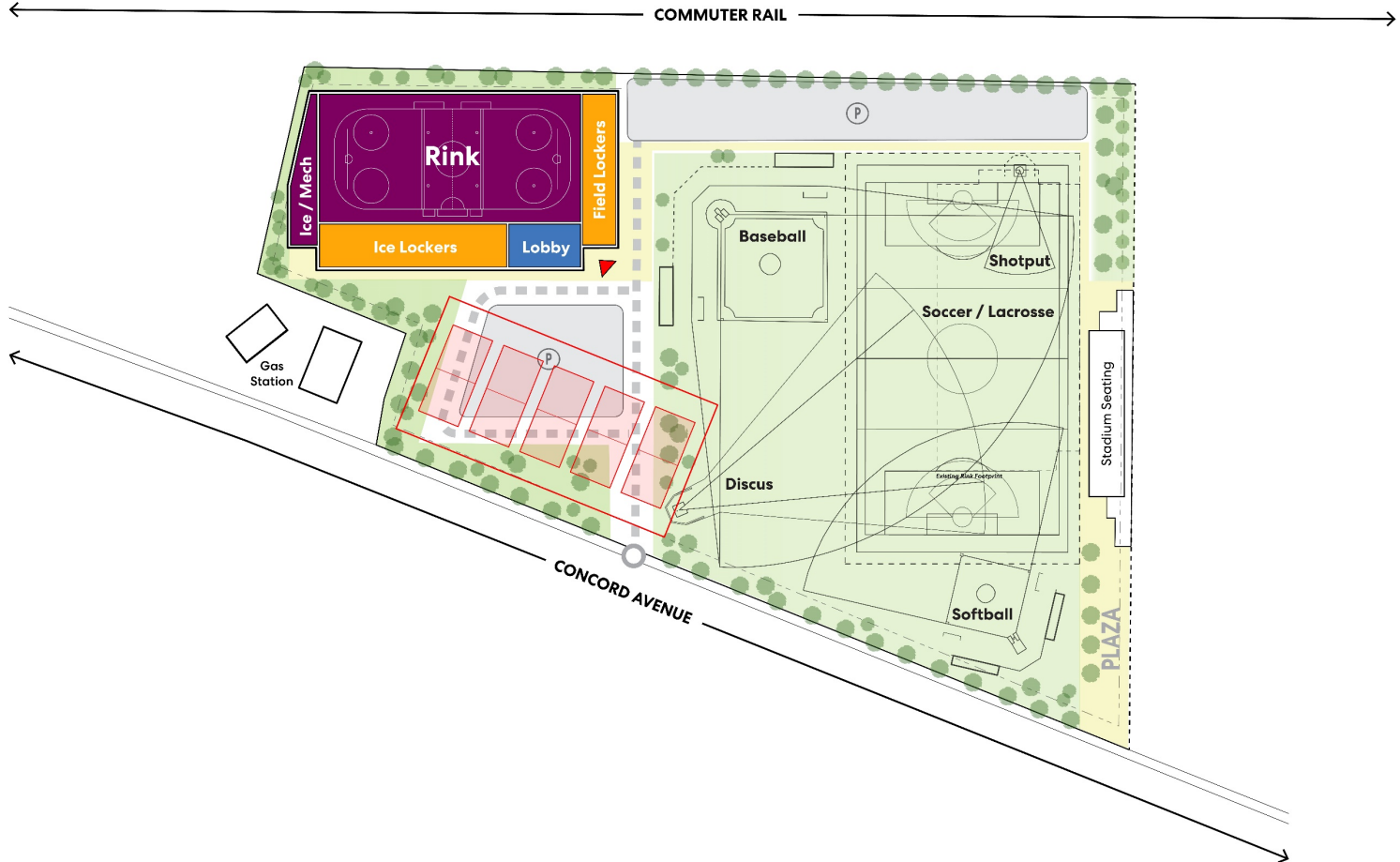
- Use Of Existing Structure
- Off Concord Ave
- Construction Phasing
- Orientation (Natural Light)
- Larger Soccer Field
- Likely Less Expensive

CONS

- Limited Stadium Drop-Off
- Farthest From Harris Field
- Inefficient Parking
- Greater Overlap Of Fields

TEST FIT

New Construction – West (tennis overlay)



BELMONT ICE RINK SITE STUDY