

Rink Building Project Budget Updates

May 13: Select Board Discussion
How did we get here?

May 20: Select Board Discussion
Rink Options

May 22: Rink Public Forum

Agenda

- Project Budget Phases and Timeline
- Cost Drivers
- Actions Taken to Control Cost
- Building Design Options
- Climate Impact Considerations
- Next Steps

Municipal Building Project Phases

Phases

- Hire Project Team – architect, owners project manager (OPM), and construction firm (CM)
- Feasibility Study – high-level options that determine if the project is feasible
- Schematic Design (SD) – conceptual drawings
 - High level estimate
 - *Value engineering – redesign to reduce cost*
- Funding
- Design Development (DD) – complete the design
- **Construction Documents (CD) – complete detail & drawings for bid process**
 - Milestones at multiple levels of completion: 30%, 50%, 100%
 - Create detailed cost estimate(s)
 - *Value Engineering – redesign to reduce cost*
- Solicit bids and award contracts for contractors and/or subcontractors
- Begin construction

CURRENT



Project Budget Timeline

March 2023	Schematic Design High level project pricing – \$29.9M
April 2023	Town Meeting approval
May 2023	Construction Manager (contractor) bid process • Confirmed project buildable at \$29.9M in projected timeline
Sept 2023	Construction Documents @ 30% • Formal cost estimate (Skanska) based on CD 30% – \$29.9M
Jan 2024 Feb 2024	Construction Documents @ 50% • Preliminary price check estimate (Skanska) based on CD 50% – \$35.1M • Needed validation of estimate with CD @ 100%
Feb 2024 April 2024	Construction Documents @ 100% • Formal cost estimates from two independent estimators (Skanska / Talevi & Haesche) – \$34.4M

What Changed?

Cost Drivers:

1. Regulatory issues
2. Site complications
3. Schedule delays
4. Materials & labor cost

Cost Drivers

COST DRIVERS

1. Regulatory requirements

2. Site complications

3. Schedule impact

4. Materials & labor cost

Examples of Regulatory Requirements

Recent regulatory changes made it necessary to replace some building systems and make significant revisions to the site plans during the construction document phase, adding cost to the project.

1. Imminent ban on ice-making refrigerant Freon R-410
 - Alternative A: Replace with CO2 \$650K
Regulatory environment moving toward requiring CO2
Global warming potential = 1 (gold standard)
 - Alternative B: Replace with Freon R-454 \$300K
However, future ban on all Freon is expected
Global warming potential = 466 (negative)
2. Compliance with Mass DEP and EPA stormwater regulations including site enabling for new Electric, Fire Protection and Water Service \$700K

Cost Drivers

COST DRIVERS

1. Regulatory requirements
2. Site complications
3. Schedule impact
4. Materials & labor cost

Examples of Site Complications

The rink is located on a very challenging site – constrained on three sides by the MBTA and playing fields, with soil and demolition conditions that were worse than expected, and a complex infrastructure feeding the west side of the campus (including Harris Field).

1. Underground oil tank leak & water main break – \$120K
2. Site-specific stormwater system, New Electric service to rink, Harris Field and Softball field. New water service requiring connection to Main beneath Concord Ave.
3. Asbestos under rink pad not discoverable with preliminary test pits – \$200K
4. Additional pavement for expanded access for fire equipment

Cost Drivers

COST DRIVERS

1. Regulatory requirements

2. Site complications

3. Schedule impact

4. Materials & labor cost

Examples of Schedule Impact

The initial project schedule was ambitious and faced numerous unexpected events and complications that combined to delay the completion of the project design and impede progress on early stages of site preparation.

1. Desire to impact only one school year produced ambitious project schedule
2. Every month of schedule delay = \$150K
 - Cost is a combination of escalation, fees to project team, insurance, etc.
 - 7-month delay = \$1M+
3. Sources of schedule delays:
 - Asbestos remediation
 - Oil tank leak & water main break
 - Site Design
 - White Field House demolition
 - Regulatory approvals
 - Completion of construction documents

Cost Drivers

Examples of materials & labor cost

Inflation of the cost of materials, as well as engineering and design modifications identified during development of the construction documents, required material and labor increases in many of the construction trades.

COST DRIVERS

1. Regulatory issues

2. Site complications

3. Schedule impact

4. Materials & labor cost

1. Concrete – inflation & add'l requirements @ 100% CD – \$550K

2. Masonry – inflation & add'l requirements @ 100% CD – \$450K

3. Sitework – inflation & add'l requirements @ 100% CD – \$700K

4. General Requirements and Overhead Costs @ 100% CD

Estimate Comparison – Trade Cost

	Amount from SKA 9/11/23 Estimate	Average 4/22/24 Reconcilled Estimates	Delta from SKA 9/11/23 to 4/22/24 Estiamte
Construction Trade Costs			
General Requirements (including fencing, surveying)	\$ 343,215	\$ 1,145,250	\$ 802,035
Demolition (including Haz Mat)	\$ 233,335	\$ 582,968	\$ 349,633
Concrete	\$ 1,111,163	\$ 1,676,100	\$ 564,937
Masonry	\$ 668,037	\$ 1,061,591	\$ 393,554
Structural Steel (not PEMB) & Misc. Metals	\$ 318,886	\$ 224,348	\$ (94,539)
Millwork	\$ 176,464	\$ 86,800	\$ (89,664)
Roofing (not PEMB) & Waterproofing	\$ 528,094	\$ 540,803	\$ 12,709
Exterior Siding (not PEMB)	\$ 694,995	\$ 263,800	\$ (431,195)
Drywall, Glass, Doors, Finishes, and other	\$ 1,213,186	\$ 1,151,850	\$ (61,337)
Lockers	\$ 171,186	\$ 79,100	\$ (92,086)
Hockey, Athletic, and Food Service Equipment	\$ 440,684	\$ 32,625	\$ (408,059)
Fixed Seating	\$ 135,181	\$ 420,757	\$ 285,576
Rink Refrigeration System (Based on R410 Freon)	\$ 2,221,399	\$ 3,035,502	\$ 814,103
Pre-engineered Metal Building	\$ 2,695,333	\$ 2,907,000	\$ 211,667
Fire Protection	\$ 541,991	\$ 483,237	\$ (58,755)
Plumbing	\$ 593,996	\$ 925,598	\$ 331,602
HVAC	\$ 2,115,699	\$ 1,586,766	\$ (528,933)
Electric (including PV)	\$ 3,218,175	\$ 3,621,737	\$ 403,562
Telecommunications, AV Systems, and Security	\$ -	\$ 313,004	\$ 313,004
Site Enabling and Trailor Enabling	\$ 870,623	\$ 922,000	\$ 51,377
Sitework	\$ 1,870,075	\$ 2,542,673	\$ 672,598
Landscaping & Site Improvements	\$ 112,053	\$ 155,700	\$ 43,647
Construction Trade Totals	\$ 20,273,770	\$ 23,759,206	\$ 3,485,436

Estimate Comparison – Overhead and Project Costs

	Amount from SKA 9/11/23 Estimate	Average 4/22/24 Reconciled Estimates	Delta from SKA 9/11/23 to 4/22/24 Estimate
CM Oversight / OH Costs			
Bonding	\$ 175,989	\$ 211,635	\$ 35,646
CCIP / GL Insurance	\$ 305,452	\$ 825,218	\$ 519,766
Subcontractor Default Insurance (SDI)	\$ 175,930	\$ 198,747	\$ 22,817
General Conditions	\$ 1,299,200	\$ 1,628,314	\$ 329,114
Preconstruction Fee	\$ 119,382	\$ 320,655	\$ 201,273
CM Fee, 2.25%	\$ 542,433	\$ 621,947	\$ 79,514
CM Contingency, 3%	\$ 608,213	\$ 740,753	\$ 132,540
Escalation Contingency	\$ -	\$ 689,000	\$ 689,000
Builder's Risk Ins	\$ -	\$ -	\$ -
Design Contingency	\$ -	\$ -	\$ -
Overhead Cost Totals	\$ 3,226,599	\$ 5,236,267	\$ 2,009,668
CM Totals with Trades and OH	\$ 23,500,369	\$ 28,995,473	\$ 5,495,104
All Other Project Costs			
Design Services - TGAS	\$ 2,675,000	\$ 2,675,000	\$ -
OPM Services - CHA	\$ 906,000	\$ 906,000	\$ -
Legal	\$ 30,000	\$ 30,000	\$ -
Builder's Risk Insurance	\$ 100,000	\$ 50,000	\$ (50,000)
Geo Technical Services	\$ 50,000	\$ 50,000	\$ -
Site Survey	\$ 18,000	\$ 18,000	\$ -
Utility Co. Fees	\$ 25,000	\$ 25,000	\$ -
Testing Services	\$ 100,000	\$ 100,000	\$ -
FF&E & Technology / IT	\$ 150,000	\$ 150,000	\$ -
Extended Services, Redesign - Allowance	\$ -	\$ 250,000	\$ 250,000
Soft Cost Totals	\$ 4,054,000	\$ 4,254,000	\$ 200,000
Owners Contingencies			
Design Contingency	\$ 1,369,419	\$ -	\$ (1,369,419)
Owner's Construction Contingency	\$ 1,053,679	\$ 1,053,679	\$ -
Cost Escalation	\$ -	\$ -	\$ -
Owner Contingency Totals	\$ 2,423,098	\$ 1,053,679	\$ (1,369,419)
Project Totals	\$ 29,977,467	\$ 34,303,152	\$ 4,325,685

Actions Taken to Control Cost

1. Value engineering & design changes (update on May 20)
2. Simplification of design to reduce probability of complications
3. Line-by-line review of construction documents and schedule by full project team
4. Additional controls and deadlines for project team partners
5. Increasing Owner's Contingency reserve by \$500K for a total of \$1.55M

Rink Project Value Engineering Efforts

- Value Engineering (VE) is the process of exhaustively reviewing the design to identify changes that can reduce the cost of the project.
- VE reductions can include things like the substitution of materials, revising the approach to construction, or eliminating project features or functionality.
- VE is part of every building project, typically at least twice – during the schematic design (SD) and 100% construction documents (CD) phases.

Examples of Value Engineering Cost Reductions for Rink Project

Reduce size of lobby and eliminate outdoor entry colonnade

Revise roof insulation (same functionality with lower cost)

Reduce pavement by relocating rear exit

Reuse existing rink scoreboard and WFH lockers

Adjust schedule to remove need for temporary dehumidification system

Build rink with PV-ready systems and roof support, but postpone panel installation (*Currently working with Belmont Light to explore options*)

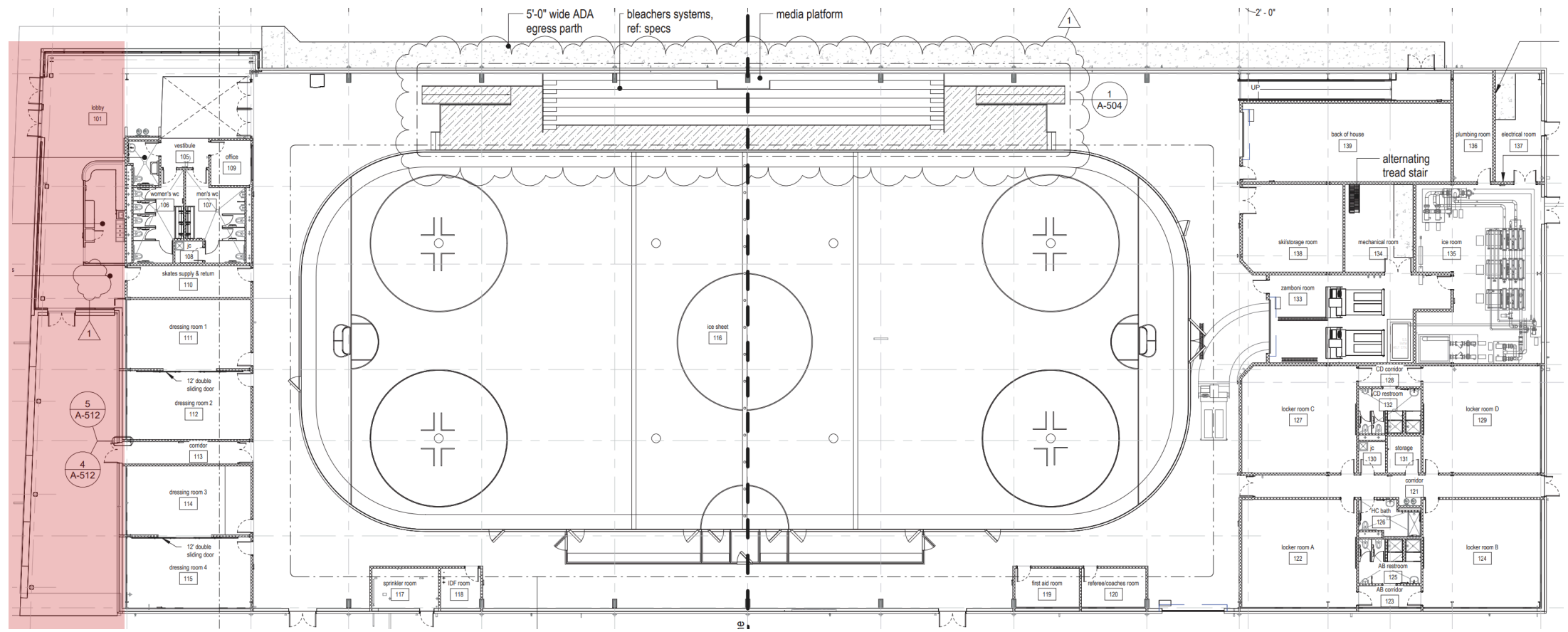
Rink Building Committee VE efforts will develop two options for community consideration:

- “Option A” (\$32.0 M) – requiring additional funding from Town Meeting
- “Option B” (\$29.9 M) – using existing project funding

Original Design

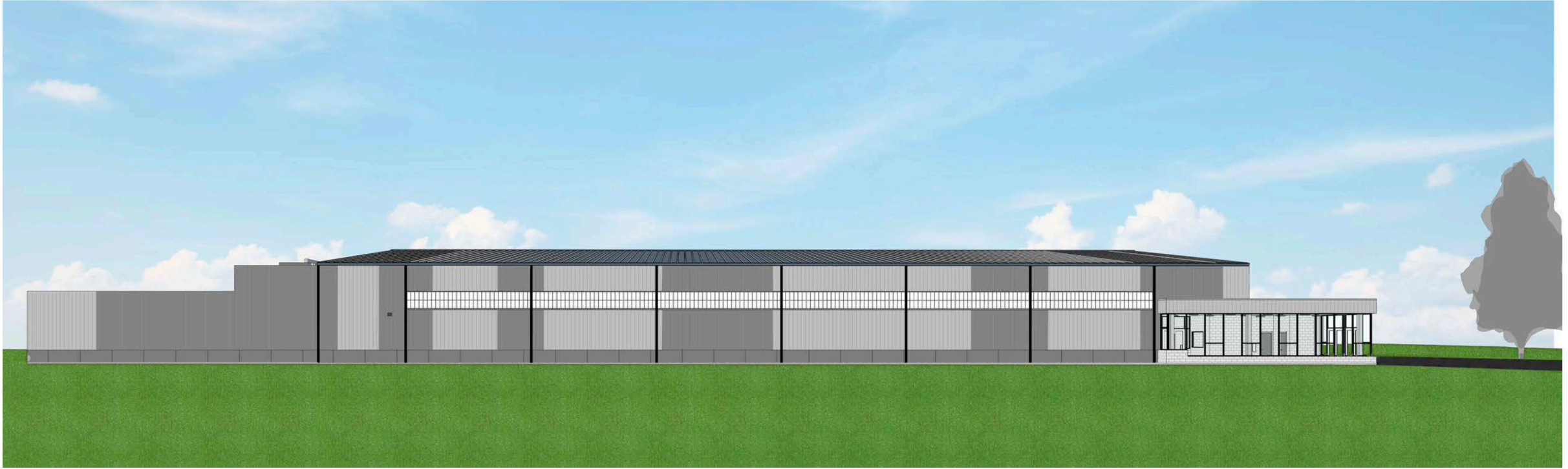


2,584 sq ft removed in Option A Redesign





SOUTHWEST CORNER | BI-COLOR PANELS



TGAS
THE GALANTE ARCHITECTURE STUDIO

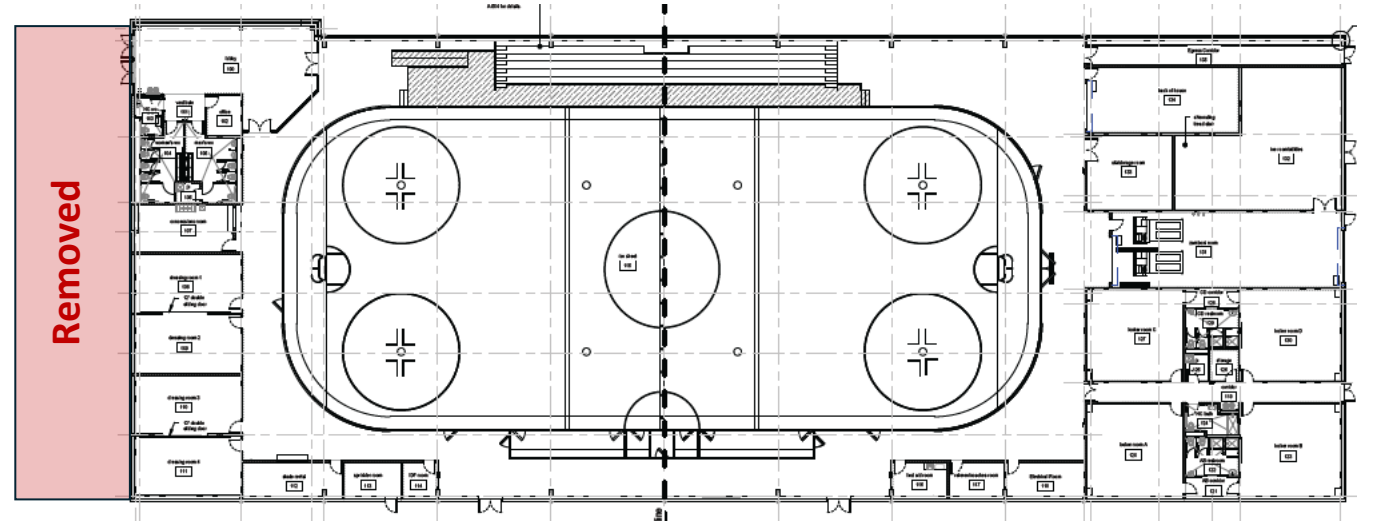
EXTERIOR

WEST FACADE | BI-COLOR PANELS



"Option A" Rink Redesign – \$32.0M

- **Reduces building by 2,584 sq. ft.**
- **No significant reduction in functionality**
 - Supports original ice and non-ice programs
- Removes front section of building
 - Reduce lobby size
 - Eliminates outdoor entry colonnade
- Replaces Freon R-410 with CO₂ for ice refrigerant
 - Reduces operating cost
 - Significantly improves climate impact
- PV-ready, but postpones PV panels
 - Active discussions with Belmont Light on options



Option A Redesign



Reduced lobby and windows, but reclaimed space in rink area

Simplified concessions

Simplified Dressing Rooms

Relocated Skate Rentals to efficiently use space

Removed extra ramp

Modified "back" egress to reduce sidewalks

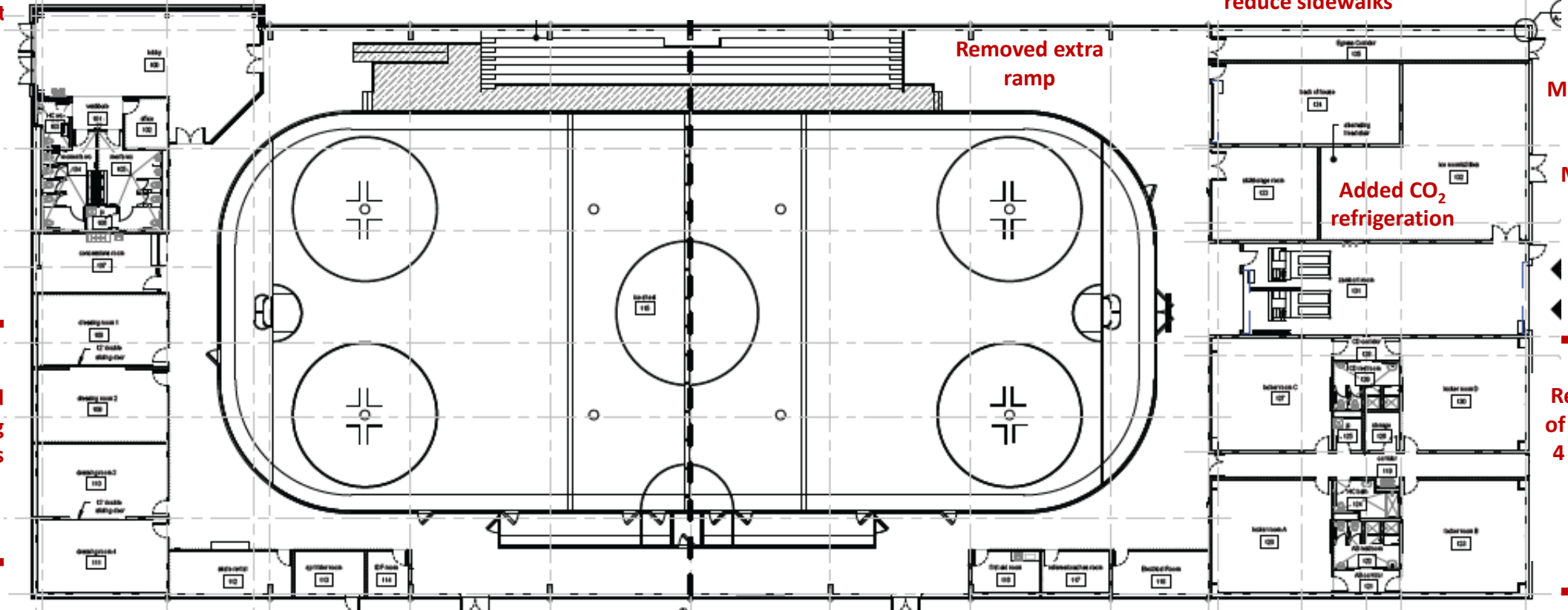
Added CO₂ refrigeration

More efficient Storage, Ice & Mechanical Rooms

Simplified Zamboni Room

Reduced cost of materials in 4 BHS Locker Rooms & Showers

Shifted Electrical Room to other side of rink to reduce distances to transformer



Option A maintains original rink “program” functionality

- ✓ Ice rink to support 3 seasons of skating, including team and referee dressing rooms
- ✓ Recreation space in summer for “non-ice” camps & sports
- ✓ 4 locker rooms for BHS sports programs (White Field House replacement)
- ✓ “Snack shack” concession for rink and Harris Field events
- ✓ Restrooms and warming areas for rink and Harris Field events
- ✓ Skate rentals, ticket sales, and skate sharpening
- ✓ Storage for rink facility and alternative programming
- + ✓ Utilizes environmentally-friendly and operational efficient CO₂ ice plant refrigeration

No Panels,
but “PV Ready”

PV Solar Panels on roof

VE Reductions
from 4/24
Estimate to get
to \$32 M Option
A budget

List of Value Engineering Reductions and Added Scope		
VE No.	Items for Discussion	Accepted Cost Adjustment
2	Reduce Exterior Concrete Block (CMU) around the base of the building with insulated concrete panel	\$ (68,158)
3	Remove Tapered Roof Insulation at North and South Low Roofs	\$ (91,056)
5	Replace the interior "Ground Face" Architectural Block inside the building for normal CMU that would be painted	\$ (26,153)
7A, 7B	Replace exterior concrete paved areas and convert to asphalt walkways	\$ (79,432)
8A	Address drawing inconsistency by reducing bleacher seating from 500 to 225 seats, which had been the original intent	\$ (170,247)
9	Eliminate purchasing of one new scoreboard (use old rink scoreboard)	\$ (22,688)
10	Change building signage from structural support sign to pin-mounted sign	\$ (14,180)
11	Change the metal roof panels from a painted finish to a galvalum finish	\$ (52,183)
13	Reduce casework	\$ (50,000)
14	Utilize salvaged lockers in "good shape" from WFH	\$ (24,503)
15	Remove Temporary Dehumidifier originally anticipated since schedule has been extended and a rental unit is no longer required as the specified unit will be procured on time	\$ (252,066)
16	Remove aluminum sill between underside of IMP and on top of CMU at the perimeter	\$ (31,766)
17	Remove bi-directional antenna (BDA) for in-building communications	\$ (74,593)
18	Defer the installation of the roof top PV solar panels to a future date. Ensure building will be "PV Ready" with all the required equipment and conduits installed within the building.	\$ (1,305,000)
19A	Add CO2 ice regridgeration system in place of Freon R-410 system	\$ 695,000
20	Add to Owner's Construction Contingency	\$ 500,000
G	Account for pre-construction additional funding	\$ (358,000)
25 (includes 4,6,21,22,23,24, 26, 27)	Remove the Entry Lobby from 1 to 2 Line, and from D to F Line. This option has the new entry at 2 Line of the High Bay structure. Also includes shift of egress from north side of building to east side to reduce pavement requirements.	\$ (700,559)
32	Eliminate field paint of structure; Use factory finish	\$ (112,758)
33	Reduce scope of sports floor in back of rink	\$ (28,800)
Z	Selectively reduce finishes, casework, paving, glazing	\$ (70,000)
Total of VE options		\$ (2,337,142)
Overall Summary		
Full Scope 100% Drawings Skanska Estimate		\$ 34,321,954
Less Accepted VE Items Above		\$ (2,337,142)
Revised total for Option A after VE		\$ 31,984,812

Climate Impact Considerations

Ice refrigerant changes from Freon R-410 to CO₂ in order to reduce environmental impact and meet EPA requirements

- Substantially improved Global Warming Potential
- Lower operating costs (15-20% reduced operating costs)
- More expensive building systems required

Proposed deferral of PV solar panel installation

- Reduction of \$1.3 M
- Building systems built to be “PV Ready”
- Roof designed for efficient solar panel installation
- Exploring PV/battery storage options with Belmont Light

Climate Impact Consideration – Ice Refrigerant

Freon R-410

Global Warming Potential: 1,890

- Imminent EPA ban in 2025
- Continued use of systems permitted, but Freon R-410 manufacturing prohibited
- Access to Freon will become difficult and costly over life of the rink

**Included in 4/24 Estimate
(Additional Cost: \$0 K)**

Freon R-454

Global Warming Potential: 466

- Regulatory agencies moving toward total ban on all Freon manufacturing in coming decade
- More expensive building ventilation required

**Included in Option B
(Additional Cost: \$300 K)**

CO₂

Global Warming Potential: 1

- Industry shift from Freon to CO₂ underway
- Preferred long-term refrigerant due to reduced environmental impact
- More expensive high-pressure system and building ventilation costs
- 15-20% operating cost reduction

**Included in Option A
(Additional Cost: \$695 K)**

“Option B” Rink Redesign – \$29.9M

Option B is a fundamental redesign that will need to be undertaken over 2-3 months. Preliminary designs contemplate a large pre-engineered structure with a warehouse-style appearance and substantially reduced functionality.

Option B expectations as of May 2024

- Redesign to budget of \$29.9 M
- Only the most basic functionality of an ice rink
- Warehouse-style building with no low roof sections or other architectural design elements and limited glass
- Lack of “program” features originally outlined in the rink project, including BHS locker rooms, storage to support recreation and non-ice programs, concessions, etc.
- Use of an ice refrigeration system based on Freon R-454 that has a worse global warming impact compared to the CO₂ system in Option A
- Requires a redesign of the building, incurring a minimum 2-3 month delay and additional cost of \$450K+ (inflation/escalation, professional fees, insurance, site maintenance costs, etc.)
- Project completion delayed by 3-6 months – miss another season of ice
- Impacts the FY26 operating budget with additional expense for ice rental and lost revenue opportunities

What Happens Next?

Value Engineering and Option A/B development	Late April – May
Project design update and costing	May – Early June
Additional private fundraising	May – Early June
Select Board update	May 13
Select Board “Special Town Meeting” request	May 20 (today)
Rink public forum	May 22
Refinement / validation of Option A design and cost	May to Early June
Special Town Meeting decision on funding	June 10
Finalize Pre-engineered Metal Building order	June 30

Special Town Meeting Funding Request

- Select Board has called a Special Town Meeting for June 10 (last night of Segment B)
- An article – recommended by the Building Committee – will be presented to Town Meeting to allocate additional funding of \$2.1 M to support the construction of Option A (\$32.0 M)
- Town Meeting will vote on the article for additional funding, and the Building Committee will proceed with construction of Option A, if funding is approved
- If no further funding is available, the Building Committee will proceed with an Option B (\$29.9 M) redesign.

BACKUP SLIDES

Impact of a 3-Month Project Delay

Cost of a 3-month delay will be a minimum of \$400 K – \$450 K

- Professional fees (architect, contractor, OPM)
- Overhead (insurance, trailers, etc.)
- Cost escalation (monthly “inflation”)
- Supply chain delays
- Providing temporary power to Harris Field

Cannot simply stop & restart the project

- Continue to pay professional fees for redesign, so minimal “savings”
- Plus additional de-mobilization & mobilization delays & cost
- Plus lose our “slot” in subcontractor’s schedules

Delay will extend the overall duration of construction

This is additional project cost that would likely offset benefits of delay.

Adequate contingencies to ensure successful project completion

Construction Contingency \$741 K

Budget line-item reserves used during construction for requirements not included in the subcontractor bids but must be done.

Escalation Contingency \$689 K

Budget line-item reserves to handle cost increases due to inflation of labor and material costs between project estimation and construction. This contingency starts high and is drawn down as project construction begins.

Owner's Contingency \$1.55 M

Budget line-item reserves used throughout the project for other unforeseen design or construction requirements that must be addressed.

Total Project Contingencies \$3.0 M