Outdoor Permanent, Conversion and Synthetic Ice Facility Options and Costs

	PERMANENT GLYCOL SYSTEM	**CONVERSION** GLYCOL SYSTEM	**SYNTHETIC**
Design Considerations			
Requires 3 Phase Hydro Connection (yes/no)	YES	YES	NO
Requires Water Connection (yes/no)	YES	YES	NO
Optimal temperature to operate	Max. 10°C or lower	Max. 10°C or lower	Year-round
Lifespan of the system	25 YEARS	10 YEARS	12-20 YEARS (using both sides)
Is it appropriate for a new facility (yes/no)	YES	NO	YES
Is it appropriate for a retrofit of an existing concrete pad (yes/no)	NO	YES	YES
Base Requirements and system	Permanent flat concrete slab with embedded glycol based piping.	Existing flat concrete or asphalt slab with roll-out of glycol based piping system on-top.	Existing flat Compacted base, ideally concrete or asphalt base with pvc boards levelled on-top.
Recommended on-site facilities, not required.	Ice resurfacer (ice flooder, hand held or tractor mounted), accessories and storage bunker.	Ice resurfacer (ice flooder, hand held or tractor mounted), accessories and storage bunker. Additional storage area is required for off-season piping storage.	Off-season storage for pvc panels can be housed on site or off-site in a protected area. On site shed may be beneficial to store cleaning equipment.
Potential on-site support amenities to consider	Proximity to washroom/ changing area/ warming station and parking	Proximity to washroom/ changing area/ warming station and parking	Proximity to washroom/ changing area/ warming station and parking
Operational and Maintenance Requirements			
Seasonal Setup (assuming a crew of 4 with support from supplier)	Approx. 1-3 days setup: any temporary boards, curb, rubber access mats and flooding the rink and operating chiller units.	Approx. 4-6 days setup: laying out temporary piping, curbs, boards, access mats and flooding the rink and operating chiller units.	Approx. 1-2 days setup: Base if required, Laying panels similar a puzzle,

Operations and Regular Maintenance (assuming a small crew with support from supplier when needed)	Typical daily tasks to be determined per site with Park Operations and supplier for standard ice keeping to maintain quality, minimize hazards on ice and maintain equipment. This would include: visual inspection of facility, ice depth measurements, edging or chipping manually, scraping and flooding the ice. Note: Weather conditions and usage greatly impact ice maintenance. Regular refrigeration reading are also performed every 2 hours when in operation. Local refrigeration technicians can service the equipment when needed with yearly inspections.	Typical daily tasks to be determined per site with Park Operations and supplier for standard ice keeping to maintain quality, minimize hazards on ice and maintain equipment. This would include: visual inspection of facility, ice depth measurements, edging or chipping manually, scraping and flooding the ice. Note: Weather conditions and usage greatly impact ice maintenance. Regular refrigeration reading are also performed every 2 hours when in operation. Local refrigeration technicians can service the equipment when needed with yearly inspections.	Daily Inspection Clean surface with a power scrubber or cleaner whenever surface is dirty.
Seasonal Closing Requirements	Approx. 1-3 days to take-down: temporary items and allow pad to drain.	Approx. 4-6 days to take-down: temporary items, piping and allow pad to drain.	Approx. 1-3 days to take-down: panels, temporary boards etc.
Utility usage when in operation	MEDIUM (embedded system is more efficient than roll-out conversion system)	HIGH	LOW
Recommended Storage	On-site storage for: equipment, utilities and temporary accessories	On-site, off site or temporary trailer for: equipment, utilities and temporary accessories.	Onsite, off-site secured area for: Panels stored flat, utilities and temporary accessories

Costs including supply and installation, engineering consulting, administration and soft costs, and approvals/permits. Servicing, site integration and accessories costs are not included.			
Hockey Rink (30m x 65m)	$975,000.00	$507,000.00	$663,000
Skating Loop (250m x 4m)	$1,055,000	Not recommended	Not recommended
Accessories Costs, supply only:			
Ice Resurfacer/ Zamboni	$100,000.00	$100,000.00	N/A
Hockey rinks Dasher Boards including penalty boxes and netting	+/-$160,500.00	+/-$160,500.00	+/-$160,500.00
Skating Trail temporary curbs, handrails, line painting etc.	+/-$50,000.00	N/A	+/-$50,000.00
Rubber matting, skating accessories, cleaners etc.	+/- 15,000.00	+/- 15,000.00	+/- 15,000.00