

## Appendix B – Decision Matrix

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A decision matrix holds team members accountable for the values agreed to at the outset. Cost is one criterion, but overall project values guide decision-making. This decision matrix evaluates a decision based on its effect (e.g., positive, neutral, negative) on project values. This process is important as all team members are unified on how/why decisions are being made and it holds team members accountable for the values agreed to at the outset.

The decision matrix was used to evaluate the best solutions for the design of some major elements of the W.J Henderson Recreation Centre such as:

- **New Pool Roof Structure Framing** – An analysis was carried out to compare the options of a Metal Deck vs Cross-Laminated Timber vs Tongue and Groove roof for the pool. The three options were designed by the structural engineer and an analysis was carried out against the agreed values alignment which considered cost, functionality and operational excellence, end-user satisfaction, community pride, design excellence, safety, schedule, energy saving and net zero ready amongst others. The decision was made to proceed with CLT in the design based on the values alignment, however, a fourth option of Nail Laminated Timber will be evaluated during design development.
- **Structural Infill of Existing Pool Basin** – This design decision was analysed to compare the support of the formed cast-in-place concrete slab over the existing pool to support the new changing rooms. Four designs were proposed and compared using the same values alignment. Steel beams with a clear span of the entire pool, steel beams with an added center column support, unshrinkable infill and masonry wall options were designed and analysed. Masonry wall support were the cheapest option with less environmental impact and maintained the void below the pool to be used as storage by the facility.

– **Replacing Rink Refrigeration Systems** – An analysis was carried out in depth to compare the options of staying with an ammonia refrigeration system (replacement and refurbishment of existing equipment) and adding heat recovery vs. a completely new CO2 system with the following findings:

- Cost – Replacing and refurbishment of ammonia - \$645,000. New CO2 system - \$1,545,000
- Heat Recovery - Both systems would have transcritical leaving glycol HR at 75F with approx. 1,200,000 kWh of heat recovery. The CO2 system could generate higher quantity HR at lower temperatures, the quality of that HR is not as beneficial in our system. Both systems would have 40% E.Glycol running under the slab.
- Energy Efficiency (BTU/W·h) - EER 8.35 vs. 5.24 (the ammonia system is more efficient to produce higher temperature HR).
- Space: Both systems would fit within existing refrigeration room space + roof space above for fluid cooler.



DM number	Title	Notes	Champion	Status	Cost
DM-1	Fluid applied vs. sheet applied exterior air/vapour barrier membrane	Sheet applied cheaper, quicker to install and ensures continuity of coverage.	Glen Gardner	Accepted	Incl in estimate
DM-2	26" flat prefinished steel with standing seem vs. GFRC	26" flat prefinished steel with standing seem is cheaper, can be installed with 2 men and no crane and offers 25 year warranty with no risk of fading.	Glen Gardner	Accepted	Incl in estimate
DM-3	26" flat prefinished steel with standing seem vs. UHPC	26" flat prefinished steel with standing seem is cheaper, can be installed with 2 men and no crane and offers 25 year warranty with no risk of fading.	Glen Gardner	Accepted	Incl in estimate
DM-5	Use conventional roofing assembly instead of inverted roofing assembly at green roof	Inverted roofs are good but if you want the same R-value it will not be cheaper, or not much. You also need a stronger structure to support the overburden (stone, pavers, green roof, etc...).	Glen Gardner	Accepted	Incl in estimate
DM-6	Use hot rubberized asphalt roofing membrane at green roof instead of modified bitumen roofing		Glen Gardner	Under Review	\$ -
DM-7	Use Electric Field Vector Mapping (EFVM) testing at green roof area, leaving conductor wire in place to help locate future leaks, should they occur		Glen Gardner	Rejected	\$ -
DM-8	New pool roof structural framing - Metal Deck vs CLT Panels vs T&G Deck	PMT approve to carry CLT in budget in and explore further potential saving during design development (such as NLT)	Glen Gardner	Accepted	Incl in estimate
DM-9	Structural infill of existing pool basin	Masonry Walls are the cheapest option and provide storage to operators	Sean Lou-Hing	Accepted	Incl in estimate
DM-10	Fire Alarm System Upgrades	Meeting with Dreupau, Introba and Modern Niagara confirmed that partial upgrade not possible due to age, capabilities and mixed components of existing system.	Daniel Lochand	Accepted	Incl in estimate
DM-11	PA SYSTEM UPGRADES	Existing system to remain apart from the addition of some devices	Daniel Lochand	Accepted	Incl in estimate
DM-12	Electrical Distribution System Upgrades	Complete upgrade carried due to age of panels, design brief. However, to save costs certian items were kept based on single line drawings.	Daniel Lochand	Accepted	Incl in estimate
DM-13	Replacing Rink Refrigeration Systems		Karine Kupers	Under Review	\$ 900,000.00
DM-14	Reinforcement of existing garage roof	Estimating advised cost of replacement far exceeds cost to reinforce.	Sean Lou-Hing	Accepted	Incl in estimate
DM-15	Fire protection coverage	This decision can be made during design devleopment. PIT recommendation is to proceed with standpipem for pracitality but not required. To be review with the fire department during design development.	Karine Kupers	Under Review	\$ 12,000.00
DM-16	Pool Head Wall - Myrtha (Stainless Steel) vs Concrete & Tile	PMT agree to proceed with the Mythra Headwall.	David Bergstrom	Accepted	\$ -