



**BRIEFING NOTE – July 5, 2021**  
**Prepared For: Mayor & Councillors**  
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**Topic: Harbour Pool Structural Report Summaries**

**Background:**

As requested on the June 22<sup>nd</sup> regular meeting of Council please find attached three studies that were commissioned at the request of the City of Fort Saskatchewan. We have summarized these reports to assist in providing a high level overview of the work and recommendations undertaken for each report.

Harbour pool was built in 1982 and now entering its 39<sup>th</sup> year of operation. We now see 100,000 visits each year (pre pandemic). A visit means one individual entering and using the pool for either programs, spontaneous use or bookings.

**Current Situation:**

Study One:

In March 2017, Maverick Inspection LTD. completed a Ground Penetrating Radar Digital Report. The purpose of the report was to detect any previously unknown voids beneath the concrete or within or beyond the concrete walls forming the pool basin. This was also used to examine the concrete for signs of degrading that might contribute to premature aging of the pool and basin.

- Ground penetrating radar is a non-intrusive method of detecting buried objects or substances in a non-conductive material through the use of UWB radio waves.
- There is no obvious signs of subsurface voiding except for areas with underground tunnels and rooms.
- Three areas coincided with unexpected cracking on the concrete surface requiring repairs. These cracks in the concrete could indicate additional movement or unexpected settling of the building. The cracking appears to coincide with variations in the steel reinforcement bars.
- Regular monitoring is recommended in these areas due to salt water intrusion through the crack, the source of the crack does not immediately appear to be related to a potential imminent failure, significant subsurface voids/washouts or similar source.

Administration Action:

Study Two:

In March 2018, Read Jones Christofferson LTD. Completed a structural report for the main pool, warm pool, and whirl pool. The purpose of this report was to perform a structural assessment of the concrete structure at Harbour Pool and provide recommendations and budget estimates for any structural concrete repairs that may be required.

- Near term concrete and waterproofing repairs were indicated as items that needed to be completed to maintain the current concrete, waterproof the concrete and protect it from further degradation. Concrete repairs and waterproofing were completed in all drain and

skimmer valves in the pool basin, gutter tracking in front of the main pool entrance, mechanical room main floor flooring, pump room floor and walls, and all pool filter tanks.

- There may be additional costs for repairs required that are not evident until the tiles are removed. There is no way to estimate the damage to existing structure until the tiles are removed from the deck and the pool basins. Tiles are not anticipated to be removed but continually re grouted and checked—this piece is in there because if the modernization does get put back in for 2025 the tiles on deck and in the pool basins will be fully removed and replaced. This is why that I initially had the budget info in there. This point can be removed but I think that it is important to note to indicate that the concrete is not in pristine shape.

#### Report three:

In addition to the pool structural report, RJC LTD completed additional testing on the pool deck and in the basin during the shutdown in January 2019 due to the pool being drained. The purpose of this study was to determine the current extent of chloride content in the concrete and the condition of the underlying concrete structure in areas of debonded tiles on the Main Pool, Warm Pool and Whirl Pool deck areas, and in areas of parging on the dry side of the pool wall.

- Chloride Ion Content testing was completed and the results are summarized in the report. The findings indicate the threshold limit has been exceeded at four test locations, and is approaching threshold at eight locations.
- There was concrete delamination due to the corrosion of steel reinforcement and concrete spalling was identified in expansion joints. The existing reinforcement is experiencing significant signs of corrosion. (This sounds super serious is it?) We have repaired the concrete, re-tiled and re-grouted which allowed for waterproofing of these areas that were exposed during testing, or that showed signs of degradation to allow for movement of the tiles over the expansion joint while still protecting the concrete from water.
- There are areas of un-bonded grout at the expansion joint.
- There is cracking in the suspended slab and there is staining directly below the surface crack that indicates moisture penetration through tile and grout finishes, and through the structure at this location.
- Concrete spalling appears to be the result of differential movement at an existing expansion joint in the slab-on-grade structure.
- The levels of contamination indicate that the existing tile and grout system does not appear to be providing adequate protection for the structure from chloride contamination.
- Waterproofing and detailing of joint locations to allow for movement has been completed to minimize the penetration and deterioration of the tile finishes, but this is not a permanent fix and will continue to need to be done regularly as the building naturally shifts and moves.

#### Summary:

Structural studies of the pool basin and the surrounding deck have indicated that the pool basin and concrete are aging, and there are areas of concern. Since 2017 we have had 3 studies that have given us details of the current state of our structure and it is indicated that there are areas that are degrading and parging. Two out of the three studies pulled up tiles in specific areas of the deck and basin to determine if there was significant damage. Until all tiles are pulled up to re-tile the deck and basin there is no way to determine the extent of damage that is occurring to the structure of the basin and surrounding concrete. These pool studies completed are dating back to 2017-2019 and our mechanical



systems along with water have remained in since then with the exception of our annual maintenance period each January when the pool's water is drained.