

Subject: Alder Recreation Centre Pool Structural Steel Upgrade

Department: Community Services

Division: Facilities/Parks

Report #: CMS-2021-028

Meeting Date: 2021-11-22

Recommendations

That report CMS-2021-028 titled Alder Recreation Centre Pool – Structural Steel Upgrades November 22, 2021 be received;

And that Council approve contemplated change notice (CCN) for the immediate remediation of structural steel columns within the Alder Recreation Centre Pool area and an additional capital fund contingency of \$990,890. Inclusive of all taxes

Background and Analysis

On October 18, 2021, Council approved an additional capital fund contingency in the amount of \$632,633 for the Alder Recreation Centre Pool Project with \$200,000 being estimated for contemplated structural upgrades to sixteen (16) steel columns within the Alder Recreation Centre Pool area. The required upgrades were as a result of sub-soil and structural failures associated with saturated soils that corroded the pool liner walls and steel column structures within the pool space along with undermining of the pool deck and building column bases.

A contemplated change notice (CCN) was issued on September 28th in an attempt to capture the magnitude of the remediation needed to correct the condition based on the suggestions from both Structural and Geo-Technical Engineers. The summary of CCN and reports from the engineers was to remove all saturated soils and remaining slabs back to native soil condition. Replace with proper backfills, such as granular 'A', pea gravel or engineered fill, including a weeping tile sub drainage system to protect the installation from future water loss or ground water infiltration.

The CCN was the result of an unknown condition, as found condition, due to poor installation and water loss from the pool system(s). This condition was not evident from previous finished installation as all conditions were only revealed at time of demolition and excavation. The main concern was the possible damage to the building structural columns and undermining of the existing pool slabs, which only became evident during and after deck removal, as the condition was all below the finished pool deck.

To date all saturated soils have been removed along with remaining concrete slabs and Geo-Technical Engineers have approved the sub-soils for pool construction; however, the General Contractor, Austin Carroll Pool Construction, cannot move forward without first repairing the corroded steel columns to address Witzel Dyce's (the structural engineers) comments.

In the Council report dated October 18, 2021, Council was advised of the following with respect to the structural steel columns:

The Alder Pool structure is a combination of conventional structural steel columns, beams and open web steel joists on the south side of the pool area (Alder Street side) and pre-engineered steel building with welded I-beam columns and frames on the north side (Food Court side).

In late August during phase one of the deck and entire pool demolition, seven (7) column bases were exposed and reviewed by Witzel Dyce Engineering, Structural Engineer. Four columns were noted to have bad to severe rusting at the column bases.

Based on these findings and preliminary observations from the initial assessment of seven columns, the Structural Engineer recommended that all (16 total) column bases within the pool area be fully exposed to review the existing condition of the steel. This required the removal of the surrounding entire pool deck slab in order to expose the hidden column and baseplates, to take accurate measurements to determine if reinforcing of the columns would be required. Based on the final review of all exposed columns it was recommended that reinforcing details and methods be developed to protect the columns from future failure.

At the time of the Council report staff did not have the structural engineer's report and attempted to estimate the remediation cost for purposes of having an approved contingency from Council and to minimize any future delays in the pool installations. Subsequent to this report, the Structural Engineer has revisited the structural assessment due to the further discovery of corrosion of the baseplates as they are now exposed, which cannot be approved for use and will also need to be replaced which requires all sixteen (16) columns to be shored. Once all columns are shored (process required to stabilize the roof structure while repairs take place) the structural steel contractor will cut away the bottom sections of the columns and replace with new structural column sections complete with new welded baseplates.

On November 18th staff received a CCN from our pool consultants, Aquatic Design and Engineering based on a quote from a Structural Steel Contractor to supply labour, materials, and equipment to complete all work recommended by Witzel Dyce Structural Engineers dated October 14, 2021.

General scope of work specifications

1. Required General Liability Insurance
2. Standard 1 year warranty on all work
3. Supply of all building materials, labour, equipment required to complete the work.
4. Structural Engineer oversight and approvals throughout various stages of the structural steel upgrades.
5. Removal of all refuse from site
6. Hoarding of main building food court area
7. Cutting of food court floor and walls to expose the remaining north side of the columns

Demolition and Shoring

1. Supply of equipment and labour to complete the pool wall removal and disposal, two (2) full sections and one (1) partial section on food court side.
2. Removal of two (2) aluminum frame window units, including all glazing, storage and reinstallation after structural repairs are completed.
3. Complete shoring as per structural engineers' specifications and compaction of base soils as per geo-technical engineer's specifications.
4. Disconnect and reconnect all electrical as required within scope of work.

Structural Steel Installation

1. Following all necessary demolition and inspection by a structural engineer of the shoring steel replacement will be carried out.
2. Cut away existing bottom sections of corroded columns,
3. Replace with new structural column sections complete with new welded base plates to be fully spliced to existing building columns, primed painted at sixteen (16) locations.

Wall Reinstallation and Finishes

1. Supply and install new concrete masonry units for lower section of removed wall.
2. Supply and install light gauge steel stud framing, thermal insulation and gypsum wallboard to match existing wall finishes.
3. Includes all painting to match existing adjacent finishes.
4. Return area outside Natatorium (Food Court) to pre-demolish condition.

Strategic Alignment

Orangeville Forward – Strategic Plan

Priority Area: Sustainable Infrastructure

Objective: Maintain exiting assets, Plan for Growth

Sustainable Neighbourhood Action Plan

Theme: Corporate and Fiscal

Strategy: Create and integrate sustainability principles into Town policies, processes and practices

Financial Impact

The following is Contemplated Change Notice quotation is based on consultation and recommendations of Witzel Dyce Structural Engineers for structural remediation of the pool area:

Steel Column repairs/upgrades and associated works

Structural Contingency approved on October 18 th	(\$ 200,000.00)
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Total Contemplated Change Notice	<u>\$1,190,890.00</u>
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Additional Contingency Requirement	<u>\$ 990,890.00</u>
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In consultation with the Treasurer, it is recommended that the additional contingency requirement of \$990,890.00 (as shown above) be funded through the Town's Line of Credit.

Respectfully submitted

Reviewed by

Raymond Osmond, General Manager
Community Services

Manager Name
Position, Department

Alder Recreation Centre Pool area

