ENTUITIVE

November 4, 2020

Westmount Place Condominium
c/o Sandra Williams
Montgomery Ross and Associates
1414 – 8th Street SW, Suite 400
Calgary, AB T2E 1J6

Re: Westmount Place (1100 8th Avenue SW)
Post Tension System Update
Our Project No. C020-0781

Dear Ms. Williams,

As outlined in our proposal dated August 26, 2020, Entuitive has completed updated testing of the post tensioned strands at Westmount Place mixed use building. Site work was completed by October 29, 2020. The following is a summary of our review.

1. DESCRIPTION OF STRUCTURE

- Westmount Place is located at 1100 8th Avenue SW.
- The building is one high-rise building overtop of a multi-level below grade parkade and was built circa 1980.
- Structural drawings produced by Cosentino Bruyer Partnership dated November 1979 were available for our review. The drawings indicate the floor system is a post tensioned slab with banded post tensioned strands in the east-west directions and distributed post tensioned strands in the north-south directions. The floor system is supported by reinforced concrete columns and a central core through the height of the building. The columns are reinforced using conventional mild steel.

2. DESCRIPTION OF POST TENSION SYSTEMS

Unbonded post-tensioned strands are placed in their final locations prior casting of concrete. Once the concrete is placed and cured, the strands are tensioned to provide structural capacity to the floor slab. The strands are fabricated from multiple wires enclosed in a plastic sheathing. The space between the strand and the sheathing contains grease to lubricate the strand and inhibit corrosion.

Post-tension strands are susceptible to corrosion deterioration in higher-risk exposure conditions such as parking decks, below grade construction, and discontinuities in the building envelope. Moisture can access the strands at end anchorages or through cracks in the concrete where the

strand sheath has been compromised. Damage can also occur due to improper handling during construction, strand slippage at the anchors during original stressing, brittle wire cracking, or coring/drilling after construction.

Strand failure (i.e. loss in strand tension) can result from one or more of the above noted occurrences. A loss in strand tension will reduce the load carrying capacity of the structure. Consequently, periodic monitoring is recommended to identify any changes in strand tension in a timely manner.

3. OBSERVATIONS AND DISCUSSION

The following observations and discussion are based on our assessment of the unbonded post-tension strands accessible at inspection recesses installed on the underside of the ground floor and suspended parking level slabs. The exposed lengths of the strands were checked for tension deficiencies by a penetration test. The results of our investigation are presented below.

3.1 GROUND FLOOR AND SUSPENDED PARKING LEVELS

Penetration testing was completed on 639 strands at 154 available inspection recesses in the ground floor and suspended parking levels. Four (4) additional inspection recesses were available, however, could not be tested as they were obstructed or inaccessible. As of the current testing, the following tension deficiencies are detected:

Full tension deficiencies:	2
Partial tension deficiencies:	10

The newly identified broken strands represent an increase of one new tension deficient strand and one carryover tension deficient strand from previous years testing that was not included int the recently completed post tension system maintenance project.

3.2 UPPER FLOORS AND ROOF LEVEL

Penetration testing was completed on 116 strands at 32 available inspection recesses in the upper floors and roof level. As of the current testing, the following tension deficiencies are detected:

Full tension deficiencies:	2
Partial tension deficiencies:	0

This represents no change from previous testing of the upper floors. It is noted that the 2 broken strands are within the recess 5-2 of the 5th floor slab. Please refer to our report C019-0025, dated March 15, 2019, regarding the details of these broken strands.

4. DISCUSSION

Tension deficiencies could be the result of mechanical damage, strand slippage, stressing defects, or moisture contact during original construction or through defects in the waterproofing. of a tension deficient strand could also be completed to determine the cause of the tension deficiency. In cases where strands have been removed for full length examination, moisture, if present, is

typically observed at anchor locations as well as along various locations of the strand (i.e. the strand may be exposed to moisture even though it was not identified in the inspection recess).

Partially tension deficient strands are classified as strands where one or more of the individual wires comprising the strand are tension deficient but at least one of the wires remains under tension. All wires without tension in a strand are classified as fully tension deficient. Indication of partial tension deficiency can be susceptible to variances in the test method and results may vary between inspections.

Overall, a total of four full deficient and 10 partial deficient post-tension strands were detected. This represents less than 1 percent of the strands tested. The fully and partially tension deficient strands have reduced the local load carrying capacity of the slabs. Broken/Fully tension deficient strands identified at the Westmount Place Condominium are typically replaced in a timely manner based on the recommendations of our capacity analysis, dated October 31, 2014.

In addition, regular testing of the strand tension at all existing recesses will provide an indication if loss in tension is occurring and allow a timely initiation of remedial repairs.

5. RECOMMENDATIONS

In light of the above observations and discussion, the following recommendations are presented for your consideration. Please note that GST would be in addition to the budget presented below.

5.1 POST TENSTION SYSTEM MONITORING – GROUND FLOOR AND SUSPENDED PARKING LEVELS

Given the current tension deficiencies noted, tension testing of the post-tension strands at existing recesses is recommended on an annual basis. The next update test should be scheduled for October 2021.

Engineering fee – Update Testing	$7,900

5.2 POST TENSION SYSTEM MONITORING – UPPER FLOORS AND ROOF LEVEL

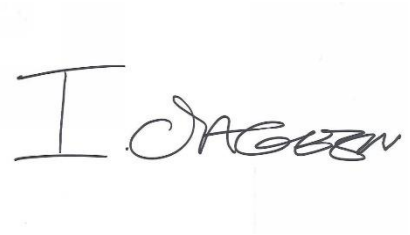
Given the current tension deficiencies noted, tension testing of the post-tension strands at existing recesses is recommended on a bi-annual basis. The next update test should be scheduled for October 2022.

Engineering fee – Update Testing	$5,000

6. CLOSURE

We trust this is the information that you require at this time. We would be pleased to meet to further discuss our observations and recommendations. Should you have any questions or concerns, please do not hesitate to contact the undersigned.

Sincerely,
Entuitive



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Reviewed by:



November 4, 2020

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Entuitive Permit to Practice

