ENTUITIVE

October 22, 2021

Westmount Place Condominium
c/o Janan Tahir
Rancho Realty (1975) Ltd.
Suite 1, 5528 1st Street SE
Calgary, AB T2H 2W9

Re: Westmount Place (1100 8th Avenue SW)
Post Tension System Update
Our Project No. EN021-00900

Dear Janan Tahir,

As outlined in our proposal dated September 28, 2021, Entuitive has completed an investigation and updated testing of the post tensioned strands at the Westmount Place (1100 8th Avenue SW) Post Tension System Update. Site work was completed on October 15, 2021. The following is a summary of our review.

1. DESCRIPTION OF STRUCTURE

The Westmount Place condominium building consists of one high-rise building overtop of a multi-level below grade parkade. 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 638 strands at 118 available inspection recesses in the ground floor and suspended parking levels. Five (5) 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:	0
Partial tension deficiencies:	9

The above testing results differ slightly from the previous year's testing in that there are less partial and full tension deficient strands identified. It appears these tension deficient strands are in the locations of obstructed recess. Thus, there presents no change in strand tension deficiency.

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. Removal 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 nine (9) partial deficient post-tension strands were detected. This represents less than 2 percent of the strands tested. The partially tension deficient strands have minimally reduced the local load carrying capacity of the slabs; however, it does not present a structural concern at this time. Should further strand breakage occur or tenant renovations be completed covering the current inspection recess locations in the future, exposing additional strands, performing a capacity analysis, and/or replacing strands may be required.

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.

After a recess has been installed to expose the unbonded post-tensioned strands for inspection, insulation is placed between the strands and the new protection plate. The purpose is to help restore the fire protection over the reinforcing steel once provided by concrete cover. Where the insulation is either not present or lacking sufficient quantity to provide adequate fire protection, re-installation of the insulation will help restore fire protection to the post-tension strands.

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 2022.

Engineering fee – Update Testing	$8,000

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 an annual basis. The next update test should be scheduled for October 2022. Installation of insulation in the inspection recesses can be completed in conjunction with the update testing.

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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