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BURNSIDE
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April 2, 2024

Via: Email

Helena Snider
Grand Valley and District Medical and Dental Board
21 Main Street North
Grand Valley, ON L9W 5S6

Dear Helena:

Re: Grand Valley Medical & Dental Centre
Follow-up Structural Review
Project No.: 300057760.0001

A building condition assessment of the Grand Valley Medical & Dental Centre located at 21 Main Street North in Grand Valley, Ontario was recently completed following a series of flooding incidents in the basement of the existing building. This assessment recommended additional structural review of existing cracks in the concrete block masonry foundation walls and of the retaining walls around the south and east sides of the property. R.J. Burnside & Associates Limited (Burnside) was retained to complete this follow-up structural review.

Personnel from Burnside attended the site on March 7, 2024 and met with Helena Snider. At the time of our site visit, access was available throughout the exterior areas of the site and to the entry vestibule and stairwell at the rear of the building. In this report, we have outlined our observations and recommendations with respect to the cracks in the concrete block masonry foundation walls and the retaining walls around the south and east sides of the parking lot.

Concrete Block Masonry Foundation Walls

Based on our observations, we note the following with respect to the concrete block masonry foundation walls:

- There are step cracks near the north end of the east foundation wall which follow the mortar joints of the masonry (See Photo 1). These cracks are also visible on the interior of the wall above the stair landing (See Photo 2). The exterior face of the wall is aligned across the cracks. It appears that the exterior parging was repaired and the cracks have reappeared through the repairs.
- There are step cracks near the south end of the east foundation wall which follow the mortar joints of the masonry (See Photo 3). The exterior face of the wall is aligned across the cracks. It appears that the exterior parging was repaired and the cracks have reappeared through the repairs.
- There is a stepped vertical crack and step cracks near the east end of the south foundation wall (see Photo 4). The stepped vertical crack appears to pass through one masonry unit while the step cracks follow the mortar joints of the masonry. The exterior face of the wall is aligned across the cracks. It appears that the exterior parging was repaired and the cracks have reappeared through the repairs.

- There is a vertical crack near the west end of the north foundation wall (see Photo 5). The crack appears to pass through several masonry units. The crack appears to extend from the top of the foundation wall to the level of the ramp landing. The width of the crack appears to be uniform over its length. The exterior face of the wall is aligned across the crack.
- The downspout and sump pump outlet at the southwest corner of the building are directed against the south foundation wall (see Photo 6). Adjacent grade along the south side of the building generally slopes down to the east and to the south, away from the building.

We recommend the following with respect to the concrete block masonry foundation walls:

- It is our opinion that the observed issues with the concrete block masonry foundation walls do not indicate an immediate risk of structural failure.
- Based on our observations, the cause of the cracks is unclear. Our observations indicate minimal differential movement across the cracks. We recommend implementing a documented monitoring program to monitor the cracks for further movement. If no further movement is observed, appropriate repairs can be specified. If further movement is observed, additional investigation may be required to identify the underlying cause.
- We recommend directing the downspout and sump pump outlet away from the foundation.

Retaining Walls Around South and East Sides of Parking Lot

Based on our observations, we note the following with respect to the retaining walls around the south and east sides of the parking lot:

- The south and east sides of the parking lot are supported by concrete retaining walls. The parking lot is located on the high side of the retaining wall and adjacent grade falls away from the low side of the wall to the south and to the east. The grade difference across the wall is approximately 1.2 m at the southeast corner of the retaining wall and generally decreases along the length of the wall to the north and to the west.
- A steel W-beam guardrail is installed along the south and east sides of the parking lot. The guardrail is supported on wide-flange steel posts driven into the ground adjacent to the high side of the retaining wall (see Photo 7).
- Stubs from wood posts are cast into the top of the retaining wall at regular intervals. It appears likely that these posts supported a guardrail at one time but have since been cut-off flush with the top of the wall (see Photo 8).
- A vertical crack is present in the retaining wall along the east side of the parking lot, approximately 1.3 m from the southeast corner of the retaining wall. This location aligns with one of the cast-in wood post stubs described above. The crack is approximately 60 mm wide at the top of the wall and approximately 30 mm wide at a point 1.1 m from the top of the wall. The retaining wall to the north of the crack is leaning outward from vertical at an angle of approximately 5 degrees (see Photo 9).
- Additional vertical cracks are present at the locations of other cast-in wood post stubs (see Photo 10 and Photo 11).
- A section of concrete is broken off the southeast corner of the retaining wall. The missing section of concrete matches the height of the cast-in wood post stub at this location and extends from the outside face of the wall to the cast-in wood post stub (see Photo 12).
- No reinforcement was observed at the vertical cracks or at the missing section of concrete.

We recommend the following with respect to the retaining walls around the south and east sides of the parking lot:

- It is our opinion that the observed issues with the retaining wall do not indicate an immediate risk of structural failure.
- Based on our observations, there has been some movement of the retaining wall. However, it is unknown when and over what length of time this movement occurred. Therefore, we recommend implementing a documented monitoring program to monitor the retaining wall for further movement on a regular basis.
- Based on our observations, the cast-in wood post stubs appear to be causing vertical cracks in the retaining wall. We recommend removing the cast-in wood post stubs from the wall, cleaning all debris from the resulting pockets and filling the pockets with self-consolidating non-shrink grout.
- We recommend repairing the missing section of concrete at the southeast corner of the retaining wall as follows:
  - Remove the cast-in wood post stub and remove all debris;
  - Cut the edges of the damaged area square and remove all feathered edges;
  - Roughen all surfaces to a minimum amplitude of 5 mm;
  - Apply bonding agent to all surfaces; and
  - Form and place concrete.

We trust that this information meets your current requirements. If you have any questions regarding our review or the contents of this report, please contact the undersigned.

Yours truly,

R.J. Burnside & Associates Limited

[redacted]

Michael Hofer, B.Eng. & Mgt., P.Eng.
Structural Engineer
MH:js

Enclosure(s) Photos

Photo 1: Step Cracks Near North End of East Foundation Wall

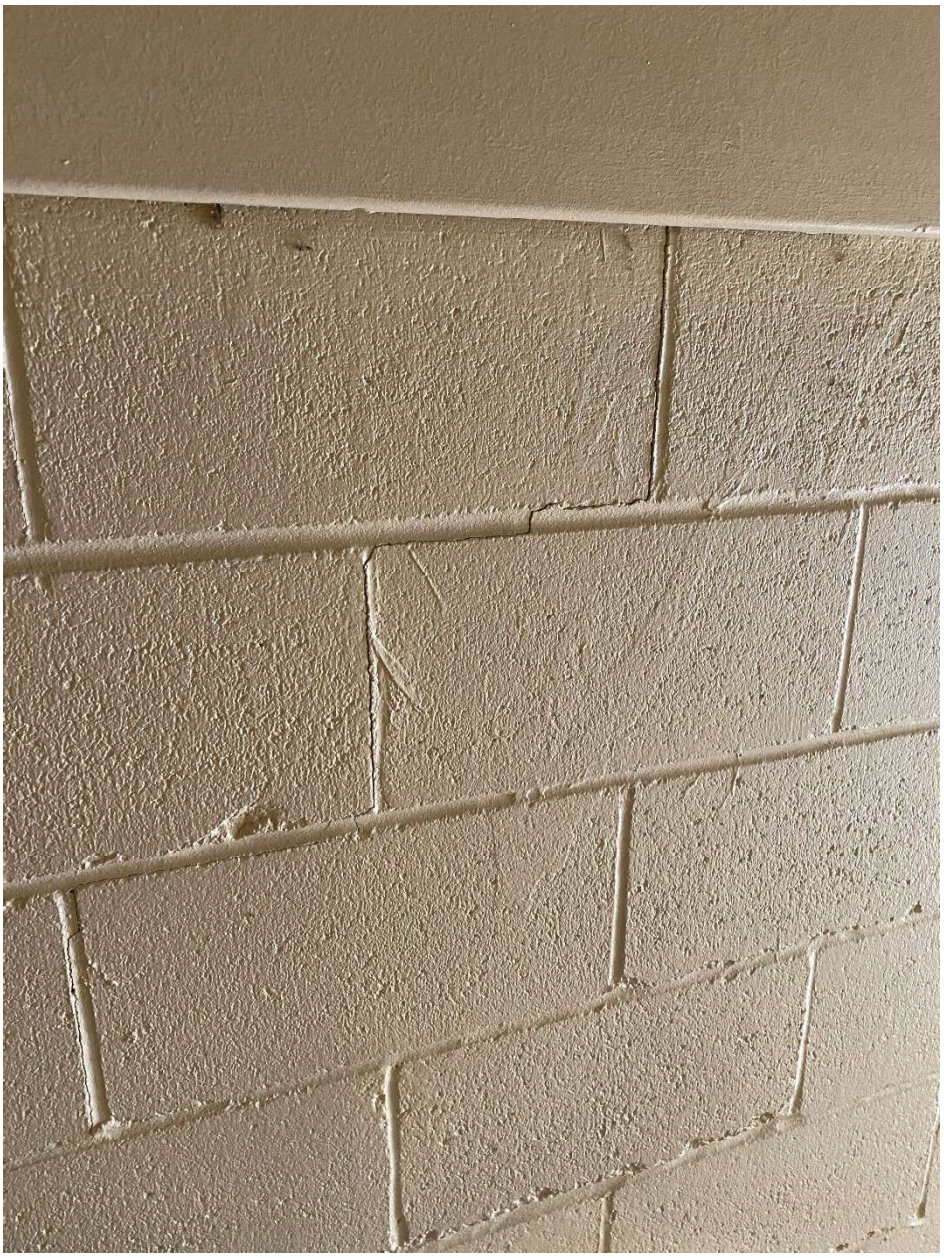

Photo 2: Step Cracks Near North End of East Foundation Wall – Interior View

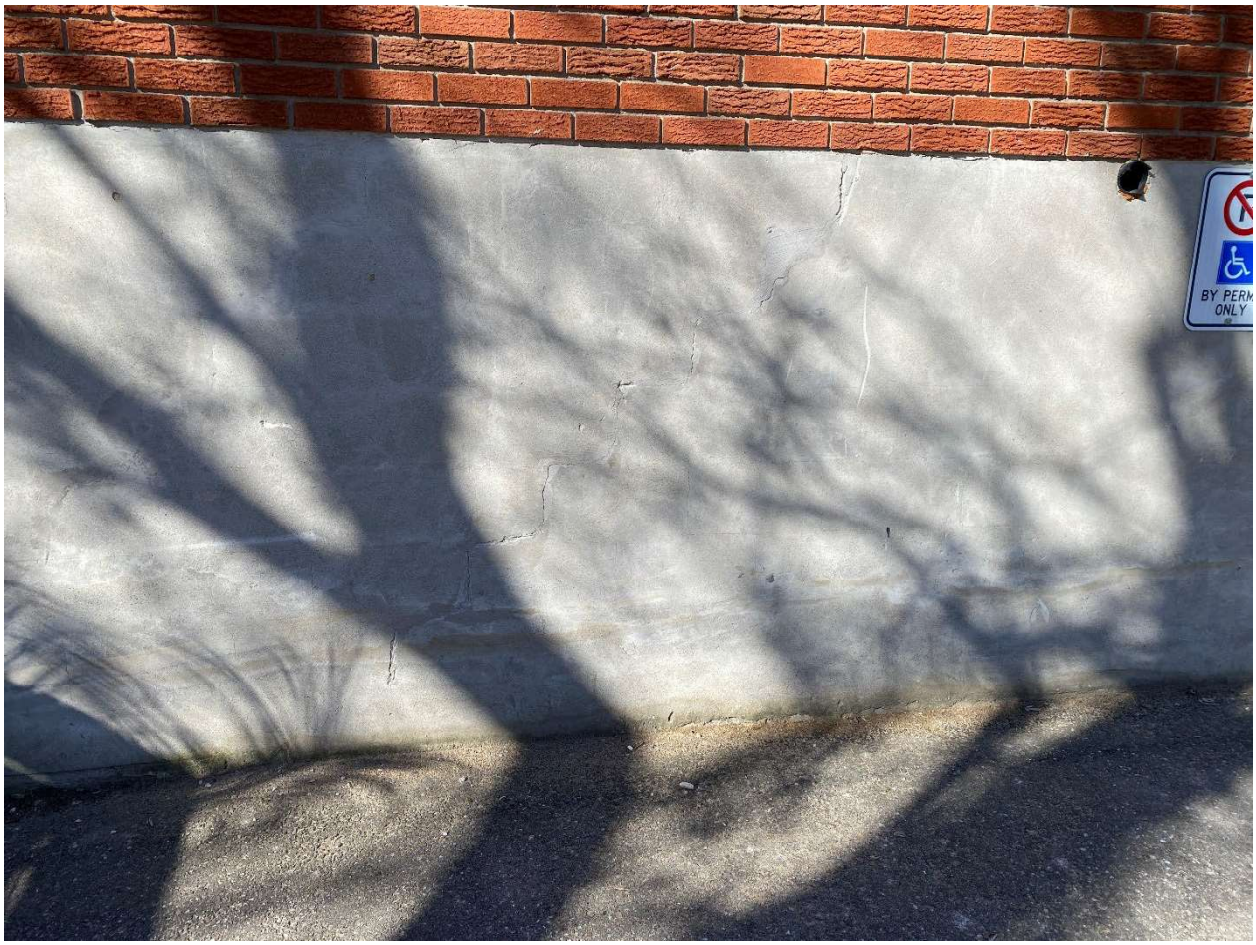

Photo 3: Step Cracks Near South End of East Foundation Wall

Photo 4: Cracks in South Foundation Wall

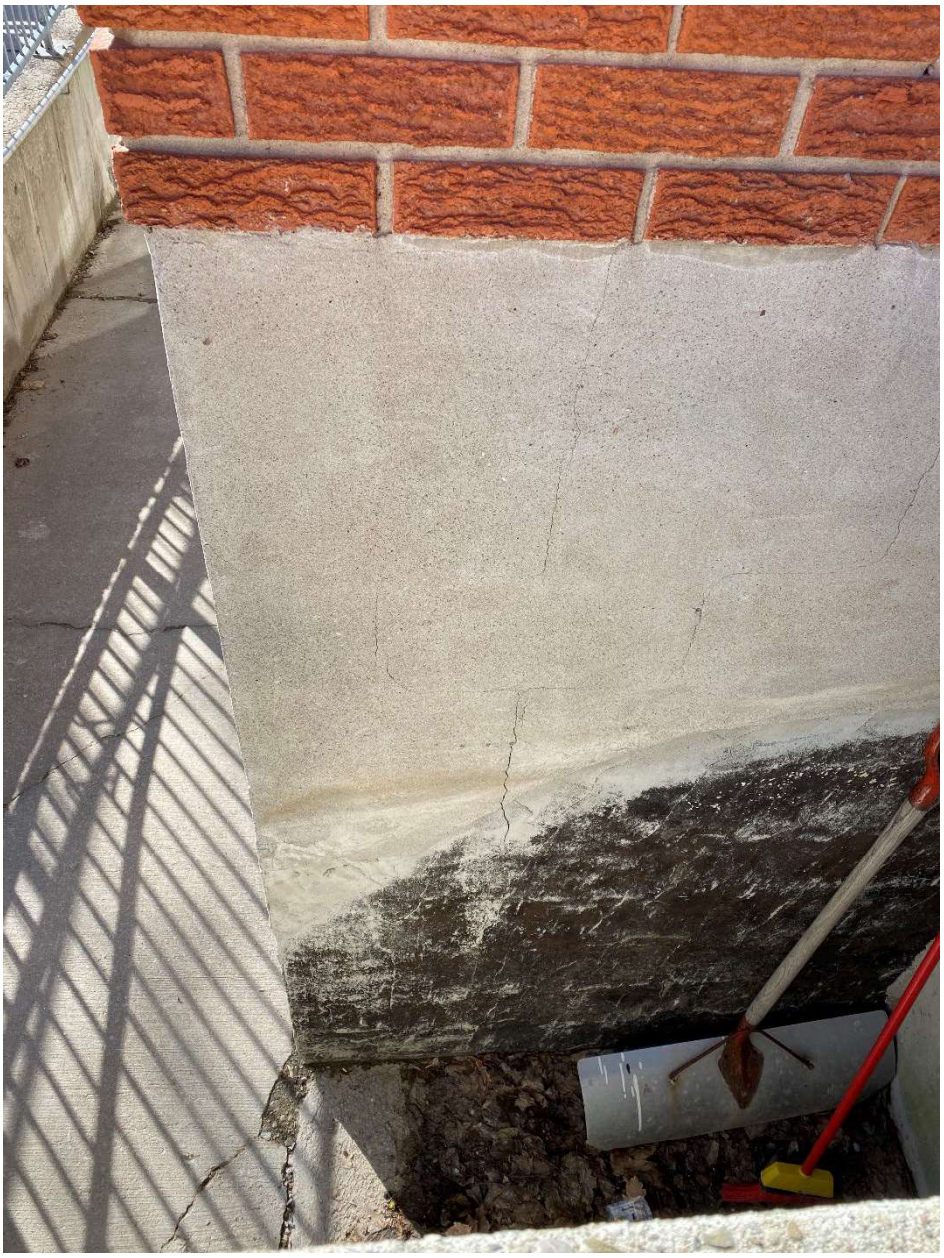

Photo 5: Vertical Crack in North Foundation Wall

Photo 6: Downspout and Sump Pump Outlet Directed Against South Foundation Wall

Photo 7: Guardrail

Photo 8: Wood Post Stub

Photo 9: Crack Near Southeast Corner of Retaining Wall

Photo 10: Vertical Crack in Retaining Wall at Wood Post Stub

Photo 11: Vertical Crack in Retaining Wall at Wood Post Stub

Photo 12: Missing Section of Concrete at Southeast Corner of Retaining Wall