Mississauga, Ontario
April 19, 2021

The Regional Municipality of Durham
Works Department
Facilities Management Division
605 Rossland Road East, 4th Floor
PO BOX 623
WHITBY, Ontario, L1N 6A3

Attention: Mr. Doug Jewison, CET, MMP
Works Technician 3 - Operations
The Regional Municipality of Durham
Department of Works, Facilities Management

Reference: **DRLHC-S-001-20-01 - Kellet Accessibility Ramp**
Investigation Report for Retaining Walls and Ramp
TAK Engineering Ltd., Project No.: 2021-07

Dear Mr. Jewison,

As specified in the Project Milestone 1 – *Investigation and Engineering Reports,* TAK Engineering Ltd mandate was to review existing building systems to understand the scope of existing operations and to develop required design (scope of work) for the construction of new ramps and prepare a report. The report to include the scope of work and an initial construction budget cost.

TAK Engineering Ltd. conducted on January 2021 review of the existing site conditions of the main and side entrance ramps at the above noted address. The purpose of the inspection was to determine the condition of the elements and to provide the Region of Durham with recommendations for work.

Our observations are as follows:

OBSERVATIONS:

LIMITATIONS:

During our visual review of the existing building systems in question TAK Engineering performed no physical or destructive testing. Comments and conclusions are therefore based on visual and/or the apparent physical condition of the exposed structural elements. TAK Engineering Ltd. has used its professional judgment and expertise in reaching the enclosed conclusion but the reader should be cautioned that this structural assessment is not based on scientific measurements or destructive testing.

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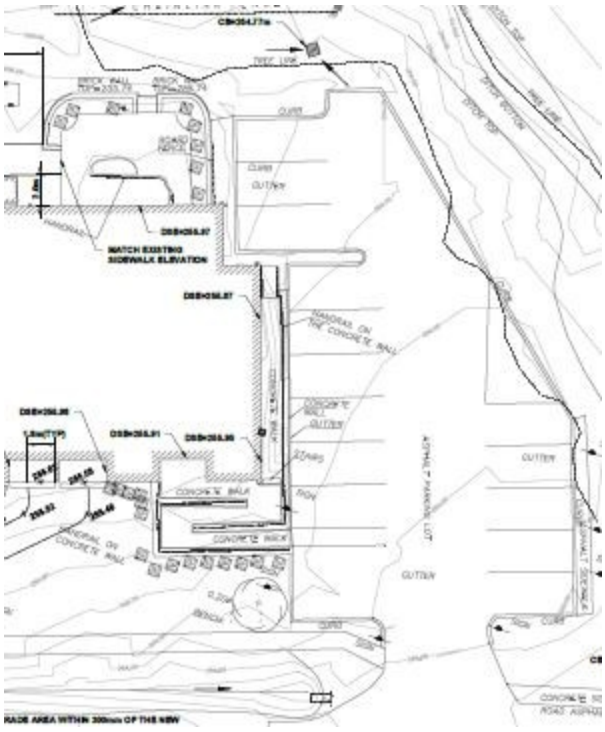
EXISTING CONDITIONS:

The findings of this report presented herein are based on the conditions found at the time of the inspection.



Partial Site Plan

1) Main Entrance Ramp:

Observations and Comments:

- Retaining wall and walkway steps run perpendicular to the parking lot and connect a parking lot with the main entrance; see Figs. #1 and #2.
- Retaining walls were build with architectural hollow concrete blocks, Unilock Wall type. Blocks were deteriorated, blocks' face or side was spalled, missing; see Fig. #4, #5 and #6. Generally the retaining walls were severely deteriorated and needs replacement. It showed efflorescence, sign of leaks,
- Concrete slab steps were uneven, broken, in need of replacement, as in present state could cause danger to the residents. See Fig. #3.
- The guard rail secured to the top of the retaining wall was in poor condition; see Figs. #5 and #6
- The guard base plates were heavy corroded; see Figs. #3 to #6.

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Fig. #1 General view of main entrance ramp.

Fig. #2 General view of main entrance bottom part of the ramp.

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Fig. #3 Deteriorated retaining walls and guard rail base plates.

Fig. #4 Another view of deteriorated retaining wall.

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Fig. # 5 Deteriorated ramp and side retaining stones. Note stone are uneven.

Fig. # 6 Deteriorated side retaining stones.

2) Side Entrance Ramp.

Observations and Comments:

- Retaining concrete block wall supports walkway and runs parallel to the building. Concrete slabs were inclined and needs replacement, see Fig. #7.
- Retaining wall was tilted, out of plumb, coping blocks were deteriorated. See Figs. #4 and #8.
- Wall was leaking at the base; see Fig. #4. It appears that wall drainage is not working.

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- Concrete slab steps leading to the building side entrance were tilted; see Figs. #8 and #9.
- The steps were placed directly on asphalt walkway without foundation; see Fig. #9.
- There was a gap between concrete slab and retaining wall; see Fig. #7.
- The guard rail secured to the top of the existing retaining wall was in poor condition; see Figs. #7 and #8. Base plates were heavy corroded.
- The guard rail was out of plane at places; see Fig. #7.

Fig. #7 Side retaining wall supporting walkway. Note leaning concrete.

Fig. #8 Side retaining walkway and the steps. Note leaning concrete steps and corroded guard rail base.

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Fig. # 9 View of steps. Note deteriorated guard rail.

RECOMMENDATIONS:

We have reviewed site and familiarized ourselves with existing building systems to understand the scope of existing operation. Based on the review and preliminary site elevations given by the Region, we came to the conclusion that present ramp layout is satisfactory; it provides wheelchair access without reducing existing greenery.

We will ensure that the ramp is designed in conformance with all AODA and OBC regulations to allow for better building access, new ramp.

Further, to ensure second access to the building, we propose to build temporary asphalt walkway at the back leading from the parking lot to the back entrance. Some site modifications to achieve this, will be necessary.

Based on the above noted limitations and observations, we at TAK Engineering of the opinion and recommend the following:

1. **Main Entrance Ramp:** Remove and replace main entrance building retaining walls, concrete ramp, steps, and steel hand rails.

    - Build new ramp for disability access as a concrete walkway.
    - Construct architectural concrete retaining block walls of Risi Stone Inc. Stones, or approved equal.

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- Construct concrete ram slab.
- Install new guard rails meeting Ontario Build Code 2012 requirements.

SienaStone – Unilock Wall. (courtesy of Unilock)

2. **Side Entrance Ramp:** Remove and replace concrete walkway including retaining wall:

    - Build new retaining wall similar to existing architectural concrete block wall, Risi Stone Inc. stones.
    - Construct new concrete walkway.
    - Construct new concrete stone steps.
    - Install new guard rails meeting Ontario Build Code 2012 requirements.

PRELIMINARY BUDGET:

In conclusion we have estimated that the construction cost for demolishing and replacement of the retaining walls and ramps is as follows:

1. Demolishing all retaining walls and ramps, - $ 20,000.00

2. Construction of temporary walkway at back, new main and side entrance retaining wall/ramps, Including guard rails on retaining walls, - $ 70,000.00

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3.	Miscellaneous/contingency	5%	-	$ 4,500.00
		Sub-Total	-	$ 94,500.00
4.	Overhead, profit, site expenses	15%	-	$ 14,175.00
		Total	-	$ 108,675.00*

*All estimate prices are without H.S.T and are **based on pre COVID-19 prices**. Therefore, the budget cost may vary, even up to 20%.

This concludes our observations, findings and recommendations.

TAK Engineering Ltd.

For T.M.Zeniuk, P.Eng. B.D.S.

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