THE MILOVIA GROUP

2575 JOHNSON RD.
SCOTIA, NY 12302

October 16, 2017

William Federiconi
194 Forbes St.
Amsterdam, NY 12010

Dear William,

The following structural report details the findings and recommendations for the structural site inspection, conducted on September 20th, 2017, of your home located at the above address. The inspection is intended to provide you information regarding this structure's viability to continue serving as a rental unit, in lieu of the partial collapse of a retaining wall to the rear of the home. As discussed, you would like to continue to rent the home, but cannot do so until the home is deemed structurally safe for future tenants.

This report will discuss the areas observed, and will conclude with recommendations for any required repair work.

Observations & Findings:

- Steep Terrain at home site:

Your home was built in 1910, on a steep, terraced hillside (see topography in photo A1). The home is located approximately 20' above the street (Forbes St.), and is accessible via a wooden staircase. There exists a low terrain wall at the front (south) of your home.

To the rear (north) of the home, the adjacent property's home is located at 34/36 Kreisel Terrace, approximately 60' above Forbes St. (about 40' above your home). A concrete retaining wall is located on the north home's property, and retains approximately 15' of soil.

In March 2017, a waterline broke in the home at 34/36 Kreisel Terrace, resulting in a flooded basement, and a portion of this retaining wall collapsed. The resulting mudslide mostly impacted the neighboring home to the west of your home (see photo A2). A structural survey of your home was conducted to determine what is the current state of the remaining wall, and if any damage to your home was incurred.

- Retaining wall condition:

The rear concrete retaining wall was built as a non-reinforced concrete gravity retaining wall, with multiple wall segments. These wall segments appear to have been precast tilt-up panels, based on the identical wall segments, the top and bottom setting holes, and the steel setting-rebar that was left in place at the top (now rusted). Many gravity walls such as these are angled into the hill, and retain the soil from the weight of the wall. This wall does not appear angled, and it is unclear how the walls were originally set into place. It is also unclear if the wall has shifted over the years from its original position to now be straight or angled outward. It is known, however, that this type of construction is now often considered unpredictable in its performance and longevity.

When the western segment(s) of retaining wall collapsed, it failed by overturning. Based on the sequence of events, the build-up of large hydrostatic forces from the waterline break resulted in too high of loads for the wall to resist. The first two adjacent remaining segments of retaining wall has significant cracking along the upper 1/3 of the wall, (see photo A3), and there has been significant movement from its original position. Each wall segment has no visible anchors between the adjacent remaining wall segments since no anchor could be seen at the portion of wall collapse, nor at the junction between wall segments 3 and 4. (see Photo A4).

It is unclear what remaining forces exist behind the wall, since no soil probes have yet been conducted to determine the weight of the soil and the height of the water table. It is also unclear the state of the drainage behind the wall, and the likelihood of similar water build-up from occurring. Based on the recent partial wall collapse due to a high water table, the remaining wall can be assumed to be at similar risk, under these similar loading conditions.

Directly in front (to the south) of wall segment 3, is a large tree, with one of its large branches crossing in front of wall segment 2. Since living organisms, such as trees, can decay at any time, they can never be assumed to serve as structural supports, so this tree cannot be relied on to provide adequate bracing of the remaining concrete wall segments. It should be mentioned that large trees do provide good erosion prevention, and removing this tree for any repair work, should be done with caution to maintain adequate erosion control.

Finally, it is clear that the habitability of the home is dependent on the retaining wall's ability to retain the soil. If any portion(s) of this wall were to fail, it would pose an immediate threat to the home and its occupants.

- Home condition:

The overall condition of your home is in fairly good shape- the roof & floor joists do not show any signs of decay/damage, and it was determined that the retaining wall collapse did not create any visible damage to the home. The only portion of your home that does require remediation, are settlement issues from residing on a steep terrain. There are signs of settling and/or shifting over the years, based on past concrete repair work of the foundation walls, as well as floors out-of-plumb (See photo A5). The descending slope from your home should not be closer to the foundation than 1/3 of the total hill height (from street to foundation). Your home is located approximately 20' above the street level, so the slope should be located at least 7' from the edge of the footings. Or, a retaining wall should be built to support both the vertical and lateral loads from the home.

The home currently does not show signs of large cracking and/or bowing of the foundation walls, so it is determined that the home can still be considered in "fair" condition (not in consideration of the rear retaining wall). This assessment is based on the current state, with the assumption that steps will be taken to remedy the settling to prevent future movement. (If proper remedies are not performed, however, your home's condition could change to "structurally unsafe for habitation").

Recommendations:

Repair Work A: retaining wall repair:

In order for retaining walls to properly support both vertical and lateral forces, they must be able to resist both sliding and overturning. The gravity wall that failed behind your home failed by overturning, and the adjacent wall segments are also at risk for failure, due to the large cracking, and the possibility that similar loading conditions (improper drainage) can lead to further collapse of this wall.

There are three different methods to repair damaged walls such as this:

1. A new wall can be built in front of the existing wall, with proper drainage. The existing wall is then left in place. This new retaining wall would be designed to resist the expected vertical and lateral loads.
2. Steel framing and/or concrete buttresses may serve as exterior wall reinforcement. With this wall, since there are significant horizontal cracking, portions of the wall have already shifted, and there is a steep descending slope, this method may prove to be difficult or too-costly to construct.
3. The existing wall is removed, and a new retaining wall is installed. This method may be difficult to do, since there is a home close to the top of the

wall, and there is limited access to properly excavate & remove the soils and existing wall.

Repair Work-B: Basement Walls, & 1st floor repair:

1. New, taller, terraced walls should be installed to the south of the home to provide better support for the home's loads. These walls should extend the soil more than 7' from the edge of the existing footings.
2. The main house can be brought back to plumb by slowly raising the home, for the installation of additional sill plates and/or shims.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Olivia Cellini, PE

Principal
The Milovia Group

Appendix A:

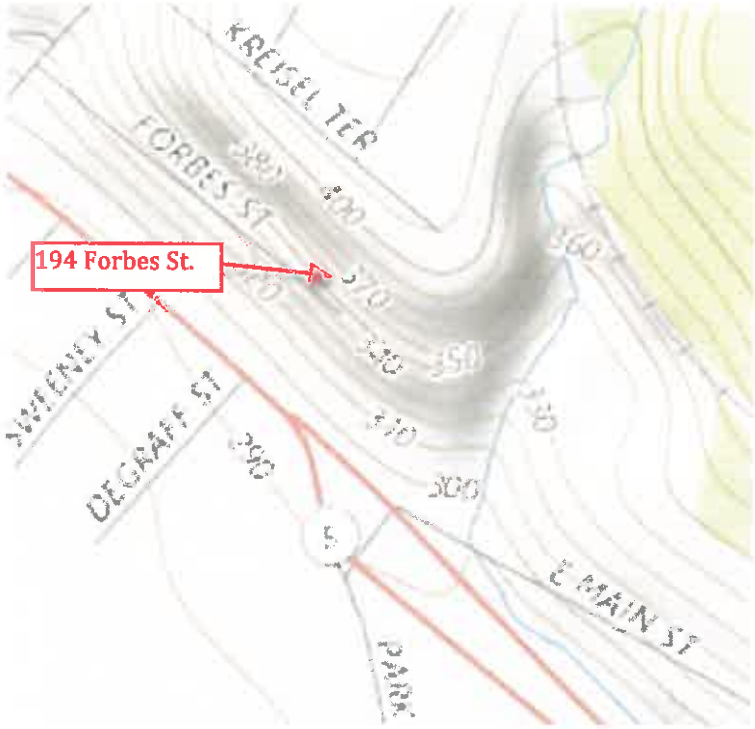

Photo A1:
Topography of property

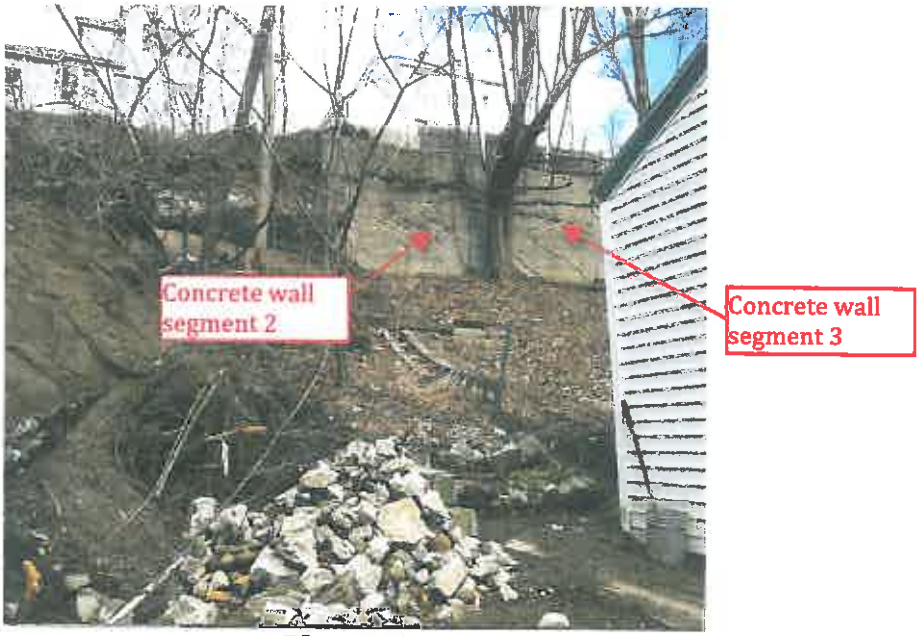

Photo A2:
North retaining wall partial collapse (Segment 1)

Photo A3:
Large cracking at concrete wall (Segment 2)

Photo A4:

- Segment 3 wall: large cracking and movement
- Segment 4 wall: no large cracks or movement
- Note the setting rebar left in-place at the top of wall

Photo A5:
Interior foundation wall past repair work

Photo A6:
Front steep descending grade, close to home