



Site Structural Inspection Report

Date of Inspection / Date de L'Inspection: August 10th 2020

Time of Inspection / Heurs de L'Inspection: 10am

114 Stanley Ave, Ottawa, ON K1M 1N9

Prepared for:

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Prepared by:

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General View of the Building (From River Lane)

Job reference no.:

1.0 Structural Inspection

1.1 Brief:

Following instructions received from Mario Poulin at Cloud 9 Drafting & Design, acting on behalf of the client, Mrs. Jennifer Toby of 114 Stanley Ave, the property was visited on Monday August 10th 2020. The purpose of the visit was to undertake a visual, non-intrusive, inspection of the garage to identify the structural integrity and put forward our recommendations for the renovation or demolition and reconstruction of the structure.

This report concentrates specifically on structural engineering issues. Thus a number of matters which may be considered in reports on buildings are outside the scope of this report, such as legal, decoration, fences, contamination, asbestos, services (electrical, gas, water, phones etc...) and party wall matters.

1.2 Inspection Date, Site Conditions and Limitations:

The property was visited on August 10th 2020. The weather: sunny +-25c during the period of the visit.

The garage is accessible from Stanley Avenue, through the yard, or from River Lane.

The exterior of the garage was viewed from pavement level at the rear and from the lower finished grade at the front (facing the house).

1.3 Brief Description of the Garage

The lot located in New Edinburgh has two buildings located on it, a 2.5 storey house and 1.5 storey garage. The Victorian-era house that is facing Stanley Avenue, is on the front (South) side of the lot. The board and batten clad garage, which is estimated to be built in 1872, is located on the rear part (North) of lot 4 (West Half). The garage is clad in board and batten wood siding that looks to be original. The roof has asphalt shingles that are not fitting with the age of the garage. They seem to be about 25-30 years old. The garage has openings on all four walls. The rear wall (North) has a single oversized (10'-0" Wide x 7'-0" high) garage door on the left side of the wall. The left wall (East) has a single 4'-0" wide x 3'-0" high wooden framed window in the storage loft. The front wall (South) has four 3'-0" wide x 4'-0" high wooden framed windows as well as a 36" wide single wood door. The right wall (West) also has a single 4'-0" wide x 3'-0" high wooden framed window in the storage loft. The overall look of the garage is very weathered, leaning, very out of square and showing some rot. See below for more detailed description of each element.

1.4 Structural Observation

1.4.1 Foundation

1. No excavation was done on the outside perimeter of the garage. The foundation could not be seen from the outside perimeter. However, under the wood floors on the inside, I could observe a 6x6 wood beam in some sections and in others there is no foundation at all. This wood beam was in turn sitting on rubble or a compacted stone layer. This means the whole garage structure is floating and resting only on the wood perimeter beam or actual ground. This does not allow for any lateral support of the walls and explains why the building is twisted, leaning and uneven.

Photo 1-4

2. The foundation beams are not original. I could clearly tell the ones I could see had been replaced recently (I estimate the last 10 years). **Photo 1**

1.4.2 Garage Floor

1. The garage has a wood floor comprised of 1x4 wood floor board sitting on a 2x10 wood joist. These are sitting on the wood foundation listed above.
2. There are clear indication of slopping that is demonstrated throughout the floor. All though the floor slopes the joist are in ok condition and I could clearly tell some of them had been replaced recently (I estimate the last 10 years) **Photo 5-6**

3. The floor holds the walls above and the slopping explains the leaning. It is our observations that the wood foundation is not level therefore sloping the floor, which in turn makes the walls and the roof lean.

1.4.3 Walls

1. The walls are comprised of 2x4 wood studs at 24" O/C clad with board and batten wood siding. **Photo 7**
2. The wall show some leaning and are out of square. It is easy to observe that the building is leaning to the right (looking from River Lane) and is showing signs of stress in the wood studs on the corner of the garage. **Photo 8**
3. There are seams and cracks very apparent in the cladding. It is easy to see rays of light penetrating from the outside in. This explains some of the water stains and also some rot on the lower portions of some of the wood studs. Spray foam has been used to cover some of these gaps. All things considered, the condition of most studs is ok and we suggest that what can be dismantled and reassembled on the new garage framing be done. We anticipate this to be about 70% of the wood studs. **Photo 9-10**

1.4.4 Roof

1. The roof structure is framed with typical rough cut 2x6 roof joist at 24" O/C with 1x6 wood decking clad with asphalt singles that seem to be 25-30 years old.
2. The roof joist have significant sagging which shows signs of overloading from snow loads. **Photo 11-12**
3. The interior roof joists have some rope holding them together to help withstand the spreading. Clearly they tried to address the fact that the upper storey walls are spreading towards the outside. Unfortunately this is a band aid solution to help limit the deflection caused by the snow loading on this roof. **Photo 13**

1.4.5 Openings

1. The openings on all 4 wall show significant stress with the building being leaning and the roof sagging. Most of the windows are inoperable but the few that were did not open do to the frames being crooked and stressed. **Photo 14-17**
2. The garage door sill is rusted and shows signs of water infiltration. It is hard to tell if the door is also out of square do to the condition of the walls and floor. **Photo 6, Photo 26**

1.4.6 Cladding

1. The exterior cladding board and batten wood shows significant signs of weathering and water damage. However the rot is minimal other than the corners, bottom of the boards and around openings. **Photo 18-26**

2. The condition of the board and batten is not great but we suggest the portion that can be dismantled and reassembled on the new garage framing be done. We anticipate this to be about 30% of the exterior cladding.

1.4.7. Interior floors

1. The wood floor to the loft is built on 2x6 wood frame structure attached to the outside walls. This floor joist size is quite overspanned for the size of the wood member. The wood seems to be in good condition but the floor itself is crooked due to the shape of the walls holding it.
2. We suggest this wood should be dismantled and reassembled and reused were possible in the structure of the new building.

2.0 Comments and Recommendations

2.1 Foundation and Slab

1. The foundation has to be a poured concrete slab on grade with thickened edge to be able to withstand the harsh conditions our geographical location demands on a yearly basis.
2. We suggest an 8" concrete curb be poured on the perimeter to allow for the new walls to be built above the finished grade. This would allow snow and rain to be in contact with the foundation and not the wood, this reducing the chance of rot.
3. The concrete slab should have rebar to allow for structural stability and saw cuts to limit cracking within the slab.
4. The slab should be poured on an 8" (min.) bed of crushed stone to allow drainage and compaction.

2.2 Walls

1. The new outside walls should be 2x4 wood studs at 16" O/C. We recommend +-70% of the existing studs could be reused for the construction of the new structure.
2. There should be strapping installed on the outside to allow for better fastening of the board and batten cladding.
3. The board and batten wood cladding should be numbered when dismantled to maximize efficiency and fit when reassembling. Some of the existing should be reused to maintain character and look.

2.3 Roof

1. The new roof should be a pre-engineered roof truss structure that would allow for the snow loading to be calculated for the next century.

2. The new roof truss should have the same pitch and be built with today's standards would have to comply with Ontario Building Code in effect at the time of reconstruction.
3. A sub membrane like OSB or plywood should be added on the new roof trusses and be clad with new asphalt shingles.

2.4 Openings

1. All windows and doors should be maintained unless the frames are rotted or out of square at which point new windows and doors should be installed.

2.5 Recommendations

1. We are always very cautious when it comes to our recommendations for buildings in heritage overlays and heritage district. Unfortunately, due to the state of the structure of this garage we recommend demolition and reconstruction. We are aware that there are only a few of these 1.5 storey garages left in the neighborhood but unfortunately, we cannot guarantee structural integrity without a new foundation, outside walls and roof.
2. We have looked at recommending only the foundation be changed. However with the roof sag, the leaning structure and the slopped floor this is not a recommended option. Shoring is possible but with the limited space between the adjacent garages, particularly on the left and the overhead electrical wires and services (**Photo 12, Photo 15-16**), this option would be difficult to achieve and duly expensive. The structure is not self-supporting, frail and fragile and would make lifting the structure difficult. While lifting the structure we are uncertain that it would remain a structure.
3. We have been informed that the city has plans on re-paving River Lane. If this resurfacing takes place, (i.e. excavation, granular, compaction etc...), we have concerns that the existing structure will be further affected by the vibrations and heavy machinery.

In summary, the existing garage has unfortunately little to no foundation and as a result the super structure has swayed, sagged and twisted, because of the freeze and thaw cycles over the years. Had there been a sound foundation the super structure would not be in the present condition. The overhead services and planned improvements on the access road at the rear, pose a risk to both neighbors and neighboring properties. Therefore to minimize risk and costs we recommend the existing garage be removed and we start afresh. However, should there be anything of heritage value and re-usability i.e., special windows, this be incorporated in the new structure.

Photographs referred to above are included in the Appendix 1.

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Appendix 1

Photographs



Photo 1

6x6 wood beam foundation, sitting on rubble. We can see the floor joists and floor boards sitting above.



Photo 2

Section of floor without a foundation. We can see an old rotted out piece of wood underneath the floor joist.



Photo 3

Here we see a section of Floor joist sitting directly on the ground/rubble. We can see voids underneath the floor joist indicating there is no actual foundation underneath these sections.



Photo 4

Here is the left corner of the front bump out sitting directly on the ground/rubble seen from the outside. We can see voids underneath indicating there is no actual foundation or anything supporting this section.



Photo 5

The floor decking shows many uneven sections.



Photo 6

Door sill shows heavy slopping.



Photo 7
2x4 wood studs
shown from the
inside of garage.



Photo 8
Walls leaning at corner of garage.



Photo 9
Spray foam used to cover gaps and cracks.



Photo 10
Spray foam used to cover gaps and cracks.



Photo 11
Interior roof composition. Somme sagging visible on left side of picture,



Photo 12
Exterior roof sagging from snow overloading.



Photo 13
Spreading starting at
roof and wall junction.
Tie rope shown added
from side to side.



Photo 14
Front side (facing Stanley Ave) shown.



Photo 15
Right side shown.



Photo 16
Rear elevation (facing River Lane) shown.



Photo 17
Left side shown.



Photo 18
Rot and damage on front bottom left corner.



Photo 19

Rot and damage above small lower roof on front side.



Photo 20

Rot and damage on front side upper right corner.



Photo 21

Rotten and damaged boards on left side.



Photo 22

Rot and damage on left front corner.



Photo 23

Rot and damage around garage door sill.



Photo 24

Rot, damage and holes on upper left side.



Photo 25

Rot and damage on left side lower right bottom portion of wall.



Photo 26

Damaged, crooked structure around door and door.