



GDR Structural Engineer
37 Somerville Rd.
Halton Hills, ON L7J 3A2
905-703-5755
gdr.structural@gmail.com

Doug Matthews
66 Main St. S
Georgetown, Ontario

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Project: Structural Assessment of Heritage House
13802 9th Line, Georgetown, ON

Dear Doug,

As requested, we visited with you at the above noted address to review the structural condition of the existing house. We understand the original front 2 storey part of the house is designated as a heritage building. The owner wishes to extensively renovate the front part of the house or demolish it and rebuild due to the old age and condition of the original construction. We did a non-destructive visual review of existing foundation and framing that was visible and not covered with finishes or backfill. Based on that review, we can comment as follows:

1. Foundation: The foundation of the original front heritage part of the house is rubble stone about 18" minimum thick. The joints between the stones are filled with various materials such as loose sand, mortar patches, concrete parging and even some spray foam insulation in places. Loose sand between stones is likely remnants of many years of water penetration through the wall that washed away any cement that may have been in the original mortar or subsequent mortar repairs. Significant water penetration also results in further damage and shifting of the foundation as it freezes and expands in the stone joints. The many patches, parging and spray foam fillers visible are evidence of previous repeated attempts to prevent water from penetrating the walls. The loose sand in the joints and other openings between stones have allowed rodents to enter the building.

There are several large openings broken through the stone walls for windows and HVAC penetrations and it appears that structural lintels were not installed or insufficient wood sills were used instead of lintels. The openings are very rough with loose stones around

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the edges. Some of the walls appear to be slightly bowed/leaning due to lateral soil pressure and possibly pressure from frost penetration.

The basement floor appears to be bedrock and is not level, varying in elevation by as much as 24" from one corner of the basement to the other. This results in an uneven, sloping floor that is unsafe and difficult to walk on in places. The headroom in the basement is very low in places as well and not safe.

2. Superstructure: The main floor wood framing consists of 2x8 joists spanning front to back that are significantly overspanned and have been shored by various temporary pieces of timber and jack posts supported on the un-even bedrock floor. Some of the sill plates/beams on the rubble stone wall and ends of floor joists have visible sections of rot and we would therefore suspect that the wood embedded further in the stone walls that we cannot see will also have some rot.

The stair opening around the main floor stairs to the basement is not safe as it is too narrow with insufficient headroom and undersized beam framing around the opening.

The main floor ceiling supporting the 2nd floor is also framed with overspanned 2x8 joists so the ceiling and floors are not level and as a result, some door frames appear to have shifted out of square. There is also a step in the floor from the original main floor into the addition main floor that is not to code and is unsafe.

When viewing from the exterior of the house, the entire front wall of the house appears to be bowed inward which could be a result of stone foundations bowing and settling combined with undersized 2nd floor framing that can further pull inwards on the walls. We also understand that rats and other rodents have chewed holes through main floor wood walls.

Therefore, the foundation and superstructure will require extensive repairs to improve them to a safe condition. Expected repairs could include, as a minimum:

- excavating around rubble stone walls and installation of a new waterproofing system
- structural repair of stone foundation including removal of deteriorated mortar and installation of new mortar joints
- removal of loose uneven stones and replace with solid masonry/concrete as required
- installation of lintels over foundation wall openings

- lowering/levelling of the bedrock floor replacement with proper concrete floor
- underpinning some of the stone foundation wall due to floor levelling
- reinforcing/shoring of overspanned floor joists and beams
- removal and replacement of all rotted wood joists, sills, beams
- demolish and reframing of all stair openings
- demolish and reframe bowed exterior stud walls as required
- install proper lintels over openings in framed walls
- properly support any 'balloon-framed' joists/beams
- demolish and repair all other structural framing items not visible at this time that are will inevitably be found during demolition for the items noted above.

In light of the above, most of the structure and foundation will require significant demolition and repair or replacement. This would be very difficult, disruptive and expensive work that would essentially result in a 'patchwork' of the remaining very old original construction with some new repair materials. Parts of the original structure that would remain, that may not appear to need immediate repair at this time, are likely to require further repairs at a later date simply due to the age and current condition of the existing structure.

Therefore, due to the overall poor structural condition of the existing wood framing and foundation that is visible at this time, the very high expected repair costs to bring them up to an adequate level of safety to meet Ontario Building Code requirements and the potential for even further high repair costs in the future, we would suggest that any incurred costs by the homeowner at this time would be better spent on demolishing and re-building the house rather than repairing.

We trust this is the information you require at this time. Please let us know if you have any questions.



**Gary Rosenberg, P.Eng. for
GDR Structural Engineer**



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