



LEA Consulting Ltd.

Consulting Engineers & Planners

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Our Ref.: 19063

CIM Development
502-55 Commerce Valley Dr. W.,
Markham, ON L3T 7V9

Attn: David Sun, President

Email: david.sun@cimdep.com

Re: 9900 Markham Rd., Markham

Dear David,

LEA Consulting was retained by City of Markham to carry out a condition review of the above-mentioned house. Following the review, a report was generated that recorded the observations made as well as provided an opinion of cost for the structural work required to remedy the deteriorated conditions. Our findings is summarized in the report dated October 23, 2017.

Now we are asked to provide an opinion on the extent of material that can be salvaged to render the building structure safe and occupiable. We offer the following comments:

Foundations

- The rubble foundations suffered considerable settlement and deterioration
- The mortar joints have deteriorated to an extent that a screw driver can go through the joint
- There was evidence of frost heave and is most likely the major cause of movements
- There were number of sporadic post and shores sitting on concrete pads or logs
- In order to make the foundations stable and basement occupiable, the rubble foundations must be replaced with new foundation wall and new posts and footings must be added to replace the random supports present now.

Exterior walls

- The brick walls have deteriorated to a point that a screw driver can penetrate right through the brick
- Mortar joints are missing in considerable areas of the wall
- Parging is missing or delaminated in areas. The parging is likely the cause of the brick deterioration by trapping moisture in the wall due prolonged exposure to moisture and freeze-thaw
- Some portion of the wall is buldging due to movements in foundation
- The movement also caused separation from the floor and roof making the wall unstable

- Most of the brick if not all must be replaced with new brick veneer and either stud or block backup

Floor Structure

Ground Floor

- The floor was constructed with mass timber and appears to have been painted
- The wood has signs of excessive rot. Paint also traps moisture and accelerates rot
- Movements in the foundations caused crushing and loss of bearing
- The joists in the crawl space area had similar issues. The span of the joist is more than what is allowed in current OBC
- Most beams and joist are not salvageable and must be replaced with new materials.

Roof

- The roof structure has been exposed to elements for many years causing in rotting and shifting
- Portion of the roof was collapsed and tarped over
- The construction method and sizes would not comply with current code. Both low and high roof members are undersized
- Most of the 4x4 rafter need to be replaced
- There were no collar ties and ridge beams resulting in outward pressure on the walls
- Roof deck was in poor condition
- The roof is unstable and must be shored before any work can take place
- In order to reconstruct the roof, it needs to be jacked and reinforced with new rafter and collar ties

Conclusion

In conclusion, the house structure needs extensive structural intervention to make it safe for construction and eventually to make it occupiable. It is our opinion that the original structural elements cannot be used to restore the integrity of the structure and as a result new structural materials are needed throughout.

We trust this is sufficient, please do not hesitate to contact us for any further information.

Yours very truly
LEA Consulting Ltd.



Shahe Sagharian, P. Eng.
Project Manager

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