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Building Condition Report 242/244/246 Princess St. Winnipeg, MB

Submitted to:
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246 Princess St., Winnipeg, MB

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A. Introduction

Wolfrom Engineering was retained to provide a building condition report of the above noted address. We were notified the City of Winnipeg requested this report be completed in an order #22-110235 ORD, dated February 1, 2022. Wolfrom Engineering has previously visited the building in 2007 for interior renovations, 2013 for masonry wall condition review and again in 2015 to evaluate the existing foundation capacity.

For ease of description the project north used follows Princess Street while east-west follows Alexander Ave.

B. Description

242, 244 & 246 Princess Street, also known as Bathgate Block, is a three storey building originally constructed in 1883. The building is separated into three units with partition walls in the east-west direction perpendicular to Princess Street. There have been slight modifications to each unit but for the most part they have similar framing and construction. The central unit #2 has the most unique framing of the three units which will be discussed in more detail below.

The roof framing of each unit consists of true 2x10 D. Fir joists at a spacing of approximately 24" on centre. The joists span the full distance, approximately 20ft, between masonry perimeter and partition walls. The masonry walls are load bearing three course multi-wythe brick and extend down to the foundation.

The main, second and third floor are true 2x12 D. Fir joists at a spacing of 12" on center and 16" on center at the third floor. The joists have plank decking with a finish hardwood floor. The joists span a distance of approximately 10ft and bear on an interior steel beam support and the multi-wythe brick walls at perimeter of each unit. The steel beam is a replacement of an original heavy timber beam, the date it was replaced is not known. The steel beam is supported by columns at approximately 17ft on centre. The size of the beam and column vary with each floor. At the furthest east side the steel beam has a short cantilever stub to support the floor framing up to the brick façade.

The floor framing of the middle unit, unit #2, differs from the others. In unit #2 the steel framing only extends from the east façade to approximate the centre point of the building. The steel beam has a longer span compared to the other units with a maximum length of approximately 32'-9" between columns. At this point the steel framing terminates at a masonry wall stub and the original heavy timber beam framing continues to the western wall. The heavy timber beam is 8x10" deep D. Fir with a 2-2x8 ledger laminated on each side supporting the floor joists. The beam is supported by 8x8 D. Fir columns spaced at approximately 7ft to 10ft on centre.

For all units the perimeter and partition masonry walls are supported by a rubble stone foundation walls. These rubble walls and all columns/posts are in turn supported by spread strip footings.

C. Observations

The following observations were made on site

242 Princess:

Basement to Main:

1. The rubble wall has been damaged at the southwest wall. The wall has significant deformation with loose rubble. Shoring is required immediately.
2. The rubble wall requires repointing of the mortar between stones. The location and severity of the mortar damage varies but is most prevalent along the exterior walls.
3. The steel beam and columns are moist and are experiencing corrosion.
4. The east wall, towards Princess Street, has settled. The steel connection to this wall is visibly sloped. It is unclear if this is a recent development or if this condition has existed for some time.

Main to 2nd:

5. Several joists have fire damaged.
6. Several joists have had large cuts made in them which severely reduce their capacity.
7. A large section of the second floor framing towards the dividing wall have inadequate framing of a stair opening infill. The header of the infill requires column supports or flush framed beam supports.

2nd to 3rd:

8. Several joists have had large cuts made in them which severely reduce their capacity.
9. The masonry wall requires repointing along the exterior walls and the center of the dividing wall.

3rd to Roof:

10. Roof decking is water damaged at the west end.
11. Joists were damaged at the west end and have been sistered with an additional ply. The splice of the additional ply is at the center of the joist span. This splice location will require an additional reinforcing ply
12. Repointing is required along the east/west end walls and along the interior dividing wall.
13. The east masonry wall appears to be leaning towards the street and has caused a gap at the dividing masonry wall connection and at the 3rd floor connection to the brick.

244 Princess:

Basement to Main:

1. Steel columns are damp and experiencing corrosion.
2. Minor repointing of the rubble wall is required.

Main to 2nd:

3. West wall requires repointing.
4. At the existing steel beam which was infilled with masonry wall, the brick wall is separated from the steel and masonry framing.

2nd to 3rd:

5. The east masonry wall requires repointing.

3rd to Roof:

6. The east masonry wall appears to be leaning towards the street and has caused a gap at the dividing masonry wall connection and at the 3rd floor connection to the brick.
7. The interior dividing walls require repointing along the mid-length of the wall
8. The roof joists have failed at the west end. The joists have a mid-span shoring wall supporting them.

246 Princess:**Basement to Main:**

1. The south rubble wall requires repointing.

3rd to Roof:

2. The east masonry wall requires repointing along the east wall.

Exterior Walls:

Access to the brick façade was limited due to snow drifting. A detailed report of masonry wall condition was provided in W13085L01, dated May 30, 2013. The present condition of the exterior wall was compared to photos from 2013. These comments are provided in addition to our earlier report.

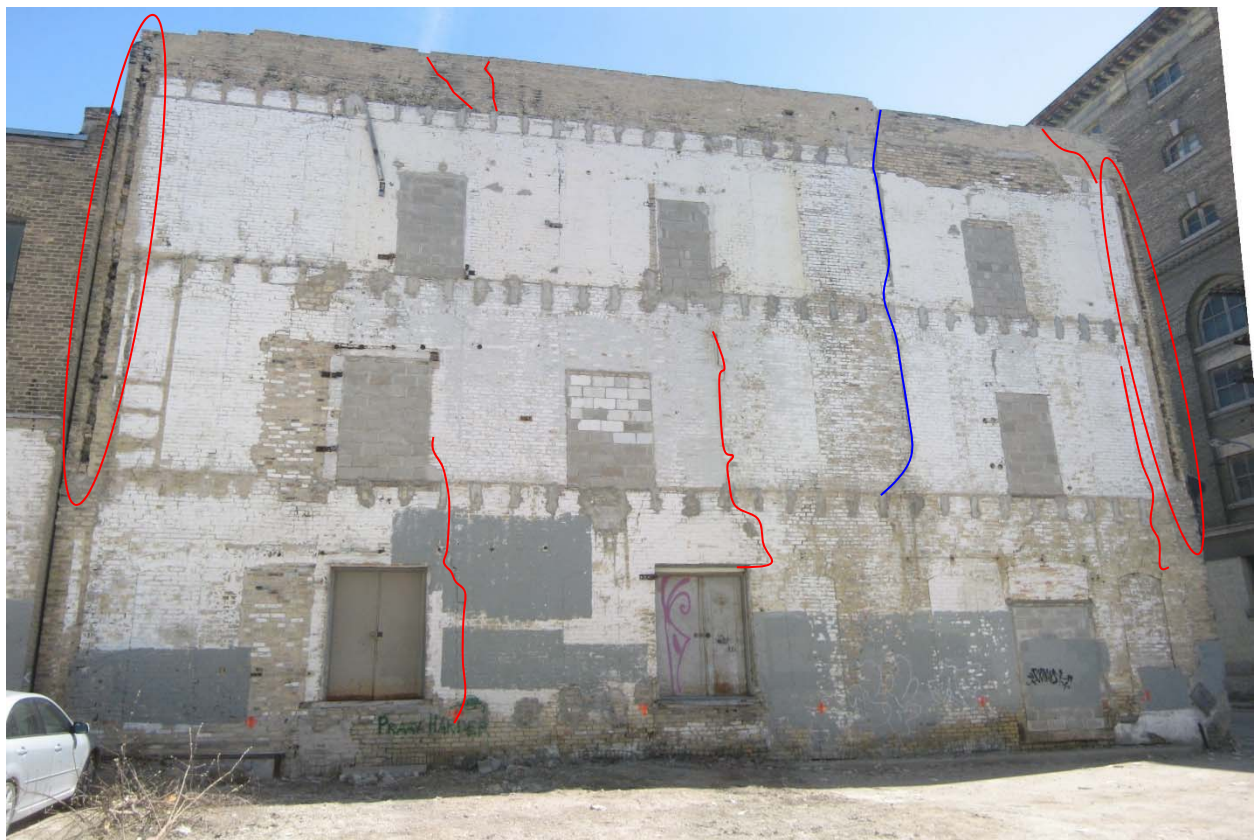


Photo 1: West Façade with Cracks Indicated (2013)

1. The vertical crack in building 242, indicated in blue, was widened significantly the full height of the building.
2. The main-second floor wall of 244 mortar has deteriorated significantly with repointing required.

3. The remainder of the building façade is in similar condition to our 2013 report.

D. Recommendations

We have categorized the proposed remediation of the building to immediate, short-term and intermediate-term and occupancy repairs.

Immediate Repairs:

These repairs are to be implemented as soon as possible.

1. The basement wall of 242 Princess is to be shored at the stairs to prevent further displacement of the bulged section until a full repair can be performed.
2. The roof joists of 244 Princess are to have their shoring redesigned by a professional engineer.
3. Materials are not to be stored leaning against walls, materials are to be disposed of or laid flat on floors.

Short-Term Repairs

These repairs are to be completed prior to September 6, 2022.

1. The bulged wall in 242 Princess is to be repaired to plumb condition.
2. Repair or replace damaged roof joists in 244 Princess.
3. The previously repaired roof joists of 242 Princess are to have an additional ply installed at the center splice.
4. The exterior basement walls of 242 Princess are to have all damaged mortar repointed.
5. The west façade are to have all weak mortar repointed and all cracks repaired. The large vertical crack along 242 princess is to have brick stitch work completed and the crack repointed.
6. The interior demising walls are to be repointed and have all large cracks repaired by brick stitch work within 30ft of the east façade.
7. The east façade is to be tied back to the third floor and dividing walls from 3rd to roof with plate tie back supports.
8. Engage an architect to provide direction on all building envelope conditions and coordinate with structural repairs. Specific direction is required on the water damage to the roof decking of 242 and 244 Princess. Architect is also to provide direction on minimum temperature to heat building to maintain building condition.

Intermediate-Term Repairs

These repairs are to be completed by September 6, 2023

1. South exterior wall and remaining interior demising walls between buildings are to have all damaged mortar repointed for the full height of the building. Repoint all weak mortar in interior rubble demising walls.
2. The east façade is to have all weak mortar repointed and all cracks repaired.
3. All steel in the basement is to be sandblasted to remove corrosion and to be primed/repainted.
4. Reinforce infill framing at old stairwell in 242 Princess.

Occupancy Repairs:

These repairs will be required to receive building occupancy but do not reduce building integrity prior to occupancy.

1. Repair or replace all fire-damaged joists.

2. Repair or replace all cut/modified joists.
3. At the main floor level of 244 Princess the gap between the steel column and masonry wall is to be concrete infilled.
4. Exposed foundations are to be infilled back to original condition.

There is some evidence of differential settlement of the building foundation. It is recommended the building be surveyed to determine movement of the walls over time.

E. Conclusion

Construction documents for the above noted repairs are not included in our current scope of work. Detailed procedures and drawings are to be provided by a professional engineer registered in Manitoba.

This review carried out for this report was conducted on a visual basis only and no destructive techniques were used based on industry standard for building condition assessments. This report should serve as a general condition assessment of the building and brickwork, however additional areas that may require further remediation may be found through additional reviews. Additional recommendations for enhanced durability and long term performance of the building are available upon request.

This concludes our report, please forward any questions to the author.

Respectfully,

A handwritten signature in black ink, appearing to read 'Josh Munro', written in a cursive style.

Josh Munro, P.Eng.

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Appendix A: Site Photos



Photo 2: 242 Princess – Rubble wall bulge/damage at south-west corner.



Photo 3: 242 Princess – Exposed foundation to be infilled.



Photo 4: 242 Princess – Exposed foundation to be infilled and typical rubble wall requiring repointing.



Photo 5: 242 Princess – Steel beam/column corrosion.



Photo 6: 242 Princess - Steel beam connection to east wall with signs of settlement.



Photo 7: 242 Princess – Roof drain with damaged roof framing.



Photo 8: 242 Princess – Water damage and roof joists reinforcing spliced mid-span.



Photo 9: 242 Princess – interior of west wall with cracking.



Photo 10: 242 Princess – Cracking and brick deterioration at center of dividing walls.



Photo 11: 242 Princess – Possible fire damage in north-east corner of roof framing.



Photo 12: 242 Princess – Brick separation where east façade meet demising wall.



Photo 13: 242 Princess – Gap between east façade and third floor framing.



Photo 14: 242 Princess – Cracking and brick deterioration at center of dividing walls.



Photo 15: 242 Princess – Material leaned against masonry walls.



Photo 16: 242 Princess – Masonry cracking at south-east corner.



Photo 17: 242 Princess – Typical example of cut floor joists to be repaired



Photo 18: 242 Princess – Inadequate stairwell infill.



Photo 19: 242 Princess – Typical example of fire damaged joist.



Photo 20: 244 Princess – Significant crack at demising wall at connection to east façade.



Photo 21: 244 Princess – Broken roof joists with shoring wall below.



Photo 22: 244 Princess –Signicant crack in west façade.



Photo 23: 244 Princess – Brick separation where east façade meet demising wall.



Photo 24: 244 Princess – Interior demising wall requiring repointing.



Photo 25: 244 Princess – Interior demising wall requiring repointing.



Photo 26: 244 Princess – Perimeter wall requiring repointing.



Photo 27: 244 Princess – Damaged perimeter wall at west façade.



Photo 28: 244 Princess – Significant crack at demising wall at connection to east façade.



Photo 29: 244 Princess – Rubble demising wall requiring repointing.



Photo 30: 244 Princess – Rubble demising wall requiring repointing.



Photo 31: 244 Princess – Corrosion of columns in basement.



Photo 32: 246 Princess – Brick repair required at window on east façade



Photo 33: 246 Princess – Crack at demising wall near east façade with large crack.



Photo 34: 246 Princess – Repointing required at east façade.



Photo 35: 246 Princess – Demising rubble wall requiring repointing.



Photo 36: 246 Princess – Demising rubble wall requiring repointing.



Photo 37: East Façade



Photo 38: West Façade



Photo 39: South Facade