Prepared By:

Chatsworth Community Centre

Structural Inspection Report - 2017
Township of Chatsworth

GMBP File: C-7711

April, 2017

Chatsworth

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1. INTRODUCTION

This structural inspection report has been prepared by GM BluePlan Engineering Limited for the Township of Chatsworth. The structural inspection consisted of a visual inspection of all the exposed structural components at random locations. This report formalizes our observations and summarizes our recommendations. The recommendations list any structural deficiencies and also indicate maintenance issues to minimize possible future structural deficiencies. The findings of this report may be used to assist the Township in preparation of future capital planning.

2. METHODOLOGY

At the request of Mr. Jamie Morgan, Operations Manager of the Township of Chatsworth, Mr. Frank Palmay, P.Eng. of GM BluePlan Engineering Limited (GMBP) attended the site on the February 22, 2017 and April 20, 2017 to complete a structural review of the building. Mr. Morgan was present during portions of our review.

The review was limited to a visual review of each component from the ground as well as a detailed review of the roof system from a scissor lift. Pictures taken during the inspection are presented in Appendix A of this report.

While the main reason for our inspection was to identify structural concerns, we made note of any obvious life-safety or architectural concerns as well.

3. BACKGROUND

The Chatsworth Community Centre was originally constructed as the community hall and change rooms with an outdoor arena around 1965. In the late 1960's to early 1970's, local residents constructed the arena structure to house the ice rink. A zamboni room and mechanical room were also added to the southeast corner of the building. In 1995, two additional change rooms were added as a lean-to to the northwest corner of the building.

In approximately 2001, a new roof was placed over the arena and community centre.

In 2006, a new cast-in-place concrete ice surface was installed over the existing slab on grade. A new dasher board system was also installed at that time.

Within the last ten years, a new heating and air conditioning unit for the community centre was installed outside the south west corner of the arena. Mono-sloped wood roof trusses were constructed as a lean-to over the mechanical unit. A new asphalt overlay was also installed over the existing asphalt paving around the same time.

For the purpose of this report, the road is considered to be on the west side of the building.

4. BUILDING DESCRIPTION

The building is located off Highway 10 in Chatsworth, just south of the Highway 6 and Highway 10 intersection. The site consists of an asphalt paved parking lot to the west of the building. To the north and south is gravel overflow parking with a gravel access road to the east. A fenced-in playground is located west of the building and a baseball diamond is on the south side of the building.

Prefinished steel siding is clad over the west face of the building, the south portion of the community centre and the north change room addition. The remainder of the building is exposed concrete block with no cladding. The roofing over the arena and community centre is a relatively new roofing membrane. The change room addition to the north has a steel roof, the zamboni room to the east has a shingled roof and the compressor room to the east has a flat roof.

The interior of the Chatsworth Community Centre consists of two distinct areas, the community centre and the arena.

4.1 Community Centre

The main floor of the community centre consists of the main entrance to the arena and community centre, a lobby/viewing area, the manager's office, a meeting room, men's and women's washrooms, two change rooms, a referee's room and a furnace/storage room. The second storey consists of an auditorium, a kitchenette and a cloak room.

4.2 Arena

The arena is a single storey structure which houses the ice surface, the player's and penalty boxes, spectator seating, the zamboni room, the compressor room, and the north change room addition which consists of two change rooms, a kitchenette and a storage room for the Agricultural Society.

All exterior walls and main floor interior walls are concrete block, with the exception of the partition wall dividing the arena ice surface from the lobby/viewing area, which appears to be wood stud and plexi-glass. The interior walls in the second storey community centre are all wood stud partition walls.

The ice surface, arena, change room and community centre main floor are all concrete slab-on-grade floors. The second floor to the community centre consists of wood floor joists.

The roof over the arena consists of bowstring timber trusses supported on timber columns. The roof over the compressor room consists of steel wide flange beams supporting a composite metal deck. The roof over the north addition change rooms and the new HVAC unit to the south are mono-sloping wood roof trusses. The roofs over the remaining portions of the building could not be verified due to ceiling finishes.

5. PREVIOUS REPORTS

In 2012 and in 2014 Gamsby and Mannerow Limited (now GM BluePlan Engineering Limited) completed a detailed visual inspection of the structure and noted several deficiencies. Out of this report, 15 recommendations were made to improve the structure and prolong its useful life. However, based on our review this year, several outstanding items remain.

6. RECOMMENDATIONS

We recommend that the following items be addressed in an attempt to prevent further deterioration of the building and update the life safety measures. Recommendations 1 through 5 are more urgent than others and should be addressed immediately, should continued use of the structure occur. The recommendations also include recommendations that were made in the 2012/2014 inspection reports that have not been completed.

1. The top and bottom chords of the roof trusses above the arena are laminated 2x4 members. Several of these members are delaminating from one another and now several cracks are present. Reinforcement of these members should be completed to restore the integrity of the trusses.

2. Several splits were noted throughout the roof trusses, particularly in web members. A previous attempt of reinforcement included installing steel straps around the ends of the members. The web members are no longer in contact with the top and bottom chords, presumably due to shrinkage, this is causing all forces to be transferred through the fasteners which is likely causing the observed cracking. The members have continued to split and replacement may be warranted.

3. Due to ingress of water the Zamboni roof is now to the point where it requires total replacement. On the exterior the fascia board and soffit have severe rot present. Mold was noted throughout the ceiling on the interior of the Zamboni room so care should be taken when performing this work.

4. Historical water damage and mold is present throughout the roof system, particularly the 2x10 purlins which span between the trusses. Environmental testing should be conducted immediately to determine if the mold observed is a health concern. Significant investment in upgrading the HVAC system is required to eliminate the mold from returning.

5. The concrete block pilasters on the north side of the structure appear to be bowed out. The pilasters on the south have continued to deteriorate due to moisture from the leaking downspouts. The overall structural integrity of these members is questionable and reinforcement should be installed.

6. Continue to treat the base of each timber column with wood preservative on an annual basis.

7. Install eaves troughs and downspouts on the north side of the change room addition.

8. Install new insulated doors between the lobby and the arena area, as this separates a heated space from an unheated space, and will reduce heating costs.

9. Replace all exterior doors which have not been replaced to date. At a minimum ensure all damaged hardware is replaced.

10. Review the fastening of all prefinished metal siding around the perimeter of the structure. Refasten all loose steel sheets as required.

11. Review all caulking at penetrations through the exterior walls such as pipes, conduits, windows, and doors. Replace the caulking as required.

12. Relocate or provide a weather tight seal around the electrical panel on the exterior south wall of the structure at the west end.

13. Epoxy inject the wide crack in the concrete slab on grade which runs east to west and the north side of the arena. This will prevent moisture from getting into the crack and causing further damage to the slab.

14. Replace the previous repair to the plumbing in the mechanical room in accordance with current standards.

15. the building is not AODA compliant and the interior would have to be remodeled to accommodate barrier free requirements which will be mandatory in 2018. This would include increasing hall widths, providing a barrier free washroom, providing toilets in the dressing rooms instead of just urinals, and providing access to the second story via an elevator.

The above noted recommendations should increase the lifespan of the structure by reducing the rate of deterioration. Please note that the structure is aging and the Township should compare the cost of continued maintenance on the structure versus the cost of replacement. It is our opinion that the above recommendations will only prolong the useful life of the structure marginally, and planning for closure and/or replacement should be considered.

7. CONCLUSIONS

Many of the structural members appear to be in fair to poor condition with a number of structural deficiencies observed. Although the exterior load bearing block walls have been repaired, they continue to deteriorate.

Significant costs are expected to be incurred in repairing the structure in accordance with all recommendations outlined above. All of the recommendations of this report should be implemented if it is intended to be used over the long term.

Due to the aging condition of this building, we recommend that another detailed structural inspection be carried out within two years' time to assess the performance of the timber trusses and the exterior concrete block wall.

As GM BluePlan has been involved with the inspection of this structure for almost a decade, we are confident in stating that the rate of deterioration has accelerated. Without investing in the rehabilitation of the structure immediately, the rate of deterioration of key structural elements such as pilasters and trusses will only increase.

Based on the above recommendations we anticipate that for only the most immediate structural concerns (items 1-5) the Municipality would have to invest $250,000 to $300,000 to address these items. To address the barrier free deficiencies we anticipate a further $350,000 or more is required.

8. LIMITATIONS

This report is intended exclusively for the Client(s) named in the report. The material in it reflects our best judgment in light of the information reviewed by GM BluePlan Engineering Limited at the time of preparation.

Unless otherwise agreed in writing by GM BluePlan Engineering Limited, this report shall not be used to imply warranty as to the fitness of the property for a particular purpose.

This report is not a certification of compliance with past or present regulations. No portion of this report may be used as a separate entity, it is written to be read in its entirety.

Only the specific information identified has been reviewed.

The consultant is not obligated to identify mistakes or insufficiencies in the information obtained from the various sources or to verify the accuracy of the information. The Consultant may use such specific information obtained in performing its services and is entitled to rely upon the accuracy and completeness thereof.

No physical or destructive testing nor have any design calculations been performed unless specifically recorded. Conditions existing but not recorded were not apparent given the level of study undertaken. We can perform further investigation on items of concern if so required.

* * * *

We thank you for engaging the services of GM BluePlan Engineering Limited for this study, and we trust it meets your needs at this time. Should you require additional assistance, or if you have any questions please do not hesitate to call me.

GM BLUEPLAN ENGINEERING LIMITED
Per:

Frank R. Palmay, P.Eng.

APPENDIX A:
PHOTOGRAPHS

Photo 1: View from the west.

Photo 2: View from the northeast.

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Photo 3: View from the east.

Photo 4: View from the southwest.

Photo 5: View of moisture and mold located in Zamboni room ceiling.

Photo 6: View of typical pilaster deterioration.

Photo 7: View of missing eavestrough and rotting fascia board.

Photo 8: View of rotting soffit located outside the Zamboni room.

Photo 9: View of typical split in truss web member.

Photo 10: View of delaminating of bottom chord.

Photo 11: View of wide crack in floor slab.

Photo 12: View of delaminating of bottom chord.

Photo 13: View of gap between webs and bottom chord of trusses.

Photo 14: View of typical moisture damage on roof purlins.

Photo 15: View of typical mold on purlins.

Photo 16: View of typical moisture damage and mold on roof purlins.