City of Winnipeg

Visual Structural Inspection Clubhouse
Harbourview Complex

March 4, 2003

Accutech Engineering Inc.
Tomorrow's Technology Today

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1.0 Introduction

The City of Winnipeg retained Accutech Engineering to carry out a Visual Structural Inspection of those portions of the main floor, crawlspace and foundations of the building, which are available for visual inspection.

The visual scope of work to be performed includes the following:

- Review the existing structural drawings of the building.
- Visit the site and carry out an inspection of the following areas of the building:
  - Exposed areas of the main floor substructure
  - Building foundations
  - Portions of piles that are visible.
- Take representative photographs of deteriorated areas.

Following completion of the above investigative scope of work, Accutech has prepared the following report outlining the findings of the Engineer's inspection and evaluation. The report includes conceptual recommendations for repair and preliminary Order of Magnitude cost estimates for the work required.

2.0 Observations

2.1 General Description

The building was designed by IKOY Architects in 1980, and was probably constructed soon after. The As-Built drawings that were reviewed were dated as April 15, 1982.

The clubhouse building is a free standing, single storey structure. The main floor contains a restaurant and kitchen, sitting lounge, banquet hall, offices and washrooms.

The building substructure is comprised of 250mm wide concrete grade beams on a combination of treated timber piles and concrete friction piles. The exterior decking is comprised of 75x150 treated wood decking on 38x240 wooden beams.

The main floor structure of the clubhouse building is 200mm thick hollow core slabs spanning across the grade beams.

2.2 Lot Grading

Due to snow embankment around the building it was not possible to adequately determine the grading of the building relative to the retention pond. It appears that the retention pond extends under the exterior deck and portions of the main floor of the building.

2.3 Exposed Structure/Foundations

The handrail installed around the deck has a seriously rotted and deteriorated vertical post on the north side of the building.

The lower 900mm of skirting around the building is made of pressure treated wood. The exposed tops of the piles appear to be in good condition.

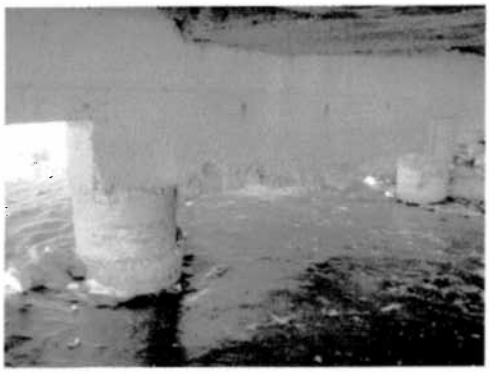
The section of timber pile, which is most at risk of undergoing rot, is that section of pile in the uppermost 300mm section below water level. Due to the frozen conditions, it was not possible to expose this section of pile. It is suggested that an additional inspection be undertaken once the spring thaw has occurred to determine the condition of the timber piles.

There are a number of blocking pieces installed around the vertical handrails, which are split and broken or missing. Most of the handrail portions are deteriorating and rot is occurring. There are areas of mold and mildew growth in most of the exposed wood surfaces.

The foundations below the area beneath the building are made up out of concrete piles and grade beams. Wooden joists span across the grade beams at the exterior deck. The rest of the main floor soffit is insulated and covered with plywood.

A number of the concrete friction piles were originally constructed with some honeycombing and there are a number of areas where the concrete grade beams also have honeycombing in them.

Deterioration of these sections of piles was not detected although the inspection was limited to that section of the pile exposed above the frozen water level.

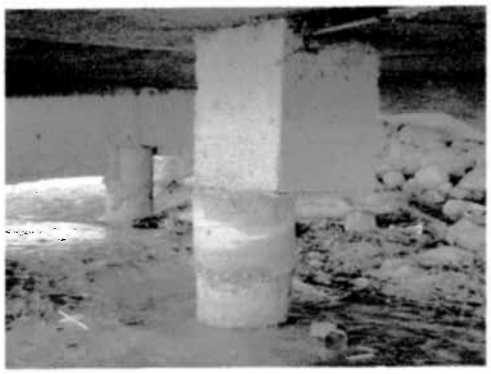


There are a number of areas where the plywood soffits are pulled down and in some instances animal infestation into the insulation has occurred.

There are a number of areas where ducts are exposed and uninsulated due to the removal or damage of the plywood soffits.

The foundations are comprised of one row of driven treated wooden piles along the exterior perimeter with the remainder of the foundations being cast-in place concrete friction piles.

A number of the timber piles are leaning in various directions however there is no overall systematic leaning or skewing of the sub-structure that could be detected.



There are a number of original construction deficiencies detected in the concrete work particularly as it relates to the pile caps and the forming that was carried out on the concrete grade beams and piles. Neither of these conditions appears to be affecting the performance of the building.

2.4 Heated Crawlspace

The majority of the existing crawlspace floor has been covered with granular material on a poly vapour barrier however; there are some areas where soil is still exposed. Although the installation of granular backfill makes access into the crawlspace more pleasant, it in no way relives the excessive moisture in the space caused by intermittent flooding of the space, and likely a high water table due to the retention pond. The City could consider the installation of additional sump pits, and the installation of additional granular fill and ventilation; however, these measures will not solve the overall problem of flooding, they will only help to alleviate the moisture following a flood.

There are watermarks on some of the grade beams within the crawlspace showing levels of the extent of the flooding within the space. Further inspection of the crawlspace indicates that no deterioration of the concrete sub-structure could be detected due to the intermittent flooding of the crawlspace.

A high humidity and damp ground condition does exist within the space however the concrete structure has not suffered any deleterious affects due to the moisture.

3.0 Conclusions & Cost Estimates

In conclusion the piling system, concrete sub-structure and concrete cast-in place piles appears to be in reasonable condition given the age and construction of the building.

- Some deterioration of the exterior wood finishes particularly the posts supporting the exterior handrail was detected and should be replaced and or repaired.
  - Estimated Cost: $2,000.00

- There were several sections of plywood soffit below the exterior crawlspace, which have become loosened and are detached. These sections of plywood should be repaired and the Styrofoam insulation above them replaced as required.
  - Estimated Cost: $1,000.00

- Installation of additional ventilation in the crawlspace.
  - Estimated Cost: $5,000.00

- Installation of additional sump pits.
  - Estimated Cost: $10,000.00

- Installation of Additional granular fill and membrane.
  - Estimated Cost: $5,000.00

Total estimated cost of the remedial work is approximately $23,000.00. The intent of this cost estimate is to be accurate to within plus or minus 25% of the actual cost of repairs.

This concludes our Visual Structural Inspection of the Harbourview Clubhouse Complex Sub-Structure and Crawlspace.

If you have any additional questions please contact the undersigned directly.

Respectfully Submitted,
ACCUTECH ENGINEERING INC.

Ken R. Drysdale, P. Eng,, P.E.

PROVINCE OF MANITOBA
Mar 4/03
K. R.
DRYSDALE
REGISTERED ENGINEER

APEGM
Certificate of Authorization
No. 1660
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