

APPENDIX B



Crosier Kilgour & Partners Ltd.

CONSULTING STRUCTURAL ENGINEERS

December 16, 2014

Our File No. 2014-0593

Hiderman Thomas Frank Cram
500 – 115 Bannatyne Avenue
Winnipeg, Manitoba
R3B 0R3

Attention: Ms Robyn Gibson

Dear Ms. Gibson:

**Re: Machray Park
Structural Assessment**

As part of an overall evaluation, Crosier Kilgour & Partners conducted a structural assessment of the pool support building located in Machray Park. It is understood that the concrete pool itself is scheduled to be replaced and thus, its condition was not reviewed. The following is summary of the structural observations made during a site walkthrough conducted in June 2014.

The building was constructed in two phases. The first phase (east side) is a wood framed structure supported on a concrete strip footing. The roof is a sloped stick framed structure consisting of 2x4 wood rafters and 2x4 ceiling joists. These are supported on 2x4 bearing wood studs at 16" on centre. The floor system is a concrete slab on grade. The west side addition (storage room) was constructed in 1978. It is of similar construction (i.e. 2x4 wood framing), however it is supported on a perimeter grade beam which in turn is supported on piers and spread footings approximately 6 feet below grade. The wall that separates the main building from the storage room is a bearing wall and cannot be removed without significant remedial work.

The roof structure appears to be in reasonable condition. From visual inspection, there did not appear to be any signs of water leakage or rot within the roof system.

The floor system, being a slab-on-grade, is susceptible to soil movement below. In Winnipeg, slabs-on-grade are predominantly supported on a highly plastic clay which is susceptible to movement with changes in moisture content. That is, as its moisture content increases, the clay swells and conversely, as its moisture content decreases, the clay shrinks. Any foundation or floor slab resting on this soil is therefore subject to movement either up or down. The potential for differential movement can be minimized by maintaining a consistent moisture content within the soil. Items that can be done to help maintain a stable moisture content include ensuring that excess water does not get under the foundation by extending rain water leaders out and sloping the ground adjacent to the house away from the foundation wall. In addition, large trees should not be planted near the foundation, as they draw large amounts of water out of the soil and cause it to shrink.

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The floor system has experienced some cracking as a result of soil movement (see photograph Number 1). In 1978, during the addition of the storage room, a 2" concrete topping was added to the existing concrete floor, likely in an effort to cover up cracks and re-level the floor. This topping has also cracked and since been filled with a repair material. Although cracked, the floor remains in usable condition.

Any walls to be constructed on the slab-on-grade should be detailed with slip joints at the top to allow for future movement.

With the main floor elevation being at grade, the base of the exterior walls have been exposed to long term moisture. As a result, many areas of wood cladding have rotted. In some locations, this rot was observed to extend into the sill plate of the wood stud bearing wall (see photograph number 2).

As part of any remedial work, an allowance should be carried to remove up to 24" of cladding to inspect all the sill plates around the perimeter and replace those that are rotted with pressure treated wood. To protect the wall system into the future, grading around the building should be redone to maintain drainage away from the structure.

It is our understanding that as part of the redevelopment of the pool area, there will be a requirement for a submerged water storage tank. The tank will be supported, and strapped down, to a concrete pad below grade to provide a counterweight to buoyancy forces that will be encountered when the tank is empty. To avoid any detrimental influence on the footings of the existing building, it is recommended that the tank be placed a minimum of 12' clear from the face of the building. This recommendation is based on a 7' diameter tank.

This concludes the report. If you should have any questions, please feel free to contact the undersigned.

Yours truly,



Tom K. Malkiewicz, C.I.M., P.Eng.

/tkm



Photograph #1:
Repaired concrete slab-on-grade.





Photograph #2:
Evidence of rot along wall bottom.

