STRUCTURAL CONDITION INSPECTION REPORT

St. Philips Church
Town of Portugal Cove- St. Philips, NL.

Prepared for:
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TILLER
Tiller Engineering Inc.

Issue Date:	Status:	Project #:	Issued By:	Checked By:	Approved By:
Dec 23 , 2011	R0 - Issued for Review	2011-347	RT	SS	RT
January 16, 2012	R1 - Issued to Client	2011-347	RT	SS	RT

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1.0 Site Information

SITE LOCATION:	Town of Portugal Cove - St. Philip's
CLIENT:	Town of Portugal Cove - St. Philip's
DATE OF INSPECTION:	December 13, 2011
WEATHER:	Overcast, -1 degrees C
INSPECTED BY:	Stewart Spurrell, C.Tech., Joe Parsons, Rick Tiller M.Eng., P. Eng.
TASK:	Structural Condition Inspection

2.0 Background Information

The original church was built in the 1890's by the parishioners of the time. The parish moved to a newly constructed church adjacent to this structure within the past ten (10) years. The existing facility has remained abandoned the past several years without heat and light. In 2010 the steeple was cut and fell to the ground. In recent years there were un-validated reports of possible structural condition issues with the facility. As a result the Town of Portugal Cove- St. Philip's engaged the services of an independent Professional Structural Engineering Firm to provide a structural condition inspection of the building structure.

3.0 Purpose of Visit

Tiller Engineering Inc. was engaged by Chris Milley, P.Eng. Town Manager/Engineer with the Town of Portugal Cove-St. Philip's to inspect the structural condition. The inspection team consisted of Structural Engineer Richard W. Tiller, M.Eng. P. Eng., Stewart Spurrell, C.Tech and Joe Parsons of Tiller Engineering Inc. The team visited the building on December 13, 2011. A cursory visual inspection and partial structural mapping of the interior and exterior of the building (which included removing several floor and wall boards) was conducted at this time.

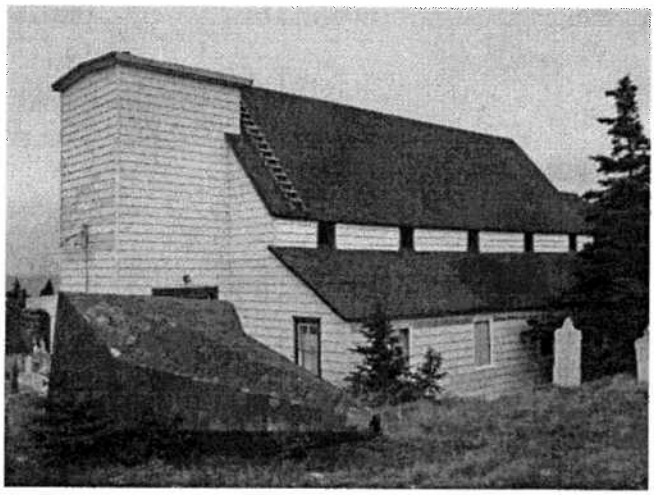
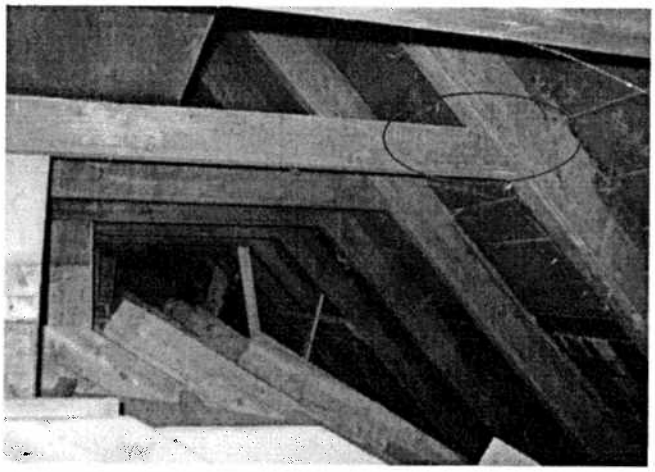
All structural assessments are based in general on the NRC Document "*Protocols for Building Condition Assessment*" as published by the NRC Institute for Research in Construction and ASCE Standard SEI/ASCE 11-99 "*Guideline for Structural Condition Assessment of Existing Buildings*".

4.0 Observations

The church building is made up of four (4) sections, the main church itself, the rear extension and the steeple support structure and the steeple itself. All four (4) sections are wood framed however they are of different construction systems and of different ages.

The exterior foundation of the church (except for the steeple support area which is poured concrete) consists of a stacked rock/rubble foundation constructed directly on the ground. This wall may have been built in a trench that extended it sub-grade. The interior foundation consists of a heavy timber "raft" foundation consisting of large diameter trimmed logs framing longitudinally and transversely. The raft foundation rests directly on the ground in most locations and is supported on rock posts in some other locations. The floor framing is supported as well on this raft foundation. The exterior rock foundation for the most part is in fair to good condition. Some locations have shifted slightly allowing an opening to develop in the wall. The floor beams and the roof columns of the church rest directly on the raft foundation which is in turn supported on the ground. The ground appears dry in the locations observed. In one test hole location we noted that the longitudinal raft member was experiencing dry rot at the soil log interface. This has resulted in the lower section of the log rotting and compressing into the soil. This situation has resulted in the floor system deflecting downwards in some locations and is a potential mechanism for localized roof column settlement in the future.

The roof system consists of rafters at 2.5 ft spacing supported on a longitudinal beam which in turn is supported on interior columns. The interior columns are braced horizontally with a heavy timber transverse member and a diagonal knee brace. The interior columns and roof system are in relatively good condition. The columns are vertically plumb and the horizontal transverse members are level suggesting that no significant settlement of the roof structure has occurred to this point over time.

Table 1 – Photographic Description of Building		
Item	Photo	Description
1.1		Church side view with main entrance and steeple (front).
1.2		Church front view with main entrance and toppled steeple.
1.3		Roof rafter system with horizontal ties. Taken in attic space.

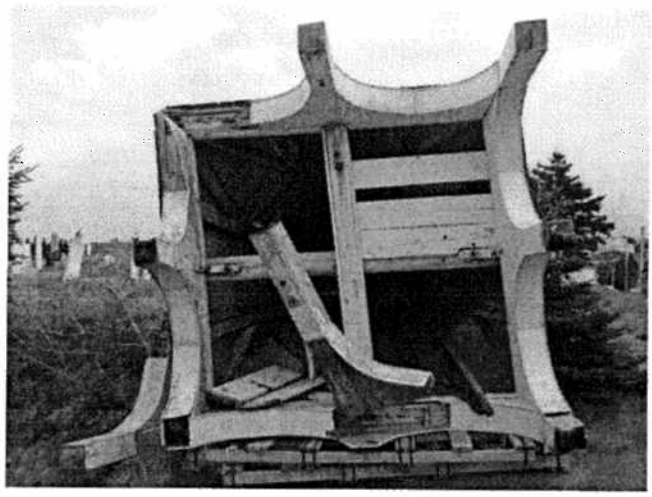
1.4		Toppled steeple showing support and framing system.

Table 2 – Photographic Deficiency Inventory

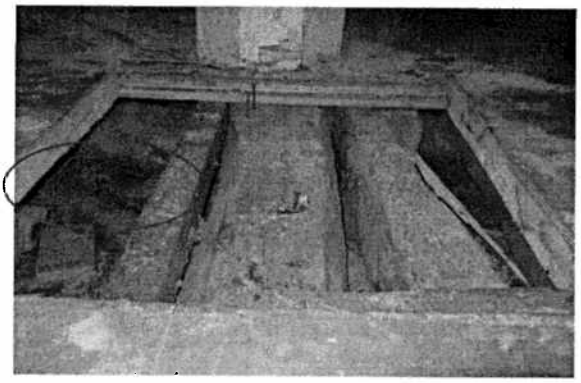
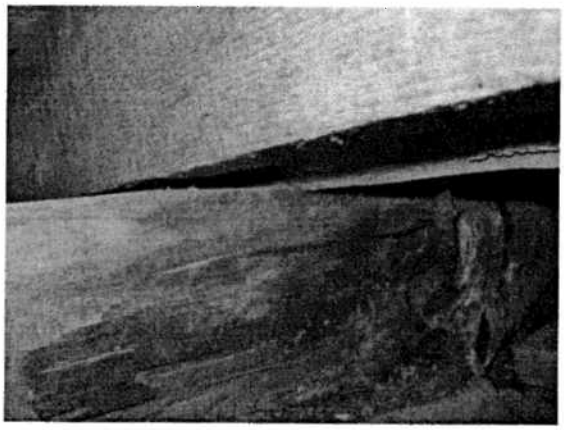
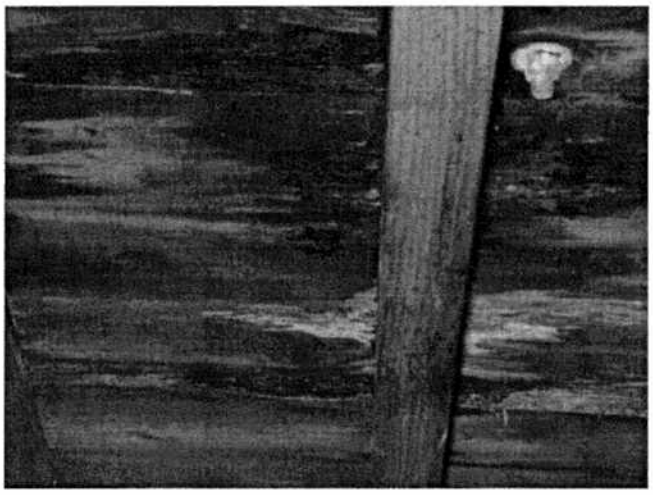
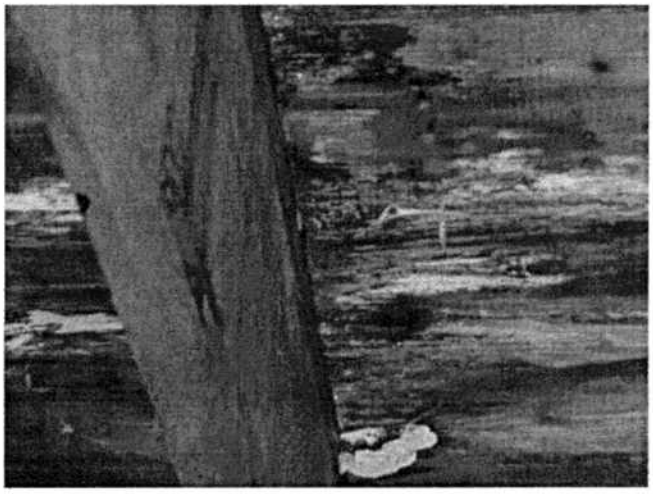
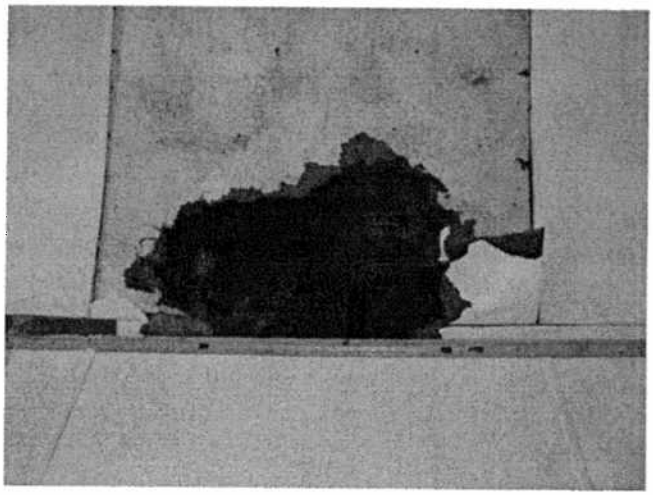
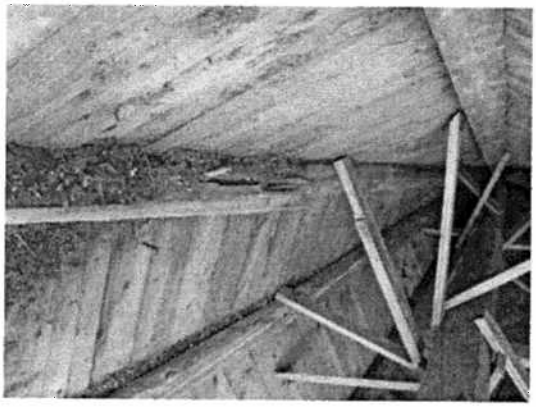
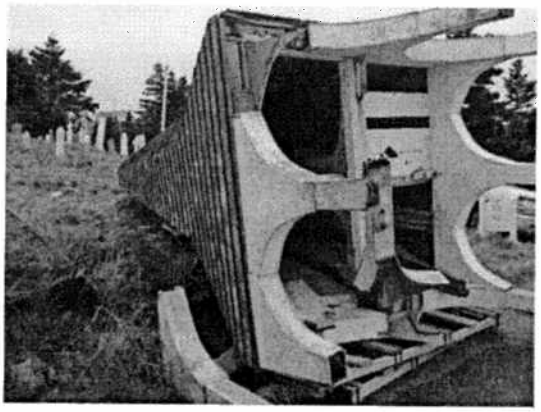
Item	Photo	Description
2.1	 	Interior column support showing transverse raft framing and longitudinal framing below (circled). Longitudinal member is rotting at ground interface. This deficiency if not addressed over time could become a significant structural concern. **High Priority Deficiency**

Table 2 – Photographic Deficiency Inventory		
Item	Photo	Description
2.2		Rot in steeple section framing. This is due to water infiltration compounded by lack of heat and electricity. **High Priority Deficiency**
2.3		Rot in steeple section framing. This is due to water infiltration compounded by lack of heat and electricity. **High Priority Deficiency**

2.4		Signs of water penetration in rear section of church at roof wall interface. This is due to water infiltration compounded by lack of heat and electricity. **High Priority Deficiency**
2.5	 	Rotted sections of steeple section plus damage broken leg on steeple section **High Priority Deficiency**

5.0 Conclusions and Recommendations

Several areas of the steeple support system, the steeple itself and the rear extension are showing signs of rot due to water penetration. This penetration is due to breakdown in the roofing system because of no maintenance and compounded further by no heat in the building. These areas are considered high priority and should be repaired before they become significant structural condition items.

The Church's original interior raft foundation has settled slightly due to dry-rot at the ground interface and will rot and deflect more with time resulting in further settlement and perhaps differential settlement. We consider this a high priority condition issue that needs to be addressed through repairs if the building is to be occupied.

The visual condition issues identified can be risk managed and an engineering scope can be developed to allow these issues to be addressed.

Tiller Engineering Inc. recommends a detailed structural assessment be conducted which would involve:

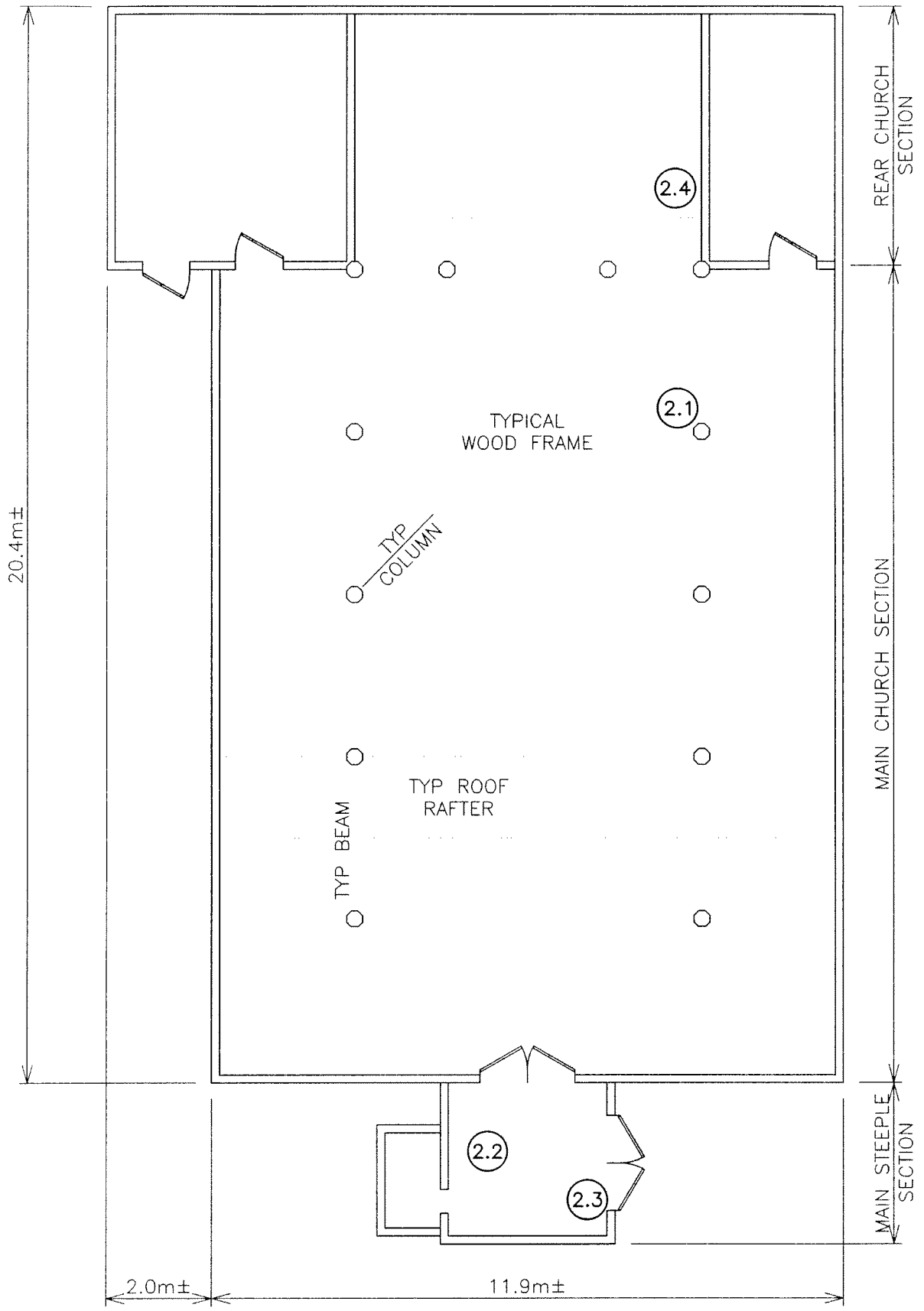
a) A structural analysis in conformance with the National Building Code of Canada for the existing load bearing systems including foundations, columns and roof and floor beams as well as the steeple and steeple support system.

b) Based on the results of the structural analysis and the observations in this report a list of the structural modifications and upgrades will be made in order to rectify the high priority structural items. Each item will require engineering input, engineering details and an estimated cost to complete.

c) For precautionary measure, use of the building should be restricted until the appropriate upgrades and the structural analysis are completed.

Appendix A

Location Plan



REV	DESCRIPTION	DATE
R0	ISSUED FOR REVIEW	23/12/11

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TITLE: ST. PHILLIPS CHURCH

PROJECT: LOCATION PLAN

PROJECT No. 2011-347

DRAWING No. SK1

DRAWN BY: JS

CHK'D BY: SS

APP'D BY: RT

DATE: 23/12/11

SCALE: 1:100

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USE OF INFORMATION IN THIS REPORT

This report was prepared by Tiller Engineering Inc. for the client noted on the front cover and for purposes described in the "Purpose of Visit" in this report. The material reflects Tiller Engineering Inc.'s best judgment based on the information available to it, at the time of report preparation and the time allocated to complete the work.

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SAMPLING PROCEDURES

This structural condition inspection is limited to a random visual sampling of the structural members, connections, and associated appurtenances noted. Sampling is defined as a set of observations and/or measurements on a subset of the whole that may be considered characteristic of the structure as a whole, and thus provides the ability to analyze the entire system. The size of the sample is based on the scope of work as defined by the client, previous information that is made available and knowledge of the structure and systems. All inspections are performed in accordance with the National Building Code of Canada, latest edition. The inspection sampling refers to surface inspection observations only, except as noted otherwise. The foundation inspection is limited to an above grade surface inspection.

The following priority levels have been adopted for the condition inspection conclusions and recommendations:

HIGH:	Deficiencies that if not corrected may lead to a collapse or failure of the system or items which pose a threat to life safety of individuals using the system.
MODERATE:	Deficiencies which do not have an immediate effect on the system but if not corrected will in time shorten the service life of the system.
LOW:	Deficiencies which require monitoring or house-keeping items