

June 24, 2003

Town of Meaford
Meaford Public Library
15 Trowbridge Street West
Meaford, Ontario.
N4L 1V4

Attn: **Ms. Rita Orr, C.E.O.**

Dear Ms. Orr,

On Tuesday June 10, 2003, Meades Engineering Limited visited the Meaford Public Library to conduct an inspection and assessment of the building structure. This building was constructed in 1935 by the Federal Government to serve as a Post Office on the main floor and a Custom and Excise Office on the second. Unfortunately original drawings for this building could not be found. Most of the structural framing members are concealed behind the interior finishes so a complete analyses with respect to strength and serviceability of framing members was not possible. While on site, a probe hole was cut at the second floor to determine the size of floor joists and the steel beams.

Building Structure:

Roof: The roof structure was viewed from attic access within the apartment unit. It is framed with 2"x6" joists, spaced at 2'-0" centres. These are supported by knee walls at approximately four to five feet centres and these are carried by the ceiling structure. Due to the magnitude of loose insulation in the attic, the ceiling structure could not be determined.

At the access into the attic, the board sheathing on the roof deck has been stained and discoloured due to water leakage. Therefore, there may be areas which may have developed rot.

Second Floor:

Framing for the second floor was determined at the exploratory hole. Floor joists consist of 2"x12" (actual size) spaced to 16" centres and these are supported on steel beams. Based on their depth being 15" and with a flange width of 5 ¼, they were determined to be S15x42.9, I beams with tapered flanges.

Analysis of the joists indicates that their safe live load capacity is 106 psf where they span 15'-8" and 167 psf for the 13'-0" span. For the steel beams the safe floor load capacity of 100 psf at the 22'-0" span and 460 psf at the 15'-8" span. These numbers suggest the second floor is quite strong and suitable for residential and offices. With respect to the Ontario Building Code, stack areas in Libraries require a safe floor loading of 150 psf. Therefore, only part of the second floor is suitable for Library occupancy.

First Floor:

During the site visit, exploratory holes were not cut to determine the sizes of joists and beams. However, the framing arrangement is similar to the second floor so it would be reasonable to expect at least the same level of safe load capacity. In the original usage as a post office, a safe floor capacity of 100 psf would be required. Current and previous Building Codes have specified that a Library have a floor rating of 150 psf.

Building Foundations:

The foundation walls around the perimeter of the building are cast-in-place concrete. Above grade, the surface has a parged finish which has been tooled to give an appearance of large cut stones. Generally, these walls are in good condition with no evidence of settlement or deterioration. The exceptions are:

- a) By the side entrance where the wheel chair ramp has been constructed, the parge surface is cracked and delaminated at the corner and infested with insects.
- b) At the stairs to the basement entrance, the parging over the foundation wall has delaminated. These stairs are not part of the original building.
- c) In the hallway which separates the reference room from main stack area the diagonal cracking is evidence of some building movement. There are cracks over the door to the reference room cracks in the basement washroom and similarly at the second floor. These suggest that there has been a modest ground settlement below the east side entrance. Considering the age of the building this movement is now probably static. The damage which has occurred can be repaired if and when renovations are undertaken. Presently these do not affect the overall safety of the building

At the south west corner it appears that a loading dock and coal bin have been demolished from the original structure.

Handrails & Guards:

The stairs to the basement for the Children's Library has a guard around the top which does not meet Building Code requirements. When the fall distance is greater than two feet, then guards must be present. These must be 42" in height, not be climbable and an object no larger than four inches in diameter be allowed to pass through. Presently, the guard will not prevent a small child from falling into the open stairway.

At the barrier free ramp for wheelchair at the east side entrance, graspable handrails on each side are required by Code, 1.25" to 1.5" in diameter and at a height of 2'-10" to 3'-2".

Modern Libraries demand that their interior be climate controlled including temperature and humidity so that the collections are not damaged over time due to a poor environment such as excess humidity. The basement area is a poor environment for any occupancy. As discussed in the report on "Indoor Environmental Quality Assessment" this is a major concern.

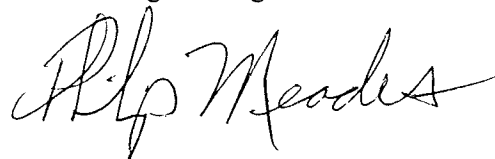
In order to prevent migration of dampness and free water into the building, two things must be done. Firstly, the foundation walls must be made waterproof. To be successful over a long period this must be applied to the exterior surface. The walls would have to be exposed down to the footings, cleaned and a membrane system applied. If waterproofing were applied to the interior surface, it would be subject to vapour and fluid pressure that can cause blistering and local failure. Moisture then can infiltrate and problems associated with microbial growth reoccur. Secondly the floor should have a vapour barrier as concrete alone will not prevent migration of dampness. At this stage, to employ a vapour barrier, it would be necessary to place sheet membrane over the existing concrete floor and then place a new concrete floor, at least three inches thick, on top

Expanding the Library into the second floor will require strengthening of the structure where the load rating is below 150 psf as required by Code for stack areas. To do this, the structure would have to be exposed which means that the first level would have to be vacated when this is done. Also, expansion into the second floor will require an elevator as buildings now must be accessible to the handicapped.

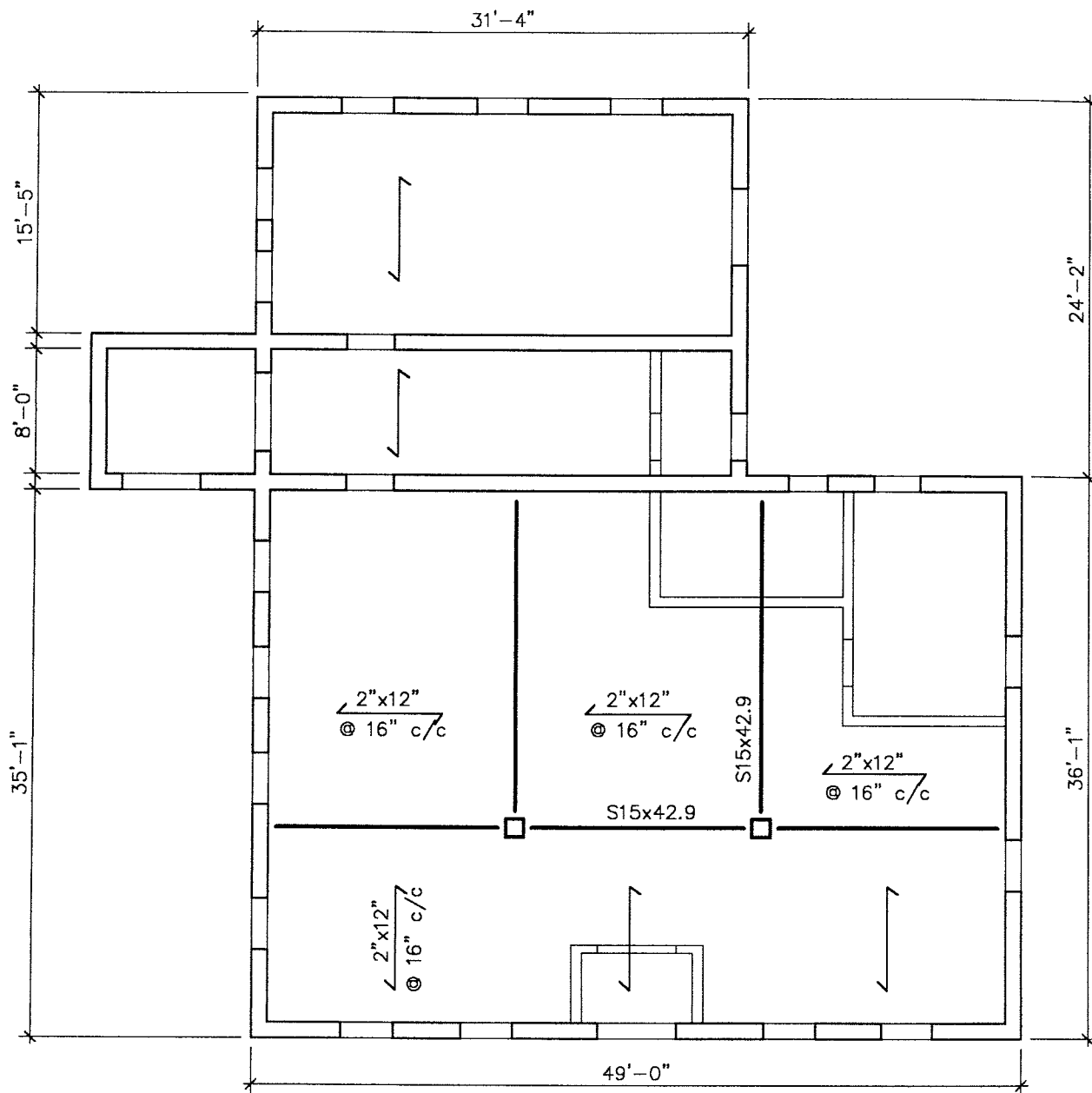
Renovating this Library to modern standard will require air handling equipment for heating and cooling and also for humidity control. This equipment most likely would be located on the roof of either the Reverence area or above the present apartment. To support their weight the structure would have to be reinforced and passage ways constructed for ductwork.

Yours truly,

Meades Engineering Limited

A handwritten signature in black ink, appearing to read "Philip Meades". The signature is fluid and cursive, written over a white background.

Philip Meades, P.Eng.



SECOND FLOOR FRAMING

SCALE 3/32" = 1'-0"

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MEADES ENGINEERING LIMITED <small>219 Saunders Road Barrie, ON, L4N 9A3 Tel. (705) 733-3200 Fax (705) 734-3703</small>	Client: TOWN OF MEAFORD	CAD File: 748-01S-1	Date: JUNE 26, 2003	Scale: AS NOTED
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			Checked by: P.C.M.	