Amy Catania, Executive Director
Historic Saranac Lake
89 Church Street, Suite 2
Saranac Lake, NY 12983

Subject: E.L. Trudeau Building, 118 Main Street, Saranac Lake, NY
Structural Evaluation

Dear Ms. Catania,

On 22 June 2018, Timothy J. Northrup, PE of North Woods Engineering, PLLC conducted a site visit at 118 Main Street, Saranac Lake. The purpose of this site visit was to perform a structural evaluation of the building in support of an overall building assessment and rehabilitation project, led by Historic Saranac Lake, and their consultant, Gordon + Gordon Architecture, LLC. The site visit and walkthrough was completed with Harry Gordon, FAIA of Gordon + Gordon Architecture, LLC. While the majority of the building was observed during the site visit, observations were focused on specific areas previously identified by Mr. Gordon; namely the foundation and first floor framing under the current Reception Desk/Foyer area, a portion of roof framing damaged by a fire, and the second floor Cure Porch.

General Building Overview
The building located at 118 Main Street, Saranac Lake is a two story wood framed structure with a combination stone masonry, concrete unit masonry (CMU), and cast in place (CIP) concrete foundation. The original building was constructed in 1894, and appears to have undergone multiple alterations and additions throughout its history. The overall structural condition of the building is fair, and consistent with structures of this age and location.

Foundation and First Floor Framing
The foundation and first floor framing was inspected by entering the bulkhead doors located along the east side (Church Street) of the building. Based on Mr. Gordon’s previous review, the focus of the inspection was on the northern side (Main Street) of the structure in the areas under the existing Reception Desk, Foyer, and Waiting Room areas. This area has stone masonry foundation walls with varying amounts of mortar. From the interior, some areas resemble stone rubble with little or no mortar, while other areas have all joints neatly mortared. The majority of
interior footings are stone masonry, although a few have been replaced with concrete spread footings.

The floor framing in this area consists of full dimension 3x10 floor joists, typically supported by 8x8 beams and posts. It is assumed that all the framing is eastern white pine or other similar native softwood.

**Foundation Observations and Recommendations**

In general the stone masonry foundation walls are in acceptable condition for the age of the structure, however there are multiple locations where remedial work is suggested (Refer to Figure 1):

- **Northeast Corner** – The foundation wall in the northeast corner (corner of Church and Main St) of the building is in poor condition with loose stone and little to no remaining mortar. The condition appears to be caused by an exterior site drainage issue. A large portion of roof runoff is concentrated at this corner and the grade slopes back toward the foundation forcing the stone masonry to be subject to excessive moisture and movement caused by freeze/thaw cycles. To address this situation, rebuild the interior face of the stone masonry wall approximately 10 feet in each direction from the northeast corner. Install gutters to help correct the roof drainage issue.

- **Interior Stone Footings** – Two interior stone footings located in the northeast corner of the building are in poor condition with deteriorated mortar and posts that are not centered on the footing. To address this condition, install new reinforced cast-in-place concrete footings to replace the stone. For planning purposes, assume the new footings to be at least 2.5’x2.5’x1’, with steel posts bases providing a mechanical connection between the footing and the wood post it supports.

- **Exterior Stone Masonry** – The exposed exterior stone masonry foundation wall is in fair condition in general, however multiple areas were noted where mortar has deteriorated. A one point, from the interior, daylight could be seen through the wall. It is our professional opinion that the exposed exterior stone masonry be repointed. Although not an immediate structural concern, repointing will ensure the long term durability of the exposed stone masonry foundation wall.

**First Floor Framing Recommendations**

In general the first floor framing is in acceptable to poor condition for the age of the structure. Remedial work is suggested in the following locations:

- **8x8 Beams** - Three main 8x8 beams are located in the area of interest. They are labeled Beam 1, Beam 2, and Beam 3 on the attached Figure 2. Large horizontal cracks (~1/2” wide and 3”-4” deep) in the timber were observed on all three beams. The cracks propagate from notched connection points and generally follow stress lines in the beams. It is our professional opinion that the cracks are more than natural “checks” (caused by the wood drying out and shrinking) and
are an indication of a structural issue. It is our recommendation that ¼” steel side plates be added to each beam to reinforce the timber and limit additional cracking.

- **Sill Plate** – The timber sill plate in the northeast corner of the building has been subjected to moisture for a prolonged period, and has started to deteriorate. Refer to comments in the foundation section on the northeast corner. It is our professional opinion that the rotten and decayed portions of the sill plate be removed and replaced. The replacement timber must be pressure preservative treated wood.

**Roof Framing**

The existing roof framing was reviewed from the attic in the area above the second floor Waiting Room. This location was reviewed because there is evidence of a fire that has damaged the roof framing in this area. The hip roof is framed with full dimension 2x8 rafters is this area.

The date and details of the fire are not known but the fire appears to have been contained to a small area on the north side of the building near the peak. A number of rafters were damaged by the fire. At the most damaged rafter, a screw driver was used to remove the charred surface down to sound, uncharred wood. The thickness of undamaged wood was measured at 1 1/8” which translates into reduction in structural strength by 55%. The charring and section loss extended down the rafters approximately 36” from the peak. At some point, new roof sheathing was placed over the charred framing, but the rafters themselves have not been repaired.

**Roof Framing Recommendation**

With the noted reduction in structural strength, it is our professional opinion that all members with section loss be reinforced by sistering an additional 2x8 SPF No 1/2. Extend the reinforced sections past the damaged area by 24”. Where joists connect to the reinforced hip rafter, the connections require modification to allow for the extra hip rafter member thickness. To perform this work, sections of the roof require temporary shoring.

**Cure Porch Modification**

As part of the planned rehabilitation work, the existing second floor cure porch will be restored to its original form, (c1930s). In order to do this, structural alterations are required as load paths will be changed by the modifications. The exact extend of the structural modifications will be determined during future design development.

**Miscellaneous**

Although not part of the specified areas of interest, a number of structural items were noted during the site visit that require attention.
Miscellaneous Observations and Structural Recommendations

- **Cracked CMU** - The southeastern portion of the building is of newer construction, and is supported by a CMU foundation wall. The CMU in this area has developed a vertical crack. It is not displaced and not of immediate structural concern, however the crack requires patching to limit water infiltration and additional damage from freeze thaw cycles.

- **Cure Porch Post Base** – A portion of the second floor Cure Porch is supported by a wood post that bears on concrete at grade. The post base has become soft with decay due to constant moisture contact. This post requires repair or replacement. Additionally, replace the concrete at grade around the post to ensure proper drainage away from the post and building. Conduct this work regardless of the final modifications to the Cure Porch.

- **Second Floor Egress** – As part of the rehabilitation work, a second level means of egress stair will be added. The stairs will be placed in the interior of the building. In order to do this, structural alterations will be required as a hole in the second floor will need to be cut. The exact extend of the modifications will be determined during future design development of the rehabilitation.

We hope that this information will be beneficial to the development of the rehabilitation project. If you have any questions, please do not hesitate to contact us.

Best Regards,

Timothy J. Northrup, PE
NYS PE#090969

Attached - Figures and Pictures
Interior stone footing in poor condition

Northeast corner foundation wall. Interior rubble condition.
Exterior stone masonry foundation wall. Note deteriorated mortar joints.

CMU foundation wall with vertical crack.
Northeast building corner. Note grade slopes back towards corner.

Second floor Cure Porch
Charred roof rafters.