Greenfield Meeting House

Greenfield, NH

Existing Conditions Assessment

for

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One Mill Plaza
Laconia, NH 03246

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A. BUILDING STRUCTURAL SYSTEMS

1. Foundations

Existing Conditions:

- The basement walls are cast-in-place concrete.
- Multiple representatives from the Meeting House mentioned that they believed the foundations were reworked and possibly the basement added in the 1940s.
- The first floor is supported by interior basement steel lally columns and the basement walls at the perimeter.
- While not visible, it is assumed that the basement walls bear on cast-in-place concrete strip footings and the lally columns by spread footings.
- The basement floor is a cast-in-place concrete slab-on-grade.

Recommendations:

- The foundations appear to be in adequate condition and no remedial action appears necessary at this time.

2. First Floor (Meeting Room Level) Framing

Existing Conditions:

- Most of the first floor framing is not visible due to the basement ceiling.
- At the north end of the first floor (the stage), the framing is exposed and it is kiln dried 2x10s at 16" o.c. spanning north-south. The 2xs support board sheathing.
- In some locations, a determination could be made that the basement lally columns support 14" deep wide flange steel beams spanning east to west.

Recommendations:

- While limited amounts of the first floor framing are visible, there are no signs of inadequacies ("soft floors", cracked finishes, etc.) with the framing, therefore no remedial action appears necessary at this time.

3. Second Floor (Sanctuary Level) Framing

Existing Conditions:

- Nearly none of the second floor framing is visible.
- The framing is supported by the exterior walls and wood (or wood clad) columns aligning with the basement columns.
- At the southwest corner of the second floor, the flooring was removed exposing plywood sheathing. The sheathing had an uneven appearance.
- Also at the southwest corner, the wood wall studs were partially exposed. The walls were balloon framed which is typical for the age of the construction.

Recommendations:

- Similar to the first floor framing, very little of the second floor framing is exposed but there are little to no signs of structural inadequacies. The lone exception to that is the framing in the southwest corner. We recommend that some selective demolition be performed to expose the framing in the southwest corner for further investigation.

4. Roof Framing

Existing Conditions:

- The roof framing is nearly completely exposed, but due to a very limited attic space, the framing is mostly inaccessible.
- The roof is supported by east-west spanning timber trusses that support rough cut purlins spanning north-south. The purlins support rough cut rafters. The rafters support board roof sheathing.
- The bottom chords of the trusses support ceiling joists. In between the joists, on top of the ceiling, cellulose insulation has placed.

Recommendations:

- From the limited amount of roof framing that could be safely reviewed at the south end of the building, there were no signs of structural deterioration. As with many older structures, the roof framing appears small, specifically the rafters and purlins. Although the roof structure has presumably functioned well for its lifetime, it is unlikely that the framing would adequately support the current code snow loads. If renovations are proposed that would require the current code snow be used to analyze the roof (heavier roofing system, change of building use, etc.), an upgrade of the roof is likely to be required.

5. Clock Tower and Bell Tower Framing

Existing Conditions:

- The towers are framed with timber framing.
- Based on visual observations of the framing, the exterior structure appears to be repaired within the last ten years and appeared to be fair condition.
- The interior framing of the structure has also been augmented over the years although these repairs are significantly older than the exterior and in much worse condition. The original framing is severely rotted and the repairs that have been made also have begun to deteriorate. Many of the connections that tie the structure to together exhibit significant deterioration as well.

Recommendations:

- It is recommended that the tower structure be reconstructed. Reconstruction will require the exterior finish and trim materials to be removed and reinstalled upon restoration of the structure.

B. BUILDING MECHANICAL SYSTEMS

1. Central Heating Plant

Existing Conditions:

- The existing heating plant is located in far end of the finished basement.
- There are two oil fired furnaces that serve the building. One serves the Church and finished basement. The other serves the Meeting house and the finished basement. The two furnaces have both been replaced within the past 15 years.
- The Church furnace is an Olsen BCL145S2 with an output capacity of 141,000 BTU/Hr.
- The Meeting House furnace is a Williamson CLB-140-DD-F-S2 with an output capacity of 141,000 BTU/Hr.
- Combustion air for the furnaces are handled with basement room air. The two furnaces vent into a common vent stack with the gas fired domestic hot water heater.
- The two furnaces are fired with oil. There are two existing 275 gallon #2 oil tanks that were installed in May 2011. The two oil tanks share a common vent.

Recommendations:

- The existing combustion air and furnace venting should be looked at for proper compliance to manufacturers installation instructions for common venting and combustion air.

2. HVAC Systems

Existing Conditions:

- The basement, first, and second floor are heated with forced hot air from the two furnaces located within the basement.
- The Church is located on the second floor and has its own dedicated furnace to serve the finished basement and the Church. A local thermostat on the second floor controls the heating of the space. A local thermostat in the finished basement controls the heating of the space.
- The Church meeting room has an electric baseboard that is not operational and is served by its a local thermostat.
- The Meeting House is located on the first floor and has its own dedicated furnace to serve the finished basement and the Meeting House. A local thermostat on the first floor controls the heating of the Meeting House. A local thermostat in the finished basement control the heating the space.
- The Meeting House handicap bathroom has an electric baseboard that is operational and is served by a local thermostat.

C. BUILDING PLUMBING SYSTEMS

1. Domestic Water System

Existing Conditions:

- Plumbing systems were designed at various times in the 19th century and some of the current domestic water piping is original to the building.
- A 1" water line enters the building in the basement and appears to be undersized for the building demand. A water meter or backflow preventer were not observed at the domestic water entrance.
- There was no pressure gauge observed on the domestic water entrance.
- Domestic hot water in the Greenfield Meeting House is currently generated by a propane fired domestic water heater located in the basement level mechanical space.

- The existing water heater serving the building consists of a single Bradford White model RG240S6X 40-gallon water heater. The domestic water heater appears to be in relatively good condition.
- There was no observable expansion tank serving the domestic water heater.
- Plumbing fixtures throughout the building were dated. A urinal located in the basement was taped up and out of use. The flush valve paired with the urinal may exceed current maximum gallon per flush requirements.
- Domestic hot and cold water within the building did not appear to be insulated.
- Overall the system and components are in poor to fair condition.

Recommendations:

- Upgrade the domestic water entrance to add a water meter, strainer, shut offs, pressure gauge and a backflow preventer.
- The existing piping is likely beyond its serviceable life. It is recommended that as renovations occur, the piping be replaced within the areas under construction.
- Add an expansion tank on the domestic hot water system.
- Replace existing plumbing fixtures with low flow, water conserving fixtures as renovations occur.
- Add insulation to hot and cold water piping.

2. *Sanitary System*

Existing Conditions:

- Much of the sanitary sewer piping was below grade or within ceilings and walls and was unobservable. What was observable appeared to be serviceable. Original piping was observed as cast iron, chrome plated cast iron, and copper DWV piping, whereas some of the newer sanitary sewer was PVC.
- The sanitary within the facility collects waste from the domestic plumbing fixtures and exits the building by gravity to the municipal sewer system.
- Some fixtures appeared to be improperly vented or not vented.
- There were no observable VTR's through the building roof. There were no observable vents located within the attic. There were insufficient vents through exterior walls to accommodate the plumbing fixtures located within the building.

Recommendations:

- Proper venting of plumbing systems and the addition of VTRs is recommended.

3. Storm Drainage System

Existing Conditions:

- The main roof is sloped and drains to a stone drip trench at grade.

Recommendations:

- No upgrades recommended.

D. BUILDING FIRE PROTECTION SYSTEMS

1. Fire Protection System

Existing Conditions:

- The existing building does not have an automatic sprinkler system.

Recommendations:

- Depending on the extent of the new work, an automatic sprinkler system may or may not be required.

E. BUILDING ELECTRICAL SYSTEMS

1. Electrical Service & Power Distribution

Existing Conditions:

- The Meeting Hall service is fed underground from a nearby utility pole rising up to a duplex meter stack and then entering the building. From there a 100A fused disconnect feeds the church panel and a dated I-T-E 'Pushmatic Electri- Center' main panel serves the town hall. In general, there is a wide variety of electrical equipment present in the meeting hall, with different generations of products added while minimal updates were made.

- The majority of the electrical equipment is believed to be approximately 30+ years old. There is a mixture of Bulldog, ITE and Square-D panels throughout the building.

- It was noted that one particular distribution center in the basement was a fuse box.

- Majority of electrical panels do not have a label warning of arc flash hazard.

- Original, dated wiring was present.

- Wire appeared to be the primary electrical distribution method although some MC cable was present.
- Wiring was observed in ductwork and behind crown molding in the basement.
- Ungrounded panelboard connections were observed.

Recommendations:

- If major HVAC changes are planned to occur, and upgraded service to 200A+ is recommended.
- Tamper resistant receptacles will be needed in Sunday school areas.
- Utilize one standard company for all electrical distribution.
- The electrical service equipment is approaching end of useful life and replacement should be heavily considered.
- Fully grounded distribution system needs to be in place.
- A true dedicated electrical room should be planned for any future renovations.

2. *Lighting*

Existing Conditions:

- Lighting in the building is primarily a mixture of fluorescent and incandescent with most observed fixtures in the basement being T8 lamps. In the more ornamental areas such as the town hall and church area, incandescent candelabra lamps were used.
- Lighting controls are primarily toggle switches with no automatic controls to turn off lighting in unoccupied spaces.
- Majority of the exit signs appeared to be illuminated, although it did not appear that all exits were properly identified by exit signs.
- Life safety lighting is provided by emergency battery units (EBUs) with remote heads. It appeared some areas may not have adequate coverage. It was observed that there was no egress emergency lighting on the exterior of the building to include one basement exit and the rear exits.
- Some EBUs and remote heads appeared to be 20+ years old. Battery units should be inventoried and replaced as they reach the end of their useful life.

- Additional emergency battery unit lighting will need to be added to sufficiently meet code. Ensure pathway lighting requirements are met. Survey existing emergency lighting and replace old and nonworking emergency lighting units.

Recommendations:

- Lighting should be upgraded. As part of lighting upgrades, it is recommended that additional lighting controls be added to comply with the energy code.
- The emergency lighting and exit signage should be supplemented to provide adequate coverage primarily in basement areas, stairwells, and Sunday school level.
- General lighting in stairwells does not appear to be adequate. Additional fixtures may be required.

3. Fire Alarm System

Existing Conditions:

- It appears that the fire alarm system has undergone a recent upgrade.
- It appears the system has been maintained/inspected regularly according to service sticker.
- Manual pull stations are not installed at all exits of the building.
- Spot smoke detection and horn/strobe notification devices do appear to have adequate coverage in most areas in basement and first level.
- It was observed that there was no smoke detection or notification in the attic level.

Recommendations:

- Additional notification devices are needed in backstage area, main entrance, Sunday school rooms and main church area.
- Additional pull stations needed at some exits.
- Smoke detection and notification will need to be in place in attic areas of the building.
- Maintain equipment to ensure proper operation.

Mechanical

Electrical

Plumbing

Fire Protection

Civil

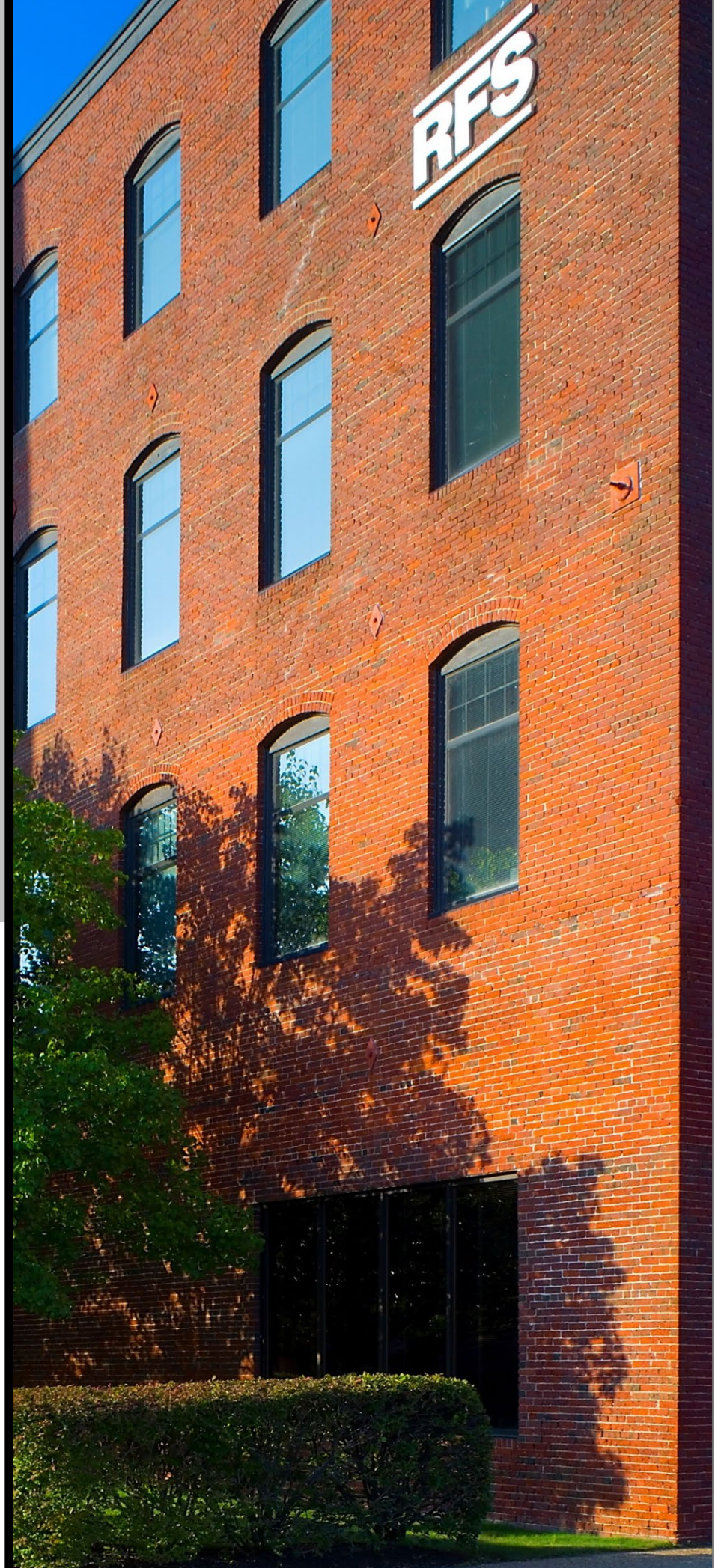
Structural

Technology

Lighting

Sustainability

Commissioning



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