

**REGAN YOUNG ENGLAND BUTERA**

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# FACILITY ASSESSMENT

## TABERNACLE TOWN HALL



**TOWNSHIP OF TABERNACLE**  
**163 CARRANZA ROAD, TABERNACLE, NEW JERSEY 08088**



**RYEBREAD PROJECT NO. 5665B**

**13 OCTOBER 2021**

*Working together, we can create building envelopes/systems/interiors/contexts  
that are more safe, productive, healthy, efficient, and distinctive.*

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PRELIMINARY ESTIMATE OF PROBABLE COSTS

**I. EXECUTIVE SUMMARY**

This Facility Assessment provides the Township of Tabernacle (Township) with a snapshot of conditions of the Town Hall and provides a basis for further investigation as to the long-term use and life-expectancy of the facility as well as the immediate and long-term repairs that need to be considered.

RYEBREAD and its engineering team of Kelter and Gilligo, P.C, (mechanical, electrical, and plumbing) and Michael A. Beach & Associates (structural) visited the building on 15 and 16 July 2021 to conduct a walk-thru review of existing building features and conditions. The team’s observations were based solely on readily visible conditions and did not include investigation of concealed conditions, nor hazardous materials, if any.

**Tabernacle Town Hall** - The Tabernacle Town Hall was originally constructed in 1874 by the Order St. Mechanics and ownership was transferred to the Township of Tabernacle in 1960 for its current use as the Town Hall. A records storage vault was constructed in the 1970’s for storage of sensitive documents.

Basement - The main structure is timber-framed construction consisting of a limited-height basement that currently houses mechanical equipment and records storage. The basement is an uninhabited space.

Main Level - The main level consists of Township offices and Public services.

Upper Level - The upper level serves as an assembly use/meeting room with additional offices. The upper level is currently used as large group meetings for Committee meetings and was formerly used as municipal court.

Attic Level - The attic level is accessible from the upper level and houses mechanical air handling equipment serving the upper level. The attic is an uninhabited space.

Basement – 1,819 SF

Main Level – 1,939 SF

Upper level – 1,819 SF

Attic – 1,819 SF

Total Habitable Square Footage – 3,749 SF

Total Building Square Footage – 7,396 SF

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Town Hall-Main Level

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Town Hall-Upper-Level Meeting Room

The purpose of this study was to analyze the existing systems, their age, and to develop a list of known deficiencies. The report is not intended to prioritize the list of deficiencies, but rather gives the Township a relative idea of the condition of the facilities.

This report is not a complete and thorough ADA-assessment of the facility (i.e., existing doorways, building access, hardware, signage, etc.).

## II. BUILDING CONDITION OBSERVATIONS

### 1.0 Foundations

**Foundation Walls:** The foundation walls in the Town Hall are a stacked sandstone system with cementitious parging. The parging in several areas has failed and water infiltration in areas was noted with potential active water infiltration at building corners.

**Insulation:** Foundation insulation was not present and insulation was not observed in the floor joists of the main level.

**Slab on Grade:** A concrete floor slab was installed with the intent to reduce ground moisture migration in the basement. It is unknown if a vapor barrier was installed before the concrete slab was installed. Portable dehumidifiers were being used to remove moisture.

**Recommended Improvements:** Consideration should be given to a more permanent mechanical dehumidification system to remove humidity the area. The basement is currently being utilized to house the first floor mechanical system and record storage. The storage of documents in a damp basement condition is not optimal and provides a combustible fire source in an area that is not suppressed. Consideration should be given to the installation of an automatic sprinkler system of the basement, if records must remain stored in the basement.

## **2.0 Superstructure**

**Roof Structure:** Commentary is provided under the structural assessment portion of this study.

## **3.0 Exterior Closure**

**Chimneys and Exhaust Stacks:** The exterior chimney is brick veneer. The condition of the chimney lining and flashings should be evaluated.

**Entrances:** There is one main Public entrance towards the parking lot and one rear exist doorway. Both entrances are served by concrete ramps for accessibility. The ramp at the rear entrance is deteriorated and will require extensive repairs or replacement.

**Exterior Doors and Frames:** The main entrance doorway is a double-set of painted hollow metal doors and frames. The door hardware serving this entrance does not meet accessibility requirements. While these doors are functioning, at a minimum, the entrance hardware should be replaced to meet accessibility requirements.

**Exterior Walls:** Exterior Walls appear to be wood-framed balloon-framing, which is no longer permitted by Code. It is unclear if wood infestation is present and is beyond the scope of this study.

**Exterior Windows:** The windows have been replaced within the past three years and consist of residential-grade vinyl replacement windows. Sashes are reported to be operable.

**Recommended Improvements:** The condition of the chimney and flashings should be evaluated by a roofing contractor and repaired as required. All brick mortar should be evaluated for cracks that could permit water infiltration unto the system.

## **4.0 Roofing System & Attic**

**Roofing System:** The roofing is residential-grade asphalt shingles that was installed in the early 1990's. Based on visual observances, it appears the original roofing system may have been wood shingles installed over attic wood members spaced for ventilation. Plywood roof decking was installed over the original wood decking. Since asphalt roofing shingles

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have a serviceable life expectancy of 20-25 years, future replacement of the roofing system should be considered.

**Roof Flashings:** There appear to be active leaks around the chimney in the attic. Roof level examination of the flashings was not possible, however based upon visual observances, experience tells us there is a breach in the flashing/counterflashing at the chimney. The picture below indicated stained, and possibly deteriorated plywood sheathing around the chimney.



**Gutters and downspouts:** Gutters are aluminum, K-style of residential grade.

**Roof and smoke hatches:** A former roof access panel was noted in the attic, however it was closed with plywood sheathing. It appears that access to the roof level must now be achieved from the ground level.

**Attic Insulation:** The attic is insulated with batt roll-in insulation with a paper kraft facing. Several areas of the attic had the roof insulation with the kraft vapor retarder installed incorrectly. The vapor retarder is to be installed with the vapor retarder/kraft facing

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towards the warm side on the space (Meeting Room Side). Incorrectly installed vapor facings can create moisture and deteriorate wood members.



**Recommended Improvements:** Due to the age of the roofing system, all existing roofing and insulation, flashings, gutters, and downspouts should be inspected by a reputable roofing company. A careful investigation of the condition of the roof decking should be conducted. All rainwater now spills on grade, creating a potential safety hazard to the building occupants and visitors and potentially allowing water infiltration into the basement.

## 5.0 Interior Construction

**Ceiling Systems:** Most areas contain acoustical type of lay-in type ceiling tiles with plaster ceilings above being observed on the main level. The condition of the ceiling tiles is good, except for a few stained tiles around the HVAC diffusers in the meeting room. Insulation should be installed on the ductwork in the attic to prevent condensation from forming on the ducts/diffusers during hot and humid weather.

**Floor Coverings:** The flooring of the Main and Upper levels is carpet tiles, that were recently replaced and is in good condition.

**Wall Finishes:** Most wall finishes appear to be painted finishes on concrete or brick masonry. However, in a few locations, wood paneling was present; it's unknown if it meets the flame spread requirements based on occupancy.

**Restroom Facility:** One Men's and one Women's restroom facility are provided. It is reported these two rooms are to be renovated by another Consultant, so the review of the existing conditions are not considered in this report.

**Drink Fountains:** No drink fountains were noted.

**Capacity Signage for Egress:** The Meeting Room was posted with signage limiting the room to a maximum of 122 persons. More on this subject is addressed in structural assessment.

## 6.0 Conveying Systems - Vertical Movement

**Interior Stairways and Railings:** The building has two open stairwells (non-fire rated enclosure) that access the Upper level, and one wood stair that accesses the basement. Of particular concern is under the current configuration, the two stairwells are not opposite one another, require egress through another space to the stairwell. Under current Code, exits requiring two exists must be remote from one another. While the current configuration may be permitted to remain as an existing condition in the eyes of the Code, the current configuration is not optimal to provide a clear and safe egress from the second floor in the event of an emergency .

**Front Interior Stairwell:** The Public access to the Upper Level is through an open stairwell between the two levels. A wall-mounted, floor supported chair lift is provided to access to the upper level for persons with mobility issues. We understand the chair lift is in the process of being replaced. Of concern is when the chair lift is in use, it limits the egress capacity of the remainder of the stairwell, potentially creating a bottleneck in the event of an emergency. Access to the Meeting Room has been provided by a chair lift for many years, however, it technically does not meet today's accessibility Codes. Furthermore, egress calculations should be conducted to determine if the proper egress units is provided to allow occupants to safely evacuate

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the second floor in an emergency. The IBC/NJ Edition Code Section 1104.4.1.1 states, “Regardless of the square footage of the buildings or floors, buildings of two or more stories that are owned by public entities shall provide a vertical accessible route between floors.”



Chairlift to Second Floor

**Rear Stairwell:** The rear stairwell serves as a second means of egress from the upper level and portions of the first floor. As previously mentioned, the upper floor egress requires access to the stair through an office/conference room. Code permits emergency egress through one space, provided it is an equal, or lower hazard than the space being evacuated. While the current configuration may meet the intent of the Code, it is not optimal. Consideration should be given to the removal of the office between the Meeting Room and stairwell to permit free and open egress to the stair. IBC/NJ Edition Section 1016.2.3 states “All exit access shall not pass through a room that can be locked to prevent egress”.

Filing cabinets are currently stored within the first-floor landing/corridor. It is recommended that the filing cabinets located at the base of the stairwell are relocated to provide clear egress to the exit door/

**Basement Stairwell:** One wooden stair serves as access to the basement from the first floor. Low-head height conditions were noted, and the guardrails, handrail and open risers are not Code-compliant.

**Elevator:** There are no vertical elevators in the building making the building by current design standards and Codes technically inaccessible to the physically challenged.

**Recommended Improvements:** The stairwells are not constructed of fire-rated construction and the handrails and guards do not comply with Code. Without a carefully located elevator addition, it is impossible to provide accessibility compliance. Any and all manual locking hardware on corridor/stairwell doors should be immediately removed.

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**7.0 Site**

**Sidewalks:** With the exception of the side exit, the sidewalks and walkways are predominately concrete and appear to be serviceable condition. The side entrance ramp construction is failing and should undergo repairs or replacement.



Side Entrance Ramp Deterioration

**Condition of Parking Lot:** The parking lot is a shared lot between the Town Hall, Annex and Public Works Department. The asphalt has several cracks and deterioration and the

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lot is in overall poor condition. Consideration should be given towards a parking lot repair/replacement/improvement.



Typical Condition of Parking Lot

**Site Lighting:** The site lighting is accomplished by wooden post-mounted light fixtures of unknown age and condition. A careful review of the light conditions during the evening

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hours should be conducted to determine if the parking lot lighting meets established lighting levels consistent with established lighting standards and Township ordinances. The lighting study is beyond the scope of this Report. Light levels should be adequate to provide proper illumination for evening use of Township facilities.

Site lighting is critically important with the deteriorated condition of the parking lot. A poorly lit parking lot with deteriorated asphalt could create a tripping hazard.

## 8.0 Security

**Secure Entrances and CCTV Monitoring:** The building is unlocked during hours of operation without the ability to provide access control. This open-door policy provides no separation from the Public and security to the staff. The construction of a secure building entrance should be considered.

Consideration should be given to keeping the exterior door locked at all times with visitor access permitted through access control hardware with a video camera.

**Signage:** No accessible signage or braille signage is provided.

**Meeting Room Function:** The Meeting Room currently operates with elected officials on the raised dais with their backs facing Carranza Road. Additionally, there are three large windows to their backs. Without adequate wall protection installed in the exterior wall, this condition creates a potentially unsafe condition for elected officials.



Meeting Room

## 9.0 Building Accessibility

### Parking:

**Signage:** Accessibility signage with braille does not exist inside the building and exterior signs need to comply with Code.

**General Accessibility:** Without an traditional elevator, for the building occupants to access any floor level that is not on grade. The use of a wall-mounted chair lift was discussed elsewhere in this report. The Americans with Disabilities Act allows certain exemptions as long as program modifications can be accommodated, however that option seems practically infeasible for this facility.

**Meeting Room Dais:** The Dais is on a raised platform without an accessible ramp to access the raised level. A ramp should be installed to provide accessibility to the raised level.



Step up to Dais

**Recommended Improvements:** The facility does not currently comply with accessibility codes and the Americans with Disabilities Act and compliance should be considered a priority.

## **10.0 Mechanical & Electrical Systems**

A detailed report prepared by Kelter & Gilligo is provided as part of the Appendix.

## **11.0 Structural Assessment**

A detailed report prepared by Michael A. Beach Associates is provided as part of the Appendix.

### **III. EXPANDIBILITY & LIMITATIONS**

The Tabernacle Town Hall has been an active municipal building for over 60 years and has served the Township of Tabernacle well. While the Township uses the building to its best use, the building was not designed as a municipal building and despite the renovations over the years to maintain and enhance the facility, the building will always be limited, outdated, and non-code compliant (by today's standards and codes). The building will require significant renovations and repairs to continue the current use as a Town Hall.

Please review the structural assessment for required repairs/stabilization components prepared by Michael A. Beach (Beach) in the Appendix. The existing building contains numerous structural issues that will require eminent remediation, including but not limited to the roof, floor structure and foundation stabilization, and reinforcement of the structure to support the chair lift. Without significant stabilization of the floor structure, the upper level should no longer be utilized as an Assembly use (Court, meetings), because the structural members cannot support the loads mandated by an Assembly use.

While the Beach report addresses the concept of relocating the upper level meeting area to the first floor as an option to reduce structural loading, it would trigger a Change-of-Use designation of the entire building from a Code standpoint. While there is insufficient number of existing restroom fixtures (from a Code standpoint), the current number of fixtures is permitted to remain as long as the building's use classification remains unchanged. Re-classifying the building to an A-assembly use, would require an increase in the number of restroom fixtures (toilets, urinals, etc.) required, and could potentially affect the existing septic system size. We do not believe that relocating the Meeting Room/assembly function to the first floor to be a viable option.

Access to the upper level, is via a wall-mounted chair lift. While the chair lift has been employed for many years, however it does not meet current accessibility guidelines. When the chair is in use, it limits the ability to safely egress the upper level in an emergency.

With significant construction stabilization required, the limitations for expandability coupled with extensive structural remediation required, limits the building and the municipality from efficiently serving the Public. As the demands for municipal services

expand in the future, the existing Town Hall will be limited in its ability to serve the Public as an office function.

#### **IV. ADAPTIVE REUSE RECOMMENDATIONS**

RYEBREAD see three potential options; all of which require further investigation.

**Option 1: The Town Hall Remains in Use:** If the building will remain in its current use and function, there are several considerations that will need to be addressed in future budgets:

Basement foundation and structural remediation as outlined in the Beach report.

HVAC systems replacement.

Considerations for enhanced employee security.

Roofing system replacement.

Basement waterproofing & exterior grading/groundwater management.  
Add sump pump system in basement.

Construct accessible ramp in Upper Level at the raised platform.

Upper Level is technically inaccessible to persons with disabilities.

Upper level should not be used as an Assembly use due to structural limitations.

Basement fire suppression for records storage function.

**Option 2: Addition to Town Hall:** Construct a one or two story addition to the north of the existing Town Hall with a center vestibule entrance with stairwell and elevator to provide code-compliant access to the upper level of the existing building. A new Meeting Room/Court with supporting Court services could be constructed in the addition and could provide a facility where the municipality court provide municipal court, should they choose to do so. If Option 2 is to be considered, further study is warranted as the existing septic system would be impacted as well as stormwater management concerns would need thorough feasibility study. It is anticipated that any expansion study will need to consider a net-zero increase to impervious coverage to meet current stormwater management requirements, which could require the relocation of the Public Works and Annex facilities, and possible reduction of impervious asphalt parking.

If Option 2 is to be considered further, it is important to note that the maintenance and repairs discussed in Option 1 will still be necessary.

**Option 3: Construct a New Town Hall:** As mentioned above, it should be expected that the existing site limitations will necessitate a net-zero increase in impervious coverage. If a new Town Hall is to be considered at the current site, it will likely require demolition of the existing Public Works complex and the Annex and their relocation to another site.

While the Town Hall makes conceptual sense to be in the center of town, this concept will be the most-expensive option due to the need to construct both a Town Hall and the Public Works complex. It might be prudent to consider the construction of a new Town Hall on another site and re-purpose the existing Town Hall and Annex with other Township/Community services that are better suited to the existing buildings.

If Option 3 is to be considered further, it is important to note that the maintenance and repairs discussed in Option 1 will still be necessary.

## V. CONCEPTUAL COST ESTIMATES

Preliminary conceptual cost estimates have been prepared for the repairs necessary (or recommended) for the continued use of the building as a Town Hall. The cost estimates provided are preliminary in nature and are based on the field observations and experience of our design team. They are not, however, to be used for firm budgeting as they are not based on detailed knowledge or operational experience of the facility or its systems. No in-depth equipment testing or exploratory investigations were undertaken.

This report is silent with respect to existing HAZMATS, including but not limited to asbestos, underground storage tanks, mold (and other microbial), and lead-based paint. RYEBREAD recommends the Township's HAZMAT consultant conducts a detailed and thorough investigation of the existing building and site. The estimates assume a properly functioning septic system.

There are a number of repairs which should be undertaken for the continued use of this facility. The facility can have the renovations conducted through incremental renovations, or over a series of budgeting cycles, however this approach will be considerably more expensive than a complete, one-time renovation. For the purposes of this report, the preliminary estimate of construction cost is based on a one-time, large-scale renovation.

The itemized costs shown in the Appendix, are based in 2021 dollars and include estimated escalation to 2022. The figures include estimated contingencies and soft costs. The purpose of the preliminary estimates below is to provide the Township with strategies to prioritize the required renovations and to determine the long-term viability of continued use of the Town Hall.

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Architecturally yours:  
 REGAN YOUNG ENGLAND BUTERA, PC



Scott Charles England, AIA, Principal  
 New Jersey Registered Architect 21AI01081900  
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**VII. APPENDIX**

<b>ROOM</b>	<b>NET SQUARE FEET</b>	<b>FLOORING</b>	<b>LIGHTING (FOOTCANDLES)</b>
<b>Main Level</b>			
Tax Collector	136 NSF	Carpet Tile	
Municipal Clerk	168 NSF	Carpet Tile	75 Fc
Admin/DPW/CFO	183 NSF	Carpet Tile	66 Fc
Men’s Restroom	56 NSF	Ceramic Tile	Not Checked
Storage	39 NSF		
Women’s Restroom	47 NSF	Ceramic Tile	Not Checked
Records Vault	107 NSF		Not Checked
Reception/Deputy Clerk	114 NSF	Carpet Tile	45-53 Fc
Circulation	489 NSF	Carpet Tile	Not checked
Closet	18 NSF		

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<b>Upper Level</b>			
Meeting Room	993 NSF	Carpet Tile	38 Fc
Deputy Court Admin.	135 NSF	Carpet Tile	50 Fc
Land Development	79 NSF	Carpet Tile	50 Fc
Conference	115 NSF	Carpet Tile	37 Fc
Court Administ.	137 NSF	Carpet Tile	47 Fc

TABERNACLE TOWN HALL  
163 CARRANZA ROAD  
TABERNACLE, NJ 08088

EXISTING CONDITIONS REPORT  
OF  
MECHANICAL SYSTEMS

PREPARED FOR:

Regan Young England Butera  
456 High Street  
Mount Holly, NJ 08060

October 13, 2021

PREPARED BY:

Kelter & Gilligo Consulting Engineers  
14 Washington Road, Suite 221  
Princeton Junction, NJ 08550  
(609) 799-8336

TABERNACLE TOWN HALL  
EXISTING CONDITIONS REPORT

**Mechanical & Electrical Systems**

**Fire Protection:**

- The building is without benefit of sprinkler coverage. Although the building is understood to be grandfathered in as-is condition, if the facility was built as new, the Second Floor assembly use would dictate the need for suppression.
- Duct penetrations through floor/ceiling assemblies do not have fire dampers, as the floor/ceiling assemblies are not of rated construction. The architectural section may elaborate on rating requirements under their code analysis.



**Plumbing:**

- The domestic water supply for the building is derived from a shallow well water system, which is prone to contamination from the surface. Quality should therefore be monitored on a regular basis until another source is found. The size, capacity and condition of the well was not evaluated under this report. However, no operating problems were brought to our attention.

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EXISTING CONDITIONS REPORT



- Sanitary waste is handled by a septic system. The size, capacity and condition of the systems were not evaluated under this report. However, no operating problems were brought to our attention.
- The building has one (1) private restroom for men (with water closet, urinal and lavatory) and one (1) for women (with water closet and lavatory). Neither restroom has a floor drain, but this is not a code issue for single fixture restrooms. The existing fixture count does not satisfy the code for the full population of the building, however increasing the fixture count could overburden the existing septic and well water systems.

**HVAC:**

- Heating and cooling for the building is provided by two (2) basement-mounted, oil-fired furnaces, with split direct expansion (DX) cooling systems (indoor evaporator and outdoor condensing unit). The furnaces are located in the open Basement, as opposed to an enclosed furnace room. Without benefit of an enclosed furnace room, the township must take other means to maintain clearance of units from combustible materials. Each unit has a local emergency shutoff switch. However, an additional “break glass” station should be provided at the exit of the Basement.

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EXISTING CONDITIONS REPORT



- One (1) HVAC unit serves the First Floor, and the other is for the Second Floor. Both units appear to be in serviceable condition. However, the First Floor unit is reportedly of 1990 vintage, which exceeds a typical twenty (20) year lifecycle by ten (10) years. The Second Floor system was thought to be of 2005 vintage, which would suggest that at least five (5) years of service life remain.
- Fuel oil for the heating system is stored in two (2) basement-mounted tanks. Each tank is of 275 gallon capacity, with single wall steel construction. The tanks are thought to be ten (10) years old, but do not include diking features, leak detection, or an automatic gauging system. The venting system for the tanks makes use of small diameter PVC piping, and the fill lines make use of small diameter copper. Replacement with full tapping size piping of steel construction is recommended.

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EXISTING CONDITIONS REPORT



- Flue products from each furnace are ducted to masonry chimney with what appears to be unlabeled, single wall metal pipe. When modernization of the HVAC equipment becomes necessary, the flue pipe should be replaced with labeled materials. In the meantime, the condition of the masonry chimney should be examined.



- Exposed duct in Basement is not of lined or insulated construction, but the exposed work in the Attic does have thermal protection. Wrapping uninsulated ductwork is recommended to minimize surface condensation issues and maximize efficiency. Stained ceiling tiles in Second Floor Meeting Room were observed near ceiling diffusers.

## TABERNACLE TOWN HALL EXISTING CONDITIONS REPORT

- Cooling coil condensate drainage from each of the indoor evaporators is piped with uninsulated PVC materials to a condensate lift pump. The pipe and receiver of the pump should be insulated to prevent surface condensate, and the pumps should be retrofit with a high level alarm.
- Ventilation is provided by natural means. Although this satisfies the code for almost all of the inhabited spaces, natural ventilation (which makes use of operable sash) does not seem appropriate for a place of business in a trafficked location, or any place of assembly.
- In order to address the aging issues, and most of observed deficiencies, the HVAC equipment could be replaced with new gas-fired split systems at an estimated cost of \$50,000.00 if a new natural gas service were provided. However, provision of an HVAC system with mechanical ventilation would require another \$50,000.00, and probably create a need for a new electric service, while provision of a more modern and efficient installation could bring the total budget up to \$200,000.00.

### **Electrical:**

- Electrical service is overhead from pole mounted transformers. Service size is 200 amps at 208/120 volt, single phase, three wire. The utility company meter is on the exterior, with the main electrical panels located in the Basement.



- The main electrical panel is an older ITE unit, with a 200 amp main circuit breaker. While the breakers themselves appear to be in reasonably good external condition, the panel is rusty from the water infiltration and needs to be replaced. It feeds an adjacent newer Siemens sub-panel to provide additional breaker positions. Both panels contain several tandem breaker units (i.e. two physically smaller breakers, squeezed into a single breaker position). When the panels are replaced, it's recommended to provide sufficient pole positions to avoid the use of tandem breakers.

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EXISTING CONDITIONS REPORT



- Existing high demand on the service is 17 kW, which equates to 91 amps, leaving approximately 69 amps or 13 kW of usable spare capacity. The service size appears adequate for the foreseeable future.

TABERNACLE TOWN HALL  
EXISTING CONDITIONS REPORT

- Lighting levels appear adequate in occupied spaces. Emergency egress lighting is provided by wall mounted battery pack units. The Attic would likely be poorly lit without benefit of daylight entering the windows, and is need of egress lighting.



TABERNACLE TOWN HALL  
EXISTING CONDITIONS REPORT



- Observed wiring is a combination of conduit, MC/AC cabling (BX), and NM (Romex), and appears to be in good condition. Normally NM wiring is not permitted for places of assembly (100 or more), however it is permitted for buildings of non-fire rated construction.



# TABERNACLE TOWN HALL EXISTING CONDITIONS REPORT

- The fire alarm system is a Napco Magnum Fire Alert 6000 Series. It's a conventionally zoned system, with four (4) separate zones for detectors on 1st floor, 2nd floor, basement, and pull stations. Conventionally zoned systems have become all but obsolete, as small addressable systems have become economically feasible for even small buildings. Therefore, the next future fire alarm upgrade should be to a small addressable system.





# *Michael A. Beach & Associates, LLC*

## *Consulting Structural Engineering*

*Michael A. Beach, PE, SECB  
Timothy D. Jennings, PE, SECB  
Anthony J. Varano, PE, SE*

October 13, 2021

Regan Young England Butera  
Attn: Mr. Scott England, AIA  
Principal  
456 High Street  
Mount Holly, NJ 08060

**Re: Tabernacle Municipal Building Structural Evaluation  
Tabernacle, NJ  
File 1129.33**

Dear Scott:

Pursuant with your request, we completed our structural evaluation of the existing building structure in accordance with our proposal dated June 22, 2021. Our evaluation is based on our site visits and subsequent structural analysis of the existing building structure. Herein is our written report with our findings and recommendations from a Structural Engineering viewpoint.

### **General Observations**

The existing building is a two story wood framed structure with a basement and attic space.

The basement walls are comprised of rubble stone. The basement floor is comprised of a concrete slab on grade.

The First Floor structure is comprised of 1" tongue and groove wood decking over 3"x 8" wood joists spaced at 16" on center. The First Floor wood joists are supported by 5 1/2"x 7 1/2" wood girders or steel beams (which were recently installed). Vertical support for the First Floor structure is generally provided by the existing rubble stone basement wall at the exterior of the building and rubble stone piers and wood posts at the interior of the building. New steel columns have been recently installed to provide vertical support in isolated areas near the rear of the building.

The Second Floor structure is comprised of wood decking over 3"x 8" wood joists spaced at 16" on center. The Second Floor wood joists are supported by 5 1/2" x 7 1/2" wood girders. Vertical support for the Second Floor is provided by 2x4 wood stud walls at the exterior of the building and 6x6 wood posts and load-bearing wood stud walls at the interior of the building.

The Attic Floor is comprised of 1 3/4" x 7" wood joists spaced at 16" on center at center bays and 24" on center at the end bays. The Attic joists are supported by 2 3/4" x 7 1/2" wood girders at the interior of the building. Vertical support for the Attic Framing is generally provided at the exterior of the building by the wood stud walls and heavy timber wood trusses and load bearing walls at the interior of the building.

The Roof Structure is comprised of 3"x 5" wood roof rafters spaced at 24" on center. The roof rafters are supported at the interior by a 3 1/2"x 6 1/2" wood girder. Vertical support for the roof rafters at the exterior of

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the building is provided by load bearing wood walls. The wood roof girder is supported by a heavy timber wood truss.

During our visit, the First Floor and Roof Structure was generally visible from the Basement and Attic space. The Second Floor structure was concealed from view by the existing ceiling finishes. Local removal of the ceiling finish was needed to determine the floor joist and floor girder size at one location. Other areas were not visible.

Based on our site visits, the following indications of structural distress or deficiencies were observed:

1. Significant cracks in rubble stone foundation wall at rear exterior corner (See Picture 1).
2. Water infiltration in basement has eroded mortar in basement wall ( See Pictures 2, 29, 30, 31).
3. Cracking in the existing CMU wall supporting the exterior concrete ramp ( See Picture 23).
4. Significant cracks in wood joist and girders supporting first floor (See Pictures 3, 4, 5, 24, 25, 26).
5. Indications of previous termite infestation and deterioration at First Floor wood framing. (See Pictures 6, 21, 24, 27).
6. Deterioration of existing wood beams/joist bearing on rubble stone walls basement wall was observed. (See Picture 21).
7. Wood shims have not been installed properly causing overstress in first floor wood joist bearing. (See Picture 7).
8. Wood joists have deficient connections (See Pictures 13, 17, 18, 20, 26).
9. Wet wall condition at electrical panel in basement. (See Picture 8).
10. New steel columns added to support first floor beams bears on basement slab without a footing. (See Picture 9).
11. New steel columns supporting first floor beams appear to have questionable footing size. (See Picture 10).
12. No plate connection for roof rafters at ridge. No wind uplift anchors for roof rafters at the eave bearing location. (See Pictures 11, 15).
13. Wood stair stringer to basement is notched and needs to be reinforced to support required loading. (See Pictures 12, 13, 22).
14. Wood stair to the second floor is notched and needs to be reinforced to support required loading. (See Picture 19).
15. Non-conventional heavy timber truss above second floor ceiling supporting ceiling rafters and roof beams does not have panel point connections. Top chord of truss is not braced. (See Pictures 14, 16).

## **Evaluation/Recommendations:**

### **1.0 Existing Building Strength:**

Currently the existing building is used as an Office Use at the First Floor and an Assembly Use at the Second Floor. For a Office Occupancy, the required superimposed Live Load is 50 PSF plus 15 PSF for partitions in accordance with the 2018 International Building Code, New Jersey Edition.

For an Assembly Use, the required superimposed Live Load is 100 PSF in accordance with the 2018 International Building Code, New Jersey Edition. The minimum Live Load for the Roof is 20 PSF. These required live load capacities have been consistent in previous building codes for many years.

#### Structural Analysis Criteria:

The allowable strength of wood elements that used to in structural calculations to determine the capacity of the floor structure to safely support the required superimposed live loads required by code has decreased significantly in the last forty years. With the move to intensive forest management to meet the demand and preserve the environment, the wood supply has been changing in quality and increasing amount of wood has been coming from managed short rotation forests. As a result, less mature wood is being used which generally adversely affects the wood strength.

Based on our experience of previous historic wood structures in which material testing of the wood framing was performed, we have chosen an allowable flexural stress of 1,500 psi and an allowable shear stress of 150 psi. This material strength is equivalent to #1 lumber permitted in building codes over forty years ago. In present day building codes, the allowable flexure stress used in the design of wood structures is approximately ½ of the value we have used in our analysis of this building structure.

#### First Floor Structure:

The existing wood floor joists (without deterioration) can safely support the required Live Load required for an Office Use occupancy referenced above. In addition, the existing floor joists (without deterioration factored in) can also safely support the required Live Load required for an Assembly Use occupancy referenced above. The existing wood girders (without deterioration factored in) can safely support the required live load for an Office Occupancy. The existing wood girders (without deterioration factored in) **cannot** safely support the required live load for an Assembly Occupancy. The First Floor could be changed to an Assembly Use occupancy by reinforcing the wood girders. However, this change of use designation creates other difficulties.

Based our observations of the First Floor structure, significantly deterioration was observed in the wood joists and wood girders that has weakened the structural strength of these elements in certain locations. As a result, it is our professional opinion that this floor is not safe for occupancy until the deteriorated structural elements have been reinforced. Temporary shoring of the deteriorated wood elements could be made to allow limited occupancy for repairs and limited use of the First Floor for three (3) months. This limited occupancy does not apply during a hurricane or significant snowstorm events. The temporary shoring should be installed immediately, and the repairs should be performed within three months. Limited use of the building beyond three months without reinforcement should not be performed without further structural inspection to evaluate the condition of the building.

Second Floor Structure:

The existing wood floor joists (without deterioration) can safely support the required Live Load required for an Assembly Use occupancy referenced above. However, the existing wood girders (even without deterioration) **cannot** safely support the required live load for an Assembly Use occupancy. The existing wood girders (without deterioration factored in ) can safely support the required live load for an Office Occupancy. As a result, it is our professional opinion that the existing Second Floor cannot be used as an Assembly occupancy without significant reinforcement of the wood girders. A change in use to an Office Occupancy could be made without reinforcement of the Second Floor structure. Since the existing wood joists and wood girders were concealed from view by the ceiling finishes, we recommend local removal of the ceiling finishes to allow a through visual evaluation of the wood joists and wood girders.

Roof Structure:

The existing wood roof rafters (without deterioration) **cannot** safely support the required Live Load referenced above for a Roof structure. In addition, the existing roof purlin **cannot** safely support the required Live Load required referenced above for a roof structure.

As a result, it is our professional opinion that reinforcement of the Roof Structure is required to safely support a minimum roof live load. Consequently, it is our professional opinion that the building is not safe for occupancy until the roof structural elements have been reinforced. Temporary shoring of the wood elements could be made to allow limited occupancy for repairs and limited use of the building for three (3) months. This limited occupancy does not apply during a hurricane or significant snowstorm events. The temporary shoring should be installed immediately, and the repairs should be performed within three months. Limited use of the building beyond three months without reinforcement should not be performed without further structural inspection to evaluate the condition of the building.

**2.0 Repair of Existing Deterioration or Deficiencies:**

2.1 The existing rubble stone foundation is significantly deteriorated. The mortar has eroded and is visible on the basement floor. The strength of the wall to resist lateral soil pressure and support vertical loads without significant future settlement has been comprised. Reinforcement of the existing rubble stone foundation wall is required. The consequence of not reinforcing the existing rubble stone foundation wall is an unsafe building occupancy. Temporary shoring could be installed to extend a limited occupancy for up to three months.

A practical method to provide support for lateral soil pressure and vertical loads would be to install a new 8" CMU wall and footing inside the existing basement wall. Repair cracks in outside face of the foundation wall to mitigate water infiltration and re-grade at the exterior walls for positive drainage away from the building.

2.2 The existing foundation wall for the exterior concrete ramp has deteriorated. Repair or replacement of the ramp is required.

2.3 Local reinforcement or replacement of First Floor wood joists and wood girders is required where indications of structural distress were observed. Provide metal connections.

Mr. Scott England, AIA

October 1, 2021

Page 5

- 2.4 New footings under steel columns are recommended where no footings or suspect existing footings were observed. Additional observation of the existing footings that were concealed from view is required.
- 2.5 Reinforcement of the roof joists, beams and heavy timber truss is required. Bracing of the heavy timber wood truss is required. Metal plate connections for the roof rafters at the ridge plate and metal anchors connecting the roof rafters to the exterior wall is recommended.
- 2.6 Reinforcement of the existing stair stringer from the First Floor to the Basement is required.
- 2.7 Reinforcement of the existing stair stringer from the First Floor to the Second Floor is required. In addition, reinforcement of the stair for the handicap lift is also required.

We were retained by Regan Young England Butera to perform a limited structural observation of the existing Tabernacle Municipal Building and alert them of structural defects. Our limited evaluation is based visual observation of the existing building structure on the date of our site visit. Our site observation recommendations are based on clearly visible, open and unobstructed areas of the premises on the dates of visual observation. No opinion is rendered with regard to structural elements that are concealed. This limited evaluation is based on our professional opinion and does not guarantee the structural integrity of the premises under its current use nor any proposed renovations.

We hope this response satisfies your requirements at this time.

Please call with any further questions or comments.

Very truly yours,

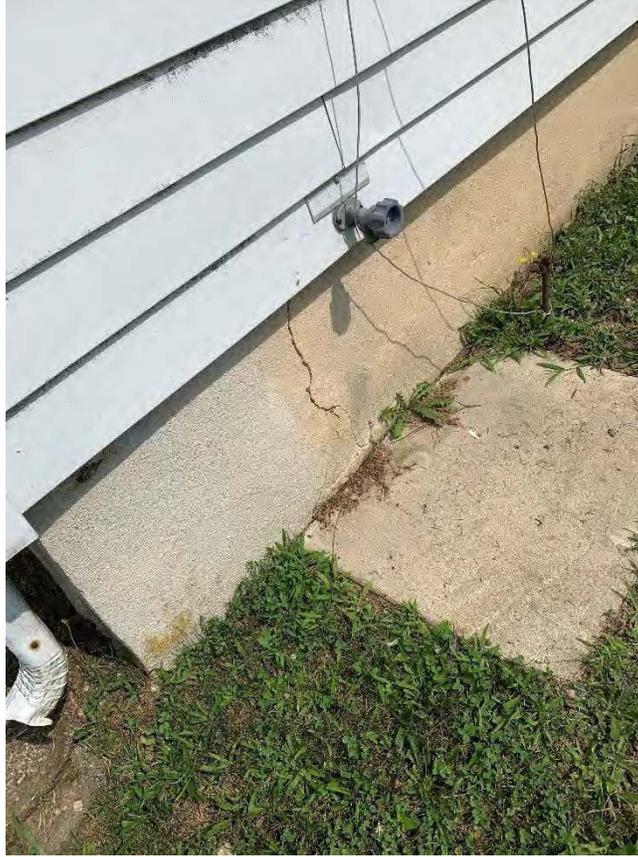
***Michael A. Beach & Associates, LLC***



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## **Pictures**



**Picture 1:**

Significant crack in rubble stone foundation wall at rear exterior corner

## **Pictures**



**Picture 2:**

Water infiltration in basement has eroded mortar in basement wall

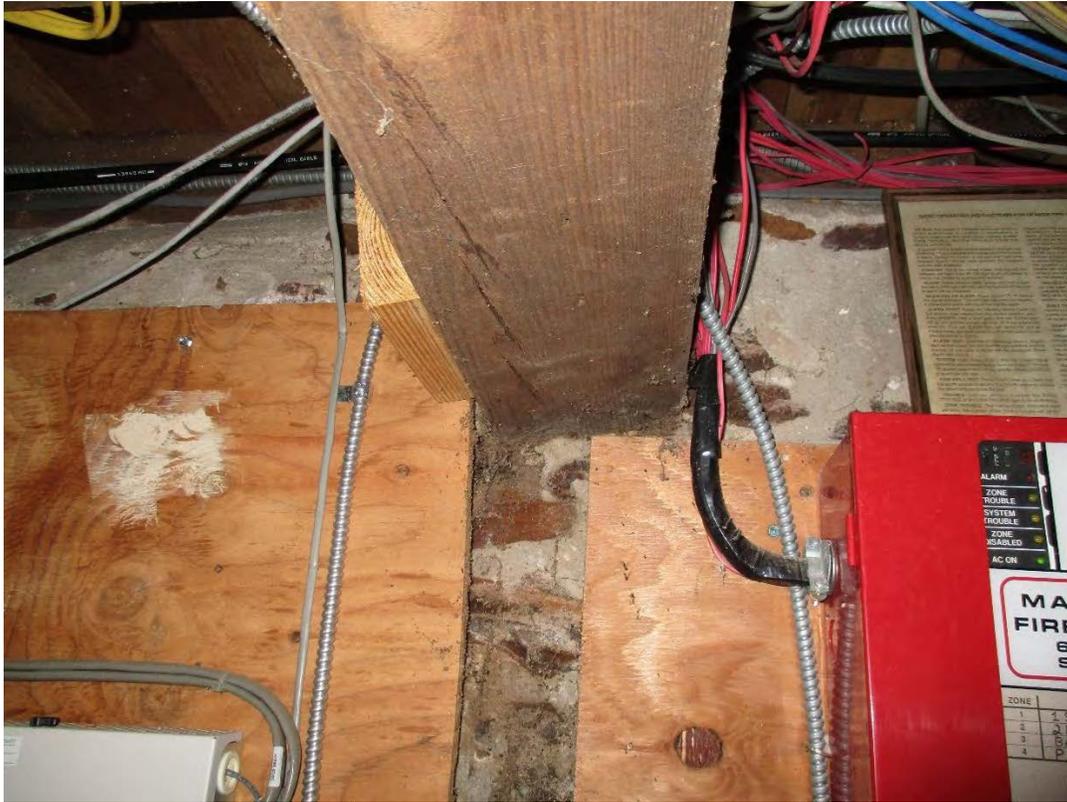
## Pictures



**Picture 3:**

Significant cracks in wood beams supporting first floor

## Pictures



**Picture 4:**

Significant cracks in wood beams supporting first floor

## Pictures



**Picture 5:**

Significant cracks in wood beams supporting first floor

## Pictures



**Picture 6:**

Indications of previous termite infestation

## Pictures



**Picture 7:**

Wood shims not on installed properly causing overstress in first floor wood joist bearing

## Pictures



**Picture 8:**

Wet wall condition at electrical panel in basement

## Pictures



**Picture 9:**

New steel columns added to support first floor beams bears on basement slab with no footing

## Pictures



**Picture 10:**

New steel columns supporting first floor beams appears to bear on slab without footing

## Pictures



**Picture 11:**

No plate connection for roof rafters at roof

## Pictures



**Picture 12:**

Wood stair to basement needs to be reinforced to support required loading

## Pictures



**Picture 13:**

Deficient Framing at Basement Stair connections

## Pictures



**Picture 14:**

Heavy Timber truss above second floor ceiling with deficient connections

## Pictures



**Picture 15:**

Roof Structure with deficient connections

## Pictures



**Picture 16:**

Heavy Timber Wood Truss without bracing and deficient connections

## Pictures



**Picture 17:**

Second Floor joist with deficient connections and cracking

## Pictures



**Picture 18:**

Second Floor joist with deficient connections

## Pictures



**Picture 19:**

Second Floor stair with notched stair stringer

## Pictures



**Picture 20:**

First Floor joist with deficient connections

## Pictures



**Picture 21:**

First Floor joist with deterioration at bearing condition

## Pictures



**Picture 22:**

First Floor Stair to Basement with deficient connection

## Pictures



**Picture 23:**

Handicap Ramp Foundation Deterioration

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## Pictures



**Picture 24:**

First Floor Framing deterioration

## Pictures



**Picture 25:**

First Floor Framing cracking

## Pictures



**Picture 26:**

First Floor Framing cracking

## Pictures



**Picture 27:**

First Floor Framing connection deficiency

## Pictures



**Picture 28:**

First Floor Framing Deterioration

## Pictures



**Picture 29:**

Basement Wall Deterioration

## Pictures



**Picture 30:**

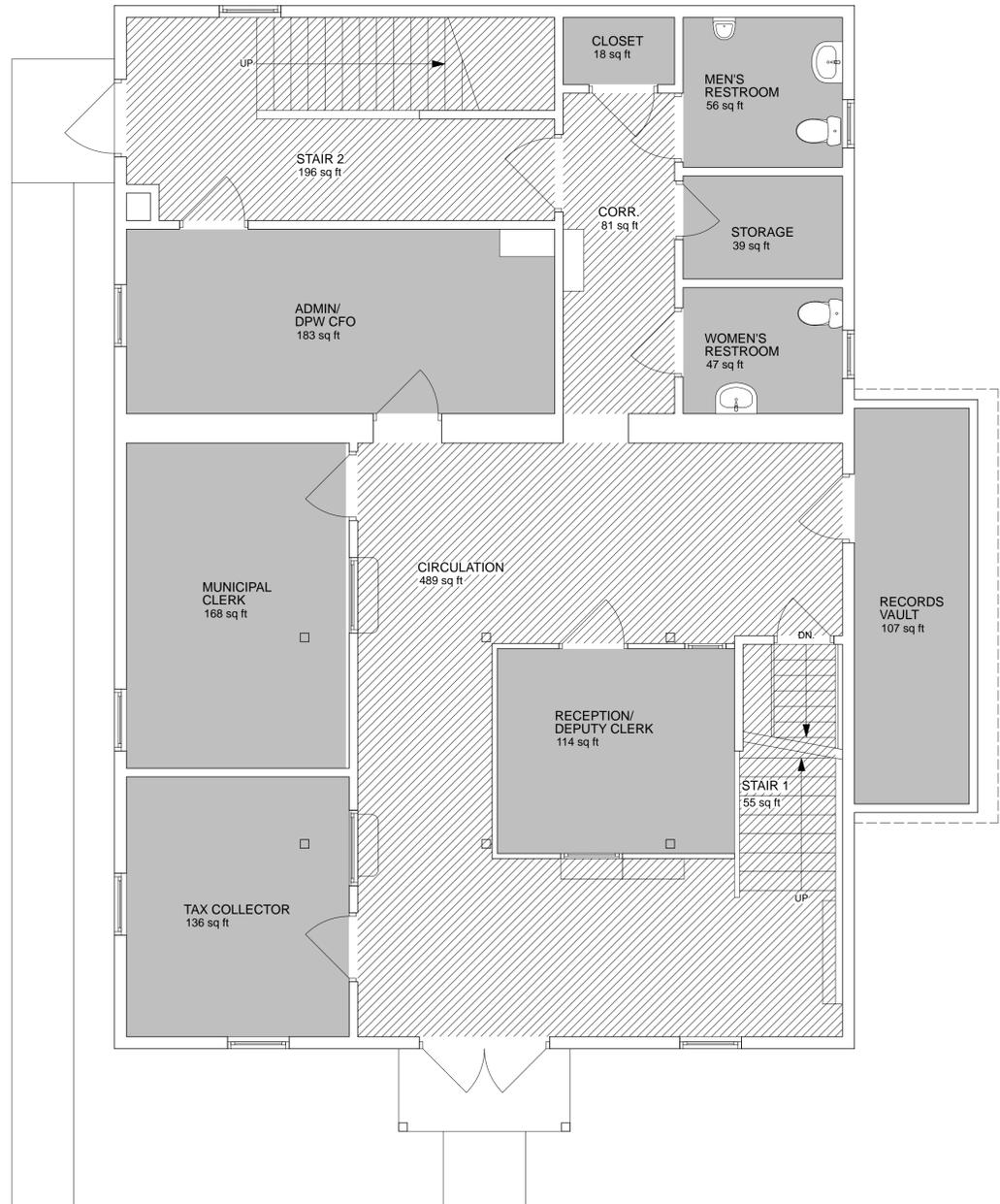
Basement Wall Deterioration

## Pictures



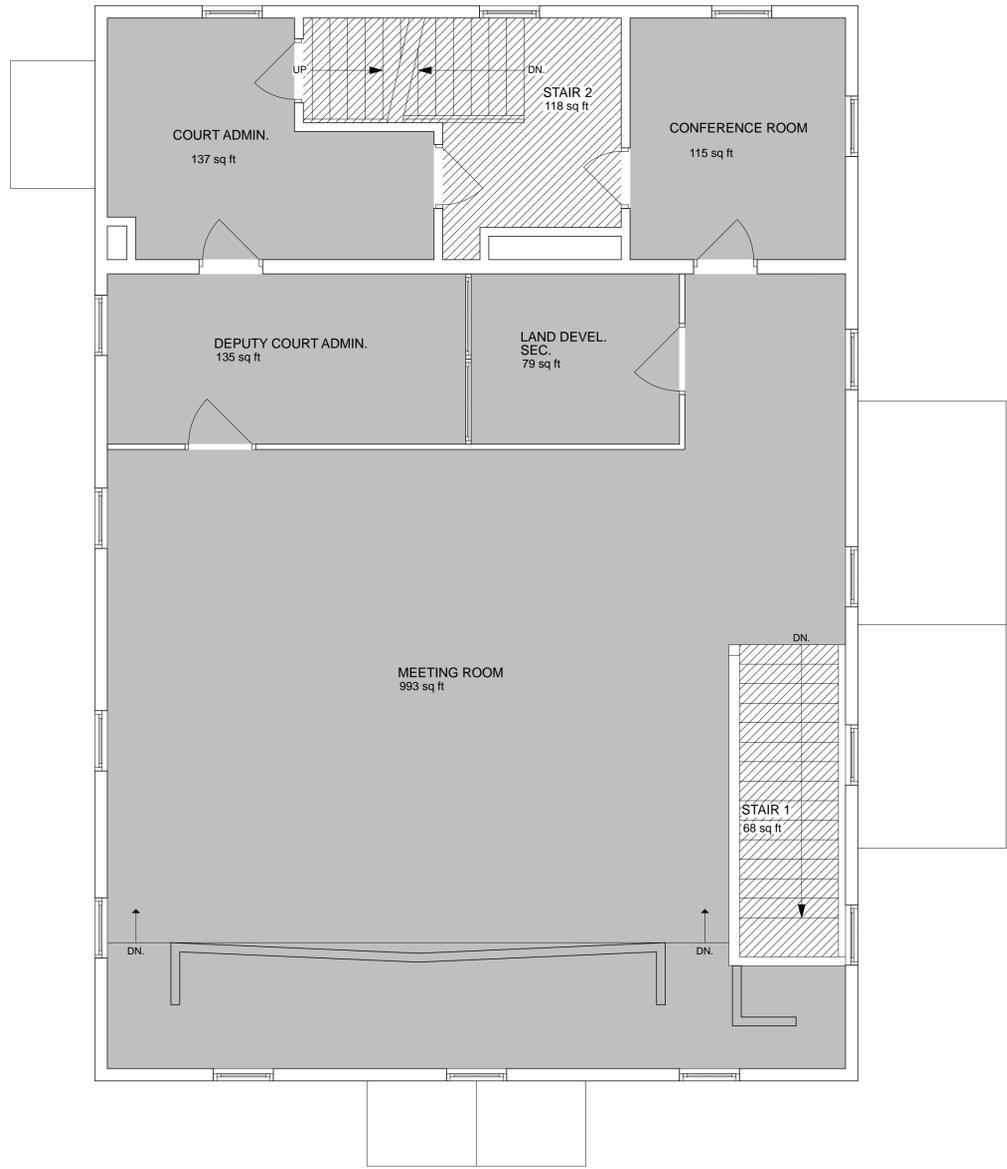
**Picture 31:**

Basement Wall and Wood Framing Deterioration



**FIRST FLOOR PLAN** SCALE: 1/4" = 1'-0" **01**

TOTAL GROSS SQUARE FOOTAGE: 1,939 SF



**SECOND FLOOR PLAN** SCALE: 1/4" = 1'-0" **02**

TOTAL GROSS SQUARE FOOTAGE: 1,819 SF



PRINT DATE: 7/19/21

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**TABERNACLE TOWNSHIP MUNICIPAL**  
**FEASIBILITY STUDY**  
 TABERNACLE TOWN HALL  
 163 CARRANZA ROAD  
 TABERNACLE, NEW JERSEY 08088  
 TITLE: **EXISTING FLOOR PLANS**

DRAWING DATE:	19 JUL 2021
REVISION DATE:	
DRAWN BY:	PF
COMMISSION NO.:	5665B

**A1.0**  
 1 OF 1

**TABERNACLE TOWN HALL ASSESSMENT**  
Preliminary Estimate of Probable Costs

RYEBREAD Project #5665B  
24 September 2021

	Cost
<b>ACQUISITION/FINANCING</b>	
Property	\$ -
Building	\$ -
Survey	\$ -
Wetlands/Stream Encroachment	\$ -
Phase 1	\$ -
Legal	\$ -
Title Insurance	\$ -
Recording Fees	\$ -
Appraisal	\$ -
Bonding Costs	\$ -
Inspections	\$ -
<b>SUBTOTAL</b>	\$ -
Contingencies (20%)	\$ -
Annual Escalation (10%x.5)	\$ -
<b>TOTAL</b>	\$ -

	Cost
<b>SOFT COSTS</b>	
Architect/MPE (16.5% of Bldg)	\$ 196,268
Civil Engineer (20% of Site)	\$ 34,580
Clerk of the Works (2% of Bldg+Site)	\$ -
Reimbursible Expenses (.5% of Bldg+Site)	\$ 6,812
Construction Loan Interest	\$ -
Perf/Maint Bond (5% of Site)	\$ -
DoT/DEP/Soils Review (2% of Bldg+Site)	\$ -
Twsp Eng. Review/Inspection (20% of Site)	\$ -
Bldg Permits (1% of Bldg)	\$ -
Owner's Insurance	\$ 2,000
<b>TOTAL</b>	\$ <b>239,660</b>

	Unit	Cost/Unit	Cost
<b>SITE DEVELOPMENT</b>			
Repair Parking Lot	1	\$ 100,000	\$ 100,000
Repair/Replace Side Ramp	1	\$ 18,000	\$ 18,000
Increase Parking Lot Lighting	1	\$ 15,000	\$ 15,000
			\$ -
<b>SUBTOTAL</b>			\$ 133,000
Contingencies (20%)			\$ 26,600
Annual Escalation (10%x1)			\$ 13,300
<b>TOTAL</b>			\$ <b>172,900</b>

	Unit	Cost/Unit	Cost
<b>BUILDING</b>			
Replace Roof & Flashings	1	\$ 25,000	\$ 25,000
Attic Insulation	1	\$ 15,000	\$ 15,000
Construct Secure Vestibule	1	\$ 125,000	\$ 125,000
Ramp @ Dais	1	\$ 10,000	\$ 10,000
Replace HVAC System	1	\$ 300,000	\$ 300,000
Basement Foundation Walls	1	\$ 170,000	\$ 170,000
First Floor Structural Reinf.	1	\$ 150,000	\$ 150,000
Roof Structural Reinforcement	1	\$ 120,000	\$ 120,000
<b>SUBTOTAL</b>			\$ 915,000
Contingencies (20%)			\$ 183,000
Annual Escalation (10%x1)			\$ 91,500
<b>TOTAL</b>			\$ <b>1,189,500</b>

	Cost
<b>CURRENT BUDGET ESTIMATE</b>	
<b>TOTAL</b>	\$ <b>1,602,060</b>

**Exclusions:**

1. Hazmats
2. Construction Manager/Clerk of Works