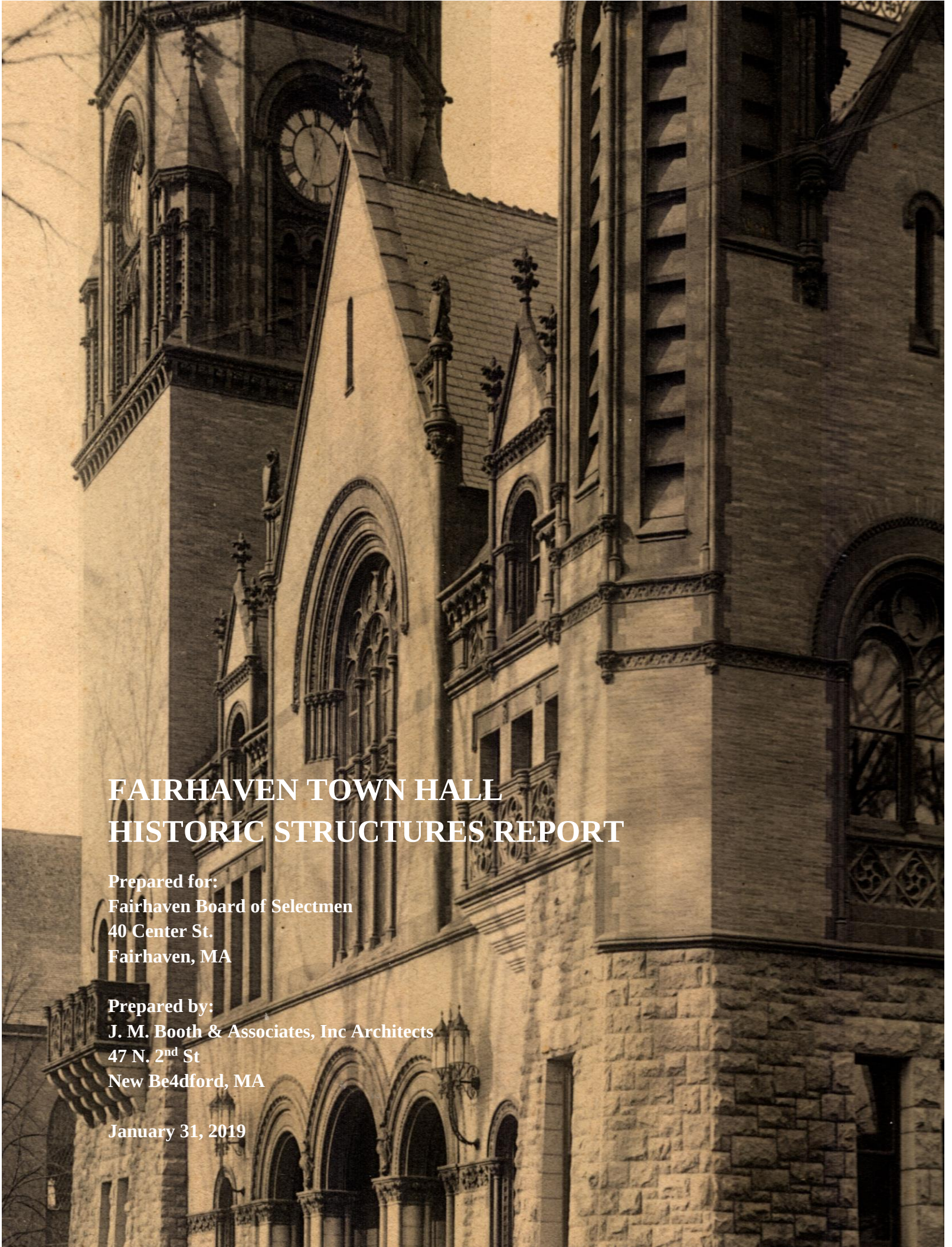

FAIRHAVEN TOWN HALL
HISTORIC STRUCTURES REPORT

Prepared for:
Fairhaven Board of Selectmen
40 Center St.
Fairhaven, MA

Prepared by:
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47 N. 2nd St
New Be4dford, MA

January 31, 2019

A. Brief History

Financed by Standard Oil Company millionaire Henry H. Rogers (1840-1909) as a gift to the Town from his wife Abbie Palmer (Gifford) Rogers, this asymmetrical French Gothic building was designed by Cambridge, Massachusetts, architect Charles Brigham. (Brigham designed several other buildings in Fairhaven for Rogers and was also architect of the Church of the Advent, Boston, the Second Church of Christ Scientist, Boston, and wings of the Massachusetts State House). The Fairhaven Town Hall was designed to house all of the Town government offices, as well as the U.S. Post Office and the police station. It is still home to many of the Town's municipal offices.

The building, completed in 1892, was constructed of New Brunswick granite and "Delmonico" brick, a light orange colored brick named for the Delmonico building in New York where it was first used. Terra cotta sculptures depicting mythological creatures add decoration. The red slate roof is accented with copper trim. The interior features quartered oak paneling, solid brass fixtures and leaded, stained glass windows. The tower houses a four-faced clock.

B. Restoration Efforts

The building was listed on the National register of historic placed in 1981. Since that time, many historically accurate restorations projects have occurred. In addition, modernization of the building also took place to make it more energy efficient, accessible to the handicap and the public in general.

Window Modifications

In the mid 1980s, the windows were modified to provide thermal glazing in the openings. Many of the chains and weights were also restored while the original window sash were fitted with weatherstripping to reduce air infiltration.

Handicap Accessibility

1996 saw the buildings Second Floor Auditorium made accessible. The second floor auditorium was in neglected and not opened to the public. The space which once held the annual town meeting could not be used as it was not handicapped accessible.

In 1996, an exterior ramp was installed on the Walnut St. side of the building. This along with the installation of a four-stop elevator, allowed the Auditorium to become barrier-free and once again used by the public. The magnificent auditorium, restored in the 1990s, was once again

reopened to the public. At the same time a uni-sex restroom was created on the first floor. Although the public restrooms are in the basement, the elevator did not extend to that level. The creation of the first floor restroom allowed barrier free access to visitors.

C. Exterior Restoration

The Town, conscious of the need to maintain their historic property, has performed many restoration phases at Town Hall. The original Delmonico brick, has been carefully replicated and used to replace badly damaged brick. The original source of the building brick was contacted and the brick carefully cut to match the size of the existing brick.

Over the past 22 years, since the restoration of the building auditorium, the building's exterior has been restored. In the late 1990s the red slate roof was substantially restored with all gable valley copper replaced as well as missing and loose slate tile. The severe pitch of the roof has made the repair of the slate a challenge, which will be discussed in this report.

In 1996, the exterior windows, which are a combination of stained glass and leaded glass units, underwent a restoration process. Many of the decorative wood frames were badly decayed and a process of rebuilding the wood was created that allowed the craftsmen to mould new damaged sections from modern material designed specifically for the restoration of antique wood. Once completed the windows were painted and preserved.

The leaded glass and stained-glass windows in many cases were covered with a protective layer of Acrylic, in order to extend the life of these irreplaceable units. The stained glass will require further examination to determine if it will need the lead came replaced. The came is an "H" shaped continuous piece of lead that holds the stained glass in place. Over time this material, which is soldered together can become brittle. The process of replacing the came is labor intensive and the protective panels on the exterior of the windows allowed the glass to be preserved and out of the weather. It did not, however, alleviate the need for repair of the lead came.

The restoration work on the building included the repair of the two bay units located on the east and west elevations of the building. The copper roofs of each bay had become badly deteriorated and was covered with EPDM membrane in the past. This only hid the leading problem. In order to properly restore these roofs, the brick balustrade was removed down to the roof level. The existing roofs were removed and the structure was found to be badly deteriorated. A new roof structure was installed complete with insulation and copper roofing. Once the roofs were installed the brick balustrade was restored to its original appearance.

The exterior doors were next in the restoration process. The west doors had become delaminated over their lifespan. The doors at the north entrance to the building required the oak veneer to be replaced as it was completely delaminated and deteriorated. The south pair of doors on the west elevation were saved and the existing door was stripped of the varnish and re-varnished. This process will need to be considered approximately every 5 years in order to maintain these 2 1/4"

thick oak doors. Maintenance of the door finish could include a light sanding of the varnish and a new coat of varnish installed a minimum of every 2 years. If this is done, it will prolong the varnish and extend the longevity of the finish beyond the noted 5 years. Careful inspection of the doors on a yearly basis is recommended to ensure that the varnish finish is intact.

The main entrance doors on the Center St. side of the building were in much better condition than the west doors. These doors are under cover within the building entrance portico which is recessed approximately 8 to 10 feet from the face of the building. Like the west doors these will need to have a periodic inspection and re-varnishing. The restoration of these doors fixed the two side panels. Originally designed to open completely, the hardware had become un-repairable and it was decided to fix the side panels with a new oak frame between the panel and the door. This enabled the frame to support the tall doors and minimize impact on the hardware.

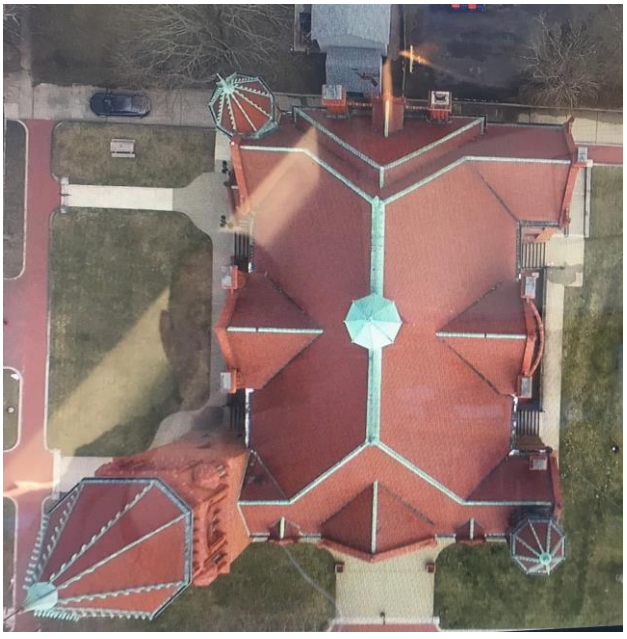
D. Future Work

Although the majority of the building has seen restoration efforts the ongoing maintenance of the building is required to ensure that the past work is preserved. Future efforts will include the following:

Exterior Restoration

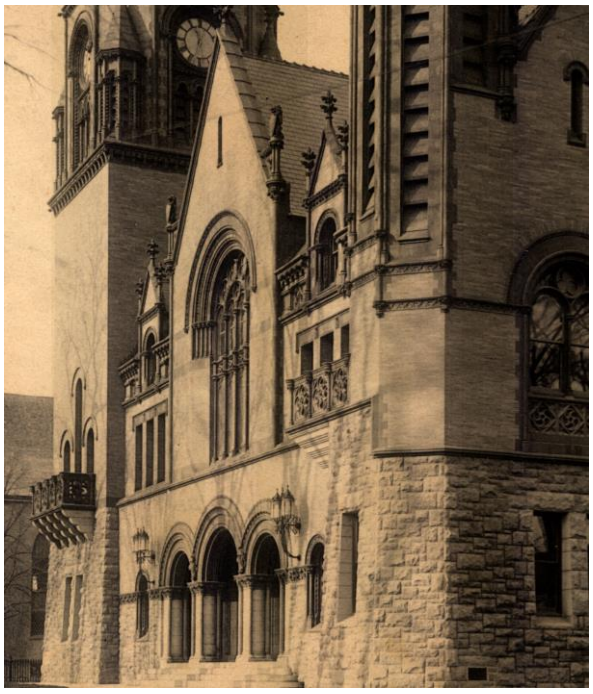
Restoration of entrance foyer ceramic tile. The tiles at the main entrance have several decayed and broken tiles. These will need to be custom made to replicate the original 100 year old tiles. The recessed entrance masonry was recently restored, however, the tilework was not. The granite stairs leading up to the entry are likewise original and are starting to show signs of structural failure. Although the granite blocks are in good conditions, these steps appear to be sloping towards the building a condition which could cause snow and ice to form on the stair. This condition is indicative of the sub-structure supporting the stairs to be decaying

The slate roof continues to present problems. Slate tiles are becoming detached and falling to the gutters at the eaves and in our opinion will continue to present a problem in the coming years. Resetting of these tiles will maintain a watertight roof, however, the process of repairing the roof is becoming expensive. In our opinion the slate tiles are in good conditions, the nails holding the tiles on are failing. The problem is compounded by the pitch of the roofs. The roof slope which is 18 inches vertical in 12 inches horizontal, creates unnecessary stress on the 100 year old nails. We recommend removal of the slate tiles, storing them on perimeter staging, introducing a new layer of plywood over the existing sheathing and reinstalling the slate tiles. In addition, by completely removal and reinstallation of the roof we can introduce new slate tile into the field of the roof which will lessen the appearance of the new tile. By dispersing the new red tile within the field it will be less noticeable. Copper detailing can be saved and reinstalled as well.

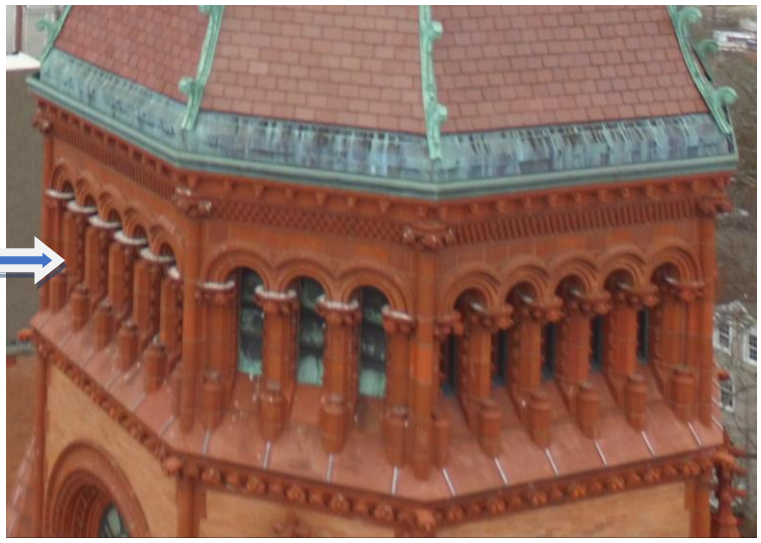


The cupola at the center of the roof also needs to have the slate tiles removed and reinstalled. The various hipped angles of the cupola base need to have a waterproof membrane installed behind the slate to ensure that the base is watertight.

Many of the terra cotta decorative elements on the building façade have either been damaged or removed. The replacement of these will be the most important element of the building restoration. The photograph to the right, obtained from the Millicent Library Historic Archive, shows the building when it was completed in 1892. The two balconies on the front of the building have terra cotta balustrades which were removed in the past. It is unclear when, or why they were removed. These two significant elements, restored to their original details, would add to the restoration of the Center Street elevation of the building. The final terra cotta detail which is currently missing are the finials on top of the dormer pediments, and the gargoyle elements at the eaves of the main gable end at the center of the elevation. There are many modern materials that could be utilized to replicate these missing elements while minimizing the cost to recreate these important details. In fact a balustrade on the north elevation of the building, seen at the right, could be used as a template for the two balcony railings.



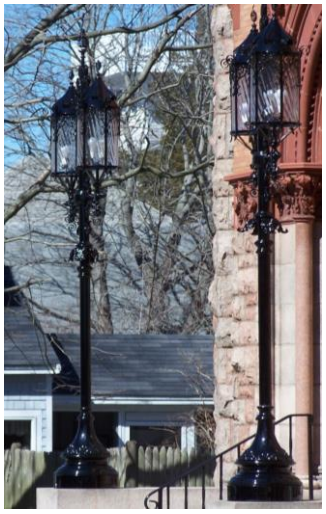
The Clock Tower has many missing terra cotta columns around its perimeter. These columns separated the various louvers and windows. In the photo to the right the arrow is pointing to the missing column shaft. This occurs on all the longer window walls, while the diagonal columns are intact. We are concerned that the column capitals at the top of the column were not intended to be a cantilevered terra cotta shape and could eventually fail due to the weight of the masonry above. These column shafts could be replicated from modern materials, and tinted to match the existing terra cotta.



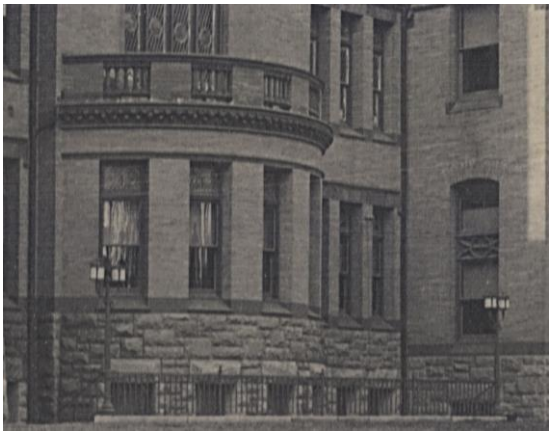
The Clock Tower weathervane has been lost and replaced with a simple arrow. This arrow and its shaft is fabricated from iron which when in contact with copper can corrode due to a galvanic reaction. The rust stains seen in the photo to the right is an indication that this is in process. A 1906 postcard give us a glimpse of the original weathervane, however, the enlarged view seen in the lower right is not clear enough to see the actual configuration of the original weathervane.

There are two internal roof drains located on the Center St elevation. These drains have been plagued with leaks and are currently leaking within the wall cavity. These leaks will create a problem with mold and mildew if left up repaired. The repairs will require the wall of the second floor stair to be opened and the pipe examined and repaired. The current cast iron drain seen at the right rises up in the wall in a brick shaft. The white gutter seen in the photo below the cast iron is a temporary solution allowing the leaking water to be channeled to the drain located at the floor below. This pipe, governed by the plumbing code, needs to be repaired and is considered a code violation in its current state. There is a similar pipe at the west side of the building which is not leaking.

In 2006 and 2011, the exterior lights were restored. The first phase of this project, completed in 2006, restored the light poles at the northwest entrance. The fixtures were carefully removed, crated and delivered to a restoration manufacturer for complete refurbishment. Once returned the fixtures were reassembled in their original location. Over the past few years the south fixture has loosened and twists in the wind. We recommend having a set screw installed to prevent this from happening. Currently the light is being held with a zip tie which is a temporary repair. The second phase of the light restoration restored the remainder of the exterior light wall sconces, located on the south and west elevation. The fixtures were carefully removed, crated and sent to the same manufacturer that restored the pole lights.



There are missing light fixtures at the east and west areaway stairs. The original poles remain and the conduit for the wiring is still visible, a careful replication of these lights would provide adequate light for these areas which provide egress from the basement offices. The light fixtures seen in this historic photo, provided by the Millicent Library, will provide enough detail to recreate the fixtures. The poles are still standing and can be used as the support for the fixtures.



In 2012, the areaways located on the east and west elevations of the building were restored. The existing brick paving was removed, the foundations were excavated and the foundations walls were waterproofed to minimize water infiltration to the office areas in the Basement. The photo to the right shows the completed east areaway with the sand joint filler being installed. At that time the storm water piping that runs under the west lawn was examined with a camera and several problems were noted. The cost to repair was restrictive and the work was not done.

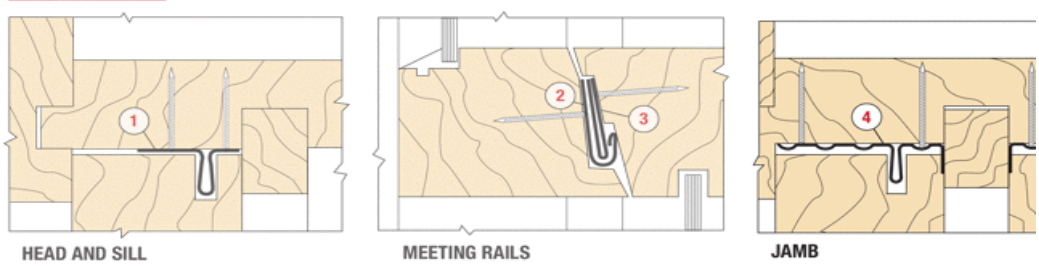
In general, the drain line is undersized to properly drain the areaways. There is an abrupt turn in the pipe which periodically clogs with debris. Roots from old tees were also found. We recommend installing a new properly sized drain line and a new manhole at the turn. This will create an access point allowing the drains to be cleaned. The pipe would need to be sized by a civil engineer and run to the Center St. drain line.

A similar issue with the east areaway drain exists. The size of the pipe is too small to drain the areaway in a heavy rain event. These is no turn in the pipe as it runs directly to the Walnut St. storm drain system.

The retaining walls of both areaways need to be rebuilt. The walls are tilting into the areaway from the top to the bottom and will continue to move if the masonry is not restored. The wall in the photograph to the right, has a bulge in the wall visible by the reveal of the cap stone. The stone retaining wall originally had an overhang if the cap stone to the stone masonry, this disappears in the center of the wall. Many of the stone masonry joints are cracked from the wall movement. We recommend complete excavation of the retaining walls on both east and west elevations and reconstruction to alleviate the hydraulic pressure being exerted on the wall.

The windows on all levels were restored in the mid 1980s. Thermal pane glass was installed in the original frames and the sash balances were restored. The balances consist of weights and chains. The weights run in a pocket within the wall. The system is adequate for the balance of the windows. A plastic weatherstripping was installed, which has seen its effective usefulness. The plastic, designed to provide a spring action to seal the windows have become destressed and no longer provide the spring action. We recommend replacing the weatherstripping with a bronze metal tee shaped weatherstripping set into the jamb. This will seal the windows to windborne infiltration. The lock rail, or meeting rails of the two sash at the center of the opening, will need to be inspected to ensure that a proper lock rail weatherstripping system has been installed.

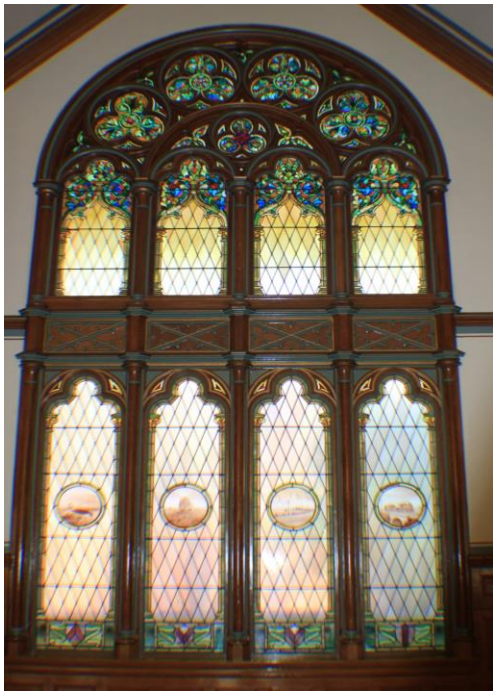
At the bottom of the lower sash, a bulb type weatherstripping was installed. We recommend removal of this weatherstripping and installing a bronze tee shape weatherstripping. This type of weatherstripping extends up into a kerf cut in the bottom of the sash effectively sealing the sash. The kerf cut exists so the installation of the weatherstripping would be an economical repair. The recommended weatherstripping are shown below.



The exterior of the windows will need to be painted as an ongoing maintenance practice. The frames, restored in the 1996 restoration project are in good condition but need to be routinely prepared and painted, approximately every five years.

The ornate stained glass and leaded glass panels were covered with an acrylic panel to protect these irreplaceable windows from the weather and vandalism. The unique exterior covering was vented to minimize heat buildup in the summer months. The south windows on the Center Street Elevation have begun to yellow and should be replaced to maximize the visual appearance from the exterior.

These windows will need to be carefully evaluated by a stained glass conservator as many of the lead cames, the "h" shaped lead that holds the glass together, have evidence of failure. This report excludes this work as we are not capable of evaluating the window glazing. A budget line item will be carried in the statement of probable construction cost, but it will need to be confirmed by a conservator.



In the West Areaway, the existing windows into the Computer room have been reglazed with acrylic rather than glass. This material has too great an expansion rate to be effective as a glazing material. As such the material is constantly breaking the seal of the glazing to the wood.

The two egress doors out of the basement to the east areaway have been repaired inappropriately. The original stiles, or vertical members, at each side of the door were modified. The stiles and bottom rail were cut on a diagonal angle and a new bottom rail installed. It is unclear why this was done, but it creates an unstable structural condition for the bottom rail. The original doors would have had the stiles extend to the bottom of the bottom rail with the bottom rail mortised and tenoned into the stiles. The doors will need to be removed and replaced with new units that meet the structural design of the original doors.

The North side of the building has the entrance to the basement mechanical room. The original doors have been modified with the original wood panel removed. A plywood panel was recently installed to replace the missing panel. This door should be restored with the proper panel. The door should be carefully inspected and repaired including the installation of new weatherstripping and repair of any decayed wood.

The Handicap Accessible ramp, constructed over 20 years ago has several problems with the concrete ramp surface. The ramp is constructed of both slab on grade and slab over galvanized steel decking and has several movement cracks visible. There is evidence of movement in both forms of slab. An attempt to grind irregularities in the slab height is evident, but the primary cause for this movement was not determined. Grinding the slab reduces the thickness of the slab and will only hasten further deterioration. The slab on grade can be removed and a new slab poured. The slab on metal decking will need further investigation to determine the cause and appropriate method of repair.

The granite stairs at the Center Street Elevation require removal and resetting. These stairs should be set so that the rainwater drains off towards the street. Unfortunately, the structure below the stairs that support the heavy granite slab has apparently deteriorated to the point where the stairs actually pitch towards the building allowing water to pond on the stair creating a hazard in the colder months.

Additional handrails should also be considered. Current codes require handrails to be set a maximum of 5 feet apart so that a rail is within 30 inches of reach.

Interior Restoration

First Floor

Many areas of the interior need to be restored, most immediately is the Assessor's Office where the ceiling is in a state of partial collapse. This ceiling, located on the west side of the building, has several large cracks. The medallion, seen at the right, is actually out of level due to the plaster failure. This room will require immediate repair and we recommend that the areas directly under the plaster failure be blocked off from the staff to avoid an accident. The plaster will need to be removed and replaced in the immediate future. The cause of this plaster failure is unclear. There are no water stains which would indicate a roof leak. In our opinion, the keying of the old horsehair plaster has failed. Although there are ways to consolidate this plaster, it can never be made level again which is why we recommend removal of the damaged area and a new skim coat plaster system installed on the existing structure.

In the selectmen's office the water damage to the ceiling continues. We were informed that the ceiling does still show new water damage during rain events. The repair of the copper roof was effective, but we believe that there is a problem within the brick wall and ornate window wall of the second floor. The windows as seen on our previous inspections had a failed sealant bed at the window frame connection to the brick wall. In addition, there are several areas of the wood frame that need to be sealed. This work should take place in the immediate future to avoid the collapse of the selectmen's ceiling.

A problem also exists with the building ventilation system. In the photograph to the right the staining at the perimeter of the vent grille is an indication that the system requires filters. In addition, the ductwork should be cleaned of any contaminates that could affect the air quality within the building.

The building inspector's office ceiling is an old acoustic tile ceiling. According to Wayne Fostin, the Building Commissioner, the original plaster ceiling in that area fell and was removed and replaced with the acoustic tile ceiling. It is unclear when this happened. The ceiling separates the second floor auditorium form the first floor and needs to have a fire rating. Many of these tiles are loose and appear to be ready to fall to the floor below. The tiles will need to be tested for hazardous materials before any work is performed on the ceiling.

The tax collector's office, has a soffit in the private office with damaged plaster, which appears to have been repaired with a plastic washer system. This system is designed to be covered in plaster, but these washers were left exposed. Visible in the photograph to the right, a crack in the plaster exists at the last washer. We recommend replacing the ceiling with a new skim coat plaster system.

The wood floors throughout the first floor are a hard pine which when properly maintained should last for a long time. The floors need the existing varnish to be stripped and refinished. Dependent on the wear each area receives, this may be needed on a cyclical bases of 5 to 10 years. The floor refinishing could be done on a systematic basis with each room being completed individually

Second Floor

Auditorium

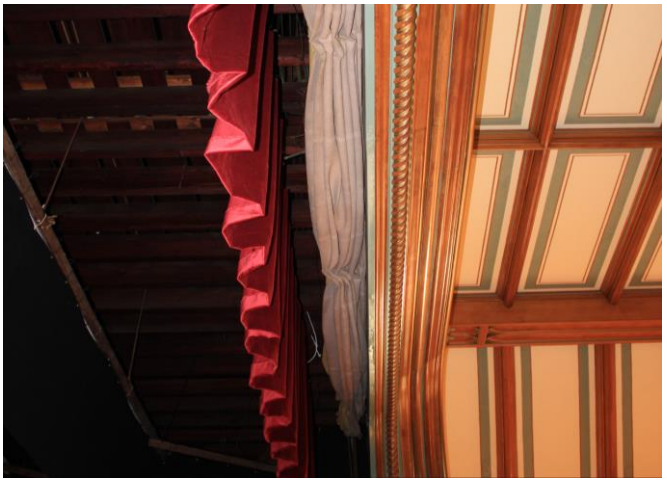
Significant restoration has occurred in the auditorium since the elevator was installed in 1996. The original color scheme was carefully replicated and the auditorium appears as it would have the day the building was opened.

The Balcony at the south end of the room was restored. A metal stair leading down to the auditorium was removed and the original guard wall panels replicated. The original leather and wood seats were found on the original risers.

The balcony level, accessible by two stairs, is not accessible to the handicap and cannot be open to the public unless means is provided to make it accessible. Furthermore, the guard wall is a low wall approximately 32 inches high. Current Building Code requires walls of this type to be 42 inches high.

A review of the stage found it to be accessible by the elevator with a stop in the west wing space. Foot lights on the stage are old containing incandescent light bulbs. The wood trap doors are difficult to operate and we recommend that these lights be modernized before using.

A fire Curtain exists at the proscenium opening but it is difficult to operate and lacks the required fusible link and counterweight system designed to minimize smoke and fire from rising up the stagehouse into the attic. This curtain should be modernized, although the curtain itself should be acceptable for its intended purpose. We also found the stage curtain rigging system to be in poor condition. A modern rigging system should be considered for this curtain as well. The curtain can be seen in the photograph to the right as a gray folded curtain behind the wood proscenium in front of the maroon curtain. This curtain is essential in safeguarding the building in the event of a fire.



Fairhaven Town Hall
Fairhaven, MA
Fire Protection Existing Conditions Systems Report
J#503 002 00.00
L#59012/Page 1/ December 8, 2017

FIRE PROTECTION

Executive Summary:

The Town Hall is protected by manual dry standpipe system. The building is not provided with sprinklers. Each floor is provided with a fire valve/hose cabinet. There is a three-way fire department connection located on the side of the building.

Massachusetts code requires that any new building or substantially renovated building, 12,000 square feet or more must be sprinklered. Per 780 CMR 34.00 work shall not be considered a substantial renovation if the cost of installing a sprinkler system exceeds 15% of the total renovation cost. Should the existing building undergo a major renovation the building will require upgrades to the existing dry manual standpipe system to provide complete protection of all spaces.

Existing Conditions:

The Town hall is supplied from manual dry standpipe system. The fire department connection has three connections, each supplies a fire hose cabinet per floor.

First Floor Valve Box

Typical Dry Standpipe Valve Box

Typical Hose Station

Typical Fire Drain Valve

Dry Standpipe Fire Department Connections

Recommendations:

- Provide new fire service with double check valve assembly, wet alarm check valve and provide new wet sprinkler system for the entire building.

Fairhaven Town Hall
Fairhaven, MA
Plumbing Existing Conditions Systems Report
J#503 002 00.00
L#59013/Page 1/ December 8, 2017

PLUMBING

Executive Summary:

Presently, the Plumbing Systems serving the Town Hall are cold water, hot water, sanitary, waste and vent system, storm drain piping, and natural gas. Municipal sewer and municipal water service the Building.

The majority of the plumbing systems are original to the building. The plumbing systems, while continuing to function, have served their useful life. The plumbing systems could continue to be used with maintenance and replacement of failed components; however other non-dependent decisions will likely force the plumbing upgrade. Due to its age, complete new water piping systems are recommended. The copper piping is in poor condition and has served its useful life.

The plumbing fixtures are in fair condition. Attempts have been made to make bathroom fixtures accessible, however, the majority of fixtures do not meet current accessibility codes. In general, the fixtures appear to have served their useful life. Current Access Code requires accessible fixtures wherever plumbing is provided. In terms of the water conservation fixtures, their use is governed by the provisions of the Plumbing and Building Code. Essentially, the code does not require these fixtures to be upgraded, but where new fixtures are installed, as may be required by other codes or concerns, the new fixtures need to be water conserving type fixtures. All new fixtures are recommended.

Cast iron is used for sanitary drainage. Rainwater from roof areas is collected by exterior rain leaders which appear to discharge to a below grade drainage system. Where visible, the cast iron pipe appears to be in fair condition. Smaller pipe sizes appear to be copper. In general, the drainage piping can be reused where adequately sized for the intended new use.

New domestic water heating systems with thermostatic mixing valves are recommended.

Fixtures:

The water closets are floor mounted tank type.

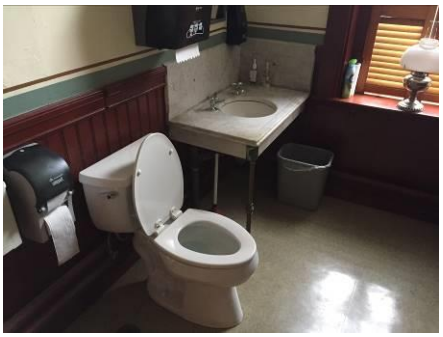
Lavatories are one-piece marble countertop with under mount bowls. Faucets are 8-inch centers with handles.

Fairhaven Town Hall
Fairhaven, MA
Plumbing Existing Conditions Systems Report
J#503 002 00.00
L#59013/Page 2/ December 8, 2017

Toilet Room Water Closet

Toilet Room Lavatory

Janitor's Sink



Toilet Room

Office Sink

Drinking fountains is a free-standing bottle type cooler.

Water Cooler

Water Systems:

The main domestic water service is located in the Mechanical Room. The service is 2" in size and includes an old Empire meter. The main domestic cold-water distribution is 2" in size.

Water Meter

Water Entrance Pit

Backflow Preventer at HVAC Make-up

Sanitary/Storm Systems:

Piping, where exposed, appears to be copper with sweat joints. The majority of the piping is insulated. Due to the lack of accessibility a major renovation should include all new domestic water piping.

Sanitary Waste Piping

Exterior Storm Piping

Area Drain

Fairhaven Town Hall
Fairhaven, MA
Plumbing Existing Conditions Systems Report
J#503 002 00.00
L#59013/Page 4/ December 8, 2017

Domestic hot water in Building is generated through Braford White (2011) gas tank type water heater.

Water Heater

Gas:

The gas meter is located inside the building and the gas regulator is outside the building. Gas piping is black steel with a combination of screwed and welded joints and the piping to the generator is flex connection.

Gas Meter (Inside)

Gas Connection at Generator

Gas Vents at Boiler

Exterior Regulator

Exterior Gas Boiler Train Vents

Mechanical Room Sump Pump

Drainage Systems:

Cast iron is used for sanitary and storm drainage. Where visible, the cast iron pipe appears to be in fair condition. Smaller pipe sizes appear to be copper.

In general, the cast iron drainage piping can be reused even in a major renovation where adequately sized for the intended new use.

Recommendations:

- Provide all new plumbing fixtures.
- Provide all new domestic water piping.
- Relocate existing gas meter to outside.

Fairhaven Town Hall
Fairhaven, MA
HVAC Existing Conditions Systems Report
J#503 002 00.00
L#59065/Page 1/ December 6, 2017

HVAC

Executive Summary:

The Town Hall's presently installed boiler system is reaching the end of its serviceable life. Controllability of the present system is inferior and requires an upgrade to achieve better efficiencies and to reduce energy consumption. Consideration should be made to converting the entire system to hot water to provide a more energy efficient heating median.

Air conditioning throughout the building is limited, and provided by window air conditioning units where required.

Heating Plant

The boiler is located in the basement level and is an HB Smith, model 88 gas-fired cast iron boiler which generates steam and supplies heat to majority of the building through a combination of floor-mounted cast iron radiators and fin tube radiation. The boiler provides 1,904 MBH of steam to the building, and was installed in 1993. The boiler is 25 years old and near the end of its useful life. The boiler burner is a gas-fired unit manufactured by Power Flame, model WCR2-G-20B. The boiler is provided with all operating and safety controls including high and low limit. At this time the boiler, associated controls and piping system appear to be operating satisfactorily; however, it was stated that in the coldest months, the boiler struggles to provide enough heat to handle the entire building; there are complaints of spaces that are too cold.

The heating boiler utilizes schedule 40 black steel piping for steam and condensate distribution throughout the building. Condensate return travels back to a condensate receiver and feed unit located in the corner of the basement. This system feeds the boiler with return steam condensation. Some of the piping system appears to be insulated with fiberglass insulation which is original to the building. Some of the insulation was installed during the 1993 boiler replacement.

Combustion gases generated from the boiler exhaust to an existing masonry chimney through a galvanized steel breeching system, with combustion fan. Combustion air is provided to the space utilizing a Tjerland supply fan. On a call for the boiler to fire, the fan starts and provides the necessary combustion air to the space. Originally, the outside doors to the room had a louver installed in the door, and was opened to the atmosphere at all times. This was covered up, and replaced with the supply fan.

Please note, the original boiler was not removed and was abandoned in place when the presently operating boiler was installed in 1993. The boiler with abandoned piping takes up a considerable amount of space within the mechanical room.

HB Smith Boiler

Abandoned Boiler

Combustion Air Fan

Existing Combustion Air Covered

Condensate Receiver

Boiler Feed Unit

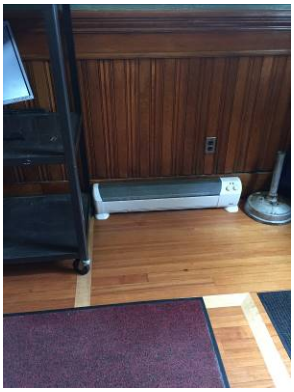
Spatial Heating

Cast iron steam radiators are utilized throughout building for heating purposes. Certain locations have bare steam piping that is used for heat. In spaces where the occupant is cold, we witnessed small electric heaters. All of the cast iron radiators are controlled via a unit-mounted thermostatic control valve which acts as thermostat for individual occupant temperature control.

Typical Cast Iron Radiator Installed Throughout

Thermostatic Control Valve

Fintube Installed in Meeting Room



Electric Heat

Ventilation

Ventilation air is provided for each space through the use of operable windows. For natural ventilation, the building code and the mechanical code 2012 requires the operable portion of the window to be minimum of 4% of the floor area for which it serves. This should be verified for code compliance.

Air Conditioning

Air conditioning is provided through the use of residential style window-mounted air conditioners. They are located in several offices, where required. There is a ductless split air conditioning unit located for the IT equipment at the basement level. The associated condensing unit is installed outside on the West wall.

The Auditorium is not air conditioned, and is a goal of the Town's to provide air conditioning within this space.

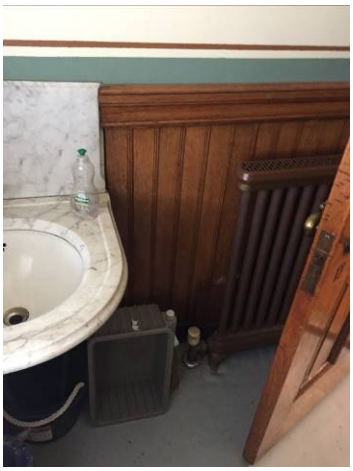
Stored Window Air Conditioners

Typical Window Mounted Air Conditioner

Toilet Rooms

The toilet rooms are not provided with any mechanical exhaust systems. All ventilation occurs through the use of operable windows. Steam heat is provided for most toilet rooms using cast iron radiators or a bare pipe assembly. As indicated in the ventilation section, utilization of operable windows for ventilation should be verified to ensure code required window area is met.

Women's Room Heat (Basement)



Upper Floor Toilet Room

Auditorium

The temperature control system is located in the basement. The system will maintain a lower space temperature in the auditorium when it is not occupied.

Auditorium Control

Decorative grille within Auditorium

Our understanding is the Town has a proposal in hand to air condition the Auditorium. It was described to us that two units will be installed behind the grilles located near the stage. Ductwork will be installed behind the wall and will run up to the attic space where it will distribute air through the decorative grille located in the middle of the Auditorium.

The Television Studio and Technology Center is now located on the Auditorium stage. This area has a considerable heat gain in the space with the addition of the equipment.

Temperature Controls

The automatic temperature control system is a semi-standalone system which consists of the cast iron radiators having thermostatic control valves allowing manual adjustments at the radiator itself, as well as wall-mounted thermostat that controls the boiler. The system is operating but this style of control has a tendency of overheating the spaces.

The boiler is scheduled for on/off operation and night set back features. The thermostat will activate the boiler based on overall space temperature and time of day.

RECOMMENDATIONS:

The following recommendations will help to improve overall system performance, temperature controllability, and energy savings:

- Steam is an antiquated heating system. We understand changing an entire system can be difficult in an existing historic building.
  - Our first recommendation would be to convert the heating system to hot water. This entails replacing the boilers with high efficiency condensing boilers. The venting and combustion air will be piped to the outdoors, eliminating any cold air entering the room for combustion air. Floor mounted end suction pumps with VFD's shall circulate heating hot water throughout the building to hot water fintube radiation. This recommendation provides the most efficient system and best overall control in the building.
  - If replacing the entire system is not feasible, we recommend replacing the existing steam boiler. In addition steam traps and controls should be replaced with automatic control valves at all steam radiators.

- Ventilation requirements for each space must be verified with the current operable window area.

- Provide forced air cooling system utilizing high efficiency indoor air handling units to provide code required ventilation air to interior spaces.

- Provide a direct digital control system with web access for the entire building, and integrate it with a town-wide control system network.

- Provide air conditioning to the Auditorium. We were not provided any information on the system that the Town has a proposal for, and what it entails for installation within the space.

  We recommend installing the Unico System. The Unico system utilizes small supply tubing that can fit within existing wall cavities and floors. This allows for minimal disruption to the building, without the extensive remodeling. The largest system has a capacity for 5 tons of cooling, so two or more units will be required. A possible solution would be two within the Auditorium and one at the stage. For more information visit www.unicosystems.com

Fairhaven Town Hall
Fairhaven, MA
Electrical Existing Conditions Systems Report
J#503 002 00.00
L#59073/Page 1/ December 8, 2017

ELECTRICAL

Executive Summary:

Most of the electrical systems, although functioning, have outlived their intended useful life. The facility's 400A, 120/208V, 3 Phase, 4 Wire electrical service is provided by Eversource and is secondary metered. Other incoming utilities run overhead and include telephone, cable TV, and fire alarm.

The power distribution system has been upgraded in a piece meal fashion and equipment ranges from good to poor condition. Most of the lighting systems have been retrofitted with new T8 lamps and ballasts, but most light fixtures, switches and wiring were requested. The fire alarm system was upgraded in 1996. The control panel is now obsolete however the detection devices are backward compatible with the FCI E3 panel. System coverage is generally inadequate and not code compliant.

The existing 15 kW generator is old and inadequate. The emergency lighting systems is not code compliant and consists of lights on the generator as well as self-contained battery units with inadequate coverage. Exit signs are generally old and some do not have battery back-up and provide inadequate coverage.

The existing communications and security systems are minimal and should be replaced with state of art integrated systems.

We recommend replacement of the Electrical and Communications/Security systems under a renovation program.

Electrical Distribution:

Three phase primary service runs overhead on Williams Street. The secondary service originates on (3) pole mounted transformers where it runs underground directly to a class 320 exterior building mounted meter in (1) 4" conduit plus (1) 4" spare. The service is rated at 400A, 120/208V, 3 phase, 4 wire.

The main distribution panel consists of a 400 amp, main circuit breaker, 120/208V, 3 phase, 4 wire with an AIC rating of 10,000 ARMS.

The main distribution panel was manufactured by GE Spectra Series is located in the main electrical closet and is in good condition.

The panel is grounded with a floor driven ground rod but does not connect to the main water service. There is no bonding jumper across the water meter.

The main distribution panel feeds the elevator as well as other remote panels located throughout the building. The panel has space provisions for (1) 2 pole breaker. Remote panels are of the breaker type and are generally not located in dedicated electric closets, panel condition ranges from poor to good.

Panels have been installed on an as needed basis and consists of different manufacturers. The stage panelboard replaced the older panel however the existing wiring remained and was extended to new panel.

Working clearance for panels in Work Room is blocked by refrigerator.

Secondary Pole Transformers

Utility Meter

Main Distribution Panel

Office Panels in Work Room

Panels in Boiler Room Hallway

Stage Panel

<u>Interior Lighting</u>:

The interior lighting consists of a combination of surface and pendant wraparound fixtures with two T8 lamps and electronic ballasts in offices, controlled with local switches. Some offices have pendant direct/indirect fixtures with steel baffles and T12 lamps. Various offices have pendant chandeliers with screw-in LED bulbs controlled with local switches.

Hallway lighting consist of wraparound fixtures with T8 lamps and wall sconces in the basement. First floor hall has pendant chandeliers with screw-in LED bulbs.

Second floor hall has a surface ornamental globe fixture with screw-in CFL lamps controlled with a pull chain. Ornamental wall sconces are controlled with integral rotary switches on each globe socket. The globes have been replaced.

The auditorium has pendant chandeliers controlled with one multi-scene entry station.

The stage has two electrics, one not used. No work lights noted on stage. Two entry stations exist on stage, one at each end.

Two 4 scene dimmer controllers manufactured by Macro Electronics Corp exist on stage, (1) for auditorium lights, (1) for stage lighting.

The area above stage has porcelain sockets, the controlling switches have been mis-wired and controls other fixtures.

The stage electric room contains a wall mounted 6 circuit dimmer panel, Macro Dimmer #DCI-30,000-120 Dimmer parts are scarce and difficult to obtain.

The East and West rooms have pendant wraps with two T8 lamps, locally switched. Rooms also contain wall sconces with integral switches.

Utility spaces are generally lit with strips and wraps with T8 lamps.

Closets typically have porcelain sockets with pull chain and screw-in LED bulbs.

Some unused wall sconces have been abandoned in place in the hallways.

There are no occupancy sensors or dimmable photo sensors to conserve energy.

The facility does not have an automated lighting control system.

Office Wrap

Office Chandelier

1st Floor Hallway Fixtures

2nd Floor Hall Globe Fixture & Wall Sconces

Auditorium Chandeliers

Dimmer Cabinet

Auditorium Entry Station

Area Above Stage Light

Planning/Harbor Lights

Exterior Lighting:

The exterior lighting consists of pole mounted ornamental fixtures and wall brackets at main entry doors.

The main exterior fixtures have been restored and are in good condition.

The main entrance has a suspended ornamental globe with screw-in LED bulbs.

The flagpole is lit with a par lamp holder mounted on the window sill.

Rear door lights consist of par lamp holders.

The exterior fixtures are controlled with non-astronomic timeclocks requiring seasonal adjusting. No exterior photocell noted.

Main Entrance Fixture

Exterior Wall Fixture

Exterior Stair Pole Fixtures

Flagpole Light

Emergency Standby System:

The emergency power system consists of an interior Onan 15 kW, 120/240V, 1 phase, 3 wire natural gas generator located in the boiler room. A 60 amp disconnect switch is located behind the generator. One automatic transfer switch manufactured by Asco, is located in the hallway outside the boiler room. A normal/emergency panelboard also located in the hallway fed from the ATS feeds the boilers, pumps, sump pump and some hall lighting but not on all floors. The radio box/FACP appears to share the same circuit as the sump pump.

The emergency standby system is in poor condition and is marginal and not code compliant. The generator voltage and phase is not consistent with the main building characteristics.

Exit signs are generally not of the LED type and do not have battery back-up. Exit sign coverage is generally inadequate.

Emergency egress lighting coverage is inadequate.

Exterior doors do not have emergency lighting.

The life safety systems are in poor condition and not code compliant. These systems should be replaced. Code requires full separation of emergency system from standby loads requiring 2 transfer switches, fire rated feeders and fire rated dedicated emergency rooms.

Generator

Automatic Transfer Switch

Generator Main Disconnect

Fire Alarm System:

The fire alarm system consists of a Gamewell IF630 addressable control panel located in the first floor lobby. The system was installed in 1996. The form of alarm transmission is via a Sigcom radio box located in the boiler room with an exterior antenna.

The existing local energy master box is still in place near the FACP. A remote LED annunciator and key repository box are located at the exterior main entrance canopy.

The audio/visual devices consist of horn/strobes. Horn/strobe coverage is inadequate.
The existing fire department standpipe risers are not supervised.

Most spaces have automatic detection coverage consisting of smoke or heat detectors. Some closets do not have detectors. The elevator is interlocked with the fire alarm system. Could not locate smoke at elevator stage landing. Each elevator landing is required to have a smoke detector interlocked with elevator.

Pull stations exist at exterior doors. Rear basement door does not have a pull station. Stage does not have a pull station.

Occasional smoke detector has a dust cover, covers should be removed.

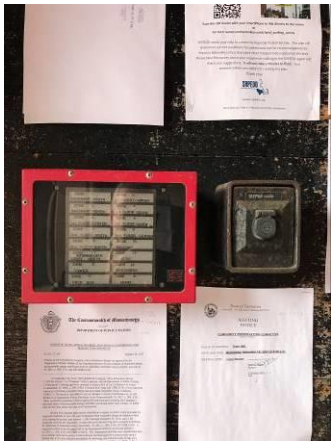
The auditorium does not have voice evacuation, this is currently required on Assembly Occupancy with occupant load of 300 or greater.

The fire alarm system, although functional, is obsolete and should be replaced under a renovation.

FACP

Radio Box

Local Energy Box



LED Annunciator & Key Box

Horn/Strobe & Pull Station

Communications/Security/Miscellaneous:

Telephone and Cable TV enter the building overhead from Walnut Street into the Basement.

The MDF is not located within a dedicated room. The tel/data cabling infrastructure is generally CAT5 and 5E. A floor mounted rack is located in the open Basement on a 6" wooden subfloor. Three 30A/1P plug-in rack mounted UPS back-up Dell servers. The communications wiring typically runs exposed throughout the building and generally improperly supported from other trades piping.

The demarcation telephone backboard is located in a Storage Room in the Basement. The telephone switch is NEC DSX-160 key telephone system. The telephone service is grounded to the water service.

The Security Intrusion System consists of a Concord 4 series wireless and dialer control panel located in a Storage Room in the Basement. Occasional PIR sensors exist in hallways. One leaf of the main exterior door has a magnetic contact, most other exterior doors do not have magnetic contacts.

The Closed-Circuit TV, CCTV System consists of (7) exterior and (1) interior camera connected to an LTS #LTN8916, 16 Channel DVR with a display monitor located in the Selectmen's Office. An APC 550 Watt portable UPS back-up the CCTV system.

The facility does not have a Card Access Control System.

The facility does not have a Lightning Protection System.

The receptacle coverage is generally fair in most offices, however the use of extension cords were noted in Offices and Stage. The use of extension cords for permanent wiring is a code violation.

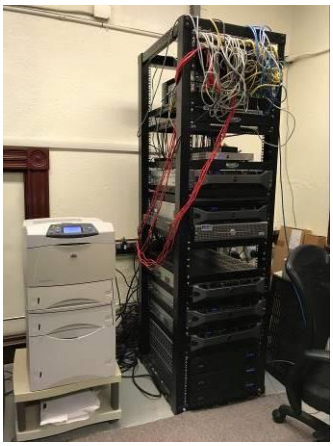
Boiler Room has an emergency power off, EPO station in hallway at entrance door to kill power to boilers during an emergency.

The facility does not have a Bi-Directional Antenna System used to enhance communications with portable radios by First Responders.

The facility does not have a Two-Way Communications System at the elevator landings.

The general wiring method is pipe and wire, MC cable and surface metal raceways, occasional Romex was noted. A lot of unused old wiring has been abandoned in place, especially above the Stage.

Roughing of surface metal raceways (wiremold) in Auditorium and East/West Rooms is ongoing.



MDF Rack

UPS Receptacles

Exposed Communications Wiring

Telephone Demarc

PIR Sensor & Camera

DVR & Display Monitor

Attic Old Wiring

Security Keypad

Recommendations:

Main Distribution System:

- The existing peak demand is 28.5 kW or 80 amperes, however it does not reflect the 25HP Elevator which is another 80 amperes. The 400 amp service is adequate for current conditions however not under a renovation. The existing electrical service should be upgraded with a larger service system to provide the required capacity for the building load based on 10 watts per square foot power consumption. A new pad-mounted transformer with new primary and secondary service should be provided.
- The proposed secondary switchgear should be installed in a dedicated main electric room, and sized in accordance with current NEC minimum workspace requirements. New panelboards should be provided as required. The new panelboards should be located in electrical rooms located in each floor of the building. The electrical rooms should be sized in accordance with current NEC minimum workspace requirements.
- Computer grade panelboards with double neutrals and with surge protective devices should be provided for computer receptacles to mitigate harmonic distortion of non-linear computer loads.

- Additional duplex receptacle for general purpose power should be provided throughout the facility as required. Additional duplex receptacles for computer workstations in classrooms/labs should be installed and circuited to the computer grade panelboards outlined above.

Emergency Distribution System:

- Provide a new exterior emergency generator and two automatic transfer switches to provide emergency backup power for life safety and critical standby loads (i.e.; communications and security equipment, boilers, pumps, elevator, etc.) Dedicated 2-hour fire rated emergency rooms would be provided within the building. Life safety system will feed all code required egress lighting and exit signs.
- Emergency life safety lighting shall be provided for all egress ways, assembly spaces, and should be provided in toilet areas and other public spaces as required by NFPA 101 Life Safety Code.

Lighting System:

- In general, the existing lighting system should be upgraded as required based on the proposed architectural renovations.
- Lighting fixtures will consist of surface or pendant-mounted direct/indirect luminaries with LED lamps and electronic drivers. The fixtures will be pre-wired for automatic dimming control where natural daylight is available and also for multi-level switching. Occupancy sensors and dimming sensors will be provided.
- Ornamental light fixtures should be restored and reused.
- Office lighting fixtures will consist of pendant indirect fixtures with LED lamps and electronic drivers for dual-level switching. Fully dimmable drivers will be provided where natural daylight is available. Lighting levels will be approximately 30 foot candles in offices.
- Auditorium lighting will be upgraded with LED sources and electronic drivers. Theatrical lights with a dimming system should be provided for performances.
- Each area will be locally switched and designed for multi-level controls. Each office space and toilet room will have an occupancy sensor to turn lights off when unoccupied. Daylight sensors will be installed in each perimeter space for automatic dimming of light fixtures.
- The entire building will be controlled with an automatic lighting control system using addressable networked controls for programming lights on and off.
- The exterior lighting will be connected to the automatic lighting control system for photocell on and timed off operation.

Fire Alarm System:

- The existing fire alarm control panel should be replaced with a new FC1 E3 panel. The existing devices are compatible with the new panel. The sprinkler system will be supervised for water flow and tampering with valves. Voice evacuation speaker/strobes will be provided in assembly spaces.
- Additional Horn/Strobe only units will be provided where required.
- Additional manual pull stations will be provided at exit discharge doors.
- The system will be remotely connected to automatically report alarms to fire department via the existing radio master box.

Uninterruptable Power System (UPS):

- A three phase centralized Uninterruptible Power Supply (UPS) system should be provided with battery backup. The system will provide conditioned power to sensitive electronic loads and telecommunication systems to bridge over power interruptions of short duration and allow an orderly shutdown of servers during a prolonged power outage. The UPS system will also be connected to the stand-by generator.

Security/Communications:

- Remove and replace the existing intrusion system and replace with a new addressable system with better coverage using motion detectors on all perimeter rooms on the first level and all corridors on each level. Each exterior door will have door contacts for monitoring door position and security keypads provided at each major entry point to the facility. An integrated CCTV and access control system should be provided with building mounted IP cameras covering the perimeter of the building and each major entrance. Card readers should be provided at major entrances to the building.
- Tel/Data wiring should be replaced with CAT6 cable throughout. The communications equipment should be located in a conditioned and properly sized MDF/IDF rooms. New outlet locations should be reviewed to accommodate the facilities new technology equipment plan. A new head end room with 50 micron laser optimized multimode and single mode cable to remote dedicated IDF rooms should be provided for gigabit connectivity to the desktop. The new dedicated data closets will ensure that present and future data needs are accommodated.

STATEMENT OF PROBABLE CONSTRUCTION COST				Project Phasing				
				Year 1	Year 2	Year 3	Year 4	Year 5
Description		**Factor**	**Totals**	**Slate Roof Restoration**	**Retaining Wall Restoration including new storm drains and catch basins**	**Masonry Repointing/stair repair**	**Restore/Repair Windows and Doors**	**Interior Restoration, Heating System, Fire Protection and Plumbing**
CONSTRUCTION COST SUBTOTAL (not including General Conditions)			**$6,939,006**	**$4,787,729**	**$208,611**	**$538,888**	**$104,156**	**$1,324,623**
DESIGN CONTINGENCY		15.00%	$1,040,851	$718,159	$31,292	$80,833	$15,623	$198,693
SUBTOTAL PRELIMINARY COST ESTIMATE (before G.C. Cost & Adjustment Factors			**$7,979,857**	**$5,505,889**	**$239,902**	**$619,721**	**$119,779**	**$1,523,316**
GENERAL CONTRACTOR ADMINISTRATIVE COST AND OVERHEAD & PROFIT								
	GENERAL CONDITIONS (from Section 01100)		$262,724	$157,724	$120,050	$192,100	$113,400	$96,200
	OVERHEAD	5.00%	$398,993	$275,294	$11,995	$30,986	$5,989	$76,166
	PROFIT	10.00%	$797,986	$550,589	$23,990	$61,972	$11,978	$152,332
	BOND	2.50%	$235,989	$162,237	$9,898	$22,619	$6,279	$46,200
SUBTOTAL BEFORE ADJUSTMENT FACTORS			**$9,675,549**	**$6,651,734**	**$405,836**	**$927,398**	**$257,425**	**$1,894,214**
Permits	Assumed fees are waived							
Construction Contingency		10.00%	$967,555	$665,173	$40,584	$92,740	$25,742	$189,421
TOTAL PRELIMINARY CONSTRUCTION COST ESTIMATE			**$10,643,104**	**$7,316,907**	**$446,420**	**$1,020,138**	**$283,167**	**$2,083,635**
Architectural Fee			$1,277,172.44	$878,028.84	$53,570.38	$122,416.59	$33,980.06	$250,036.20
testing, document printing, bidding			$5,428	$5,428	$5,428	$5,428	$5,428	$5,428
OPM			$532,155.18	$365,845.35				$104,181.75
Total			$1,814,755.61	$1,249,302.17	$58,998.36	$127,844.58	$39,408.04	$359,645.93
TOTAL ESTIMATED PROJECT COST			**$12,457,859**	**$8,566,209**	**$505,418**	**$1,147,983**	**$322,575**	**$2,443,281**
Escalation factor	4% per year				**$20,217**	**$91,839**	**$38,709**	**$390,925**
TOTAL PROBABLE CONSTRUCTION COST INCLUDING ESCALATION				**$8,566,209**	**$525,635**	**$1,239,821**	**$361,284**	**$2,834,206**

STATEMENT OF PROBABLE CONSTRUCTION COST		Work Category Totals	Slate Roof Restoration	Retaining Wall Restoration including new storm drains and catch basins	Masonry Repointing/stair repair	Restore/Repair Windows and Doors	Interior Restoration, Heating System, Fire Protection and Plumbing
01100	General Conditions	262,724	157,724				
03 3000	Cast-in-Place Concrete	41,632		41,632			
04 2100	Masonry	21,139			21,139		
04 2113	Brick Masonry	73,114			73,114		
04 2129	Terra Cotta Construction	237,101			237,101		
044 4300	Stone Restoration	167,534			167,534		
05 5216	Miscellaneous Metals	2,391		2,391			
06 1100	Rough Carpentry	124,300	84,300				40,000
06 2000	Finish Carpentry	41,000					41,000
07 4100	Metal Roofing	33,072	33,072				
07 3129	Slate Roof	4,208,822	4,208,822				
07 6500	Flashing & Sheetmetal	144,106	144,106				
07 9200	Sealants & Caulking	60,000	20,000		40,000	25,000	
08 1400	Doors & Frames	5,000				5,000	
08 5200	Wood Windows	21,151				21,151	
'08 7000	Hardware	7,180				7,180	
09 2100	Gypsum Bd Systems	19,546					19,546
09 6400	Flooring	112,821					112,821
'09 9100	Painting	80,825				45,825	35,000
10 2800	Toilet & Bath Accessories	5,000					5,000
22 0500	Plumbing	314,375					314,375
23 0500	Heating	483,130					483,130
26 0500	Electrical	228,750					228,750
24 1000	Demolition	336,178	297,430	38,749			
31 2300	Excavation & Compaction	67,322		67,322			
33 4200	Site Drainage	88,002		43,002			45,000
32 1600	Site Improvements	15,515		15,515			
		$6,939,006	$4,787,729	$208,611	$538,888	$104,156	$1,324,623

STATEMENT OF PROBABLE CONSTRUCTION COST

FAIRHAVEN TOWN HALL FEASIBILITY STUDY				YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
				Slate Roof Restoration	Retaining Wall Restoration including new storm drains and catch basins	Masonry Repointing/stair repair	Restore/Repair Windows and Doors	Interior Restoration, Heating System, Fire Protection and Plumbing
Description	**Factor**	**Totals**	**REMARKS**					
CONSTRUCTION COST SUBTOTAL (not including General Conditions)		$6,939,006		$4,787,729	$208,611	$538,888	$104,156	$1,324,623
DESIGN CONTINGENCY	15.00%	$1,040,851		$718,159	$31,292	$80,833	$15,623	$198,693
SUBTOTAL PRELIMINARY COST ESTIMATE (before G.C. Cost & Adjustment Factors)		**$7,979,857**		**$5,505,889**	**$239,902**	**$619,721**	**$119,779**	**$1,523,316**
GENERAL CONTRACTOR ADMINISTRATIVE COST AND OVERHEAD & PROFIT								
GENERAL CONDITIONS (from Section 01100)		$262,724		$157,724	$120,050	$192,100	$113,400	$96,200
OVERHEAD	5.00%	$398,993		$275,294	$11,995	$30,986	$5,989	$76,166
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BOND	2.50%	$235,989		$162,237	$9,898	$22,619	$6,279	$46,200
SUBTOTAL BEFORE ADJUSTMENT FACTORS		**$9,675,549**		**$6,651,734**	**$405,836**	**$927,398**	**$257,425**	**$1,894,214**
Permits Town Waives permit fees								
Construction Contingency	10.0%	$967,555		$665,173	$40,584	$92,740	$25,742	$189,421
TOTAL PRELIMINARY COST ESTIMATE		**$10,643,104**		**$7,316,907**	**$446,420**	**$1,020,138**	**$283,167**	**$2,083,635**
Architectural Fee	12.00%	$1,277,172		$878,029	$53,570	$122,417	$33,980	$250,036
testing, document printing, bidding	**0%**	$5,427.98		$5,428	$5,428	$5,428	$5,428	$5,428
Estimated Clerk of the works								
OPM	**5%**	$532,155.18		$365,845				$104,182
Total		**$1,814,756**		**$1,249,302**	**$58,998**	**$127,845**	**$39,408**	**$359,646**
TOTAL PRELIMINARY COST ESTIMATE WITH SOFT COSTS		**$12,457,859.28**		**$8,566,209**	**$505,418**	**$1,147,983**	**$322,575**	**$2,443,281**
Escalation Factor	4% per year				**$20,216.73**	**$91,839**	**$38,709**	**$390,925**
PROJECT TOTAL (including escalation)				**$8,566,209**	**$525,635**	**$1,239,821**	**$361,284**	**$2,834,206**

Section	Description	Quantity	Units	Daily Output	Hourly Labor Cost	Material /Equip Cost	Unit Cost	Item Total	Division Total		Slate Roof Restoration	Retaining Wall Restoration including new storm drains and catch basins	Masonry Repointing/stair repair	Restore/Repair Windows and Doors	Interior Restoration, Heating System, Fire Protection and Plumbing
01100	**General Conditions**								**262,724.00**		157,724.00	120,050.00	192,100.00	113,400.00	96,200.00
	Construction Superintendant	52.00	weeks				2,500.00	130,000.00			25,000.00	65,000.00	100,000.00	60,000.00	80,000.00
	Temporary Office	12.00	mts.				1,500.00	18,000.00			18,000.00	18,000.00	18,000.00		
	Temporary telephone	12.00	mts.				300.00	3,600.00			3,600.00	3,600.00	3,000.00	1,800.00	1,800.00
	man lift	26.00	wk				1,800.00	46,800.00			46,800.00		21,600.00	46,800.00	
	Staging	22,000.00	s.f.				2.25	49,500.00			49,500.00	2,250.00	49,500.00		
	Dumpster 20 c.y. w/ disposal	12.00	months				1,200.00	14,400.00			14,400.00	31,200.00		4,800.00	14,400.00
	Project Sign	32.00	s.f.				13.25	424.00			424.00				

STATEMENT OF PROBABLE CONSTRUCTION COST

Section	Description	Quantity	Units	Daily Output	Hourly Labor Cost	Material /Equip Cost	Unit Cost	Item Total	Division Total		Slate Roof Restoration	Retaining Wall Restoration including new storm drains and catch basins	Masonry Repointing/stair repair	Restore/Repair Windows and Doors	Interior Restoration, Heating System, Fire Protection and Plumbing
31 2300	**Excavation & Compaction**								**67,322.06**						
	sidewalk removal	74.44	s.y.	100.00	504.25	4.00	44.34	3,300.89				3,300.89			
	excavation	149.33	c.y.	200.00	504.25	2.50	22.67	3,385.41				3,385.41			
	backfill	1,075.26	c.y.	200.00	504.25	1.00	21.17	22,763.38		includes compaction		22,763.38			
	Excavate for storm water lines														
	east side trench 5' wide and 10'deep	370.37	c.y.	200.00	504.25	2.50	22.67	8,396.34				8,396.34			
	west side 5' wide 10' deep	555.56	c.y.	200.00	504.25	2.50	22.67	12,594.52				12,594.52			
	Excavate for catch basins (10' B.F.G.)	47.41	c.y.	200.00	504.25	2.50	22.67	1,074.73				1,074.73			
	shoring for trench excavation	1,000.00	s.f.	5,000.00	504.25	15.00	15.81	15,806.81				15,806.81			
33 4200	**Site Drainage**								**88,002.08**						
	Storm Water- leaching catchbasins	2.00	l.s.				15,000.00	30,000.00				30,000.00			
	Fire Supresson Service	1.00	l.s.				45,000.00	45,000.00							45,000.00
	Storm water pipe	300.00	l.f.	100.00	504.25	3.00	43.34	13,002.08				13,002.08			
24 1000	**Demolition**								**336,178.43**						
	remove eave copper & preserve gutters	456.00	s.f.	200.00	348.24		13.93	6,351.93			6,351.93				
	remove and store snow guards	12,700.00	s.f.c.a.	6,000.00	348.24		0.46	5,896.90			5,896.90				
	carefully remove copper ridge cresting, hip caps, st	700.00	l.f.	100.00	348.24		27.86	19,501.55			19,501.55				
	remove slate roof tile and store on staging	12,700.00	s.f.	175.00	348.24	5.00	20.92	265,679.33		Carefully remove and store on staging	265,679.33				
	remove concrete on exterior ramp	215.00	s.f.	80.00	348.24		34.82	7,487.20							
	Remove granite cap stone	82.00	l.f.	200.00	543.75	3.00	24.75	2,029.50				7,487.20			
	Remove granite retainig wall	672.00	s.f.	100.00	543.75		43.50	29,232.02				2,029.50			
												29,232.02			
32 1600	**Site Improvements**								**15,514.96**						
	Site sidewalks	700.00	s.f.	600.00	286.38	8.00	11.82	8,272.84				8,272.84			
	Sub base under asphalt 6" Compacted Gravel	49.88	c.y.	200.00	426.32	20.00	37.05	1,848.10				1,848.10			
	Loam, Grade, & Reseed	402.22	s.y.	1,000.00	426.32	10.00	13.41	5,394.01				5,394.01			
03 3000	**Cast-in-Place Concrete**								**41,632.30**						
	retaining wall footings (1' x 10' x 42') x 2	31.11	c.y.	25.00	389.41	150.00	274.61	8,543.43				8,543.43			
	12" ext. walls	24.89	c.y.	18.00	389.41	300.00	473.07	11,774.18				11,774.18			
	6" crushed stone behind wall for drainage	18.67	c.y.	50.00	389.41	20.00	82.31	1,536.36				1,536.36			
	reinforcing in walls	2,500.00	l.b.	450.00	389.41	0.18	7.10	17,756.99				17,756.99			
	replace ramp concrete & decking	3.98	c.y.	15.00	389.41	300.00	507.68	2,021.33				2,021.33			
04 2100	**Masonry**								**21,138.61**						
	Rebuild masonry walls under granite stairs	64.00	s.f.	200.00	312.47	22.50	35.00	2,239.92					2,239.92		
	Remove and reset granite steps at center St	108.00	l.f.	20.00	312.47	50.00	174.99	18,898.69					18,898.69		
04 2113	**Brick Masonry**								**73,114.16**						
	repoint brick walls	8,000.00	s.f.	400.00	312.47	1.25	7.50	59,995.14					59,995.14		
	replace spalled brick	2,000.00	s.f.	500.00	312.47	1.56	6.56	13,119.03					13,119.03		
04 2129	**Terra Cotta Construction**								**237,101.27**						
	Replicate Clock Tower Column shafts	40.00	ea	5.00	314.23	500.00	1,002.77	40,110.75					40,110.75		
	Lion/Shield Replication	7.00	ea	4.00	314.23	5,000.00	5,628.46	39,399.23					39,399.23		
	Decorative epi finial replication	5.00	ea	4.00	314.23	2,500.00	3,128.46	15,642.30					15,642.30		
	Decorative Finial repairs	5.00	ea	4.00	314.23	1,500.00	2,128.46	10,642.30					10,642.30		
	Balcony Balustrade	160.00	s.f	75.00	314.23	500.00	533.52	85,362.87					85,362.87		
	Mikscellaneous Terra Cotta repairs	1.00	l.s.				35,000.00	35,000.00					35,000.00		
	Molds for replication														
	Finials	1.00	ea	4.00	117.98	2,500.00	2,735.95	2,735.95					2,735.95		
	column shafts	1.00	ea	4.00	117.98	1,500.00	1,735.95	1,735.95					1,735.95		
	gargolye	1.00	ea	4.00	117.98	3,000.00	3,235.95	3,235.95					3,235.95		
	balustrade	1.00	ea	4.00	117.98	3,000.00	3,235.95	3,235.95					3,235.95		

STATEMENT OF PROBABLE CONSTRUCTION COST

Section	Description	Quantity	Units	Daily Output	Hourly Labor Cost	Material /Equip Cost	Unit Cost	Item Total	Division Total		Slate Roof Restoration	Retaining Wall Restoration including new storm drains and catch basins	Masonry Repointing/stair repair	Restore/Repair Windows and Doors	Interior Restoration, Heating System, Fire Protection and Plumbing
044 4300	**Stone Restoration**								**167,533.64**						
	Re-install Granite Ashlar Stone at retaining walls	672.00	s.f.	80.00	1,010.99	80.00	181.10	121,698.20					121,698.20		
	Reinstall Stone Cap on Retaining wall	82.00	l.f.	50.00	1,010.99	2.00	163.76	13,428.12					13,428.12		
	Repoint Stone	1,285.00	s.f.	400.00	1,010.99	5.00	25.22	32,407.32		20% of total stone w/ ribbon joint			32,407.32		
05 5216	**Miscellaneous Metals**								**2,390.65**						
	Railings @ stairs (3 railings)	30.00	l.f.	135.00	79.12	75.00	79.69	2,390.65				2,390.65			
06 1100	**Rough Carpentry**								**124,299.85**						
	reinforce attic floor for new AC units	1.00	l.s.				20,000.00	20,000.00							20,000.00
	zip sheathing	13,970.00	s.f.	1,500.00	339.22	0.44	2.25	31,379.11		10% waste included in area calc.	31,379.11				
	Renail existing roof deck	12,700.00	s.f.	3,000.00	339.22	0.09	0.99	12,631.28			12,631.28				
	zip tape	2,619.38	l.f.	281.25	339.22	0.44	10.09	26,427.91			26,427.91				
	5/4 x 8 wood roof sheathing repair allowance	2,540.00	s.f.	1,600.00	339.22	3.76	5.46	13,861.54		20% sheathing replacement	13,861.54				
	miscellanneous Rough Carpentry	1.00	l.s.				20,000.00	20,000.00							20,000.00
06 2000	**Finish Carpentry**								**41,000.00**						
	Remove decorative grill in Auditorium	1.00	l.s.				8,000.00	8,000.00							8,000.00
	Reinstall decorative grill after AC installed	1.00	l.f.	225.00		1.30	8,000.00	8,000.00							8,000.00
	miscellaneous finish carpentry	5.00	l.s	1.00			5,000.00	25,000.00							25,000.00
07 4100	**Metal Roofing**								**33,071.93**						
	drip edge	40.00	l.f.	285.00	269.63	7.00	14.57	582.74			582.74				
	roof jacks and planks	12,600.00	s.f.	2,000.00	269.63	1.50	2.58	32,489.19			32,489.19				
07 3129	**Slate Roof**								**4,208,822.05**						
	Slate Roof installation	1,656.00	sq	1.75	348.24	200.00	1,791.96	2,967,491.06		assume 20% waste.	2,967,491.06				
	New Slates	331.20	sq	1.75	348.24	2,000.00	3,591.96	1,189,658.21		20% new slate	1,189,658.21				
	Hip Slates	202.40	lf	200.00	348.24	17.19	31.12	6,298.62		assume 10% waste.	6,298.62				
	Valley slate	544.80	lf	150.00	348.24	25.60	44.17	24,065.40		assume 20% waste.	24,065.40				
	Ice and Water Shield	2,240.40	s.f.	450.00	348.24	0.75	6.94	15,539.34			15,539.34				
	30# roof felt	12,700.00	s.f.	5,500.00	269.63	0.06	0.45	5,769.41			5,769.41				
07 6500	**Flashing & Sheetmetal**								**144,105.95**						
	Valley Flashing (20 oz. copper)	908.00	s.f.	100.00	348.24	15.00	42.86	38,916.30			38,916.30				
	Hip Flashing	696.00	s.f.	100.00	348.24	12.50	40.36	28,090.11			28,090.11				
	Eave flashing	212.00	s.f.	50.00	348.24	25.00	80.72	17,112.37			17,112.37				
	counterflashing at gable ends	1.00	l.s.				15,000.00	15,000.00			15,000.00				
	R&R hips at towers	560.00	l.f.	100.00	348.24	2.50	30.36	17,001.24			17,001.24				
	Reinstall Ridge Cresting	80.00	l.f.	80.00	348.24	2.50	37.32	2,985.94			2,985.94				
	Miscellaneous Metal repair	1.00	l.s.				25,000.00	25,000.00			25,000.00				
07 9200	**Sealants & Caulking**								**60,000.00**						
	Sealant @ windows & Doors	1.00	l.s.				25,000.00	25,000.00					25,000.00	25,000.00	
	Sealant @masonry	1.00	l.s.				15,000.00	15,000.00					15,000.00		
	Misc/ Sealant	2.00	l.s.				10,000.00	20,000.00			20,000.00				

STATEMENT OF PROBABLE CONSTRUCTION COST

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08 1400	**Doors & Frames**								**5,000.00**						
	restore Mechanical Rm Door	1.00	opng				5,000.00	5,000.00						5,000.00	
	3'-0"x7'-0" interior "B" label fire door		opng	13.00		500.00									
08 5200	**Wood Windows**								**21,150.99**						
	remove and replace window weatherstripping	105.00	opng	10.00	183.35	50.00	196.68	20,650.99						20,650.99	
	replace glazing in Computer rm window	1.00	opng				500.00	500.00						500.00	
'08 7000	**Hardware**								**7,180.06**						
	Lever Locksets	11.00	ea	10.00	91.67	500.00	573.34	6,306.72		replace knob locksets with lever sets at all public doors				6,306.72	
	Front door lockset	1.00	ea	10.00	91.67	800.00	873.34	873.34						873.34	
09 2100	**Gypsum Bd Systems**								**19,546.10**						
	remove and repair walls for storm water piping	60.00	s.f	60.00	229.18	1.57	32.13	1,927.65		remove existing lath & Plaster, reframe and install new veneer plaster on gyp bd.					1,927.65
	1/2" FC Gyp. Bd. Ceiling	500.00	s.f	500.00	229.18	1.57	5.24	2,618.45							2,618.45
	Miscellaneous plaster repairs	1.00	l.s.				15,000.00	15,000.00							15,000.00
09 6400	**Flooring**								**112,821.43**						
	Refinish Floors (sand & 3 coats of varnish)														
	First Floor	7,640.00	s.f.	400.00	253.64	1.23	6.30	48,153.95							48,153.95
	Second Floors	7,260.00	s.f.	400.00	253.64	1.23	6.30	45,758.86							45,758.86
	Basement	3,000.00	s.f.	400.00	253.64	1.23	6.30	18,908.62							18,908.62
'09 9100	**Painting**								**80,824.76**						
	Interior Painting	1.00	l.s.				35,000.00	35,000.00							35,000.00
	Paint windows - exterior	105.00	opg	8.00	175.71	25.00	200.71	21,074.10						21,074.10	
	repair ornamental window frames and paint	3.00	opg	0.50	175.71	3,500.00	6,311.29	18,933.88						18,933.88	
	Paint ramp rails	184.00	l.f.	50.00	175.71	3.50	31.61	5,816.78						5,816.78	
10 2800	**Toilet & Bath Accessories**								**5,000.00**						
	Toilet & Bath Accessories	10.00	l.s.				500.00	5,000.00							5,000.00
22 0500	**Plumbing**								**314,375.00**						
	Plumbing	10.00	fixtures				6,500.00	65,000.00		remove old fixtures, repipe and install new fixture					65,000.00
	Fire Protection	33,090.00	s.f.				5.50	181,995.00		includes attics and basement non habitable areas					181,995.00
	new water piping	22,460.00	s.f.				3.00	67,380.00							67,380.00
23 0500	**Heating**								**483,130.00**						
	Replace Boilers only	1.00	l.s.				60,000.00	60,000.00							60,000.00
	Auditorium AC	7,500.00	s.f.				10.00	75,000.00							75,000.00
	Replace Heating System	22,460.00	s.f.				15.50	348,130.00							348,130.00
26 0500	**Electrical**								**228,750.00**						
	Rewire building	18,300.00	sf				12.50	228,750.00		assume wiremold surface conduit & outlets					228,750.00
SUBTOTAL CONSTRUCTION COST ESTIMATE								**6,939,006.28**	**6,939,006.28**		**4,787,729.48**	**208,610.78**	**538,887.68**	**104,155.80**	**1,324,622.54**