Team DTC

Newington Town Hall
Renovation Feasibility Study
Newington, CT

April 20, 2016

Hamden, CT
Andover, MA

Newington Town Hall Renovation Study

Feasibility Study

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1. Executive Summary

1.1 Introduction:

The existing Newington Town Hall building was originally constructed in 1950 with additions in 1955 and 1971. Although the building is dated, and has challenges in accommodating 21st century operations, the actual building remains robust, and well-maintained. Issues of code and accessibility compliance, space needs, structural/façade integrity, HVAC, energy efficiency, technology & security in the building are all present and are critical to address.

The previous solution pursued by the Town was to construct a new Town Hall building in the location of the existing building, as well as a new community center located in Mill Pond Park. This solution was voted down during a September 2014 referendum. A subsequent plan to construct one new building containing a new community center were also in the works as recently as September of 2015, however those plans were put on hold. To this end, the Town of Newington has requested a team of Engineers and specialists (lead by DTC) to review all available documentation that has been performed to date, and further investigate the feasibility of renovating the existing Town Hall facility as an alternative, and to develop cost-effective measures to address critical issues within and around the building.

1.2 Scope of the Feasibility Report:

This report's scope will evaluate the existing Newington Town Hall facility, addressing its suitability to address critical issues with a renovation project, along with identifying the associated potential costs to do so. The police department portion of the building is excluded from the scope of this report.

1.3 Feasibility Report Team:

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2. Existing Building Evaluation Report

2.1 Scope of Evaluation Report:

This report's scope will evaluate the existing Town Hall building and site in regards to code compliance, physical condition, expected lifespan, health, safety, welfare, energy efficiency and accessibility.

This report contains a summary of our walk-through of the existing Town Hall building and campus located at 131 Cedar Street in Newington, CT. The main purpose for this evaluation was to determine whether or not the facility is viable for a renovation project.

2.2 Applicable Building Codes:

The following is a listing of applicable Codes within the Jurisdiction of the work:

- 2003 International Building Code & Existing Building Code
- 2003 International Mechanical Code
- 2003 International Plumbing Code
- 2011 NFPA 70 National Electrical Code
- 2003 ICC/ANSI A 117.1
- 2009 International Energy Conservation Code
- 2005 Connecticut State Building Code Amendment
- 2009 Connecticut State Building Code Amendment
- 2011 Connecticut State Building Code Amendment
- 2013 Connecticut State Building Code Amendment
- 2003 International Fire Code
- 2003 NFPA 101
- 2003 NFPA 1 Uniform Fire Code
- 2010 Connecticut Fire Prevention Code
- Accessibility Guidelines and 2010 ADA
- Standards for Accessible Design
- Current Public Health Code
- Current OSHA – Title 29/Labor

3. Description of Existing Facility

3.1 Description of the Existing Facility:

- The existing building is approximately 95,000 gross square feet multi-story, mixed-use building originally built in 1950 as a high school. Subsequent additions were built in 1955 and 1971, the latter of which converted the facility to use as a Town Hall. The building was designed and constructed prior to code and legislation requiring compliance with the ADA accessibility law.

- In addition to normal Town Hall functions, the building also contains the Board of Education's Transition Academy, Mortensen Community Center, Teen Center and Food Pantry, among other town functions. The Newington Police Department is attached to the Town Hall to the West, which was constructed in the mid-2000's.

- Within the last five years, the building has undergone substantial renovations to two areas of the building – the Lower Level (West) area and Transition Academy. These areas are generally in excellent condition and do not require much attention in regards to renovations.

- The building's site contains simple parking and vehicular circulation. The site is bounded by Cedar Street to the North, Library to the East, Mill Pond Park to the South and the Mill Brook to the West. Vehicular access to the Town Hall is via Garfield Street to the South.

3.2 Exterior Building Envelope Description

See appendix for report by Martin A. Benassi, Architect LLC.

In general, façade issues are limited to the 1955 construction areas. The issues are mainly due to water infiltration, which is causing spalling of the brick. This issue will be rectified by repointing, brick replacement and addressing the water infiltration issues. The brick façade should also be cleaned (after addressing moisture infiltration issues) to remove staining, efflorescence and other visible imperfections. There are also issues with cracking of cast in place concrete visible on the South side of the building. The canopy at the Mortensen Community Center is in poor condition, is causing issues with the façade, and should be replaced.

The existing roof continues to experience numerous leaks throughout the building. A roof study report was previously produced for the Town in 2008, and recommended replacement due to age and condition. DTC agrees with this suggestion. The Town has included the roof replacement (including gutters and downspouts) in its capital improvement plan and will be paid for outside the scope of this project as a maintenance project. Additional insulation should be added to pitched roof areas where feasible, to increase energy efficiency of the building.

The majority of the windows on the building are old, inefficient and should be replaced with modern energy efficient windows. Windows that were recently replaced under renovation projects will remain and will be re-sealed to address concerns with draftiness. It is assumed that due to the presence of PCB's, much of the brick may need to be removed in the area of the windows, therefore it is recommended the (original) larger window openings on the second level be utilized for the new fenestration.

3.3 Programmatic / Space Needs

Kaestle Boos evaluated the building for space needs in a previous study.

We have reviewed the Kaestle Boos study for general issues. The Town has instructed DTC to leave most of the spaces within the building as-is in terms of partitioning, to help reduce construction costs. The two departments that appear to be need reconfiguration and/or space addition are the Assessor and Human Services. Privacy issues are also a concern in the Human Services department. It was also noted that there is a general lack of storage. It is recommended that digital storage be encouraged as much as possible, as is the trend for most organizations and entities. Regardless, additional storage areas are recommended.

It should be mentioned that if a renovation were to take place, not all of the recommendations in the space needs study would be addressed due to most of the partition walls remaining in their existing locations.

The multi-purpose room / gym is heavily used by the Town's residents and does not provide adequate capacity for desired activities. To remedy this, an additional multi-purpose room could be located within the existing auditorium / council chambers area, which is rarely utilized. When large town meetings are required, they could be held remotely at the High School auditorium, or in another Town building.

3.4 Interior Finishes:

All interior spaces were surveyed by DTC and are in various states of condition. Many areas require new flooring, ceilings, paint and other finishes due to age and wear. Each of these areas have been identified by DTC as needing light, medium or heavy renovations, depending on the conditions observed.

The multi-purpose / gymnasium space floor and ceiling were heavily damaged by water and are in need of replacement. The wall padding and basketball hoops are also in need of replacement due to age and condition.

3.5 Accessibility

Kaestle Boos evaluated the building for ADA compliance in a previous study.

The majority of upgrades recommended are handrails, bathrooms, door hardware, door swings, call for aid systems and ramps. DTC agrees with these recommendations, as a fully accessible building must be provided.

3.6 Hazardous Materials

See appendix for Enviromed's hazardous materials report.

The building contains an assortment of lead, asbestos and PCB's, as identified in Enviromed's report. DTC's environmental engineers have reviewed the testing, which appears to be of a "screening level". The sampling performed to date is not of a level sufficient to renovate the building. Additional testing will be required to do so. There is also the (likely) possibility that PCB's have migrated out of the window caulk into the adjacent surfaces, and potentially to the soil below. Due to the unknowns of testing results, DTC recommends adding a 20% contingency on top of Enviromed's cost estimates to address these concerns.

3.7 Technology & Security

DTC met with the Town's IT director, Paul Boutot, to discuss IT systems within the building. It was found that many of the IT rooms have inadequate cooling, lack of space for future expansion, and lack of secure access to the IT rooms. In addition, much of the cabling in the building is CAT5 and not adequate for current technologies. Flooring in some of the IT closets is asbestos, needs to be abated, and cannot be done easily with the equipment in the room

It is recommended that new IT closets with adequate redundant cooling (on generator backup) be provided throughout the facility. All equipment should be on generator backup and should be provided with surge suppression. A Technology/Security design consultant should be hired as part of any architecture/engineer design team. These new IT closets should be established within existing storage spaces (or similar spaces), and then transition old IT closet equipment into the new closets, reducing downtime. The old (Abandoned) closets should then become storage closets.

Access control throughout the facility is lacking, creating possibilities for the general public to access many spaces that should not be fully accessible. It is recommended that a card access system be

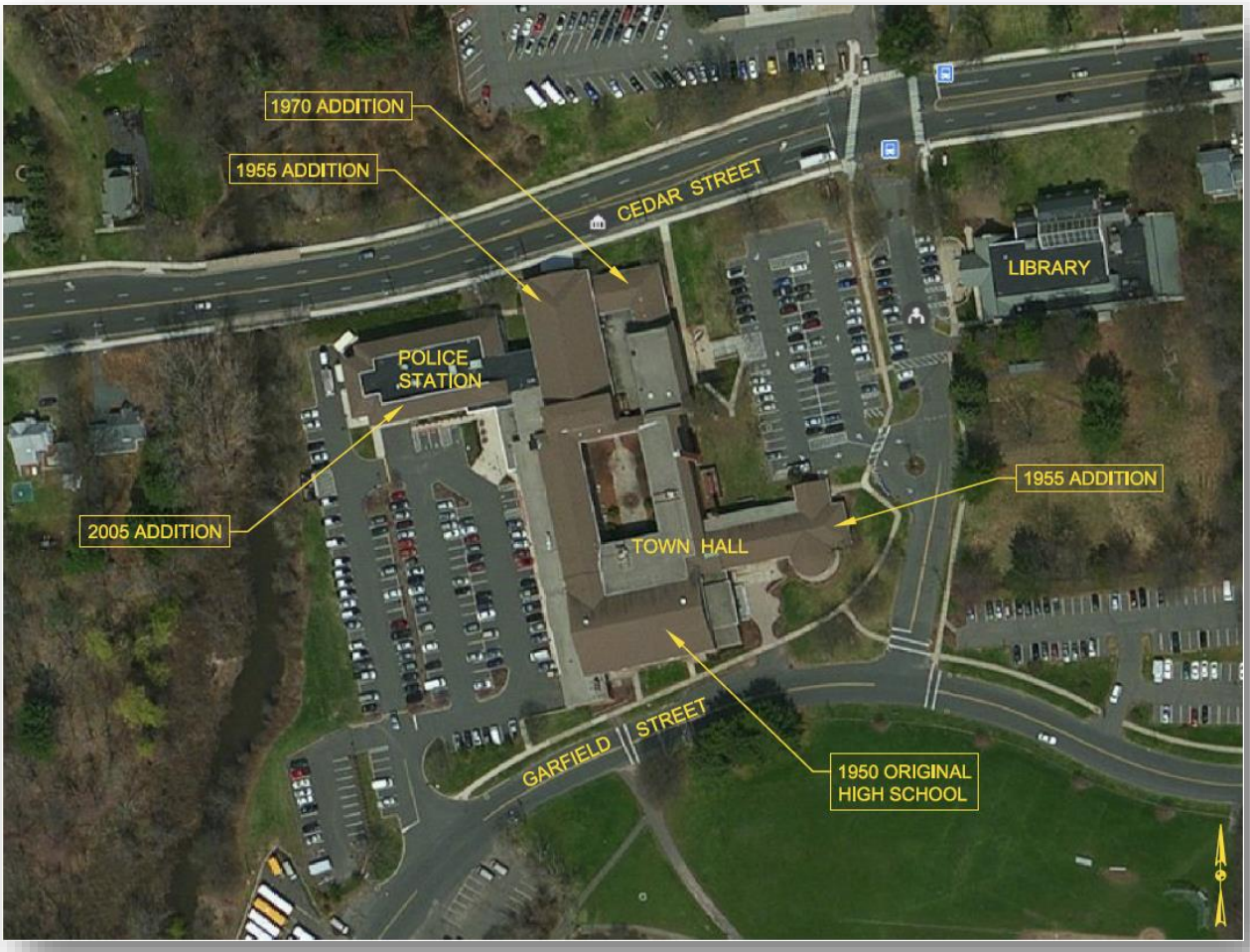
provided in select spaces in the facility. CCTV cameras were generally lacking in and around the facility and should be added for optimal protection/monitoring of the facility.

3.8 Site Evaluation

All traffic must enter from Garfield Street and utilize the parking area on the west side of the site or continue along the south side of the building to access the parking located on the east side.

Parking is a major issue on site, and many residents are forced to park offsite and walk long distances. Additional parking is needed on site, although there is limited space currently to address this issue.

Directional signage guiding visitors to Town Hall is limited, as the official address is still Cedar Street. Individuals that are not familiar with the area may find it confusing. Access for handicapped individuals is good on the west side of the site. The parking drainage system is comprised of a network of catch basins within the roadways, parking area, and a few yard drains in landscaped area. The outfall is to the river. Generally the system functions adequately. (See *the following overall site plan).*



3.8.1 Western Parking Lot

The walkways and parking area on the west side were reconstructed when the Police facility addition (2005) was completed, and they are in excellent condition. Travel for pedestrians on the west side is good.

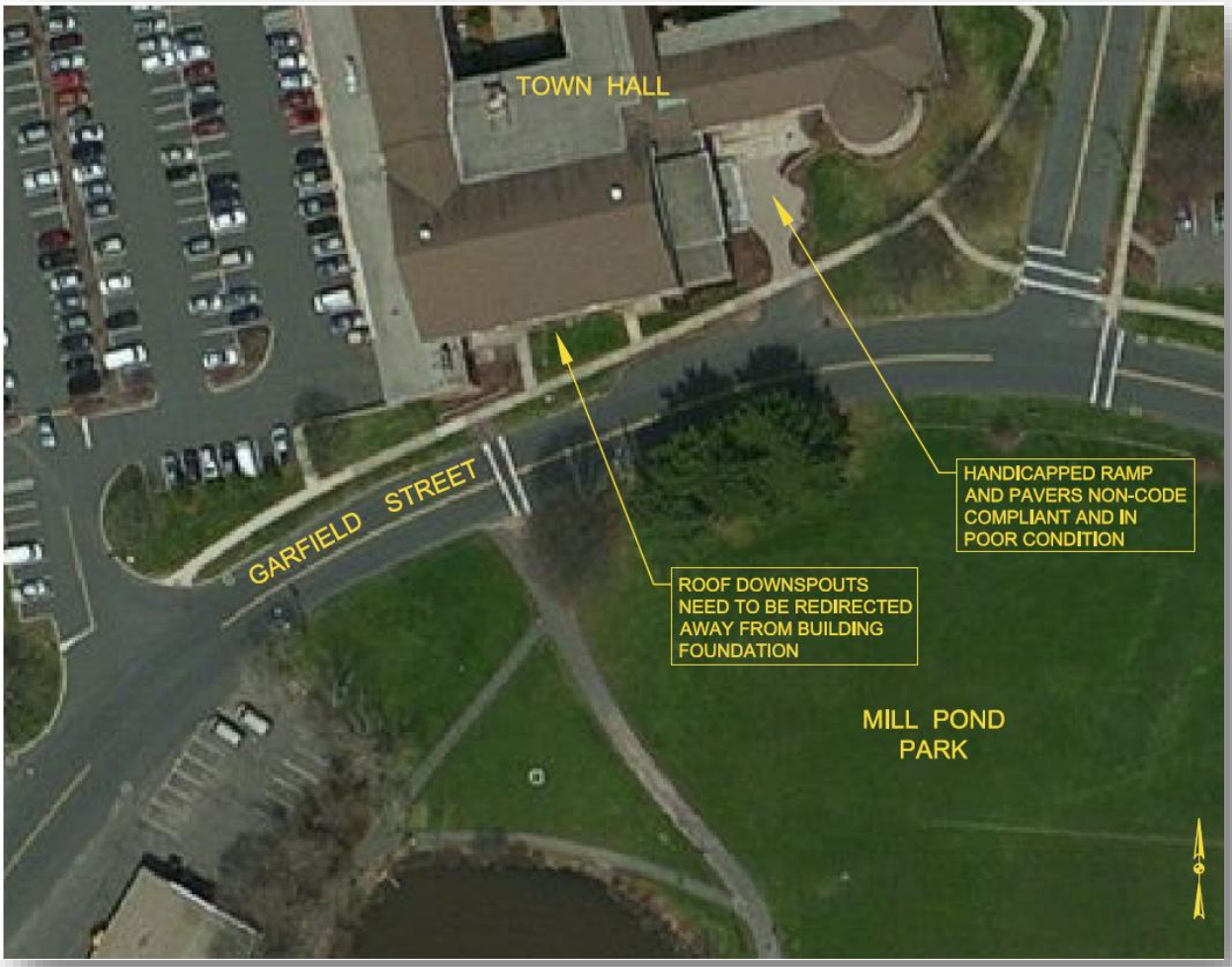
3.8.2 Eastern Parking Lot

The eastern parking lot dates to the 1970 construction and is in poor shape and should be reconstructed.

Travel for pedestrians is poor from the eastern lot with a set of stairs that are in extremely poor condition and a bituminous concrete ramp/walk that is also in relatively poor condition.

3.8.3 Southern/Garfield Street

Handicapped ramps on the south are poor and do not meet current standards. Downspouts do not appear to provide adequate drainage away from the building and runoff may be contributing to water issues in the building.



3.9 Building Systems

3.9.1 HVAC Systems

The HVAC systems at the Newington Town Hall comprise a variety of different system types and ages, installed during the numerous building expansions and renovations over the past 65 years. Much of the existing HVAC equipment was installed during a major building renovation in the early 1970's.

The heating plant includes two Smith Model 28HE-14 dual-fuel cast iron steam boilers that were installed in 2008, and are currently are in good condition. They each have a Net IBR output capacity of 2,769 MBH which equates to approximately 75% of the building's peak heating load, resulting in redundancy should one boiler require maintenance or repair. While these boilers are in good condition, the steam and condensate distribution piping is in very poor condition with leaks throughout the facility. Much of this piping dates back to the original construction of the building in 1950, and is currently in need of replacement. The steam systems feeds various air-handling units, fan-coil units, unit ventilators, convectors, and radiators. Due to the fact that the steam and condensate distribution piping must be replaced fairly soon, it is recommended that either the existing boiler plant be converted to hot water, or new high-efficiency hot water condensing boilers be installed. New boilers would result in significant operational cost savings.

Split system air-handling units with steam heating and direct-expansion cooling serve some areas of the facility, including the Multi-Purpose Space, Town Council Chamber & adjacent offices, and the lobby & adjacent interior spaces. Associated condensing units are located either on the roof or at grade, generally nearby to the air-handling units. This equipment was installed in the 1950's, the 1970's, or the 1980's. Based on the age and appearance of these systems, replacement is recommend.

Two packaged rooftop units that were installed in the 1970's serve interior portions of the Second Floor. Based on the age and appearance of these units, replacement is recommend.

Through-the-wall air conditioning units and unit ventilators installed in the early 1970's serve or previously served many of the office areas throughout the facility. As many of these systems have failed over the years, small independent fan-coil units and split systems have been installed, with the associated condensing units are located in the courtyard, on grade outside the building, or on the roof. These numerous independent small split systems are inefficient, do not often provide mechanical ventilation, and the number of systems creates increased maintenance costs.

The various HVAC system described above generally are controlled by either old pneumatic controls, or by local independent controls. A new facility-wide building management system is recommended to improve operational efficiency.

Two areas of the building were renovated in 2009, and new HVAC systems were installed. The Lower Level is served by a variable air volume air-handling unit with hot water heating and direct expansion cooling, a condensing unit located outdoors. Zones served by this air-handling unit include VAV boxes with hot water reheat, and perimeter hot-water baseboard radiation to provide independent control of each zone. The First Floor of the East Wing is served by a similar system. The hot water for these two systems are provided by a steam-to-hot water heat exchanger located in the boiler room. At this time, there is no reason to replace these two systems.

3.9.2 Fire Protection Systems – Existing Conditions

The building is partially sprinklered. The majority of the sprinklers are located in the basement. In 2009, part of the lower level was sprinklered for the studio, conference and office areas.

The existing stage for the auditorium was converted to storage space and standpipes still exist, but are no longer required.

Water flow and pressure is good; Water pressure is very good; 95 psi static. A fire pump is not present and not anticipated.

Two sprinkler services and rooms exist. One is a six-inch wet system and another is a six-inch dry system. A backflow preventer was not located for the dry system.

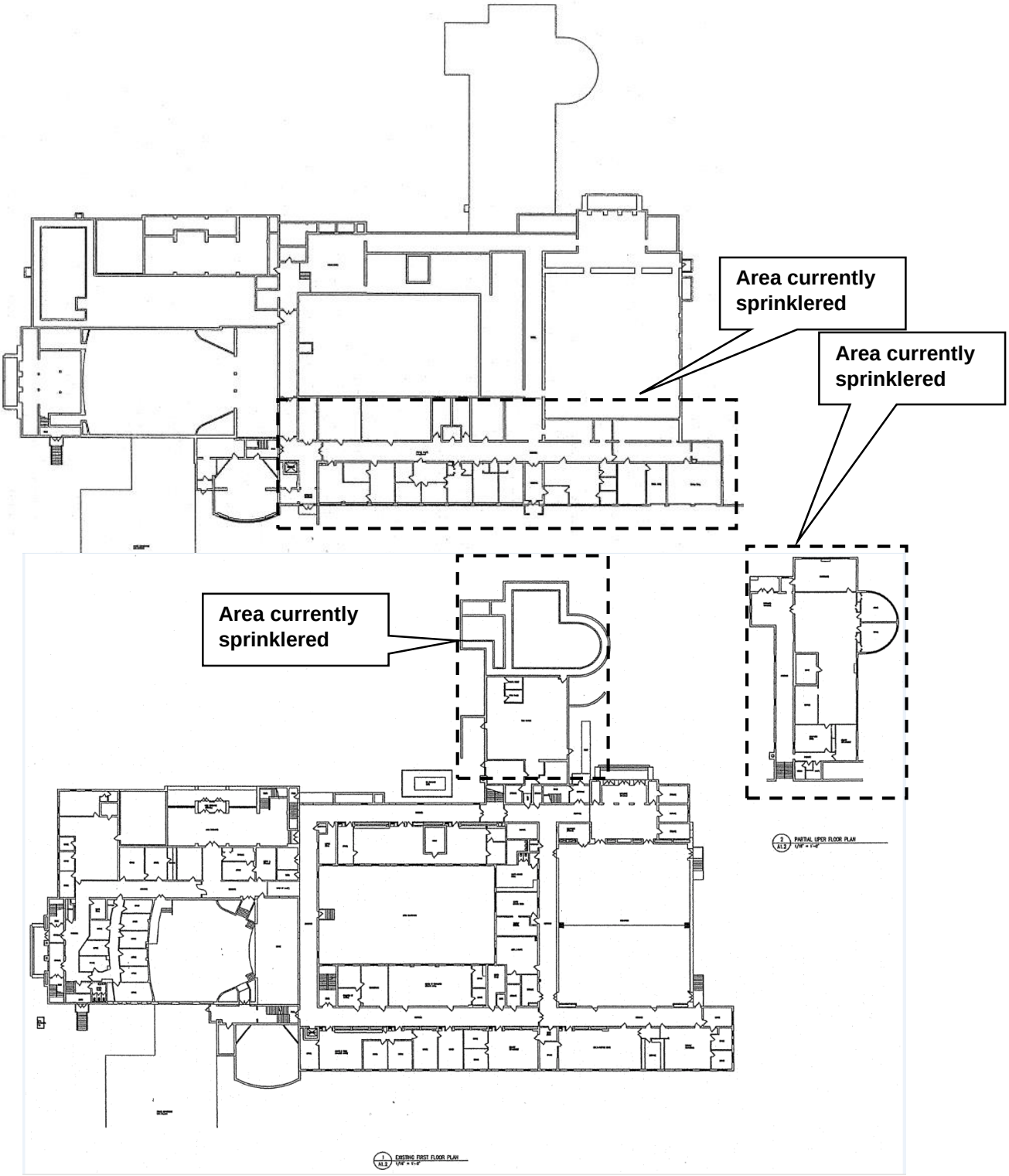
Sprinkler System Riser - Wet System

Sprinkler System Riser - Dry System

The sprinkler systems as installed are newer and in good condition. It is desired to fully sprinkler the remainder of the building.

See diagrams below for areas that are sprinklered.

It was also noted that the police dispatch area experienced a frozen pipe recently which caused water damage. This should be remedied in any renovation scenario.


Area currently sprinklered
Area currently sprinklered
Area currently sprinklered
PARTIAL UPER FLOOR PLAN
EXISTING FIRST FLOOR PLAN

3.9.3 Plumbing Systems – Existing Conditions

The building is serviced with multiple natural gas services from Eversource Gas Company with the meters located on the exterior of the building. These systems are in good condition.

Water pressure is very good; 95 psi static. Water pressure greater than 80-psi is required to be reduced with a PRV valve. Water piping is copper tube with leaded solder joints. The water service is a public supply with a 3" main and meter entering a dirt crawl space under the gymnasium. The pipe is heat traced if there is a freeze up. There is no backflow preventer and the service is severely corroded due to the high moisture environment from the steam piping. It is recommended to remove and replace all water piping in the pipe tunnels.

The existing plumbing system is fed from one gas-fired, storage type domestic water heater. The water heater is eight years old and was installed in 2008 and is in good condition. Its life expectancy is about 10 more years.

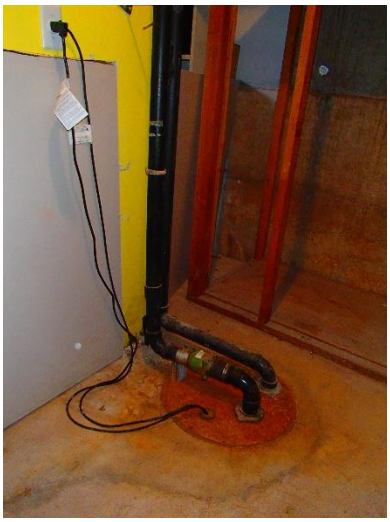
Plumbing fixtures are original except for the small renovated areas, as a result they are not ADA accessible, not energy efficient, not NSF and made with lead parts. It is recommended to remove and replace all the plumbing fixtures with new.

Sanitary sewer exits the rear of the building to a site sewer system. The majority of the piping is original, s cast iron and up to 66 years old and past its life expectancy. The piping has had a major failure recently in the pipe tunnels which incurred a replacement and cleanup cost of $100,000. The steam piping and high moisture in the tunnels is causing severe corrosion due to the environment. It is recommended to remove and replace all the sanitary, waste and vent piping.

Some plumbing vents are located too close to mechanical unit intakes. They were retrofitted and raised approximately eight feet to help prevent sewer gases from entering the units.

Roof drains were minimal as the majority of the roof is pitched to exterior gutters and downspouts. The flat areas have roof drains but the roofing membrane is severely deteriorated that the rain water does not readily flow to the roof drains and ponding occurs. There is no secondary drainage system as required by current code. If the primary system gets clogged or fails, a roof failure could occur. It is recommended that these areas be removed and replaced and brought up to current code.

Sump pumps are located in pipe tunnels and basement areas. Some of these pumps are original to the building, well past their life expectancy and should be replaced.



3.9.4 Electrical Systems

The existing electrical service to the building is routed via an overhead high voltage pole line beginning along Cedar Street, continuing around the east side of the building and eventually in to a transformer vault in the building. From the transformer, the secondary (service) conductors route through a wall into the back of the existing main electrical service switchboard that serves the whole buidling. The overhead lines and vault transformer are owned by the utility company. In current times, the utility company does not allow transformer vaults – all new transformers of this size are required to be located outside the building on a pad. Transformer vaults present more risk of fire damage to the building as compared to a pad mounted transformer.

Electrical Service Pole

The main switchboard (1600A, 208Y/120V) is over 40 years old, contains original circuit breakers and is in need of replacement due to age and reliability. Older electrical equipment may not trip breakers when needed, causing fire hazard concerns. Modern switchboards contain more reliable digital trip circuit breaker, do not require fuse replacement after faults, and have readily available replacement parts. It is recommended that the electrical switchboard be replaced with modern digital trip circuit breakers, ground fault protection and surge suppression for reliability and safety of the electrical system.

Existing Main Service Breaker

From the switchboard, power is distributed through a multitude of panelboards located throughout the building. The majority of this equipment is also over 40 years old and should be replaced due to age and reliability. Many panels also contain fuses, and are likely over 60 years old. Many existing panelboards are also full, which decreases ease of adding new electrical circuits as they are needed. DTC was not able to observe wiring methods within the walls and above ceilings, but due to age it is assumed cloth wiring is present in the building, which presents fire safety concerns.

Example of Old Electrical Panel

Lighting throughout the building is provided mainly by fluorescent, metal halide and LED sources. The lighting sources have been retrofitted and upgraded throughout the years as technology has progressed, to reduce energy consumption. Although this was a positive, cost-effective method of reducing operating costs, the fixture locations did not change, and there are many areas that are currently under lit, over lit or do not have optimal lighting fixture layouts. If the building were to be renovated, it would be recommended that all new lighting and controls be provided to ensure a long lifespan, optimal energy efficiency and proper light levels. Lighting in the transition academy and lower level renovation area is adequate and does not need to be upgraded at this time.

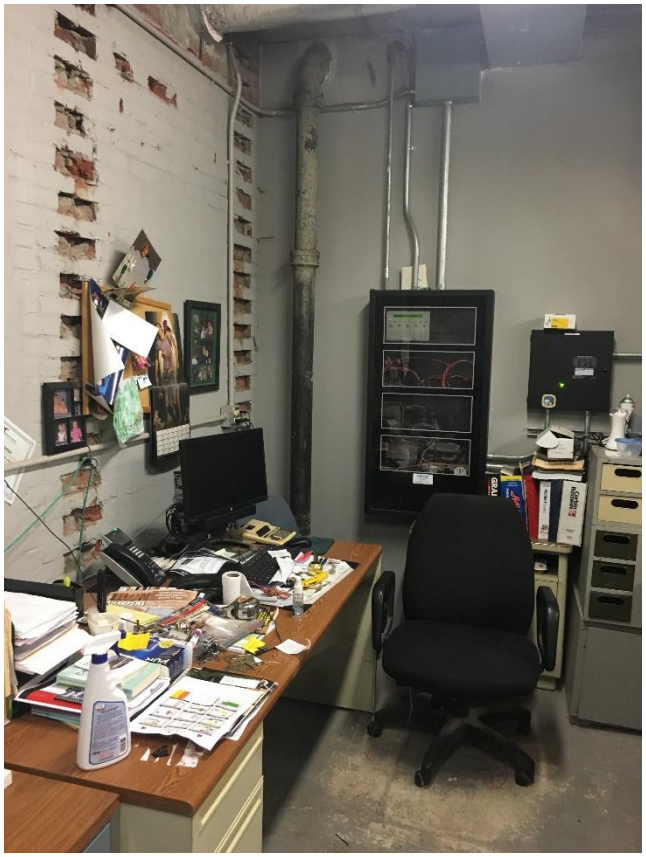
Emergency Lighting is provided by emergency battery pack fixtures. It was noted that many areas of the building that would require emergency lighting under current codes do not have any. If the building were to be renovated, it would be recommended that battery packs integral to the new light fixtures be provided in all areas of egress.

The building mounted exterior lighting fixtures and pole mounted site lights are inefficient compared to today's LED fixtures and should be replaced. Building mounted egress lights do not have two light sources and two power sources (no single point of failure) per code.

Exit signage appears to be code compliant throughout the building, although a few additional signs should be added for clarity in some of the larger spaces such as the media center.

Occupancy sensors are located on lighting circuits throughout the building, however additional areas should be provided with sensors to meet current energy codes, including the corridors. Photocells with daylight harvesting dimming should also be installed against window walls to comply with current energy codes.

The fire alarm control panel is manufactured by Notifier, is addressable, expandable and is not in immediate need of replacement. Many of the fire alarm devices throughout the building appear to be non-addressable devices that should be upgraded to addressable for additional fire safety. The placement and quantity of fire alarm devices around the building do not meet code in many places. Many of the exterior doors do not have pull stations and many of the rooms do not have adequate audio/visual coverage per current NFPA requirements. Smoke detectors should be added to all electrical, IT and storage rooms. Some critical document storage areas do not have adequate smoke detection coverage, which is quite risky. Voice evacuation should be provided in all areas of assembly. As such, it is recommended that new addressable devices be provided throughout the building, and connected to the existing (Expandable) fire alarm control panel per current NFPA requirements. This will increase fire safety within the building, and will improve fire department response



Existing Fire Alarm Control Panel

In general, many spaces do not have adequate quantities of outlets, due to the fact that when the building was built, there were not as many items that required electricity within rooms. Additional outlets should be added so as to avoid the use of surge strips and extension cords.

There is no lightning protection system on the building, however a UL master label system (with surge suppression) is recommended for optimal protection of electronics within the building. A system is not required by code.

A small generator was recently installed outside the building to provide backup power to critical loads such as IT equipment, freeze protection and fire alarm. The generator and associated equipment are in

excellent condition and are not in need of replacement unless substantial loads are to be added to the generator backup system.

The building contains a large expanse of roof space that would be ideal for a photovoltaic system. Given that there are heavy subsidies available for photovoltaic systems at this time, the owner should consider the idea of a power purchase agreement, with a system to be hosted on the roof. This would require no capital expenditure, but would reduce energy costs within the building.

3.9.5 Structural Systems

1950 High School Structure

Had this structure been located on a flat site, it would be a two story structure with several sub-terrain areas. The east side of this structure is a two story building with finished first floor Elevation of 81.33 feet. Accommodating the east to west slope of the site, the west side of the structure is a two story building with finished first floor Elevation of 67.77 feet. There is a three story portion of the building along the east side of the west corridor to account for the 13.5 foot drop in grade across the width of the building.

The south west corner of this building is a single story gymnasium with finished floor Elevation of 81.33 feet. The northwest portion of this structure is one story structure with finished first floor Elevation of 81.33 feet.

The peaked roofs are constructed with fabricated steel trusses spaced 12'-14' on center. Steel channel purlins span between trusses and support the 2 inch deep bulb tee-gypsum plank roof deck. The flat roof areas are supported on open web steel joists spaced typically at 2 feet on center. The roof deck is a 3 inch thick cast in place concrete deck supported between joists by steeltex concrete form system.

The typical upper floor construction is open web steel joist spaced at 2 feet on center with 3 inch thick cast in place concrete slab on steeltex concrete form system. The typical floor construction above crawl spaces is precast concrete lith-i-bar joists spaced at 2.5 feet on center with 2 ½ inch thick cast in place concrete slab on steeltex concrete form system. Concrete slabs that occur at grade, not over crawl spaces or pipe tunnels are 4 inch thick reinforce concrete slabs on grade. Pipe tunnels and crawl spaces typically have exposed earth floors. The structural slab supporting the gymnasium floor is a 3 ½ inch thick cast in place concrete slab on steeltex concrete form system supported by precast concrete lith-i-bar joists spaced at 2.5 feet on center. The joist span between rows of reinforced concrete beams. The concrete beams are supported on concrete piers and reinforced concrete spread footings.

There is an open court yard in the center of the structure. The finish grade of the court yard is Elevation 77.33 feet.

Roof trusses and floor joists bear on load bearing masonry walls. The masonry walls transfer the vertical, gravity loads of the roof, slabs and walls to the reinforced cast-in-place concrete foundation walls. The concrete foundation walls are supported on reinforced concrete strip foundations.

The lowest point in the building is the pump pit which is located just north of the boiler room and has a finish floor Elevation of 57.83 feet. The boiler room is located west of the northwest corner of the open courtyard. The boiler room has a finish floor Elevation of 62.33 feet. There is a network of pipe tunnels that connect the different parts of the building to the boiler room.

At the time this building was constructed, a dedicated lateral force resisting system was not required.

1955 Additions & 1971-72 Renovation and Conversion to Town Hall

The following structural deficiencies have been observed and noted.

- Gymnasium
  - The crawl space has an exposed earth floor.
  - Several of the existing concrete piers that support the reinforced concrete beams have spalled concrete surfaces at the interface between the beam and pier. The pier reinforcement is exposed. The reinforcement is corroded and has lost cross sectional area to the corrosion. The corrosion is being accentuated by the humid atmosphere within the crawl space.
  - The south exterior wall of the gymnasium has large areas of glass block infill within the masonry wall. The sill condition where the glass block interfaces with the brick masonry has resulted in a cracked horizontal mortar joints in the interior brick extending the entire length of the glass block. This is typical at all of the glass block panels.
  - The northwest entry doors into the gymnasium are recessed inward in an alcove. The alcove is constructed with brick masonry walls and a concrete slab ceiling. The topmost brick at the southwest corner of the alcove has been broken free from the mortar and is at risk of falling or being knocked off the top of wall.
- Auditorium
  - The north concrete masonry unit wall of the fan room, located over the stage, has stair step cracks in the mortar joints at each end of the proscenium opening.
  - A prominent crack in the concrete floor slab exists at the interface between slab and the north wall of the second floor storage area at the north end of the auditorium.
  - Roof leak and deterioration of gypsum roof panels north east of stage in seating area.
- Pipe Tunnels-
  - All of the pipe tunnels, except the one accessible through the teen center, have exposed earth floors.
- Crawl Spaces-
  - All crawl spaces have exposed earth floors.
- Exterior Façade
  - Erosion of Brick – see Martin Benassi study
  - Roof drainage and directing water away from exterior façade, down spouts, gutters.
  - Deteriorated steel lintels
  - No weep holes in brick veneer
- Police Department Interface
  - The required seismic joint in the roof construction between the police department building and the town hall facility is not water tight. Water infiltration has damaged interior finishes in proximity to this joint at the second floor ceiling.

4. Renovation Concept

4.1 General

- Create second multi-purpose room in existing council chambers / auditorium area
- Install new roof, downspouts and gutters (paid for under CIP)
- Install new windows throughout building
- Reconfigure main entry, including new canopy
- Install moisture control in crawlspace/tunnel areas with dirt floors
- ADA upgrades as identified in KBA study (Handrails, ramps, door hardware, plumbing fixtures, bathroom layouts, etc.)
- Abatement of hazardous materials (lead, asbestos, PCB's)
- *Very* minor improvements to recently renovated lower level & Transition Academy areas
    - Select repairs to finishes
    - Fix plenum return issues
    - Address "drafty" windows
- Exterior façade repairs as identified in Martin Benassi study
- Insulate attic space of pitched roof areas
- New flooring, ceilings, paint on a room by room basis, dependent on condition
- Upgrade finishes and equipment in existing gymnasium
- Appropriate roof drainage

4.2 Site

- Newly constructed east parking lot, including new site lighting
    - Reconstruction will result in approximately 10 additional parking spaces
- New concrete walks to the east and south
- New entry plaza at Community Center, including pavers and landscaping
- New storm drainage including pipe and catch basins
- New sanitary service to building
- New entry plaza at East (Main) entrance, including pavers, landscaping and ramps
- New accessible ramp, pavers and plantings in interior courtyard

4.3 Structural

- <u>Gymnasium Foundation Repair:</u>
    - Form and cast 6 inch thick additional concrete around the perimeter of the existing 12 inch square concrete piers supporting the gymnasium floor structure. The top of the existing piers are spalled at the intersection of the concrete girders and the pier. The concrete girders span over the top of the piers. The proposed concrete shall be reinforced with four #5 vertical bars (one in each corner) and #4 ties at 12 inches on center. Additional concrete shall be an average of 6 feet tall. Work space is in the crawl space and shall be considered as a confined workspace. Hand excavation around the base of the existing pier will be required to expose the top of the existing footing. Price this for 12 existing piers.

- Boiler Room
  - Clean base of two existing steel pipe columns.
  - Form and cast new concrete around existing steel pipe columns. Top of concrete to match existing adjacent housekeeping pads. Provide #4 perimeter bars. Approximate area is 18 square feet, ((2) 3'x3' squares) 6 inches thick.

- Auditorium/Storage second floor crack.
  - Ream out crack in second floor slab between storage areas at back of auditorium. Fill crack with epoxy repair medium. Crack is approximately 6 feet long (across a door opening).
  - Provide new hot dip galvanized steel dunnage for support of roof top mechanical equipment.

- Conversion of Town Council Chamber/Auditorium to Multi-Purpose Room
  - Auditorium dimensions- 85'-4" (seating bowl) + 1'-8" (proscenium wall) + 23'-4" (stage) = 110'-4" length 60'-4" width
  - Proposed finished Floor Elevation 80.22'
  - Existing Stage Floor Elevation 80.22'
  - Existing north end of auditorium Floor Elevation 80.22'
  - In 1971 (with the creation of the Council Chamber) the north 24 feet of the auditorium was infilled to Elevation 80.22". There was a second floor constructed over this infilled area.
  - In order to create the multi-purpose room space, approximately 63'x60' of the auditorium seating bowl will be overframed to Elevation 80.22'. The second floor framing (24'x60') at the north end (constructed in the1971) will be demolished. The columns at each end of the proscenium opening, along with the girder at the head of the proscenium opening will be demolished and replaced with a single span girder clear spanning the 60' width. This girder will support the fan room floor framing and fan room roof framing. The wing structures on each side of the proscenium will be demolished as well.
  - The difference in floor elevations the west side of the stage will be addressed as well.

4.4 Electrical

- Lighting
  - New LED lighting (high efficiency, 2'x4' in majority of spaces
  - Linear ceiling mounted lighting in bathrooms (along walls), supplemented with recessed LED can lights as needed
  - Moderately decorative lighting at main entry only
  - High bay LED in gymnasium / multi-purpose room areas
  - Storage rooms, janitors closets, mechanical spaces and similar areas will receive industrial grade fluorescent strip lighting
  - Emergency relays (connected to generator power) for all egress lighting
  - LED edge-lit exit signage throughout building, as required per code. High/low exit signage in auditorium and gymnasium / multi-purpose room spaces.
  - Handicap symbol illuminated signage at accessible exterior egress doors.
- Lighting controls
  - In general, one occupancy sensor in each Room.
  - Single occupancy offices and small rooms will use occupancy sensor switches (on wall)

- Areas over 750 sf will receive multiple occupancy sensors, one additional sensor per 750sf
- One light switch at each door to each space
- Conference rooms to receive recessed can lights and dimmer switches
- Rooms with windows will receive hardwired daylight harvesting systems with photosensor (no central lighting control system)

- Normal Power
  - New pad mounted utility transformer next to building, approximately 75' length of run to main electrical room. Primary line from pole on Cedar street will be approximately 250' of two 4" PVC conduits. Primary line is installed and terminated by utility company. First 200' is typically free of charge.
  - New 3000 Amp 208Y/120V electrical service (copper bussing, Square D or equal)
  - Twelve additional 42-pole, 208Y/120V, 225 Amp normal power panels throughout building
- Generator Backup:
  - 350kW diesel Generator w/ circuit breakers to feed transfer switches
  - Standard sound & weather enclosure
  - 48 Hour sub-base fuel tank
  - 100 Amp life safety transfer switch
  - 1000 Amp standby transfer switch to serve fire alarm and egress lighting
  - 100 Amp life safety distribution panel
  - 1000 Amp standby distribution panel
  - Two additional 30-pole, 208Y/120V, 60 Amp life safety panels throughout building
  - Six additional 42-pole, 208Y/120V, 150 Amp standby panels throughout building
- Exterior
  - Retrofit pole mounted lights in west parking lot. Poles, bases and wiring to building to remain.
  - All new 25' tall square steel poles with LED cobraheads for east parking lot. New wiring and conduit to building.
  - Combo timeclock/photocell to control all pole mounted site lighting
  - LED wall mounted fixtures with integral photocells at each exterior egress door, connected to generator life safety system
- Fire Alarm
  - Existing Notifier control panel located in Lower Level Reno area to remain and be expanded upon
  - All new devices throughout all spaces per code.
  - Manual pullstations at ever exterior egress door and at stairwells on each level
  - Audio/visual (horn/strobe) devices per code throughout. Single occupancy offices will not receive audio/visual devices. Six weatherproof horn/strobes mounted to building exterior.
  - Duct smoke detectors for large mechanical ventilation units
  - Addressable modules for elevator controller, magnetic door holders & ublic address system override
  - Voice evac systems in gymnasium / multi-purpose room areas
  - Smoke detectors in all storage rooms
- Devices
  - New electrical outlets in all spaces, typically:
    - One in each bathroom
    - One quad at each desk location
    - One duplex on each office (or similar space) wall. Additional duplex for walls over 12'.
    - Outlets within 25' of roof mounted mechanical equipment
    - Duplex outlet every 25-50' in corridors

- One GFI outlet on each wall of mechanical rooms.
- One duplex outlet in each storage room
- Six weatherproof GFI outlets around building exterior
- Any outlets within 6' of water source will be GFI
- Maximum of 8 duplex outlets on each 20 amp circuit

- Materials:
  - Copper wiring & bussing
  - EMT conduit where exposed in building in unfinished spaces
  - Wiremold where exposed in building in finished spaces
  - MC Cable in all concealed spaces in building
  - RGS conduit where exposed outside
  - PVC conduit underground outside
  - Fire alarm wiring to be FPLP (firewire) or fire alarm MC cable
  - Generator: Cummins, Cat, Kohler, Generac or equal
  - Electrical gear: Square D, GE, Cutler Hammer or equal
  - Fire Alarm: Existing Notifier to remain
- Miscellaneous:
  - No lightning protection system
  - Power connections for all mechanical equipment, architectural equipment, powered doors, etc.
  - Call for aid systems in each single occupancy toilet room & stairwells

4.5 HVAC

General:

- All HVAC systems serving the building will be replaced except for the systems serving the Second Floor East Wing (Transition Academy) and Lower Level Office Areas. These areas will be re-fed from the new boiler system. These two areas currently have standalone ventilation and cooling, which will remain.
- Ductwork insulation will be code minimum, assuming 2009 IECC.
- Refrigerant piping will be Type L copper tube with soldered joints. Suction and hot-gas lines will be insulated.

Gym / Multi-Purpose Rooms:

- For each of the two spaces, install two (four total) new 25-ton variable air volume indoor air-handling units with hot water heating and direct expansion cooling. Associated condensing units to be installed either on the roof or at grade. These systems will provide heating, cooling, and ventilation to the spaces.
- For the existing multi-purpose room, units will be located in the mechanical rooms to the east and west of the gym.
- For the new multi-purpose room, units will be located in the mechanical penthouse above/behind the existing stage

Heating Systems:

- Install two new high-efficiency, gas-fired hot water condensing boilers to serve the building's air-handling units, perimeter radiation, and unit heaters. Boilers to be Aerco Benchmark BMK-3000 or approved equal with 3,000 MBH capacity and will be located within the existing boiler room.

- Install complete new hot water distribution system throughout building serving all areas except Second Floor East Wing (Transition Academy) and Lower Level Office Areas. Hot water system to include piping, four pumps (two at 400 gpm and two at 200 gpm), expansion tanks, air separator, control valves, and all associated hydronic components and accessories.
- Connect new hot water system to existing hot water systems serving Second Floor East Wing (Transition Academy) and Lower Level Office Areas.
- Install new hot water perimeter radiation in all areas of the building except the multi-purpose rooms, Second Floor East Wing (Transition Academy), and Lower Level Office Areas.
- Hot water piping 2 inches and smaller will be insulated Type L copper tube with soldered joints. Hydronic water piping 2-1/2 inches and larger will be insulated Schedule 40 steel pipe with welded and flanged joints.

Cooling Systems:

- Except for the Multi-Purpose Room, Second Floor East Wing (Transition Academy), and Lower Level Office Areas, all other areas of the building will be cooled by variable refrigerant flow (VRF) systems. Six separate VRF systems are anticipated. Each system consists of an outdoor condensing unit located either on the roof or at grade, with indoor ceiling cassette style fan-coil units in every space, and refrigerant piping connecting the indoor and outdoor units. Six separate VRF systems are anticipated. For cost estimating, each system should be assumed to have a capacity of 42 tons. Most spaces will have a single ceiling cassette, with larger spaces and high-occupancy spaces having multiple cassettes. The main lobby, which is anticipated to be more decorative, will have ducted indoor units.
- Refrigerant piping will be Type L copper tube with soldered joints. All refrigerant piping will be insulated, including liquid, suction, hot-gas, discharge, and heat-recovery piping.

Ventilation:

- Several gas-fired, direct-expansion, variable air volume packaged dedicated outdoor air units (DOAS) with a total airflow of approximately 32,000 cubic feet per minute will provide the required ventilation for the spaces served by the VRF systems. For cost estimating, four units should be assumed. Outdoor-air will be distributed by main ductwork located above the corridors, with branch ducts extended to diffusers located in each space. Relief-air and exhaust-air will be exhausted back to the DOAS units in a similar manner. The relief-air and exhaust-air will used to temper the incoming fresh air through energy recovery systems in the DOAS units. DOAS units to be Aaon Series RN or approved equal.
- All supply-air / outdoor-air ducts will be insulated.

IT Closets:

- Each of the IT Closets will be served by a new ductless split system sized appropriately for the equipment within it.

Building Management System:

- The existing Johnson Controls Metasys building management system will be expanded and upgraded to control all new mechanical equipment. We will also allow other vendors to come in and install an all new system, if more cost effective.
- The building management system will be a complete direct digital control (DDC) system employing the latest, best available technology for energy saving strategies, and will include

BACnet and Web enabled interfaces, microcomputer workstation, application software, control units, sensors, thermostats, temperature and pressure transmitters, gauges, valves, dampers, operators, relays, and other equipment and appurtenances, including electrical wiring. The system will provide 365 day scheduling with override, monitoring, reporting, alarming and set point controlling capabilities for all HVAC equipment and zones. The VRF systems utilize factory controls that are in addition to the DDC controls.

4.6 Plumbing & Fire Protection

- Plumbing
    - Re-use existing sanitary main from building
    - Re-use existing domestic water service to building
    - Replace all existing sanitary piping in building with new except Transition Academy and Lower Level Reno Areas, PVC schedule 40 piping. Sanitary main in pipe tunnel was recently replaced and will remain.
    - Replace all plumbing fixtures with new, Kohler fixtures or equal with manual flush valves
    - Provide new ADA fixtures where required, Kohler fixtures with manual flush valves
    - Majority of roof drains are exterior architectural gutters and downspouts
    - Replace and re-pipe roof drains for minimal flat areas, PVC schedule 40 piping
    - Provide new overflow drains for minimal flat areas, Froet bifunctional type
    - Existing water heaters are newer to remain
    - Replace ground water pump in tunnel near boiler room, see attached cut sheet for pricing purposes
    - Replace ejector pump in boiler room, see attached cut sheet for pricing purposes
    - Replace severely corroded water piping in pipe tunnels, Copper tubing with soldered joints
    - Remainder of hot and cold water piping to remain
    - Gas service & piping to boilers to remain

- Fire Protection
    - Remove existing fire service
    - Provide new 6” fire service to building
    - Add sprinkler to all areas except Transition Academy and Lower Level Reno Areas (those two areas already have sprinklers)
    - Standpipes are not anticipated nor required at this point
    - A fire pump is not anticipated nor required at this point
    - Pipe tunnels & crawlspaces are not required to be sprinklered
    - Piping: Main - Schedule 10 lightwall pipe and Victaulic fittings, branches - Schedule 40 black steel pipe and threaded fittings
    - Sprinkler heads: Concealed, center of tile

4.7 Technology & Security

- Creation of new IT rooms to reduce phasing impacts
- All new CAT6 cabling to data/voice jacks around the building
- Address security concerns to IT closets
- Creation of an allowance for new IT equipment
- Additional CCTV cameras throughout building as required

- Card access system in appropriate areas

5. Energy Efficiency / Renewable Energy

5.1 Energy Efficiency

One of the driving factors for this project is to improve energy efficiency, thereby reducing ongoing operating costs and reducing impacts on the environment. The suggestions contained within this report are done so as to keep the initial costs to a minimum, while still employing energy efficient systems. There are HVAC systems available that are higher efficiency than what is recommended within this report, however our recommendations try to strike a balance between initial costs and ongoing costs. Improvements contained within this project include:

- Improved building envelope (new windows, insulation, roof)
- Increased efficiency of heating, ventilation & cooling equipment and systems
- LED lighting with occupancy sensors and daylight harvesting
- Low flow plumbing fixtures
- Building management system for HVAC controls
- High efficiency motors and drives

5.2 Renewable Energy / Solar

This project will make design accommodations for roof mounted solar (photovoltaic) arrays to be installed at a later date by a third party power purchasing agreement (PPA). A preliminary roof mounted array layout is contained in the appendix of this document. This system would be installed on the roof at no up-front cost to the Town, with the Town agreeing to buy the power (at a rate lower than current electrical rates) for a set period of time. Prior to implementation, the roof support structure will need to be analyzed to confirm adequacy for the additional weight of the system.

The photovoltaic system can be arranged to be used as an educational tool for the schools as well. The production data for the system is remotely accessible via the internet, and can be displayed on monitors in the schools, or integrated into the curriculum in some way.

Although outside the scope of this report, the financial viability of other technologies such as solar hot water and rainwater harvesting should be investigated.

6. Cost Estimates

6.1 Renovation

Refer to appendix for detailed renovation cost breakdown

The total cost of renovating the Town Hall, which includes all scope items listed in section 4, has been estimated by Professional Construction Services to be in the range of:

$24,325,000

This estimate includes all trade costs and soft costs, including but not limited to:

- Design Fees
- Hazmat Consultant Fees
- Hazmat Abatement Costs
- Testing Lab / Special Inspections
- Fixtures, Furnishings and Equipment
- Printing, referendum and Town's bonding costs
- Technology & security equipment and wiring
- Relocation / Phasing Costs
- Insurance & Performance Bonds
- Staff / general conditions
- Construction management fees
- 20% Design, construction & owner's contingency of 20% (will be reduced as design progresses)
- 10% Escalation to bid (assumed Spring 2018)

6.2 Adjusted New Building Estimate (For Comparison)

Refer to appendix for Downes' new construction estimate

To better compare the renovation costs to new building, we can compare to the recently estimated Downes' construction estimate, which included a new building in place of existing. Downes' estimate was completed on 9/1/2015, approximately 7 months prior to the issuance of this report. The estimate included a line item for "Value Engineering" and did not include relocation costs.

The renovation estimate completed by Professional Construction Services includes all relocation/phasing costs, no "value engineering" line item, and also included a 5% yearly escalation.

After equalizing Downes' estimate to match with the renovation estimate by eliminating "Value Engineering", adding $2M of relocation costs (the costs of which were identified in Downes' soft costs breakdown) and escalation to April 2016, the cost of a new building is in the range of:

$37,225,000

This represents a cost difference as compared to a renovation of approximately:

$12,900,000

7. Conclusion

7.1 Summary

While the cost savings of a renovation is significant, the Town and its residents must consider if the benefits of cost savings outweighs the limitations of the project are acceptable to them. It is likely that the Town will not undertake another major renovation to this building for at least 25 years. There are many significant upgrades that would be performed under the renovation scenario, however the building will not be exactly what all interested parties want or need.

The renovation would provide a building that is more efficient, less intensive to maintain, fully accessible to all residents, free of hazardous materials and would be provided some added features such as a new multi-purpose room and a lighting refreshed appearance.

Only the Town's residents and building occupants can truly weigh the decision of cost versus limitations.

7.2 Benefits & Limitations of Renovation

The following items are a list of major benefits and limitations/shortcomings of the proposed renovation project:

BENEFITS:

- Addition of Multi-Purpose Room
- Increased energy efficiency
- Elimination of steam system
- Abatement of hazardous materials
- Addition of Solar Panels (reduction in operating costs)
- Façade issues repaired
- New windows & roof
- Replace of old infrastructure (less maintenance costs)
- New, attractive main entry
- Salvage recent renovations to Transition Academy & Lower Level
- Moisture & water infiltration issues addressed
- Lower cost than previous "new building" concept
- Makes building fully accessible

LIMITATIONS:

- Non-adjacent multi-purpose room spaces
- Size of rooms and space configuration are not perfectly ideal
- Major disruptions to building occupants (phased renovation)
- Minimal additional parking
- Building envelope not ideal (insulation levels)
- No visual continuity with library

7.3 Alternative Solutions

After considering this renovation, we have determined that a potential compromise between renovation and new construction may be another solution to consider. An alternative solution to a renovation or new building is what we refer to as a "hybrid" concept. This concept retains a yet to be defined portion of the existing building (which would be renovated), constructs an appropriately sized addition, and demolishes a portion of the building.

Construction of the new addition would be performed in the first phase, which would create a place for occupants of the existing building to move into permanently, thus reducing the impact of phasing on the building occupants and users. Once the occupants move into the new space, the areas they were relocated from can be renovated. Once renovations are complete, building occupants in the spaces that are going to be demolished can move into the renovated space, or some other combination of the above sequence.

This hybrid solution creates a properly sized building, with reduced construction phasing impacts to building occupants and users, while salvaging a portion of the building to save on construction costs. The town would be able to address most, if not all of the items listed under "LIMITATIONS" section noted above. In the case of this hybrid concept, an addition may be able to be added to the east, along Cedar Street, and potentially connected to a library addition, or new library structure, creating a consistent look in a campus setting. Adjacent gymnasiums / multi-purpose rooms could be constructed, and additional parking would be created. The cost of the hybrid would likely be between the cost of renovation and new building, based on our experiences.

The actual plans and feasibility of a hybrid solution would require further in-depth study, which is outside the scope of this report.

7.4 Next Steps

The Town of Newington's residents and staff need to discuss and determine if the cost savings of a renovation as compared to a new building are acceptable given the limitations of the renovation project.

If the Town wishes to move forward with the renovation project, an architecture & engineering team should be engaged to provide pre-referendum documents, and eventually construction documents if the project were to be approved by the Town during referendum.

If the limitations of the renovation project are not acceptable, the Town should pursue the new building or hybrid concept as alternatives.

8. Document Limitations and Qualifications

DTC has produced this document under an agreement between the Town of Newington and DTC. All conditions and terms of those agreements are inclusive in this document by inference. DTC and the Town of Newington disclaim any obligation to any other persons and/or private or public entity with respect to the material in this Feasibility Report who may utilize and/or rely on this information without advance written consent from DTC and/or the Town of Newington and such person's written agreement is to be bound by all limitations, qualifications, terms, conditions, and indemnification to the parties listed above and set forth in each agreement, furthermore the above parties disclaim any obligations to any outside entity.

DTC asserts that our review of this report for the existing Newington Town Hall facility is subject to monetary, schedule, and scope constraints, with limitations, qualifications and conditions as authorized by the Town of Newington. Given this, we have made reasonable and professional informed assumptions and opinions; based on industry best practices within the reasonable scope of investigation. The information presented in this document is bound by the above parameters. DTC's actual knowledge of the subject matter after such inquiry is considered reasonable given the parameters listed above.

To the extent of the physical inspection and observation in this report, it was conducted with limited visual inspection and observation of existing surface materials and construction of the building by the Engineering Team in addition to discussions with the Facility Director, maintenance staff and building occupants. In addition, limited hard copies of drawings of the building and systems were available for review. Assumptions regarding the overall condition of the building and property have been developed based on observation of representative areas of the facilities. As such, the development of conceptual designs and associated budget estimates for the correction of identified deficiencies is based on the overview of observation and is limited by this Feasibility Report parameters.

9. Reference Materials

- Town Hall Space Needs (Kaestle Boos, presented Feb 2015)
- Existing Hardcopy Drawings (Multiple sources and dates)
- Town Hall Expansion / Renovation Feasibility Study (Olsen Design Group, 2012)
- Newington Town Hall Existing Conditions Report (Kaestle Boos, 2008)
- Various Publically Released Documents (Downes, Kaestle Boos, etc, posted on Town of Newington Website)
- Structural Existing Conditions Report (Kaestle Boos / CT Masons, 5/4/2015)