Mechanical and Electrical Systems
Existing Conditions Narrative

Academy Building
Madison, Connecticut

3/11/10

Prepared By
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CES Project No. 29066.00

A. ***PLUMBING NARRATIVE***

APPLICABLE CODES AND STANDARDS

The plumbing systems will be reviewed in conformance with the requirements of the following codes and regulations and all applicable local authority requirements.

1. 2005 Connecticut State Building Code
2. 2005 Connecticut State Fire Safety Code
3. 2003 International Building Code(IBC)
4. 2003 International Plumbing Code
5. 2003 International Energy Conservation Code
6. NFPA, Latest Version
7. ASHRAE 90.1

PLUMBING UTILITIES

1. Domestic Water:
   a. Existing Domestic Water Service: The building is currently served by a 2-½" domestic water main fed from Connecticut Water Company. The water meter has been removed and the domestic water system drained to protect from freezing. The domestic water service appears to be adequately sized for a building of this size and use. The water distribution system is original to the building.
2. Natural Gas:
   a. Existing Natural Gas Service: There is currently no natural gas service to the building.
3. Sanitary:
   a. Existing Sanitary Service: The sanitary sewer system provides sanitary waste drainage for plumbing fixtures located throughout the building. There is a duplex sewage ejection pumping system in the basement which appears to be original to the building and has not operated in a few years. The sanitary waste piping discharges to a septic tank and leaching field.
4. Storm:
   a. Existing Storm System: Building is served by a combination of gutters and roof drains with internal rain leaders.

PLUMBING FIXTURES AND SPECIALTIES

1. Existing plumbing fixtures are as follows:
   a. Due to the building addition (circa 1938), there are a variety of plumbing fixtures; all of which are in need of replacement.

b. Lavatories at many locations are wall hung vitreous china. Faucets are installed with two twist handle faucets.

c. Many of the urinals are floor mounted with flush valves. Under new construction these are not allowed to be installed by the State of CT Department of Public Health. They are grandfathered in and can remain until renovations occur.

DOMESTIC HOT WATER SYSTEMS

1. Existing Domestic Hot Water System: The facility is served by three electric water heaters. The first is an 80 gallon, 4,500 watt unit located in a room adjacent to the main mechanical room. The second is a 120 gallon, 18,000 watt unit that serves the kitchen. The third unit is an 80 gallon, 4,500 watt unit in the 1936 addition. All of these water heaters appear are beyond their anticipated useful life.

B. ***FIRE PROTECTION NARRATIVE***

FIRE PROTECTION SERVICE

1. The fire suppression system for the facility consists of manual stand pipes located in corridors of the addition. The building is not equipped with an automatic fire suppression (sprinkler) system. The piping serving the stand pipes is connected to the domestic water service; there is no dedicated sprinkler main from the water service in the street.

C. ***MECHANICAL NARRATIVE***

APPLICABLE CODES AND STANDARDS

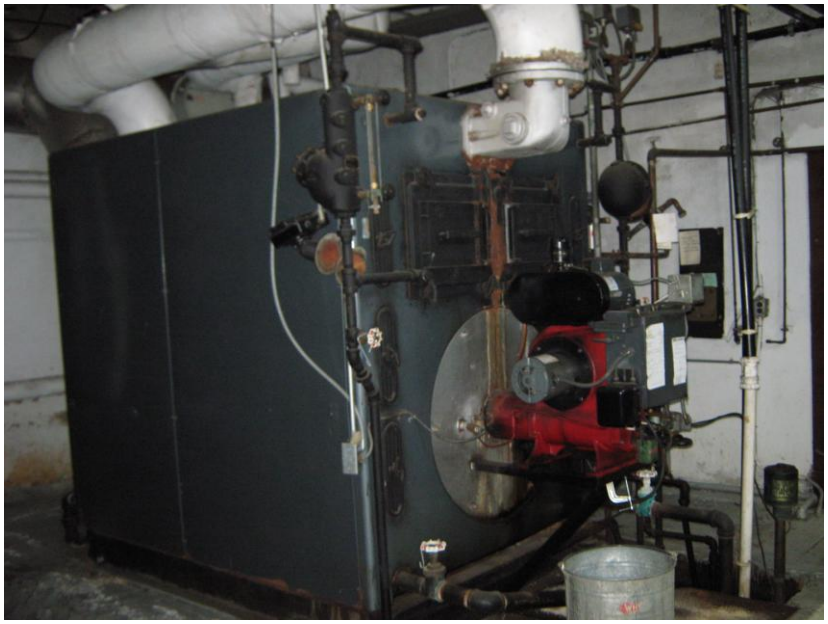
The mechanical systems will be reviewed in conformance with the requirements of the following codes and regulations and all applicable local authority requirements.

1. 2005 Connecticut State Building Code
2. 2005 Connecticut State Fire Safety Code
3. 2003 International Building Code(IBC)
4. 2003 International Mechanical Code
5. 2003 International Energy Conservation Code

6. NFPA, Latest Version
7. ASHRAE 90.1

EXISTING SYSTEMS

1. Boiler Plant: The existing oil fired steam boiler plant is approximately 70 years old and has not been in operation for the last several years. Prior to removing the boiler plant from service the boiler and associated piping were drained to protect from freezing.



2. Buried Fuel Tanks: Refer to 2004 Underground Storage Tank Report done by Flagship Environmental LLC, 2004.
3. HVAC Distribution and Controls :
   a. Steam supply and return piping in the main building is original to the building. The piping is primarily distributed to cast iron radiators.

   b. Ventilation systems: The facility does not include a mechanical ventilation system. The previous classrooms wee passively ventilated by a gravity ventilation system.

c. Temperature controls are local, pneumatic or stand alone controls.

D. ***ELECTRICAL NARRATIVE***

APPLICABLE CODES AND STANDARDS

The electrical power, interior lighting, and fire alarm systems will be reviewed in conformance with the requirements of the following codes and regulations and all applicable local authority requirements.

1. 2005 Connecticut State Building Code
2. 2005 Connecticut State Fire Safety Code
3. 2003 International Building Code(IBC)
4. 2003 International Energy Conservation Code
5. 2005 National Electrical Code, NFPA 70 (NEC)
6. Illuminating Engineering Society Lighting Handbook (IESNA), 9th Edition
7. ASHRAE 90.1

EXISTING SYSTEMS

1. The existing electrical service to the building is rated at 400 amperes, 208 volts, 3-phase, 4-wire. The electrical service and distribution equipment is approximately 40 years old and in poor condition.

2. There are a number of electrical panels located throughout the facility. These panelboards are original to the facility and in poor condition.

3. Lighting at classrooms, corridors and administrative areas consists of both incandescent and fluorescent fixtures. Many of the fixtures are old and should be replaced if the building is renovated.
4. Site lighting has fair to good coverage with street fixtures and building mounted fixtures.
5. The fire alarm system is a Notifier system which appears to have been updated recently. The system may be able to be re-used and expanded if the building is renovated.
6. Emergency lighting is handled by 2-head emergency lighting fixtures with integral battery packs. These fixtures are old and should be replaced if the building is renovated

E. ***MEP SYSTEMS CONCLUSION***

The MEP systems are beyond their useful life expectancy. In addition, domestic water and heating systems have sat idle and may not operate if they are re-connected. If the building is renovated all new MEP systems will need to be installed. The following capital needs survey form highlights the major systems and their respective capital costs to implement.

Town of Madison

Capital Needs Survey Form

Academy Building - "Renovate As New"

Total Floor Area (sf): 41,125

Note: The "System Priority Rating" (1 to 4 rating) and "Condition of the Existing System Rating" (1 to 5 rating) are to be reviewed together to assist in prioritizing replacement and/or upgrades. As an example, we recommend line items with a System Priority rating of 1 and Existing Conditions rating of 1 be prioritized for replacement and/or upgrades.

SYSTEM	System Priority 1 to 4 (1-Highest Priority, 4-Lowest Priority)	Condition of the Existing System 1 to 5 (1 Poor, 5 Excellent)	Last Major Reconstruction (Year)	Projected Replacement (Year)	Quantity	Unit Price	Current Replacement Cost	REMARKS
Division 2 - Site Construction								
Site - Electrical	1	1	1938	2015	1	$ 35,000	$35,000	
Site - Lighting	2	1	1938	2015	1	$ 30,000	$30,000	
Other Site - Included in line items below								
Division 15 - Fire Protection								
Overall Fire Protection Reno - includes:	1	1	1938	2015	41,125	$8	$329,000	
New fire service from street								
New sprinkler system throughout								
Standpipes at stage								
Assumes a fire pump is not needed								
Division 15 -Plumbing								
Overall Plumbing Renovations - includes:	2	1	1938	2015	41,125	$15	$616,875	
Water Distribution System								
Plumbing Fixtures								
Water Heaters								
Division 15 - HVAC								
Overall HVAC Renovations - includes:	2	1	1938	2015	41,125	$28	$1,151,500	
(2) New Hot Water Boilers								
Ventilation Systems								
Air Handling Systems								
Exhaust Systems								
Temperature Control Systems								
Air Conditioning Systems - added cost				2015	41,125	$12	$493,500	
Division 16 - Electrical								
Overall Electrical Renovations - includes:	2	1	1938	2015	41,125	$18	$740,250	
Electrical Service								Upgrade to 1000A - 480Y/277V
Distribution and Local Panels								
Lighting - general								
Emergency Lighting								
Misc Low Voltage Systems								
Fire Alarm System								
Emergency generator							$250,000	150 Kva for life safety, sewage pumps, boilers, etc
							$3,646,125	
							$ 89	per sf