# CITY OF PITTSBURGH
## PROPERTY CONDITION REPORT

**B131 – Medic 8**
212 Walter Street
Pittsburgh, Pennsylvania 15210

June 2014

Massaro
www.massarocms.com

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# 1 Executive Summary

## 1.1 General Description

The City of Pittsburgh contracted with MCMS to provide a Property Condition Assessment (PCA) in order to prepare a Property Condition Report (PCR) of the subject property, located in the Allentown neighborhood at 212 Walter Street, Pittsburgh, PA. A walk-through survey of the subject property was conducted on July 23, 2013.

The subject property consists of a 2-story former fire station with basement; containing an apparatus room, storage, break room, lockers and offices. The building was constructed in 1928. The property is on a 0.1 AC municipal lot on the corner of Walter St. and Proctor Way.

## 1.2 General Physical Condition - FAIR

The general physical condition of properties is typically categorized as:

- **New** – Constructed within the last year.
- **Good** – Well constructed and maintained, without significant deficiencies.
- **Fair** – Apparent deferred maintenance issues and deficiencies that can be remedied at reasonable cost.
- **Poor** – Inadequately constructed and/or maintained, with substantial deficiencies that require significant cost and scope of work to remedy. Some items may require additional detailed analysis and testing to fully define the deficiency.
- **Derelict** – State of deficiencies and failure to maintain renders the property unfit for use and may pose direct hazard to occupants and/or the general public. For these properties, either major rehabilitation or demolition and replacement will be required.

Generally, the property appears to have been constructed within typical industry standards for the building type and period of construction. However, based on the findings of this PCA, the subject property is considered to be in **FAIR** overall condition. The major deficiencies and deferred maintenance issues are as follows:

- The asphalt paving and concrete walks at the parking area need replaced.
- The roofing system is in disrepair and will need replaced within 5 years.
- The boiler requires combustion air ductwork to meet code.
- The fire detection/notification and protection systems are inadequate.

## 1.3 Recommendations – Table 1

See various sections of this Report for details. For the Summary of Recommendations see Table 1, Attached.

**Immediate and Short Term Repairs - Table 1**
**Opinion of Probable Costs**
**Building #B131 - Medic 8. ALLENTOWN**
**MCMS Project No. 13-707.08**

| Section | Item | Quantity | Unit | Unit Cost | Cycle Replacement | Replacement % | Immediate Total | Short-Term Total |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| **3.1** | **SITE** | | | | | | | |
| a | Replace walk at west parking area | 1 | EA | $2,500 | | | $2,500 | |
| b | Replace asphalt paving and improve storm drainage control at parking area | 1200 | SF | $31 | | | | $36,960 |
| c | Repair concrete apron and walks | 1 | EA | $10,000 | | | | $10,000 |
| d | Cut back overgrown vegetation | 1 | EA | $0 | | | | |
| | | | | | | | | |
| **3.2** | **SUBSTRUCTURE** | | | | | | | |
| | | | | | | | | |
| **3.3** | **SHELL** | | | | | | | |
| a | Seal cracks and waterproof apparatus room floor | 1 | EA | $7,500 | | | $7,500 | |
| b | Masonry restoration, lintel replacement, sealants | 1 | EA | $220,000 | | | | $220,000 |
| c | Main roof - Replace missing, loose and broken tiles | 1 | EA | $10,000 | | | $10,000 | |
| d | Hose Tower roof - Replace metal roof | 100 | SF | $66 | | | $6,600 | |
| e | Main roof - Replace entire tile roof and gutter system (5yr) | 2,400 | SF | $28 | | | | $66,000 |
| | | | | | | | | |
| **3.4** | **INTERIORS** | | | | | | | |
| | | | | | | | | |
| **3.5** | **SERVICES** | | | | | | | |
| | | | | | | | | |
| | **Plumbing** | | | | | | | |
| a | Install backflow preventer | 1 | EA | $3,300 | | | $3,300 | |
| | | | | | | | | |
| | **HVAC** | | | | | | | |
| b | Boiler safety testing | 1 | EA | $250 | | | $250 | |
| c | Calibrate thermostats | 1 | EA | $800 | | | $800 | |
| d | Add combustion air ductwork per code | 1 | EA | $9,000 | | | | $9,000 |
| | | | | | | | | |
| | **Fire Protection** | | | | | | | |
| d | Add Fire Alarm devices and fire extinguishers | 1 | EA | $1,800 | | | | $1,800 |
| e | GFI receptacles | 3 | EA | $1,800 | | | | $5,400 |
| f | Emergency Light/sign fixtures | 3 | EA | $2,750 | | | | $8,250 |
| g | CO detector in Boiler Room | 1 | EA | $3,500 | | | | $3,500 |
| | | | | | | | | |
| | **Electrical** | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| **3.6** | **EQUIPMENT AND FURNISHINGS** | | | | | | | |
| **3.7** | **SPECIAL CONSTRUCTION** | | | | | | | |
| | | | | | | | | |
| | | | | | | **TOTALS** | **$30,950** | **$360,910** |

# 2 Team, Purpose and Scope

## 2.1 PCA Team

**Team Lead, Site, Architectural, Accessibility, Drawings:**
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## 2.2 PCA Purpose & Scope

Massaro Construction Management Services (MCMS) is providing Property Condition Assessment (PCA) services in general accordance with the ASTM E2018-08 *Standard Guide for Property Condition Assessments; Baseline Property Condition Assessment*. This standard is widely recognized in the real estate industry as a benchmark tool for evaluating the condition of real property. The City of Pittsburgh is undertaking a multi-year effort to complete PCA's with the following goals:

- Gain greater insight into the current scope and condition of their real property assets.
- Quantify physical deficiencies and immediate repair needs along with short and medium term capital reserve needs for preservation of those assets.
- Identify opportunities to implement Energy Efficiency Measures (ECM) to reduce energy use and hence, energy and/or demand costs.

The general scope of work in a typical PCA includes the following tasks:

- Document Review and Interviews
- Walk-Through Survey
- Opinion of Probable Costs
- Property Condition Report

## 2.3 Document Review and Interviews

Documents provided by the Owner include: limited architectural and drawings dated 1928 and 1983, and 2003. This facility was originally constructed in 1928. Although formal interviews were not performed the Point of Contact (POC) Mr. Henry Cafardi, Facilities Maintenance Supervisor, was available to answer questions.

## 2.4 Walk-Through Survey

The scope of the walk-through survey was limited to representative visual observations of site and property improvements and should NOT be considered all-inclusive. It is conducted without protective clothing, exploratory probing, removal or relocation of materials, testing, or the use of equipment, such as ladders (except as required for roof access), stools, scaffolding, metering/testing equipment, or devices of any kind. Out-of scope issues include but are not limited to:

- Operating, measurement and/or testing of any building systems.
- Assessment of any process-related equipment or systems.
- Assessing components of systems that are not readily observable.
- Entering limited access or confined spaces.
- Accessing pitched roof areas or any roof area that appears unsafe.
- Determining applicability of Life Safety/Fire Protection code requirements.

## 2.5 Opinion of Probable Costs

Replacement, repairs, and routine maintenance of various building components and systems are discussed in various sections of this report and opinions of their probable costs are summarized for the evaluation period in the attached tables. Per ASTM E2018-08; costs indicated should be considered preliminary, order of magnitude budgets. Actual costs most probably will vary from those contained within depending on such matters as type and design of suggested remedy, quality of materials and installation, manufacturer and type of equipment or system selected, field conditions, whether a physical deficiency is repaired in part or replaced in whole, phasing of the work (if applicable), quality of contractor, quality of project management exercised, market conditions, and whether competitive pricing is solicited, etc. Certain opinions of probable costs can not be developed within the scope of this assessment without further study. Where applicable, the opinion of the probable costs for further study will be included.

- **Immediate Costs** are to remedy those deficiencies that require immediate action as the result of any of the following:
    - material existing or potential unsafe condition
    - material building or fire code violations
    - conditions that if left uncorrected have the potential to result in or contribute to critical element or system failure within one year or will result most probably in a significant escalation of its remedial cost.

- **Short-Term Costs** are to remedy physical deficiencies, such as deferred maintenance, that may not warrant immediate attention, but require repairs or replacements that should be undertaken on a priority basis in addition to routine preventative maintenance. Unless noted otherwise, generally the time frame for such repairs is 1-2 years. Such opinions of probable costs may include costs for testing, exploratory probing, and further analysis; or these services may be evaluated separately.

## 2.6 Property Condition Report (PCR)

The Property Condition Report documents the findings of the PCA. This report is for the use of this Client only, for the stated purpose above. Specific language in the descriptions of the various PCA processes, intent, scopes of work, and/or definitions throughout Section 1-2 of this PCR are excerpted directly in whole or in part from the ASTM E2018-08 Standard (herein the 'Standard') document without specific attribution. All rights remain with the ASTM. In the event of any discrepancy between statements in this Report and the Standard, the scope and intent in the respective sections of the Standard shall govern. A complete copy of the Standard may be made available upon request.

## 2.7 Additional Scope Considerations

For this assessment, in addition to the baseline PCA tasks, further considerations are taken into account and additional deliverables are included as follows:

- **Schematic Floor Plans** – Produced using Autodesk Revit™ Building Information Modeling (BIM) software, and including limited field check of representative dimensions and documentation of changes to layout. These drawings and associated floor area information provide a helpful quick reference tool for General Services and Architectural Division staff. They are schematic in nature and should NOT be considered complete documentation of as-built conditions. City develop a BIM Standard and/or Computer Aided Facilities Management (CAFM) program in the future, this initial modeling effort can be further enriched and aligned with those initiatives.

- **Energy Audit** – Level 1, Walk-Through Analysis, per the *Procedures for Commercial Building Energy Audits, 2nd. Ed.* Published by the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE). This Audit provides an overview of building systems and their functional operation, benchmarks the Energy Use Index (EUI) of the subject property against comparables, identifies low/no-cost changes to current Operations and Maintenance (O&M) process to provide savings, and identifies potential capital improvements for further study.

# 3 Element Descriptions and Observations

## 3.1 Site

The building is located on an approximately one-tenth acre (0.1AC) municipal corner parcel. Overall the Site is in Fair condition.

1. Topography and Drainage – The site is relatively level, falling slightly along Proctor Way. Much of the site appears to positively drain away from the building. At the west side the walk adjacent to the parking area has subsided and drains towards the basement stair well. Storm water from the west parking area leaves the site and drains onto Eugenie Way.

   Recommendation – Repair walk at west parking area – see below.

2. Access and Egress – Vehicle access to the subject property is available from Walter St. and Eugenie Way. Egress from the building to grade is available from the first level and lower level.

3. Paving, Curbing and Parking – The site paving and adjacent sidewalks are concrete and generally in Poor condition. Sidewalks have areas of heavy cracking, scaling, spalling and minimal settlement. Concrete apron has areas of joint spalling. Parking area is asphalt and has heavy cracks. Accessible parking is NOT available.

   Recommendations:
   - Repair / Replace broken and settled concrete paving and walks. Repair spalling at apron. Clean and seal all joints.
   - Replace asphalt paving system at parking area.

4. Landscaping and Appurtenances – Landscaping and plantings consist primarily of a planting bed and hedge at the NW corner. The property abuts an unmaintained vacant lot. Unimproved vegetation and invasive trees overgrown along the south side of the building limit access for maintenance.

   Recommendation: Cut back overgrown vegetation.

5. Site Amenities / Accessory Structures- A low rise CIP concrete retaining wall in Good condition runs along the north side of the apron.

## 3.1 Site: Photos

ST1 – View looking NW from Walter St.

ST2 – View looking west along Proctor, concrete paving needs repair and maintenance

ST3 – Looking SE, Eugenie Way is at right

ST4 – Parking area is in Poor condition

ST5 – Concrete walk subsided, site drainage problem

ST6 – Looking NE at property from adjacent vacant lot

## 3.2 Substructure

This visual inspection included the observation of the substructure including foundation and basement construction. Overall the Substructure is in Good condition.

1. Foundation
    a. Constructed of concrete - Good condition: the basement walls have a few light cracks.
    b. West wall has a stairwell constructed of concrete; which is in Good condition.
2. Slab on grade: The basement floor is concrete and has some light cracks.

## 3.3 Shell

1. Overall the Shell is in FAIR condition.

2. Building Frame & Floors

   2.1. The first floor of the entire building is constructed of reinforced concrete T-Beams with clay tiles between the RC T Beams
   2.2. The concrete reinforced concrete T Beams are in good condition they have areas of light cracks, and light spalls.
   2.3. The first floor decking has some spalls with broken clay tiles. There a few concrete patches
   2.4. The concrete encased steel roof beams are in good condition, no steel is visible
   2.5. All interior stairs are in good condition
   2.6. Roof Framing is timber and in good condition

   Recommendation - Apparatus Room floor should be sealed and waterproofed.

3. Building Façade

   3.1 Construction: The building walls are constructed with brick masonry with Tudor style painted wood trim on the second floor, and appear to be in Good condition. Wall penetrations include: 3 metal man doors – 1 with wood frame - 2 with metal frames, 1 garage door with wood frame, 30 windows with metal frames, 2 wall vents in basement and 3 wall louvers in the hose tower.
   3.2 There are areas with light brick cracking, step cracking and areas of minimal brick displacement

4. Roof Deck

   4.1. Construction: The roof deck was not visible on the main roof but is wood sheathing in the hose tower.
   4.2. Condition: No conditions were observed that would indicate deck problems on the main roof. The wood deck was wet on the hose tower roof due to leaks.

5. Roof Insulation

   5.1. Construction: No core cuts were taken.
   5.2. Condition: No insulation is assumed to be installed on either roof area. If there is insulation it is assumed to be in the ceiling of the second floor.

6. Roof System

   6.1. Construction: The high slope roof system on the Main Roof is Ludowici flat clay tiles. The flat roof system installed on the Hose Tower is flat locked, painted terne metal.

   6.2. Condition: The roof systems appeared in poor condition. A large area of tiles were recently repaired from falling brick damage caused by a lightning strike to the chimney. Numerous tiles are missing, broken and loose. The metal roof is rusted and has numerous holes.

7. Flashings

   7.1. Construction: The only flashing is around the chimney on the hose tower and it consist of felts and asphalt cement.
   7.2. Condition: The chimney flashing system is in poor condition. The flashing was not properly replaced during the chimney repair work and is open.

8. Perimeter Terminations

    8.1. Construction: The building walls end at the eave line. The main roof is terminated with a painted wood cornice at the eaves of the Main roof and Hose Tower.
    8.2. Condition: The painted wood cornices are in fair condition. The paint is peeling in some areas.

9. Roof Top Penetrations

    9.1. Medic 8: 5 vent pipes on the main roof area.
    9.2. Condition: The penetrations are in fair condition.

10. Drainage System

    10.1. Construction: The Hose Tower roof drips onto the Main Roof area. The Main roof area slopes to and drains into a box gutter system with painted aluminum downspouts. The box gutter system is constructed with painted terne metal. I could not observe if there is slope to the drains in the box gutters.
    10.2. Condition: There box gutters are assumed to be in fair condition as there was no evidence of leakage observed.

11. Access

    11.1. Providing an extension ladder is the only access to the Main roof. A roof hatch is installed on the Hose Tower which could provide some access to the main roof.

**CONCLUSIONS**

A few leaks have been reported and have been repaired.

The building walls are in fair condition. A few defects were observed. A few cracks were observed in the concrete foundation walls and one crack in the brick wall.

The roof decking appears to be in fair condition. We did not observe any signs that would suggest a serious problem with the Main Roof decking systems at this time. The Hose Tower roof decking will have to be closely monitored due to its' wet condition

The Main Roof tile system is in poor to fair condition. Numerous tiles are loose, broken and missing. The metal roof on the Hose Tower is in poor condition containing many holes due to rust.

The painted cornice and wood trim is in fair condition. One area of peeling paint was observed.

The roof top penetrations are in fair condition.

The drainage system is in fair condition. Any debris should be cleaned from the gutter system and continued to be cleaned twice yearly.

With proper Maintenance and corrective repairs, it is our opinion that the roofing system is in a maintainable condition for the next five years.

Estimates:

1 year: Replace missing and broken roof tiles. Refasten loose tiles – this work does not have to be done at one time but as the maintenance budget permits. Estimated cost: $10,000. Replace the metal roof on the Hose Tower. Inspect roofs and walls yearly and remove debris from the gutter system. Estimated cost: New Roof on the Hose Tower – $2,000 (100 SF x $20/SF)

5 year: Replace tile roofing and gutter system – Estimated cost: $96,000 (2,400 SF x $40/SF)

10 year: Maintain a pro-active maintenance program. Inspect the roof system and walls on a regular schedule – minimum twice a year (late spring and late fall). Estimated cost: none (perform in-house)

## 3.3 – Shell: Photos

SH1 – East wall wood trim details

SH2 – East wall window - typical

SH3 – North wall looking east

SH4 – Light crack in north foundation wall

SH5 – Light crack in north foundation wall

SH6 – NW corner foundation wall and steps

## Section 3.3 – Shell: Photos Continued

SH7 – View from above – north is at the top

SH8 – Missing, loose and broken tile on south side

SH9 – Missing loose and broken tile on west side

SH10 – Pieces of tile fallen from roof

SH11 – Wet wood deck under Hose Tower roof

SH12 – Hose Tower roof – no flashing installed, corner is open, patch membrane is loose, holes and open solder joints

## 3.4 Interiors

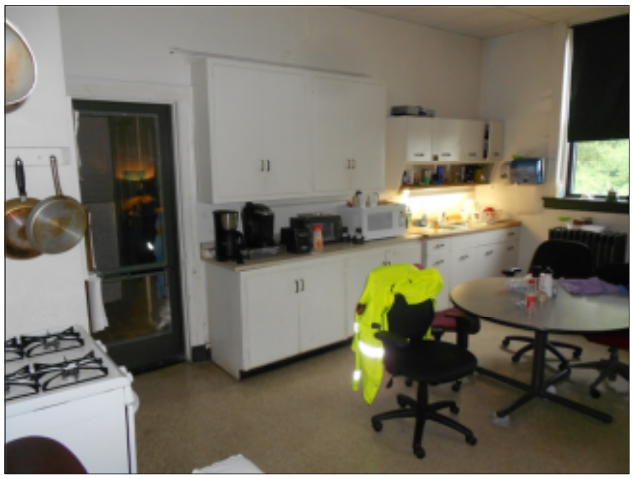
1. Interior Construction - Interior partitions are primarily wood frame / cement plaster construction. Doors and frames are typically wood construction with commercial grade hardware. Overall the Interiors are in Fair condition.

2. Stairs – The wood stairs are in Fair condition.

3. Interior Finishes – The apparatus room has glazed quarry tile flooring. The office/kitchen/lounge areas have resilient tile flooring in Fair condition. The restroom flooring is painted concrete. Ceilings are typically cement plaster or ACT throughout and are in Good condition.

## 3.4 Interiors: Photos

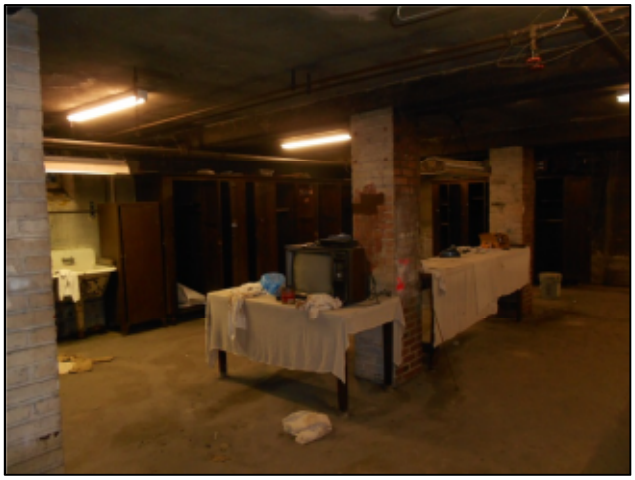
I1 – Apparatus bay



I2 – Kitchen / Dining area

I3 – Office area

I4 – Lounge / fitness room



I5 – Lower level – laundry / work area

I6 – Lower level – former locker area

**Building Mechanical Systems: HVAC 4.5.1**

1. HVAC System – General Description: Primary space heating for fire station is supplied by a central hot water system. It is comprised of central equipment, distribution systems, and room level terminal units. The boiler, piping, and room terminal units are reported to be original to the building. Space cooling is provided by window air-conditioning units (WACU).
   1.1. Room level terminal units: Room based heating terminals are comprised of various combinations of local window air conditioners, and hot water convectors. Individual room heating units are interconnected with hot water supply and return distribution piping. Hot water convectors on the 2nd floor have self-contained radiator control valves.
   1.1.1. Construction:

| | Heating | | | Cooling | | | Ventilation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Room | RAD | BBD | UH | WACU | SAG | RAG | EAG | EF | GRV | TStat | Notes - Comments |
| Rest Room #1 | 1 | - | - | - | - | - | - | - | - | - | No RAD control valve(s) |
| Rest Room #2 | 1 | - | - | - | - | - | - | - | - | - | No RAD control valve(s) |
| Office | 1 | - | - | 1 | - | - | - | - | - | - | No RAD control valve(s) |
| Main / Locker area | 4 | - | - | 1 | - | - | - | - | - | - | Self-contained RAD control valve(s) |
| Hallway | 1 | - | - | - | - | - | - | - | - | - | No RAD control valve(s) |
| Hose Tower | 1 | - | - | - | - | - | - | - | - | - | No RAD control valve(s) |
| Rest Room #3 | 1 | - | - | - | - | - | - | - | - | - | No RAD control valve(s) |
| Kitchen / Lounge | 2 | - | - | 1 | - | - | - | - | - | - | No RAD control valve(s) |
| Apparatus bay | 3 | - | - | - | - | - | - | - | - | 1 | No RAD control valve(s) |

EF = Exhaust Fan
GRV = Gravity Relief Ventilator
RAD = Cast Iron Hot Water Radiator
TStat = Thermostat
WACU = Window Air Conditioning Unit

   1.1.2. Condition: Room terminal units - **Poor**
      1.1.2.1. Physical Deficiencies: No vehicle exhaust system in apparatus room
      1.1.2.2. Functional Deficiencies: None reported or observed
      1.1.2.3. Performance Deficiencies: None reported or observed
      1.1.2.4. Maintenance observations: WACU casing corrosion
      1.1.2.5. Remaining useful life observations (RUL)
         1.1.2.5.1. WACU: 2-3 years
         1.1.2.5.2. Heating: 5+ years

   1.2. Heating Distribution System: The hot water heating distribution system includes black steel hot water supply and return piping and one (1) in-line centrifugal hot water pump.
   1.2.1. Construction
      1.2.1.1. Hot water piping: Black steel
      1.2.1.2. Piping Insulation: None Observed
      1.2.1.3. One (1) Pumps: Factional HP, in-line centrifugal
      1.2.1.4. Pump controls: Partially de-commissioned

   1.2.2. Condition: Heating distribution system - **Poor**
      1.2.2.1. Physical Deficiencies: No piping insulation
      1.2.2.2. Functional Deficiencies: None reported or observed
      1.2.2.3. Performance Deficiencies: None reported or observed
      1.2.2.4. Maintenance observations: None reported or observed
      1.2.2.5. Remaining useful life observations (RUL)
         1.2.2.5.1. Pump: 3-5 years

1.3. Central Boiler System:

1.3.1. Construction: The hot water system consists of one (1) Hydrotherm 210 MBH (input) Hot water boiler, one (1) circulation pump, black steel circulation piping, expansion tank, black steel fuel piping, boiler mounted safety devices, and vent pipe, and temperature controls. The boiler is fueled by natural gas and is natural combustion type. The boiler, circulating pump, control system are functioning beyond their expected useful life (EUL), and are located in the basement mechanical equipment room (MER). No dedicated combustion air supply source present: **Potential code violation.**

1.3.2. The hot water heating control system consists of original, partially decommissioned field mounted devices.

| Location | Boiler | Type | Fuel | Comb | Pump(s) | Type | XTank | CA | Control | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| Basement M.E.R. | 1 | HW | NG | ND | 1 | ILC | 1 | **No** | Decom. | **Inspection certificate: 4/29/71** |

Note 1: Boiler safety devices and control testing not included in project scope.
Note 2: Boiler inspection should be performed by competent official as required by L&I.
Note 3: Boiler safety devices testing should be performed by competent technician, twice during heating season.

CA = Combustion Air supply duct
Comb = Combustion Type
Decom. = De-Commissioned, Partial
HW = Hot Water
ILC = In-Line Centrifugal Pump
M.E.R. = Mechanical Equipment Room
ND = Natural Draft
NG = Natural Gas
XTank = Thermal Expansion Tank

1.3.3. Condition: Central Boiler - **Poor**

| | |
|---|---|
| 1.3.3.1. Safety Concerns: | **Boiler inspection certificate out-of-date** |
| 1.3.3.2. Physical Deficiencies: | **No dedicated combustion air supply** |
| 1.3.3.3. Functional Deficiencies: | No OA reset controls |
| 1.3.3.4. Performance Deficiencies: | None reported or observed |
| 1.3.3.5. Maintenance observations: | Boiler age general condition |
| 1.3.3.6. Remaining useful life observations (RUL): | 1-3 years |

*Note: The field audit and PCA did not include functional testing of boiler safety devices, water heater safety devices, nor fire or smoke alarm systems.*

1.4. Controls

1.4.1. Construction: The central and room level control systems are reported to be original to the building. The controls are observed to be in a partially de-commissioned state. The boiler and hot water pump controls do not appear to employ outside air temperature input.

1.4.2. Condition: Controls - **Poor**

1.5. Performance Observations

1.5.1. Energy and Sustainability: The heating system is consuming excess natural gas due to lack of fully functioning controls for the hot water heating system, old low efficiency boiler, uncalibrated thermostats, lack of local control from self-contained radiator thermostatic valves, and lack of set-back controllers. The resulting excess in energy consumption is estimated at 15% of the related utility bills.

2. Utilities
   2.1. General Description: Natural gas.
   2.2. Construction
      2.2.1. Low pressure natural gas meter and associated threaded, black steel piping.
   2.3. Condition Assessment: **Fair**

3. Energy Performance Summary
      3.1.1. Preliminary Energy-Use Analysis

4. Conclusion:
   4.1. The HVAC system as a whole is in poor condition.

5. Estimates: Suggested remedies and opinions of probable Cost
   5.1. De minimus conditions
      5.1.1. Boiler Safety Testing: $250 (Fire and Ice heating)
      5.1.2. Replace actuator for One (1) self-contained radiator valve
   5.2. Immediate Costs
      5.2.1. Recalibrate existing Carbon Monoxide (CO) detector: $1,200
      5.2.2. Replace old uncalibrated thermostat with programmable, wireless device: $800
   5.3. Short-Term Costs
      5.3.1. Combustion air for boiler and water heater: $7,500
      5.3.2. Remove, transport, and install unused packaged ambient fume exhaust units (from Firehouse #12): $2,500
      5.3.3. Install piping insulation for MER hot water supply and supply and return risers between 1st and 2nd floor (Armaflex type): $2,500
      5.3.4. Install Two (2) Motion based occupancy detectors for Window Air Conditioning Unit control (WACU): $1,200
      5.3.5. Install OA reset controller (Tekmar 246 - BacNet): $2,800
      5.3.6. Install vent damper for boiler systems, HWS and HWR sensors: $3,600
      5.3.7. Install new wireless, WEB based Energy Management Controller/Gateway/WEB server: $4,000
      5.3.8. Replace existing boiler with high efficiency model (Triad 300SH): $18,500

6. Energy Conservation
   6.1.1. Preliminary Energy Efficiency Measures: EEM's

**EEM Summary Table - Medic 8**

| Measure Number | Measure Description | | Estimated cost with Incentive | | |
|---|---|---|---|---|---|
| | | Expected energy reduction* | Measure Cost | Potential Utility Incentive | Net Measure Cost |
| **EEM-1** | **A:** Replace old uncalibrated thermostat(s) with programmable, wireless devices.<br>**B:** Replace existing manual lighting switches with motion based detectors (occupancy).<br>**C:** Install pipe insulation at boiler supply and hot water supply.<br>**D**: De-lamp lighting fixtures to new ASHRAE/IES standard. | 11% | $ 4,600 | $ 200 | $ 4,400 |
| **EEM-2** | Extend motion based occupancy detectors to Window Air Conditioning Unit control (WACU). | 5% | $ 1,200 | $ 150 | $ 1,050 |
| **EEM-5** | **A:** Install OA reset controller (Tekmar 246 - BacNet).<br>**B:** Actuated vent damper for boiler systems, HWS and HWR sensors.<br>**C:** Domestic water temperature set-back controls. | 7% | $ 6,800 | $ 200 | $ 6,600 |
| **EEM-6** | Install new wireless, WEB based Energy Management Controller/Gateway/WEB server | 10% | $ 4,000 | $ 400 | $ 3,600 |
| **TOTALS (Recommended Measures)** | | **15%**** | **$ 16,600** | **$ 950** | **$ 15,650** |

* Percentage of contributing system, not overall energy cost
** Expected percentage of overall gas and electrical energy cost

4.5.1.1 – HVAC: Roof and perimeter

**HVAC 1 – WACU -1**

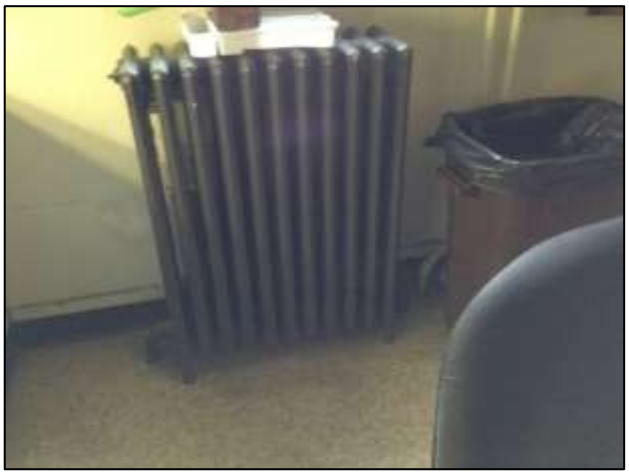
**HVAC 2 – WACU - 2**

## 4.5.1.2 – HVAC: 1st Floor

HVAC 3 – Hot water radiator - 1

HVAC 4 – Hot water radiator - 2

HVAC 5 – Thermostat



HVAC 6 – Hot water radiator - 3

HVAC 7 – WACU: EMT room

HVAC 8 – Hot water radiator - 4

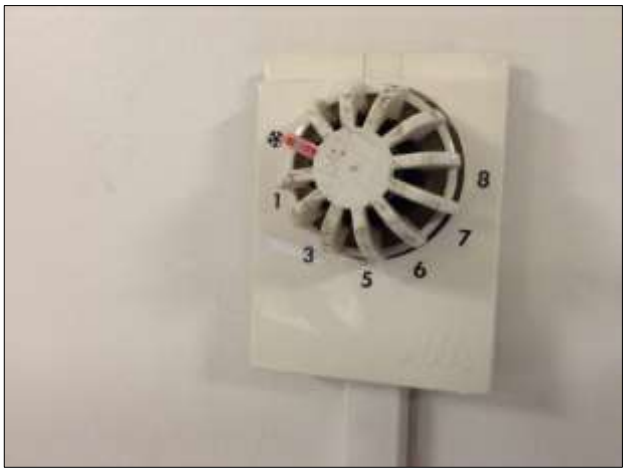
## 4.5.1.3 – HVAC: 2nd Floor

HVAC 9 – Hot water radiator - 5

HVAC 10 – WACU -3

HVAC 11 – Hot water radiator - 6

HVAC 12 – Radiator control valve - 1




HVAC 13 – Radiator control valve - 2

HVAC 14 – Radiator control valve (missing actuator)

### 4.5.1.4 – HVAC: Basement and Utilities

HVAC 15 – Hot water piping (Uninsulated piping)

HVAC 16 – Gas meter

## 4.5.1.5 – HVAC: Boiler and Misc.

HVAC 17 – Hot water boiler - 1

HVAC 18 – Hot water boiler -2

HVAC 19 – Hot water boiler -3

HVAC 20 – Hot water boiler -4

HVAC 21 – Hot water pump

HVAC 22 – Expansion tank

**Building Electrical Systems 4.5.2**

1. Interior Lighting
   1.1. General Description: interior lighting is provided to the building by a combination of windows, and recessed mount and surface mount florescent fixtures.
   1.2. Construction

| | Lighting Fixtures | | | | Lamps | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Room | Q1 | Mount | Length | Type | W1 | Q2 | Type | W2 | Comments |
| Rest Room #1 (a) | 1 | Surface | 4' | Fluor. | 32 | 2 | T8 | 51 | Man Sw, Mag Bal, 8'AFF, NL |
| Rest Room #1 (b) | 1 | Surface | 4' | Fluor. | 32 | 1 | T8 | 26 | Man Sw, Mag Bal, 8'AFF |
| Total: Rest Room #1 | | | | | | | | 77 | |
| Rest Room #2 (a) | 4 | Surface | 2' | Fluor. | 25 | 4 | | 320 | Man Sw, Mag Bal, 8'AFF, NL |
| Rest Room #2 (b) | 2 | Surface | 4' | Fluor. | 32 | 1 | T8 | 51 | Man Sw, Mag Bal, 8'AFF |
| Total: Rest Room #2 | | | | | | | | 371 | |
| Office | 1 | Surface | 4' | Fluor. | 32 | 4 | T8 | 102 | Man Sw, Mag Bal, 8'AFF, NL |
| Main / Locker area | 6 | Surface | 4' | Fluor. | 32 | 4 | T8 | 614 | Man Sw, Mag Bal, 8'AFF, NL |
| Hallway | 3 | Suspend | 4' | Fluor. | 32 | 2 | T8 | 154 | Man Sw, Mag Bal, 8'AFF, NL |
| Hose Tower | 1 | Surface | na | Incand. | 75 | na | na | 75 | Man Sw |
| Rest Room #3 (a) | 1 | Surface | 4' | Fluor. | 32 | 2 | T8 | 51 | Man Sw, Mag Bal, 8'AFF, NL |
| Rest Room #3 (b) | 1 | Surface | 4' | Fluor. | 32 | 1 | T8 | 26 | Man Sw, Mag Bal, 8'AFF |
| Total: Rest Room #3 | | | | | | | | 77 | |
| Kitchen / Lounge (a) | 4 | Recess | 4' | Fluor. | 32 | 4 | T8 | 410 | Man Sw, Mag Bal, NL |
| Kitchen / Lounge (b) | 2 | Recess | 4' | Fluor. | 32 | 1 | T8 | 51 | Man Sw, Mag Bal, 8'AFF, NL |
| Kitchen / Lounge (c) | 2 | Recess | na | Incand. | 75 | na | na | 150 | Man Sw |
| Total: Kitchen | | | | | | | | 611 | |
| Apparatus bay | 9 | Surface | 4' | Fluor. | 32 | 2 | T8 | 461 | Man Sw, Mag Bal, NL |
| Rest Room #3 | 1 | Surface | 4' | Fluor. | 32 | 2 | T8 | 51 | Man Sw, Mag Bal |
| Boiler room (MER) | 2 | Surface | 4' | Fluor. | 32 | 2 | T8 | 102 | Man Sw, Mag Bal, 8'AFF |
| Laundry / Work area (a) | 2 | Surface | 4' | Fluor. | 40 | 1 | T12 | 80 | Man Sw, Mag Bal, 8'AFF |
| Laundry / Work area (b) | 2 | Surface | 8' | Fluor. | 80 | 2 | T12 | 320 | Man Sw, Mag Bal, 8'AFF |
| Laundry / Work area (c) | 6 | Surface | 4' | Fluor. | 32 | 2 | T8 | 307 | Man Sw, Mag Bal, 8'AFF |
| Laundry / Work area (d) | 1 | Surface | 4' | Fluor. | 40 | 2 | T12 | 80 | Man Sw, Mag Bal, 8'AFF |
| Laundry / Work area (e) | 1 | Surface | 4' | Fluor. | 40 | 4 | T12 | 160 | Man Sw, Mag Bal, 8'AFF |
| Total: Laundry | | | | | | | | 947 | |
| Exit Hallway | 1 | Surface | 4' | Fluor. | 32 | 2 | T8 | 51 | Man Sw, Mag Bal |
| Basement room | 1 | Surface | na | Incand. | 75 | na | na | 75 | Man Sw |
| Perimeter (a) | 3 | Surface | na | HPS | 150 | na | na | 75 | Photo Cell |
| Perimeter (b) | 2 | Surface | na | Halo | 125 | na | na | 75 | Photo Cell |
| Total: Perimeter | | | | | | | | 150 | |

AFF = Mounting Height Above Finished Floor
Flour = Fluorescent
HPS = High Pressure Sodium
Length = Standard Fixture Length
Mag Bal = Magnetic Ballast
Man Sw = Manual Wall Switch
Q1 = Fixture Quantity
Q2 = Lamp Quantity per Fixture
W1 = Watts per Lamp
W2 = Watts/room (Net: 0.80 BF applied for T8)

1.3. Condition Assessment: Interior
   1.3.1. Condition: **Poor**

2. Power Distribution
   2.1. Construction and condition
      2.1.1. Distribution panels (original to building): Condition- **Poor**
      2.1.2. General Receptacles (original to building): Condition- **Poor**

3. Utilities Service
   3.1. Construction
      3.1.1. One (1) 3-phase original electric service.
   3.2. Condition Assessment
      3.2.1. Condition Power Service: **Poor**
      3.2.2. Condition Electric Meter: **Good**

4. Conclusions:
   4.1. The interior electrical system as a whole is in poor condition.

5. Estimates: Suggested remedies and Opinion of probable cost
   5.1. De minimus conditions
      5.1.1. Replace missing electric work box cover (4 x 4)
      5.1.2. De-lamp lighting fixtures to new ASHRAE/IES standard: $350
   5.2. Immediate Costs
      5.2.1. Replace Three(3) existing manual lighting switches with motion based detectors (occupancy): $1,400
      5.2.2. See GFI in Life Safety section.

## 4.5.2.1 –Interior Lighting: 1st Floor

E1 – Apparatus room - 1

E2 – Hallway

E3 – Apparatus room - 2

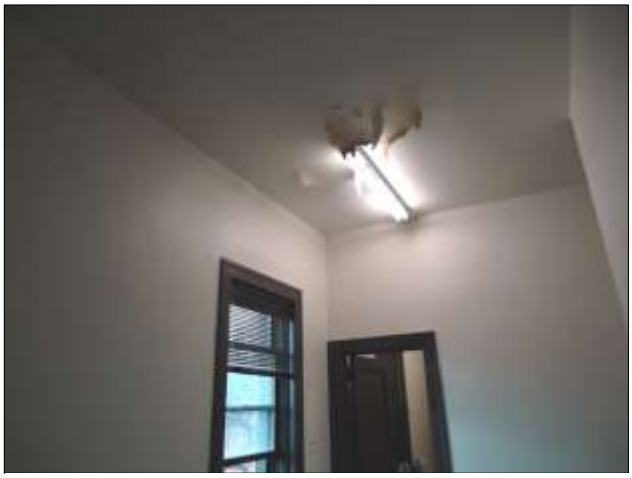
E4 – Locker area

E5 – Kitchen/Lounge

E6 – Surface mount fixture -1

## 4.5.2.2 –Interior Lighting: 2nd Floor

E7 – Surface mount fixture - 2



E8 – Surface mount fixture - 3

E9 – Surface mount fixture - 4

E10 – Suspended fixture - 1

E11 – Surface mount fixture - 5

E12 – Suspended fixture - 2

## 4.5.2.3 – Interior Lighting: Basement

E13 – Laundry and work area -1

E14 – Laundry and work area -2

E15 – Boiler room (MER)

E16 – Surface mount fixture - 6

E17 – Incandescent

## 4.5.2.4 – Exterior Lighting

E18 – Spot type fixture

E19 – Perimeter fixture - 1 (photo cell malfunction)

E20 – Perimeter fixture - 2

## 4.5.2.5 – Electrical: Service, Distribution, and Receptacles

E21 –Service line - 1

E22 – Service line - 2

E23 – Meter and Breaker panel 1st Floor

E24 – Meter

E25 – Breaker panel - 1

E26 – Work box (missing safety cover)

## 4.5.2.6 – Electrical: Service, Distribution, and Receptacles

E27 – Breaker panel - 2

E28 – Breaker panel - 3

E29 – Receptacle - 1

E30 – Receptacle - 2

E31 – Receptacle - 3

**Building Plumbing Systems 4.5.3**

1. Fixtures
   1.1. General Description: The plumbing system is served by a combination of sanitary fixtures, supply and drain piping, and supply water meter service. Serving lavatory rooms, lunch room kitchen area, and laundry.
   1.2. Construction
      1.2.1. Four (4) toilets
      1.2.2. Four (4) lavatory sinks
      1.2.3. Two (2) urinal
      1.2.4. Two (2) shower heads
      1.2.5. One (1) kitchen type sink
      1.2.6. Two (2) janitor's sink
      1.2.7. One (1) laundry sink, double basin
   1.3. Condition Assessment
      1.3.1. Condition: **Poor**

2. Domestic Water Production
   2.1 Construction: The domestic water heating system is served by one RUUD (1) 50 gallon, commercial water heater and supply piping.

| Location | DWH | Type | CAP | Fuel | Pump | SSw | XTank | PRV* | CA | Control | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Basement M.E.R. | 1 | Tank | 50 | NG | No | No | No | Yes | **No** | Unit | Installation Date: 4/16/02 |

Note 1: Water heater safety devices and control testing not included in project scope.
Note 2: Water heater safety devices testing should be performed by competent technician.

CA = Combustion air source: dedicated
CAP = Storage Capacity: Gallons
DWH = Domestic Water Heater
M.E.R. = Mechanical Equipment Room
NG = Natural Gas
PRV = Pressure relief valve with extension piping
SSw = Spill Switch: Draft safety
XTank = Thermal Expansion Tank

2.1.1 Water Heater Condition: **Poor**

3. Utilities
   - 3.1 General Description: Potable water supply
   - 3.2 Construction
     - 3.2.1 Original meter, shut-off valve, and piping.
     - **3.2.2 No back-flow prevention.**
   - 3.3 Condition Assessment: **Fair**

4. Conclusions:
   - 4.1 The plumbing systems are in fair to poor overall condition. Routine maintenance should continue to extend serviceability.

5. Estimates: Suggested remedies and Opinion of probable cost
   - 5.1 De minimus conditions
     - 5.1.1 Insulate supply pipes from water heater.
   - 5.2 Immediate Costs
     - 5.2.1 Install back-flow preventer: $2,000.

## 4.5.3.1 – Plumbing: Fixtures 1st Floor

P1 – Kitchen/Lounge

P2 – Room lavatory sink - 1

P3 – Toilet - 1

P4 – Urinal - 1

P5 – Janitor Sink - 1

P6 – Janitor Sink - 2

## 4.5.3.2 – Plumbing: 2nd Floor

P7 – Room shower - 1

P8 – Room shower - 2

P9 – Room lavatory sink - 2

P10 – Room lavatory sink - 3

P11 – Urinal - 2

### 4.5.3.3 – Plumbing: Basement

P13 – Laundry Sink - 1

P14 – Laundry Sink - 2

P15 – Toilet - 2

P16 – Domestic water heater - 1

P17 – Domestic water heater - 2

P18 – Domestic water heater - 3

## 4.5.1.4 – Plumbing: Utilities

P19 – Domestic water service - 1

P20 – Domestic water service - 2

P21 – Domestic water meter

**Building Fire Protection and Life Safety Systems 4.5.4**

1. Fire Extinguishers
   1.1. Construction: Three (3) fire extinguishers present.
      1.1.1. Basement laundry: Test date – 1984, Pressure gauge: Low
      1.1.2. Apparatus room electric meter area: Test date – 2009 Pressure gauge: Green
      1.1.3. Kitchen/Lounge: Test date – 2013
   1.2. Condition: **Derelict**

2. Alarm Systems
   2.1. No observable fire or smoke alarm system present. **Potential Code Violation.**
   2.2. No observable fire or smoke detectors present. **Potential Code Violation.**

3. Smoke Evacuation System and Stairwell Pressurization
   3.1. No Smoke Evacuation System or Stairwell Pressurization.

4. Sprinklers and Standpipes
   4.1. No sprinkler system present.

5. Emergency Lighting
   5.1. There are no observed fixed emergency light/signs. **Potential Code Violation.**
   5.2. Construction: Three (3) portable, emergency lanterns present.
   5.3. Condition: **Fair**

6. Ground Fault Interruption
   6.1. Construction: There are GFI's are present. **Potential Code Violation.**

7. Conclusions:
   7.1. The building fire protection and life safety systems are physically deficient.

8. Estimates: Suggested remedies and Opinions of probable cost
   8.1. De minimus conditions
      8.1.1. Test fire extinguisher at Apparatus room electric meter area
   8.2. Short-Term Costs
      8.2.1. Add a minimum of three (3) fire extinguishers:
         8.2.1.1. Laundry area: $250
         8.2.1.2. 2nd Floor: $250
         8.2.1.3. Outside boiler room: $250
      8.2.2. Add a minimum of three (3) smoke-fire detector/alarms:
         8.2.2.1. Kitchen/Lounge: $350
         8.2.2.2. 2nd Floor: $350
         8.2.2.3. Basement landing: $350
      8.2.3. Add a minimum of three (3) GFI receptacles for laundry area and kitchen: $1,200
      8.2.4. Add a minimum of three (3) emergency light/sing fixtures – LED type: $1,400
      8.2.5. Add Carbon Monoxide Detector-Alarm in Boiler Room: $3,500

## 4.5.4.1 – Fire Protection and Life Safety Systems

FP 1 – Extinguisher - Apparatus room

FP 2 – Extinguisher - Kitchen/Lounge exit

FP 3 – Extinguisher - 1

LS 1 – Plug loading - Kitchen/Lounge

LS 2 – Receptacle - Kitchen/Lounge

LS 3 –Carbon Monoxide detector - Kitchen/Lounge

## 4.5.4.2 – Fire Protection and Life Safety Systems

FP 4 – Extinguisher - 2

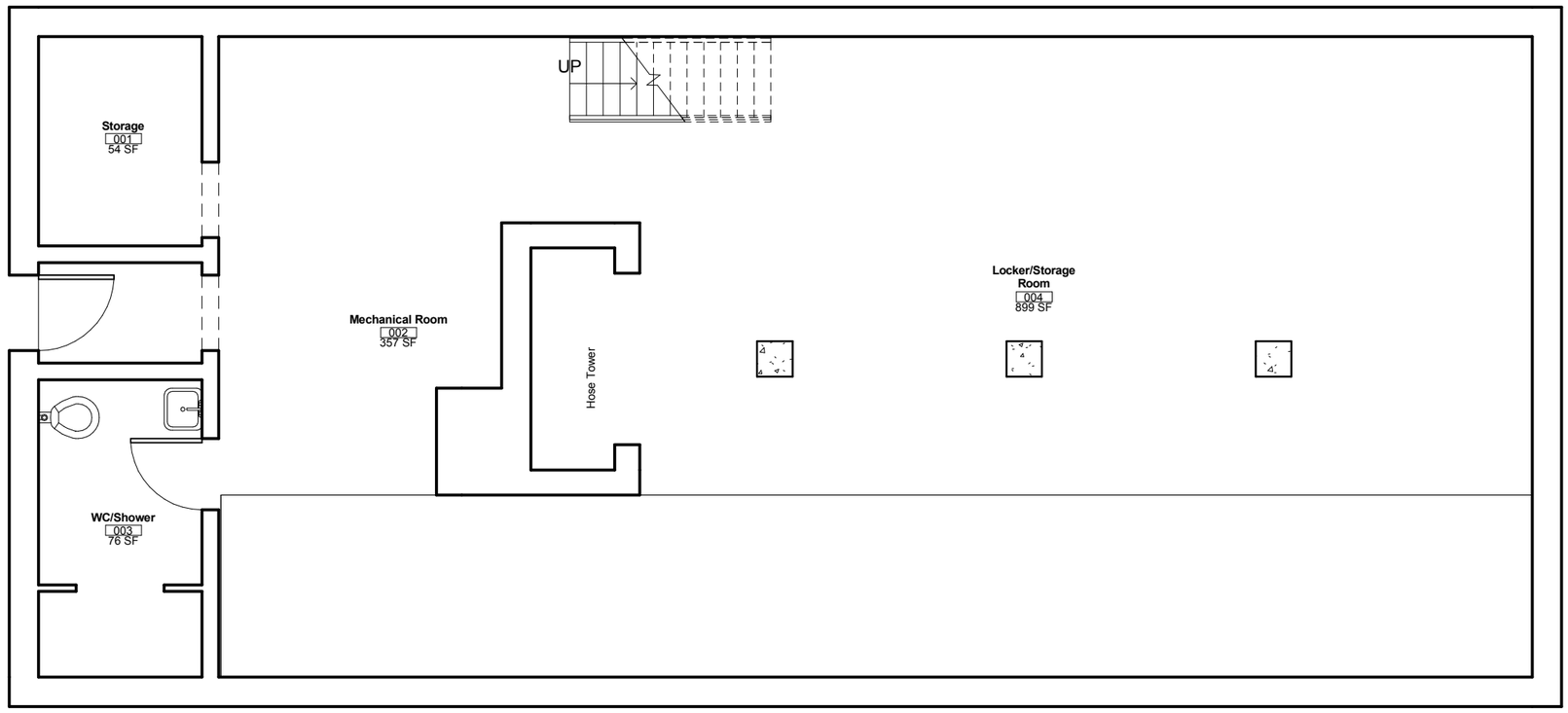
FP 5 – Extinguisher - 3

FP 6 – Extinguisher - 4

LS-4 – Emergency Lantern - 1

LS-5 – Emergency Lantern - 2

LS-6 – Emergency Lantern - 3




1 Basement Floor Plan
3/16" = 1'-0"

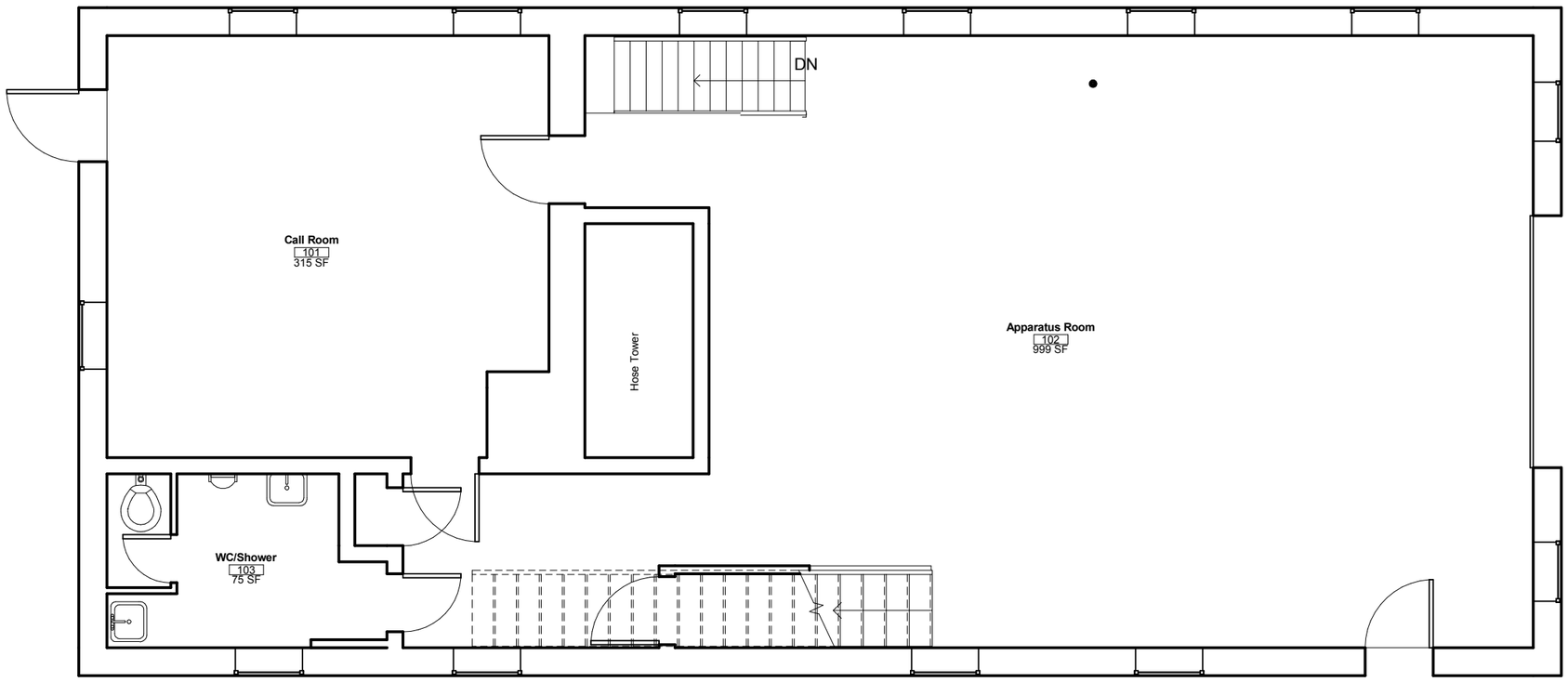
*The drawings and related digital files are a schematic rendition of the existing conditions of the facility only.*
*Please verify exact field conditions before using these for further construction and renovation work.*

Massaro

# Medic 8

City of Pittsburgh

| Basement Floor Plan | | A1.00 |
|---|---|---|
| Date | 07/24/13 | |
| Drawn by | AS | Scale 3/16" = 1'-0" |




1 L1 Floor Plan
3/16" = 1'-0"

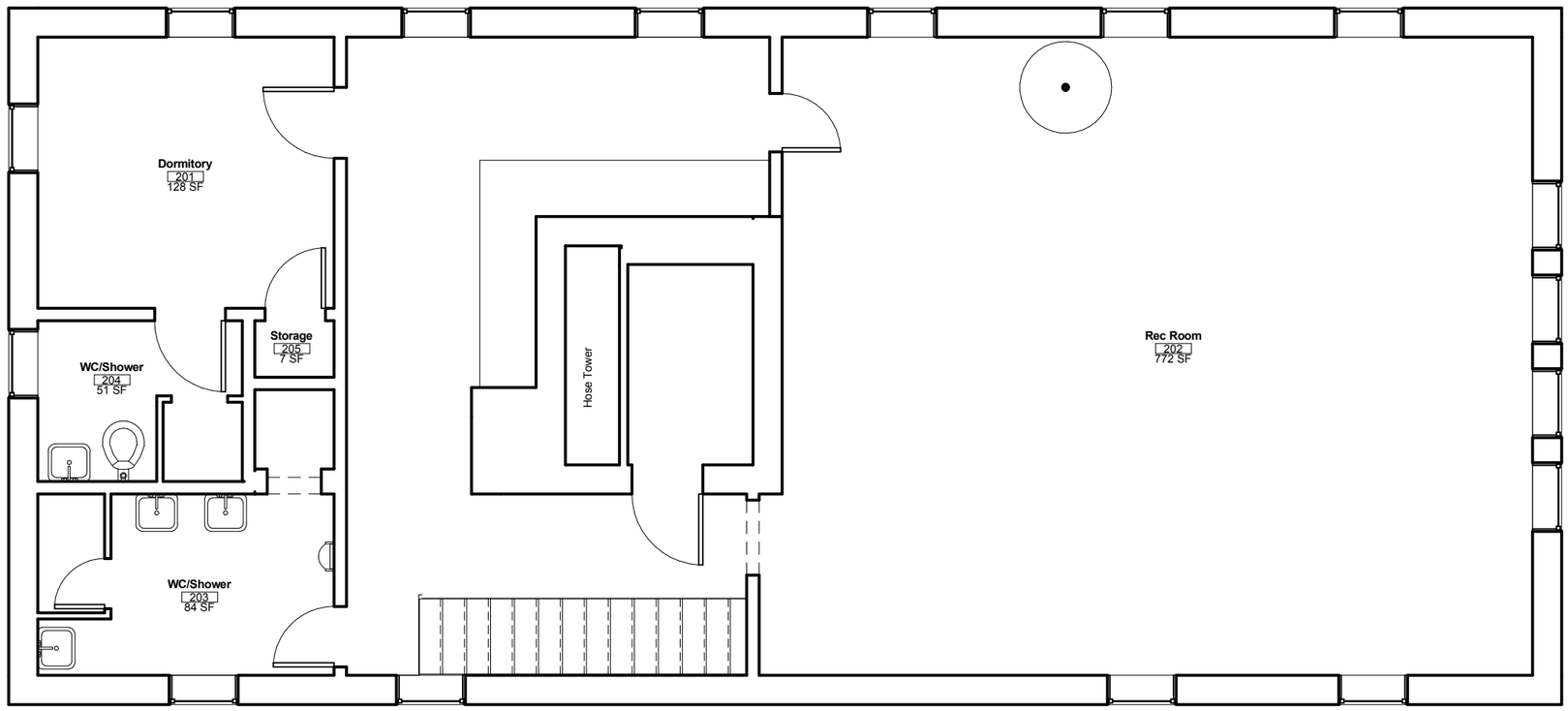
*The drawings and related digital files are a schematic rendition of the existing conditions of the facility only. Please verify exact field conditions before using these for further construction and renovation work.*

Massaro

# Medic 8

City of Pittsburgh

| L1 Floor Plan | | A1.10 |
|---|---|---|
| Date | 07/24/13 | |
| Drawn by | AS | Scale 3/16" = 1'-0" |




1 L2 Floor Plan
3/16" = 1'-0"

Massaro

# Medic 8

City of Pittsburgh

| L2 Floor Plan | | A1.20 |
|---|---|---|
| Date | 07/24/13 | |
| Drawn by | AS | Scale 3/16" = 1'-0" |

1 Site Plan
1/32" = 1'-0"

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*Please verify exact field conditions before using these for further construction and renovation work.*

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# Medic 8

City of Pittsburgh

| Site Plan | | C1.01 |
|---|---|---|
| Date | 07/24/13 | |
| Drawn by | AS | Scale 1/32" = 1'-0" |

B131 - MEDIC 8

## Tier II: Abbreviated Accessibility Survey

| | Item | Yes | No | N/A | Comments |
|---|---|---|---|---|---|
| **A. Building History** | | | | | |
| 1. | Has an ADA survey previously been completed for this property? | ☐ | ☐ | ☑ | |
| 2. | Have any ADA improvements been made to the property? | ☐ | ☐ | ☑ | |
| 3. | Does a Barrier Removal Plan exist for the property? | ☐ | ☐ | ☑ | |
| 4. | Has the Barrier Removal Plan been reviewed/approved by an arms-length third party such as an engineering firm, architectural firm, building department, or other agency, etc.? | ☐ | ☐ | ☑ | |
| 5. | Has building ownership or building management reported receiving any ADA related complaints that have not been resolved? | ☐ | ☐ | ☑ | |
| 6. | Is any litigation pending related to ADA issues? | ☐ | ☐ | ☑ | |
| **B. Parking** | | | | | |
| 1. | Are there sufficient accessible parking spaces with respect to the total number of reported spaces? *(See Table X2.1)* | ☐ | ☐ | ☑ | |
| 2. | Are there sufficient van-accessible parking spaces available (96 in. wide by 60 in. aisle)? *(See Table X2.1)* | ☐ | ☐ | ☑ | |
| 3. | Are accessible spaces marked with the International Symbol of Accessibility? Are there signs reading "Van Accessible" at van spaces? | ☐ | ☐ | ☑ | |
| 4. | Is there at least one accessible route provided within the boundary of the site from public transportation stops, accessible parking spaces, passenger loading zones, if provided, and public streets and sidewalks? | ☐ | ☑ | ☐ | |
| 5. | Do curbs on the accessible route have depressed, ramped curb cuts at drives, paths and drop-offs? | ☑ | ☐ | ☐ | |
| 6. | Does signage exist directing you to accessible parking and an accessible building entrance? | ☐ | ☑ | ☐ | |
| **C. Ramps** — N/A | | | | | |
| 1. | If there is a ramp from parking to an accessible building entrance, does it meet slope requirements? (1:12 slope or less)? | ☐ | ☐ | ☐ | |
| 2. | Are ramps longer than 6 ft complete with railings on both sides? | ☐ | ☐ | ☐ | |
| 3. | Is the width between railings at least 36 in.? | ☐ | ☐ | ☐ | |
| 4. | Is there a level landing for every 30 ft horizontal length of ramp, at the top and at the bottom of ramps and switchbacks? | ☐ | ☐ | ☐ | |
| **D. Entrances/Exits** | | | | | |
| 1. | Is the main accessible entrance doorway at least 32 in. wide? | ☐ | ☐ | ☑ | |
| 2. | If the main entrance is inaccessible, are there alternate accessible entrances? | ☐ | ☑ | ☐ | |
| 3. | Can the alternate accessible entrance be used independently? | ☐ | ☑ | ☐ | |
| 4. | Is the door hardware easy to operate (lever/push type hardware, no twisting required, and not higher than 48 in. above floor)? | ☐ | ☑ | ☐ | |
| 5. | Are main entry doors other than revolving doors available? | ☑ | ☐ | ☐ | |
| 6. | If there are two main doors in series, is the minimum space between the doors 48 in. plus the width of any door swinging into the space? | ☐ | ☐ | ☑ | |

**FIG. X2.1 Abbreviated Accessibility Survey**

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| Tier II: Abbreviated Accessibility Survey | | | | | |
|---|---|---|---|---|---|
| | Item | Yes | No | N/A | Comments |
| E. Paths of Travel | | | | | |
| 1. | Is the main path of travel free of obstruction and wide enough for a wheelchair (at least 36 in. wide)? | ☑ | ☐ | ☐ | |
| 2. | Does a visual scan of the main path of travel reveal any obstacles (phones, fountains, etc.) that protrude more than 4 in. into walkways or corridors? | ☑ | ☐ | ☐ | |
| 3. | Is at least one wheelchair-accessible public telephone available? | ☐ | ☑ | ☐ | |
| 4. | Are wheelchair-accessible facilities (toilet rooms, exits, etc.) identified with signage? | ☐ | ☑ | ☐ | |
| 5 | Is there a path of travel that does not require the use of stairs? | ☐ | ☑ | ☐ | |
| F. Elevators — N/A | | | | | |
| 1. | Do the call buttons have visual signals to indicate when a call is registered and answered? | ☐ | ☐ | ☐ | |
| 2. | Is the "UP" button above the "DOWN" button? | ☐ | ☐ | ☐ | |
| 3. | Are there visual and audible signals inside cars indicating floor change? | ☐ | ☐ | ☐ | |
| 4. | Are there standard raised and Braille markings on both jambs of each hoist way entrance? | ☐ | ☐ | ☐ | |
| 5. | Do elevator doors have a reopening device that will stop and reopen a car door if an object or a person obstructs the door? | ☐ | ☐ | ☐ | |
| 6. | Do elevator lobbies have visual and audible indicators of car arrival? | ☐ | ☐ | ☐ | |
| 7. | Are elevator controls low enough to be reached from a wheelchair (48 in. front approach/54 in. side approach)? | ☐ | ☐ | ☐ | |
| 8. | Are elevator control buttons designated by Braille and by raised standard alphabet characters (mounted to the left of the button)? | ☐ | ☐ | ☐ | |
| 9. | If a two-way emergency communication system is provided within the elevator cab, is it usable without voice communication? | ☐ | ☐ | ☐ | |
| G. Toilet Rooms | | | | | |
| 1. | Are common-area public toilet rooms located on an accessible route? | ☐ | ☑ | ☐ | |
| 2. | Are door handles push/pull or lever types? | ☐ | ☑ | ☐ | |
| 3. | Are there audible and visual fire alarm devices in the toilet rooms? | ☐ | ☑ | ☐ | |
| 4. | Are corridor access doors wheelchair-accessible (at least 32 in. wide)? | ☐ | ☑ | ☐ | |
| 5. | Are public toilet rooms large enough to accommodate a wheelchair turnaround (60 in. turning diameter)? | ☑ | ☐ | ☐ | |
| 6. | In unisex toilet rooms, are there safety alarms with pull cords? | ☐ | ☑ | ☐ | |
| 7. | Are toilet stall doors wheelchair-accessible (at least 32 in. wide)? | ☐ | ☑ | ☐ | |
| 8. | Are grab bars provided in toilet stalls? | ☐ | ☑ | ☐ | |
| 9. | Are sinks provided with clearance for a wheelchair to roll under (29 in. clearance)? | ☐ | ☑ | ☐ | |
| 10. | Are sink handles operable with one hand without grasping, pinching, or twisting? | ☐ | ☑ | ☐ | |
| 11. | Are exposed pipes under sinks sufficiently insulated against contact? | ☐ | ☑ | ☐ | |
| H. Guestrooms — N/A | | | | | |
| 1. | Are there sufficient reported accessible sleeping rooms with respect to the total number of reported guestrooms? *(See Table X2.2)* | ☐ | ☐ | ☐ | |
| 2. | Are there sufficient reported accessible rooms with roll-in showers with respect to the total number of reported accessible guestrooms? *(See Table X2.2)* | ☐ | ☐ | ☐ | |

**FIG. X2.1 Abbreviated Accessibility Survey** *(continued)*

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## 4.3 ASHRAE Level-1 Energy Audit

**Executive Summary**

The building systems for Medic 8 have been analyzed and evaluated according to ASHRAE Level-1 methodology and reporting requirements.

The following sections are complimentary to the PCR with additional focus on energy costing, benchmarking, and remediation planning. The detailed information as provided is of an initial nature according to the level-1 structure.

The resulting EUI for this facility is uncharacteristically low. A more detailed analysis is required including client provided, disaggregated utility bills, and a level-2 analysis and/or a field data logging effort. (Utility bill tabulation as received from client combine consumption and cost data from Firehouse 24, Medic 8, and Police Zone 3.)

Methodology, calculations, standards, and reference material are drawn from these industry publications:

1. ASHRAE Procedures for Commercial Building Energy Audits -2011 Second Edition
2. ANSI/ASHRAE Standard 105-2007: Standard Methods of Measuring, Expressing, and Comparing Building Energy Performance
3. DOE/EIA US Energy Information Administration: U.S. Commercial Building Energy Intensity -2003 Table 7b.
4. Energy Star Target Finder tool
5. “Commercial Energy Auditing Reference Handbook”, Steven Doty, PE, CEM

**Scope of Work**

The scope-of-work associated with the ASHRAE Level-1 includes the following items.

- Conduct walk-through survey: Completed see - PCR
- Identify low-cost/no-cost recommendations: Completed see - PCR
- Identify capital improvements and potential EEM’s: Completed - see PCR
- PEA analysis
- Energy Systems Condition Assessment
- Utility rate structure commodity programs
- EUI target and comparative evaluation
- Potential savings from new EUI target
- Proposed Action Plan: Phase #1

**Preliminary Energy Analysis (PEA)**

**Historical Energy Consumption by Year and Type:**

**2011 - Electricity**

YEAR: 2011

| Month | Cooling Degree Days | Billed Demand (kW) | Electric Use (kWh) | Demand Cost ($) | Total Bill ($) |
|---|---|---|---|---|---|
| January | 0 | 2.83 | 1,330.35 | - | $117 |
| February | 0 | 2.88 | 1,087.12 | - | $102 |
| March | 0 | 2.98 | 1,037.48 | - | $98 |
| April | 21 | 4.07 | 1,007.69 | - | $105 |
| May | 94 | 4.42 | 1,469.34 | - | $144 |
| June | 182 | 4.77 | 1,732.44 | - | $165 |
| July | 397 | 5.06 | 2,213.94 | - | $203 |
| August | 206 | 5.11 | 2,040.20 | - | $190 |
| September | 78 | 3.77 | 1,419.70 | - | $134 |
| October | 0 | 3.62 | 1,136.76 | - | $112 |
| November | 0 | 2.43 | 928.27 | - | $88 |
| December | 0 | 2.93 | 1,191.36 | - | $109 |
| | | **Annual Totals** | **16,594.65** | **$0** | **$1,567** |

**2011 - Natural Gas**

YEAR: 2011

| Month | Heating Degree Days | MCF | Therms | Total Bill ($) |
|---|---|---|---|---|
| January | 1240 | 18.62 | 186.15 | $160 |
| February | 917 | 12.04 | 120.38 | $106 |
| March | 781 | 8.07 | 80.67 | $67 |
| April | 350 | 18.37 | 183.67 | $159 |
| May | 138 | 2.48 | 24.82 | $24 |
| June | 12 | 1.12 | 11.17 | $12 |
| July | 0 | 0.99 | 9.93 | $11 |
| August | 1 | 0.87 | 8.69 | $10 |
| September | 87 | 1.24 | 12.41 | $12 |
| October | 401 | 2.11 | 21.10 | $19 |
| November | 532 | 5.83 | 58.33 | $49 |
| December | 849 | 9.06 | 90.59 | $72 |
| | | **Annual Totals** | **807.89** | **$702** |

**2012 - Electricity**

YEAR: 2012

| Month | Cooling Degree Days | Billed Demand (kW) | Electric Use (kWh) | Demand Cost ($) | Total Bill ($) |
|---|---|---|---|---|---|
| January | 0 | 2.80 | 1,141.72 | - | $105 |
| February | 0 | 2.63 | 1,102.01 | - | $101 |
| March | 4 | 3.47 | 1,012.66 | - | $100 |
| April | 7 | 4.27 | 1,151.65 | - | $115 |
| May | 114 | 4.42 | 1,459.42 | - | $136 |
| June | 181 | 4.86 | 1,881.36 | - | $158 |
| July | 347 | 5.16 | 2,109.70 | - | $174 |
| August | 226 | 4.52 | 1,747.33 | - | $147 |
| September | 110 | 4.42 | 1,072.22 | - | $102 |
| October | 24 | 2.88 | 1,017.62 | - | $88 |
| November | 0 | 2.33 | 898.48 | - | $76 |
| December | 0 | 3.23 | 1,538.84 | - | $119 |
| | | **Annual Totals** | **16,133.00** | **$0** | **$1,420** |

**2012 - Natural Gas**

YEAR: 2012

| Month | Heating Degree Days | MCF | Therms | Total Bill ($) |
|---|---|---|---|---|
| January | 993 | 14.52 | 145.20 | $109 |
| February | 860 | 11.07 | 110.75 | $74 |
| March | 430 | 6.74 | 67.41 | $44 |
| April | 456 | 3.25 | 32.50 | $22 |
| May | 60 | 1.93 | 19.26 | $13 |
| June | 29 | 0.96 | 9.63 | $8 |
| July | 0 | 1.20 | 12.04 | $10 |
| August | 1 | 0.84 | 8.43 | $8 |
| September | 107 | 0.96 | 9.63 | $9 |
| October | 343 | 2.29 | 22.87 | $18 |
| November | 719 | 7.58 | 75.84 | $57 |
| December | 795 | 8.67 | 86.67 | $67 |
| | | **Annual Totals** | **600.22** | **$441** |

**2013 - Electricity**

YEAR: 2013

| Month | Cooling Degree Days | Billed Demand (kW) | Electric Use (kWh) | Demand Cost ($) | Total Bill ($) |
|---|---|---|---|---|---|
| January | 0 | 3.43 | 1,479.27 | - | $117 |
| February | 0 | 3.13 | 1,514.02 | - | $117 |
| March | 0 | 3.18 | 1,548.77 | - | $120 |
| April | 22 | 3.82 | 1,260.86 | - | $106 |
| May | 92 | 4.52 | 1,538.84 | - | $129 |
| June | - | 0.00 | - | - | - |
| July | - | - | - | - | - |
| August | - | - | - | - | - |
| September | - | - | - | - | - |
| October | - | - | - | - | - |
| November | - | - | - | - | - |
| December | - | - | - | - | - |
| | | **Annual Sub-Totals** | **7,341.76** | **$0** | **$589** |

**2013 - Natural Gas**

YEAR: 2013

| Month | Heating Degree Days | MCF | Therms | Total Bill ($) |
|---|---|---|---|---|
| January | 988 | 16.01 | 160.10 | $116 |
| February | 998 | 14.32 | 143.25 | $102 |
| March | 911 | 12.52 | 125.19 | $92 |
| April | 360 | 5.78 | 57.78 | $47 |
| May | 151 | 0.00 | 0.00 | $9 |
| June | - | 1.32 | - | $6 |
| July | - | - | - | - |
| August | - | - | - | - |
| September | - | - | - | - |
| October | - | - | - | - |
| November | - | - | - | - |
| December | - | - | - | - |
| | | **Annual Sub-Totals** | **486.32** | **$371** |

**Energy Performance Summary**

The EUI values include in the performance summary below have been calculated using ASHRAE forms and formulas. Due to the low sampling response for Public order and Safety facilities in the northeast sector, the direct and literal application of these calculations is not advisable.
The total annual cost information data source is the client provided utility bill spread sheet.

**ENERGY PERFORMANCE SUMMARY**
Commercial Building Energy Audit Sample Forms

| Energy Type | Total Annual Use | Units | Conversion Multiplier | kBtu | Total Annual Cost ($) |
|---|---|---|---|---|---|
| Electricity | 18,631 | kWh | 3.412142 | 63,572 | $1,665.26 |
| Natural Gas | 778 | Therms | 100 | 77,828 | $620.82 |
| Purchased Steam | | | 0 | - | |
| Purchased Hot Water | | | 0 | - | |
| Purchased Chilled Water | | | 0 | - | |
| Oil #: | | | 0 | - | |
| Propane | | | 0 | - | |
| Coal | | | 0 | - | |
| Thermal—On-Site Generated | | | 0 | - | |
| Other | | | 0 | - | |
| Electricity—On-Site Generated | | | 0 | - | |
| Thermal or Electricity—Exported | | | 0 | - | |
| | | | 0 | - | |
| **Total** | | | | **141,400** | **$ 2,286.07** |

| | |
|---|---|
| **Gross Conditioned Area** | **3817.00** |
| **EUI (kBtu/ft^2)** | **37.04** |
| **Target Finder Score*** | - |
| **CBECS EUI (for comparable , kBtu/ft^2)** | - |
| **ECI ($/ft^2)** | - |

**Energy Systems Condition Assessment**

The energy systems condition assessment is an additional effort beyond the scope of the ASTM PCA standard and the typical ASHRAE Level-1 requirements. It is a basis for a targeted audit as referred to in ASHRAE standard. This approach supplements the PCR and formal Level-1 to develop a credible EUI target and an actionable remediation program.

This section also provides an initial performance assessment of energy consuming systems and devices as part of the targeted audit effort.

**Heating System**

Energy System Condition: Boiler system including pump(s), piping, and room radiators - **Derelict**
Boiler System Deficiencies

- Combustion Efficiency: **Poor**
- Age: Near EUL see PCR
- Maintenance Condition: **Poor** see PCR
- Piping System Insulation: **None**

Control System Deficiencies

- Space Set-Point Control: **Poor**. Uncalibrated thermostat, excessive set-point temperatures, and open occupant adjustment
- Boiler Water Set-Point Control: **Poor**. Decommissioned controls, see PCR.
- Set-Back Controls: **None**
- Weekly Scheduling Controls: **None**

Energy Management System Deficiencies

- Active Energy Monitoring and Management System: **None**

**Cooling System**

Energy System Condition: Room Cooling Units (WACU) - **Derelict**
WACU Deficiencies

- Efficiency: **Poor**
- Age: Near EUL see PCR
- Maintenance Condition: **Poor** see PCR

Control System Deficiencies

- Space Set-Point Control: **Poor**. Uncalibrated integral thermostat, excessive set-point temperatures, and open occupant adjustment
- Set-Back Controls: **None**
- Weekly Scheduling Controls: **None**

Energy Management System Deficiencies

- Active Energy Monitoring and Management System: **None**

**Lighting System**

Energy System Condition: Interior Lighting - **Fair**
Fixture Deficiencies

- Lamp Efficiency: **Good**
- Ballast Efficiency: **Poor**
- Age: Near EUL see PCR
- Maintenance Condition: **Poor** see PCR

Control System Deficiencies

- Occupancy Controls: **None**
- Weekly Scheduling Controls: **None**

Energy Management System Deficiencies

- Active Energy Monitoring and Management System: **None**

**Potable Water System**

Energy System Condition: Water heating and piping - **Derelict**
Heater System Deficiencies

- Combustion Efficiency: **Poor**
- Age: Near EUL see PCR
- Maintenance Condition: **Poor** see PCR
- Piping System Insulation: **None**

Control System Deficiencies

- Set-Back Controls: **None**
- Weekly Scheduling Controls: **None**

Energy Management System Deficiencies

- Active Energy Monitoring and Management System: **None**

**Utility rate structure commodity programs**

The energy billing and cost data received to date are understood to be directly from local, single source utility companies. Energy rate structures may be reduced through a commodity sourcing approach. Such an approach could include natural gas and electrical energy brokering services. While such services have been successful in reducing cost per kWH and MCF, additional risk of such approach must be carefully considered. It would be expected that energy rate costs could be reduced from 10-15% in a city wide contract. However, such saving would typically require Smart Metering and potential interruption in service, which may not be compatible or acceptable for emergency services facilities. However, full consideration should be given to 'bidding' Natural Gas supply as contractual arrangement may be more acceptable. Further, alternative energy supply opportunities should be explored as peak season interruption obligations are in a state of change, which often favors the consumer.

**EUI target and comparative evaluation**

See energy analysis summary section for portfolio based comparisons and Medic 8 provisional EUI ranking.

**Provisional energy cost savings**

| Energy Type | Total Annual Use | Units | Conversion Multiplier | kBtu | Total Annual Cost ($) |
|---|---|---|---|---|---|
| Electricity | 15,090 | kWh | 3.412142 | 51,489 | $1,348.75 |
| Natural Gas | 630 | therms | 100 | 63,013 | $502.82 |
| Purchased Steam | | | 0 | - | |
| Purchased Hot Water | | | 0 | - | |
| Purchased Chilled Water | | | 0 | - | |
| Oil #: | | | 0 | - | |
| Propane | | | 0 | - | |
| Coal | | | 0 | - | |
| Thermal—On-Site Generated | | | 0 | - | |
| Other | | | 0 | - | |
| Electricity—On-Site Generated | | | 0 | - | |
| Thermal or Electricity—Exported | | | 0 | - | |
| | | | 0 | - | |
| **Total** | | | | **114,502** | **$ 1,851.57** |

| | |
|---|---|
| **Gross Conditioned Area*** | **3817.00** |
| **Actual EUI (kBtu/ft^2)** | **37.04** |
| **Proposed EUI (kBtu/ft^2)** | **30.00** |
| **Proposed ECI ($/ft^2)** | **$ 0.49** |

**Proposed action plan: Phase #1**

Scope: Wireless, WEB based energy management system with wireless instruments including:

- One (1) Boiler Control
- Three (3) Room level heating radiator controls
- Three (3) Lighting controls
- Three (3) Cooling controls
- Set-point, set-back, and scheduling controls
- Insulate basement level hot water supply and return piping
- Insulate basement level domestic water piping