CITY OF

PITTSBURGH

PROPERTY CONDITION REPORT

B150 – Medic 4

Federal & Lafayette Streets

Pittsburgh, Pennsylvania 15214

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, and is located in the Perry South neighborhood adjacent to the corner of Federal and Lafayette Streets, Pittsburgh, PA. A walk-through survey of the subject property was conducted on August 6, 2013.

The subject property consists of a 2-story medic station with basement; containing an apparatus room, storage, break room, training center, lockers and offices. The property is on a 0.2 AC municipal lot.

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:

- Concrete and asphalt paving needs repair / replacement.
- Interior concrete needs repair.
- Masonry and flashing at the shell require restoration and/or replacement.
- The porch roof is in need of immediate replacement.
- Boiler lacks ductwork for combustion air.
- 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 #B150 - Medic 4. NORTH SIDE
MCMS Project No. 13-707.12

Section	Item	Quantity	Unit	Unit Cost	Cycle Replacement	Replacement %	Immediate Total	Short-Term Total
3.1	**SITE**							
a	Replace asphalt drive (5yrs)	3400	SF	$20				$67,320
b	Replace damaged curbs and walks	1	EA	$5,500				$5,500
c	Replace terrace concrete slab and drainage	480	SF	$33				$15,840
d	Repair concrete apron and seal joints	1	EA	$12,000				$12,000
e	Remove overgrown vegetation and debris	1	EA	$0				$0
f	Repair damaged retaining wall and guardrail	1	EA	$2,000				$2,000
3.2	**SUBSTRUCTURE**							
3.3	**SHELL**							
a	Repair Apparatus Bay slab (5yrs)	1	EA	$5,000				$5,000
b	Masonry restoration	1	EA	$100,000				$100,000
c	Replace hose tower door and frame to main roof, paint	1	EA	$2,500				$2,500
d	Install new roof drain and secondary at main roof	1	EA	$5,000				$5,000
e	Replace porch roof and drainage system	192	SF	$30			$5,760	
f	Repair openings in metal cornice cover	1	EA	$3,000				$3,000
3.4	**INTERIORS**							
a	Evaluate second floor resilient tile for potential ACM	1	EA	TBD				
b	Remove stored items at top of basement stair landing.	1	EA	$0				
3.5	**SERVICES**							
	Plumbing							
	HVAC							
a	Boiler Safety Testing	1	EA	$250			$250	
b	Combustion air for boiler and water heater	1	EA	$9,000			$9,000	
	Fire Protection							
c	Add Fire Alarm devices and fire extinguishers	1	EA	$1,800				$1,800
d	GFI receptacles	1	EA	$1,800				$1,800
e	Emergency Exit signs	3	EA	$3,500				$10,500
	Electrical							
3.6	**EQUIPMENT AND FURNISHINGS**							
3.7	**SPECIAL CONSTRUCTION**							
						TOTALS	**$15,010**	**$232,260**

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: Electrical drawings indicating alterations dated 1982. It is unclear when the building was originally constructed. 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 two-tenths acre (0.2AC) parcel. Overall the Site is in Fair condition.

1. Topography and Drainage – The site slopes up approximately one story from Lafayette to Percival Way. The adjacent grade and site paving generally appears to be positively drained away from the building. Damaged site paving and debris from overgrown vegetation appears to be negatively impacting site drainage adjacent to the east and west sides of the building.

2. Access and Egress – Vehicle access to the subject property is available from Lafayette on the south side of the building. Egress from the building to grade is available at the first level only.

3. Paving, Curbing and Parking – The site paving at the parking area is asphalt and in Poor condition. The curbs and walks are also in Poor to condition. The concrete slab at the terrace on the NW side of the building is severely cracked and settled. Concrete apron has areas of cracking and joint spalling and is in Poor condition. Accessible parking is NOT available. Approx. five (5) spaces are available for on-site parking. Note that the parking area extends on to the adjacent corner lot which is NOT owned by the City. Overall the site paving is in Poor condition.

   Recommendations:

   - Replace asphalt at drive/parking
   - Replace damaged curbs and walks
   - Replace concrete slab and repair site drainage at NW terrace
   - Repair concrete apron and seal all joints

4. Landscaping and Appurtenances – Unimproved plantings surround the building on three sides. Overhanging trees and overgrown vegetation significantly impacts drainage and limits maintenance.

   Recommendations:

   - Remove overgrown vegetation and cut back overhanging trees
   - Remove debris from site area adjacent to building.

5. Site Amenities / Accessory Structures- A large stone masonry retaining wall at the NW side of the building appears to be in Fair condition except the south corner was apparently damaged during the sump pump line installation. The cap stones are shifted and the steel railing is broken, apparently by equipment impact.

   Recommendation – Repair cap stones and guardrail at retaining wall

3.1 Site: Photos

ST1 – Looking north from Lafayette

ST2 – Entrance to parking area

ST3 – Broken paving at parking area

ST4 – Retaining wall at NW terrace, broken concrete paving, inadequate site drainage

ST5 – Looking west along Percival Way, Medic 4 is at left

ST6 – Looking north along east side of property, Medic 4 is at left

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 is stone masonry- Good condition
2. Slab on grade: The basement floor slab has areas of light cracking and is in Fair condition.

3.2 Substructure: Photos

SS1 – Basement floor and stair

SS2 – Typical foundation wall

3.3 Shell

1. Overall the Shell is in Fair condition.

2. Building Frame

   2.1. The walls are brick. West wall has open mortar joints. North Wall has step cracking
   2.2. Porch lintel bricks are step cracked
   2.3. Minor collision damage to brick at overhead doors and spalling of concrete cover
   2.4. The steel beams are concrete encased, there is patches and light cracking
   2.5. The basement floor level was filled in for the first 14-6" from overhead doors and a CMU wall was constructed to contain the fill material in 2010
   2.6. The first floor concrete slab has 3 spalls with exposed rusted rebar G2-B7 (7'x7') area and G2-B8 (2'x2') area , G3 –B15 (3'x3'), There are random patches
   2.7. G2 has two additional steel support columns added in 2010
   2.8. The concrete encased steel beams are not visible.

   Recommendation: (Immediate) Repair concrete slab at three (3) areas noted above

3. Building Façade

   3.1. Construction: The building walls are constructed with brick masonry. A brick cornice is constructed on the top of the building at the roof line and covered with a metal cap. Wall penetrations include: 2 garage doors with metal clad wood frames, 2 wood man doors with metal frames, 16 windows with metal sashes and metal frames, 2 closed in windows, 8 closed in wood louvers in the tower.
   3.2. Porch parapet railing has collision damage to cap stones and wall with brick displaced
   3.3. Condition: The building walls appear to be in fair condition. Some cracked brick joints were observed. The brick walls at the porch contain some displaced bricks. Missing bricks were observed at the base of the north end of the east wall. The mortar joints at the cornice brick work are open in some areas. The metal cap on the cornice is rusted and has open joints and holes.

   Recommendations:

   - Masonry restoration work to replace missing or damaged masonry, seal open joints and lintels
   - Replace frame and door to main roof from hose tower

4. Roof Deck

   4.1. Construction: The roof decks were not observable and are assumed to be wood sheathing supported by a wood truss system.
   4.2. Condition: No conditions were observed that would indicate deck problems.

5. Roof Insulation

   5.1. Construction: No core cuts were taken.
   5.2. Condition: No conditions were observed that would indicate insulation problems on the main roof area.

6. Roof System

   6.1. Construction: The roof system on the main roof is constructed of a Modified Bitumen membrane with a gray granule surface. The roof system on the porch roof is soldered flat-lock metal panel roof system. The tower roof was unobservable.
   6.2. Condition: The metal roof on the porch is in poor condition and rusted. The modified bitumen roof system appeared in fair condition. Debris from the surrounding trees and overhanging branches was observed on the

roof surface.

7. Flashings

    7.1. Construction: The perimeter flashings are constructed with the same materials as used on the roofs. The main roof flashing extends over top of the parapet walls.
    7.2. Condition: The main roof modified bitumen flashings appear to be in fair condition. One area in the NE corner is buckled. The metal flashings on the porch roof are rusted and in poor condition. The flashings have been repaired with roof cement which is cracked and dried out.

8. Perimeter Terminations

    8.1. Construction: The building walls extend above the main roof line creating a parapet on the exterior walls. The parapet walls are terminated with coping that has been covered by membrane flashings. A mill finish aluminum drip edge has been installed on the exterior face of the parapet and stripped flashed with the roofing membrane. The interior walls of the porch are terminated with metal flashing and counter flashing. The exterior edges of the porch roof terminate in a box gutter system.
    8.2. Condition: The main roof terminations are in fair condition. The terminations on the porch roof have been coated with roof cement that is cracked and dried out.

9. Roof Top Penetrations

    9.1. Medic 4: 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 drains into a throughwall scupper and downspout that drains onto the main roof. The Main roof area slopes to and drains into an interior roof drain with a drain line that turns to and goes through the outside wall and into a downspout. The porch roof slopes to a box gutter system on the exterior perimeters that drains to one gutter drop and downspout.
    10.2. Condition: The main roof drain is in poor condition and not properly flashed. A roof leak was observed directly below the drain on the second floor. There is no emergency overflow scupper installed on the main roof. The porch roof gutter system is in poor condition and has been repaired with roof cement and caulking. The exterior downspouts are rusted. The downspout on the Hose Tower does not have a splash block installed.

11. Access:

    11.1. Access to the main roof is through a wood man door in the hose tower. No direct access to the Hose Tower or porch roof without providing an extension ladder.
    11.2. The paint has weathered away on the wood man door and frame leaving mostly bare wood exposed. The jack arch header is cracked and settling.

CONCLUSIONS

One leak stain was observed in the second floor area of the main roof drain.

The building walls are in fair condition. A few defects were observed. A few brick joint cracks and missing bricks were observed.

The roof decking appears to be in fair condition. We did not observe any of the decks or any signs that would suggest a serious problem with the roof decking systems at this time.

The main roof system is in fair condition. The porch roof metal roof system is in poor condition and should be replaced. The hose Tower roof was unobservable.

The painted wood door and trim on the Hose Tower is in poor condition (access door to the main roof).

The roof top penetrations are in fair condition.

The drainage system is in fair condition. Any debris should be cleaned from the main roof and continued to be cleaned twice yearly. A new roof drain system and emergency overflow drain should be installed on the main roof. The rusted downspouts should be replaced and a splash block provided on the main roof for the Hose Tower downspout.

With proper Maintenance and corrective repairs, it is our opinion that the modified bitumen roofing system on the main roof is in a maintainable condition for the next ten years. The metal roof system on the porch roof should be replaced as soon as the budget permits.

Estimates:

1 year: Replace the porch roof and drainage system – Estimated cost: $6,000 (192 SF x $30/SF). Install new roof drain and emergency overflow drain on the main roof – Estimated cost: $5,000. Repair openings in metal cornice cover – Estimated Cost: $3,000. Paint all wood doors and trim – Estimated cost: none (can be performed in house). Inspect roofs and walls yearly and remove debris from the main roof system.

5 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).

10 year: Replace the main roofing and flashing system, replace the metal cornice cover – Estimated cost: $43,200 (roof - 2,880 SF x $15/SF) (cornice - $12,000). 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 – South façade – brick cornices

SH2 – Impact damage at apparatus bay doors

SH3 – Knee wall at porch – damage from impact

SH4 – East wall – typical window / sill

SH5 – Missing brick at east wall, NE corner

SH6 – Hose tower from main roof – rusted downspout, failing lintel and door, condition of tower roof is unknown

3.3 – Shell: Photos Continued

SH7 – View from above, Lafayette is at right, north is at left

SH8 – Main roof looking south, hose tower at left

SH9 – Looking NW – overhanging trees, debris on roof

SH10 – Looking east – arrow indicates location of main roof drain – this is the ONLY drain, there is no secondary drainage

SH11 – View looking down on porch roof, rusted

SH12 – Rusted metal cornice cover, downspout from main roof drain

3.4 Interiors

1. Interior Construction

    1.1. Interior partitions are primarily wood framed or masonry with cement plaster finish and are in Fair condition.
    1.2. Doors and frames are typically wood construction with some commercial grade hardware and are in Fair condition.

2. Stairs

    2.1. The interior wood stairs and concrete stairs to basement are in Fair condition.

    2.2. Storage at top landing of basement stairs limits access and creates a safety hazard.

    Recommendation – Remove stored items from basement stair top landing.

3. Interior Finishes – Typical flooring throughout the building is resilient tile in Fair condition. 9” x 9” tile at second floor should be evaluated for potential Asbestos Containing Materials (ACM). Ceilings are typically ACT throughout and are in Fair condition. Some tiles need replaced. Ceiling in Apparatus Room is tin and some ceramic tile, and is in Fair condition.

    Recommendation: Evaluate second floor tile for potential ACM.

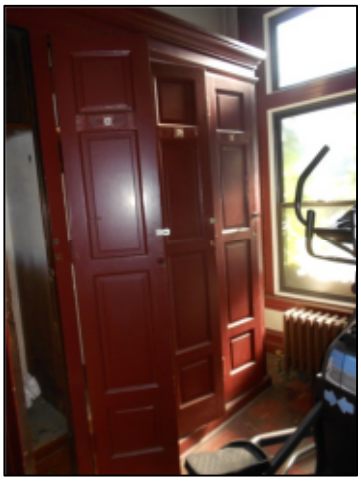
3.4 Interiors: Photos

I1 – Apparatus bay – stair to basement is at right rear

I2 – Apparatus bay – stair to second floor is at right

I3 – Kitchen / Dining / Office

I4 – Training Center



I5 – Lockers – not used

I6 – 2nd Flr. Resilient tile – Potential ACM?

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.

	Heating			Cooling			Ventilation				
Room	RAD	BBD	UH	WACU	SAG	RAG	EAG	EF	GRV	TStat	Notes - Comments
Meeting Room	1	-	-	-	-	-	-	-	-	-	Limited access to room
Locker and Fitness	1	-	-	-	-	-	-	-	-	-	No RAD control valve(s)
Restroom	1	-	-	-	-	-	-	-	-	-	No RAD control valve(s)
Training Room	4	-	-	2	-	-	-	-	-	1	No RAD control valve(s)
Kitchen	1	-	-	-	-	-	-	-	-	-	No RAD control valve(s)
Lounge	1	-	-	1	-	-	-	-	-	-	No RAD control valve(s)
Apparatus Room	2	-	-	-	-	-	-	-	-	-	No RAD control valve(s)

BBD = Hot Water Base Board - Copper Fin-Tube Element
DCVEX = Direct Connect Vehicle Exhaust System (Nederman)
EAG = Exhaust Air Grille
EF = Exhaust Fan
GRV = Gravity Relief Ventilator
RAD = Cast Iron Hot Water Radiator
RAG = Return Air Grille
SAG = Supply Air Grille
TStat = Thermostat
UH = Hot Water Unit Heater - Integral Fan
WACU = Window Air Conditioning Unit

1.1.1. Condition: Room terminal units - **Fair**
- 1.1.1.1. Physical Deficiencies: No RAD Control Valves
- 1.1.1.2. Functional Deficiencies: None reported or observed
- 1.1.1.3. Performance Deficiencies: None reported or observed
- 1.1.1.4. Maintenance observations: None reported or observed
- 1.1.1.5. Remaining useful life observations (RUL)
  - 1.1.1.5.1. WACU: 1-3 years
  - 1.1.1.5.2. 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) Pump: Factional HP, in-line centrifugal
- 1.2.1.4. Pump controls: Partially de-commissioned

1.2.2. Condition: Heating distribution system - **Fair**

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) Weil-McLain 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). The boiler inspection is certificate was not found and inspection date is unknown. No Dedicated combustion air system 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.	No boiler inspection certificate

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 permit, Boiler safety controls testing
1.3.3.2. Code non-compliance issues:	No Dedicated combustion air system
1.3.3.3. Functional Deficiencies:	None reported or observed
1.3.3.4. Performance Deficiencies:	OA reset
1.3.3.5. Maintenance observations:	Boiler age general condition
1.3.3.6. Remaining useful life observations (RUL):	2-5 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.
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 se-lf-contained radiator thermostatic valves, and lack of set-back controllers. The resulting excess in energy consumption is estimated at 18% 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 fair 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. De-lamp lighting fixtures to new ASHRAE/IES standard.
5.1.3. Replace missing WACU cover.
5.2. Immediate Costs
5.2.1. Combustion air for boiler and water heater: $7,500
5.2.2. Replace old uncalibrated thermostat with programmable, wireless device: $800
5.3. Short-Term Costs
5.3.1. Replace Five (5) existing manual lighting switches with motion based detectors (occupancy): $2,500
5.3.2. MER Insulation (Armaflex type): $2,000
5.3.3. Add Five (5) wireless thermostatic radiator control valves: $1,700
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): $3,500
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 600SH): $26,000

6. Energy Conservation

6.1.1. Preliminary Energy Efficiency Measures: EEM's

EEM Summary Table - Medic 4

Measure Number	Measure Description		Estimated cost with Incentive		
		Expected energy reduction*	Measure Cost	Potential Utility Incentive	Net Measure Cost
EEM-1a	**A:** Replace old uncalibrated thermostat(s) with programmable, wireless devices. **B:** Replace existing manual lighting switches with motion based detectors (occupancy). **C:** Install pipe insulation at boiler supply and hot water supply.	9%	$ 5,200	$ 200	$ 5,000
EEM-1b	**D:** De-lamp lighting fixtures to new ASHRAE/IES standard. **E:** Relamp T12 fixtures to T8	7%	$ 3,280	$ 150	$ 3,130
EEM-2	Extend motion based occupancy detectors to Window Air Conditioning Unit control (WACU).	5%	$ 1,600	$ 150	$ 1,450
EEM-3	Install wireless radiator control valves	10%	$ 2,875	$ 100	$ 2,775
EEM-5	**A:** Install OA reset controller (Tekmar 246 - BacNet). **B:** Actuated vent damper for boiler systems, HWS and HWR sensors. **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)		**18%****	**$ 23,755**	**$ 1,200**	**$ 22,555**

* 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

HVAC 3 – Gravity Ventilator

4.5.1.2 – HVAC: 1st Floor

HVAC 4 – Gas piping: Apparatus Room

HVAC 5 – Hot water radiator: Apparatus Room - 1

HVAC 6 – Hot water radiator: Apparatus Room - 2

HVAC 7 – WACU: Lounge - 3

HVAC 8 – Hot water radiator - 3

HVAC 9 – Hot water radiator - 4

4.5.1.3 – HVAC: 2nd Floor

HVAC 10 – WACU - 4

HVAC 11 – Hot water radiator - 5

HVAC 12 – Hot water radiator - 6

HVAC 13 – WACU - 5

HVAC 14 – Hot water radiator - 7

HVAC 15 – Thermostat

4.5.1.4 – HVAC: Basement

HVAC 16 – Hot water heating boiler - 1

HVAC 17 – Hot water heating boiler - 2

HVAC 18 – Hot water heating boiler - 3

HVAC 19 – Hot water heating boiler - 4

HVAC 20 – Hot water system expansion tank

HVAC 21 – Hot water system control devices

4.5.1.5 – HVAC: Boiler, Utilities, and Misc.

HVAC 22 – Hot water heating pump

HVAC 23 – Hot water piping

HVAC 24 – Natural gas meter

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, recessed mount and surface mount florescent fixtures, and incandescent lights.
   1.2. Construction

	Fixtures		Lamps					
Room	Q1	Length	Type	W1	Q2	Type	W2	Comments
Meeting Room					No Access			
Side Room					No Access			
Locker and Fitness	1	na	Incand.	75	1	na	75	Man Sw, 8'AFF, NL
Hallway	1	4'	Fluor.	40	2	T12	80	Man Sw, Mag Bal
Side Room					No Access			
Restroom	1	4'	Fluor.	40	2	T12	80	Man Sw, Mag Bal, 8'AFF, NL
Training Room	15	4'	Fluor.	40	2	T12	1,200	Man Sw, Mag Bal, NL
Stairwell (a)	1	4'	Fluor.	40	1	T12	40	Man Sw, Mag Bal
Stairwell (b)	1	na	Incand.	75	1	na	75	Man Sw
Total: Stairwell							115	
Stairway to Roof	2	na	Incand.	75	1	na	150	Man Sw, Not working
Kitchen	4	4'	Fluor.	40	2	T12	320	Man Sw, Mag Bal, 8'AFF
Locker room	1	4'	Fluor.	40	2	T12	80	Man Sw, Mag Bal, 8'AFF
Lounge	3	2'	Fluor.	40	2	T12	240	Man Sw, Mag Bal, 8'AFF
Apparatus Room	10	4'	Fluor.	40	2	T12	800	Man Sw, Mag Bal, 8'AFF
Stairwell Landing	1	na	Halo.	75	1	na	75	Man Sw
Basement	4	na	Incand.	75	1	na	300	Man Sw
Old Shower (basement)	1	4'	Fluor.	40	1	T12	40	Man Sw, Mag Bal, 8'AFF
Perimeter	4	na	HPS	150	1	na	600	Photo Cell

Note #1: Three (3) total lamps out

AFF = Mounting Height Above Finished Floor
Flour = Fluorescent
Halo = Halogen
Length = Standard Fixture Length
Mag Bal = Magnetic Ballast
Man Sw = Manual Wall Switch
NL = Natural Lighting
Q1 = Fixture Quantity
Q2 = Lamp Quantity per Fixture
W1 = Watts per Lamp
W2 = Watts/room (Net: 1.00 BF applied T12)

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

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

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: **Fair**
      3.2.2. Condition Electric Meter: **Good**

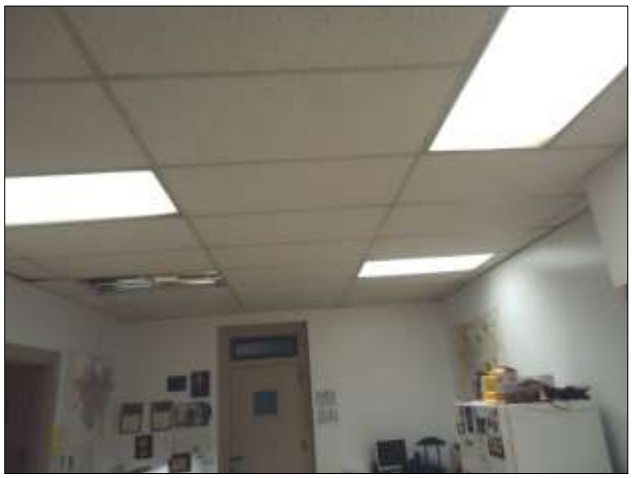
4. Conclusions:
   4.1. The interior electrical system as a whole is in fair condition.

5. Estimates: Suggested remedies and Opinion of probable cost
   5.1. De minimus Costs
      5.1.1. De-lamp lighting fixtures to new ASHRAE/IES standard.
      5.1.2. Replace (9) incandescent lamps and halogen spot lights to CFL type.
   5.2. Immediate Costs
      5.2.1. Re-Lamp Seventy Two (72) fluorescent T12 lamps to T8 types: $1,300
      Note: Quantity will change based on de-lamping effort.

4.5.2.1 –Interior Lighting: 1st Floor

E1 – Apparatus room - 1

E2 – Apparatus room - 2



E3 – Kitchen - 1

E4 – Kitchen - 2

E5 – Locker

E6 – Hallway

4.5.2.2 –Interior Lighting: 2nd Floor

E7 – Training room - 1

E8 – Training room - 2

E9 – Hallway

E10 – Suspended fixture

E11 – Stairwell - 1

E12 – Stairwell - 2

4.5.2.3 –Interior Lighting: Basement

E13 – Basement - 1

E14 – Basement - 2

E15 – Basement room - 1

E16 – Basement room - 2

E17 – Basement room - 3

4.5.2.4 – Electrical: Service and Distribution

E18 – Electric service - 1

E19 – Electric service - 2

E20 – Electric meter

E21 – Breaker panel - 1

E22 – Breaker panel - 2

E23 – Breaker panel - 3

4.5.2.5 – Electrical: Distribution, and Misc.

E24 – Breaker panel - 4

E25 – Telephone Cabinet

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 the locker room, men's and ladies' rooms, lunch room kitchen area, and laundry.
   1.2. Construction
      1.2.1. Two (2) toilets
      1.2.2. Two (2) lavatory sinks
      1.2.3. One (1) shower head
      1.2.4. One (1) kitchen type sink
      1.2.5. One (1) janitor's sink
   1.3. Condition Assessment
      1.3.1. Condition: **Fair**

2. Domestic Water Production
   2.1 Construction: The domestic water heating system is served by one A.O. Smith (1) 40 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	40	NG	No	Yes	Yes	Yes	No	Unit	Installation Date: 2010

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: **Fair**

3. Utilities
   - 3.1 General Description: Potable water supply
   - 3.2 Construction
     - 3.2.1 Original meter, shut-off valve, and piping.
   - 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 heaters.

4.5.3.1 – Plumbing: Fixtures 1st Floor

P1 – Laundry area - 1

P2 – Laundry area - 2

P3 – Kitchen sink

4.5.3.2 – Plumbing: 2nd Floor

P4 – Shower - 1

P5 – Shower - 2

P6 –Locker area lavatory sinks

P7 – Room toilet - 1

P8 – Room toilet - 2

4.5.3.2 – Plumbing: Basement

P13 – Domestic water heater - 1

P14 – Domestic water heater - 2

P15 – Domestic water system expansion tank

P16 – Domestic water meter and piping

P17 – Basement shower - 1

P18 – Basement shower - 2

Building Fire Protection and Life Safety Systems 4.5.4

1. Flammable Gas Storage
   1.1. Liquid Propane (LP) gas tank is stored in the apparatus room/Vehicle garage with commercial BBQ grill. **Code Violation.**

2. Fire Extinguishers
   2.1. Construction: One (1) fire extinguishers present first floor.
   2.2. Condition: **Derelict**

3. Alarm Systems
   3.1. No observable fire or smoke alarm system present. **Potential Code Violation.**
   3.2. No observable fire or smoke detectors present. **Potential Code Violation.**

4. Smoke Evacuation System and Stairwell Pressurization
   4.1. No Smoke Evacuation System or Stairwell Pressurization.

5. Sprinklers and Standpipes
   5.1. No sprinkler system present.

6. Emergency Lighting
   6.1. No emergency light fixtures present. **Potential Code Violation.**

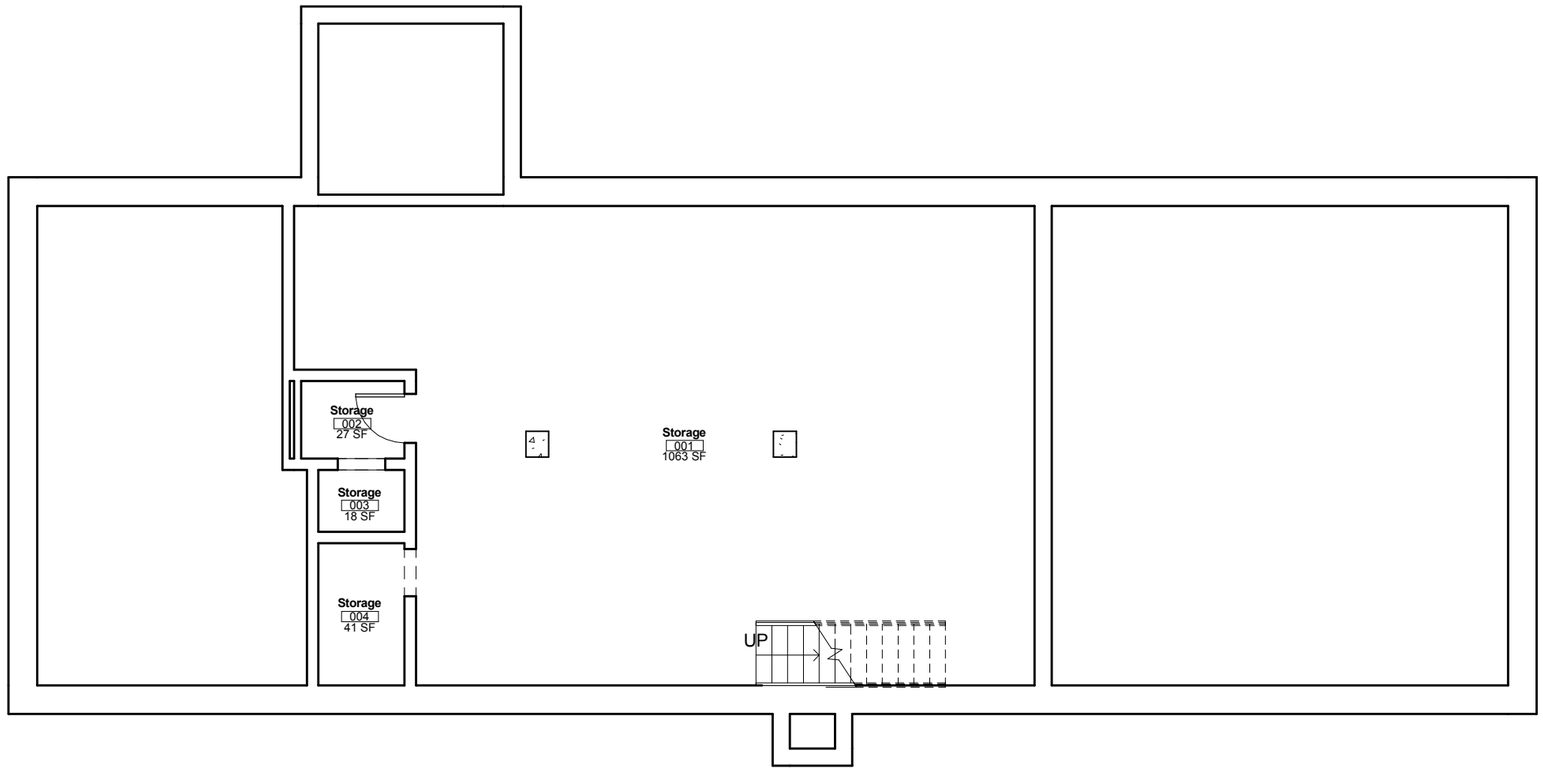
7. Ground Fault Interruption
   7.1. Construction: GFI's are present in kitchen.
   7.2. Condition: **Fair**

8. Conclusions:
   8.1. The building fire protection and life safety systems are physically deficient.

9. Estimates: Suggested remedies and Opinions of probable cost
   9.1. De minimus conditions
      9.1.1. Remove liquid propane (LP) gas tank for BBQ grill.
   9.2. Short-Term Costs
      9.2.1. Add a minimum of five (5) fire extinguishers
         9.2.1.1. Locker room: $250
         9.2.1.2. Apparatus room: $250
         9.2.1.3. Kitchen: $250
         9.2.1.4. Outside boiler room: $250
         9.2.1.5. Training room: $250
      9.2.2. Add a minimum of five (5) smoke-fire detector/alarms:
         9.2.2.1. Locker room: $350
         9.2.2.2. Kitchen: $350
         9.2.2.3. Basement landing: $350
         9.2.2.4. Outside boiler room: $350
         9.2.2.5. Training room: $350
      9.2.3. Add a minimum of One (1) GFI receptacles: $400
      9.2.4. Add a minimum of three (3) emergency light/sing fixtures – LED type: $1,400
      9.2.5. Add Carbon Monoxide Detector-Alarm in Boiler Room: $3,500

4.5.4.1 – Fire Protection and Life Safety Systems

FP1 – Extinguisher 1st floor (testing out-of-date)



1 Ground Floor Plan
1/8" = 1'-0"

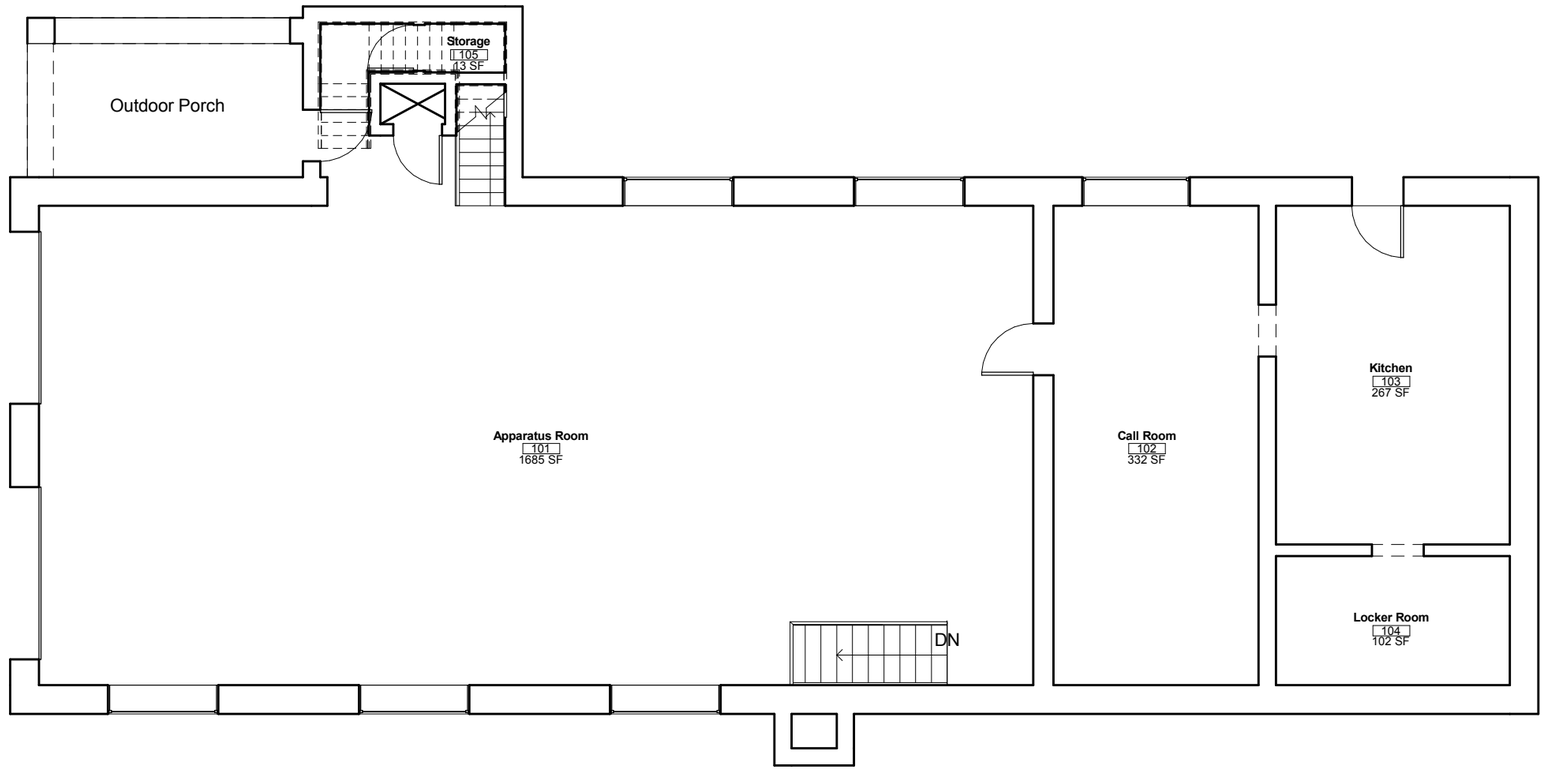
The drawings and related digital files are a schematic rendition of the existing conditions of the facility only. Please verify exact field conditions before using these for further construction and renovation work.

Massaro

Medic 4

City of Pittsburgh

Ground Floor Plan		A1.00
Date	08/07/13	
Drawn by	AS	Scale 1/8" = 1'-0"



1 L1 Floor Plan
1/8" = 1'-0"

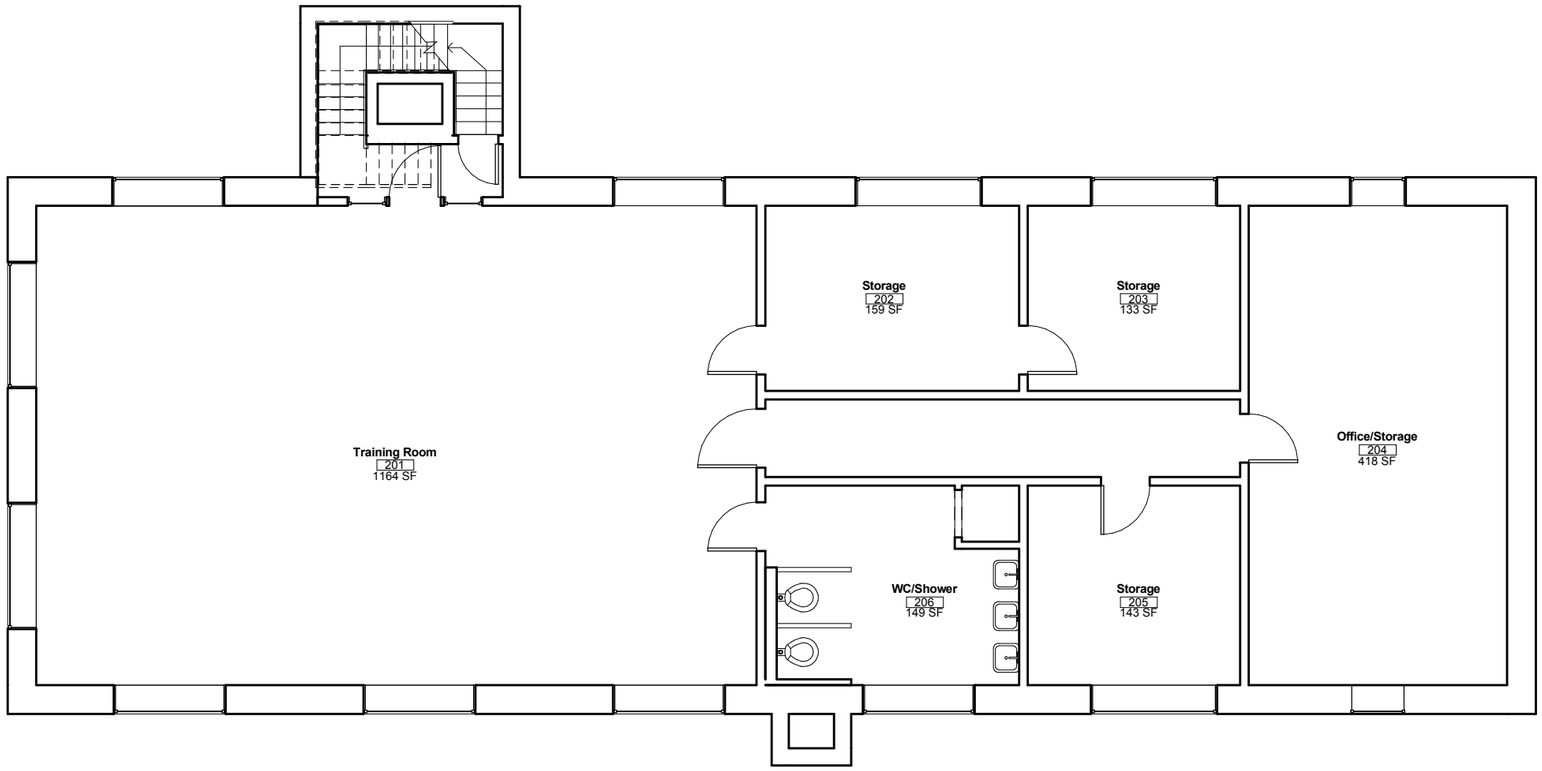
The drawings and related digital files are a schematic rendition of the existing conditions of the facility only. Please verify exact field conditions before using these for further construction and renovation work.

Massaro

Medic 4

City of Pittsburgh

L1 Floor Plan		A1.10
Date	08/07/13	
Drawn by	AS	Scale 1/8" = 1'-0"



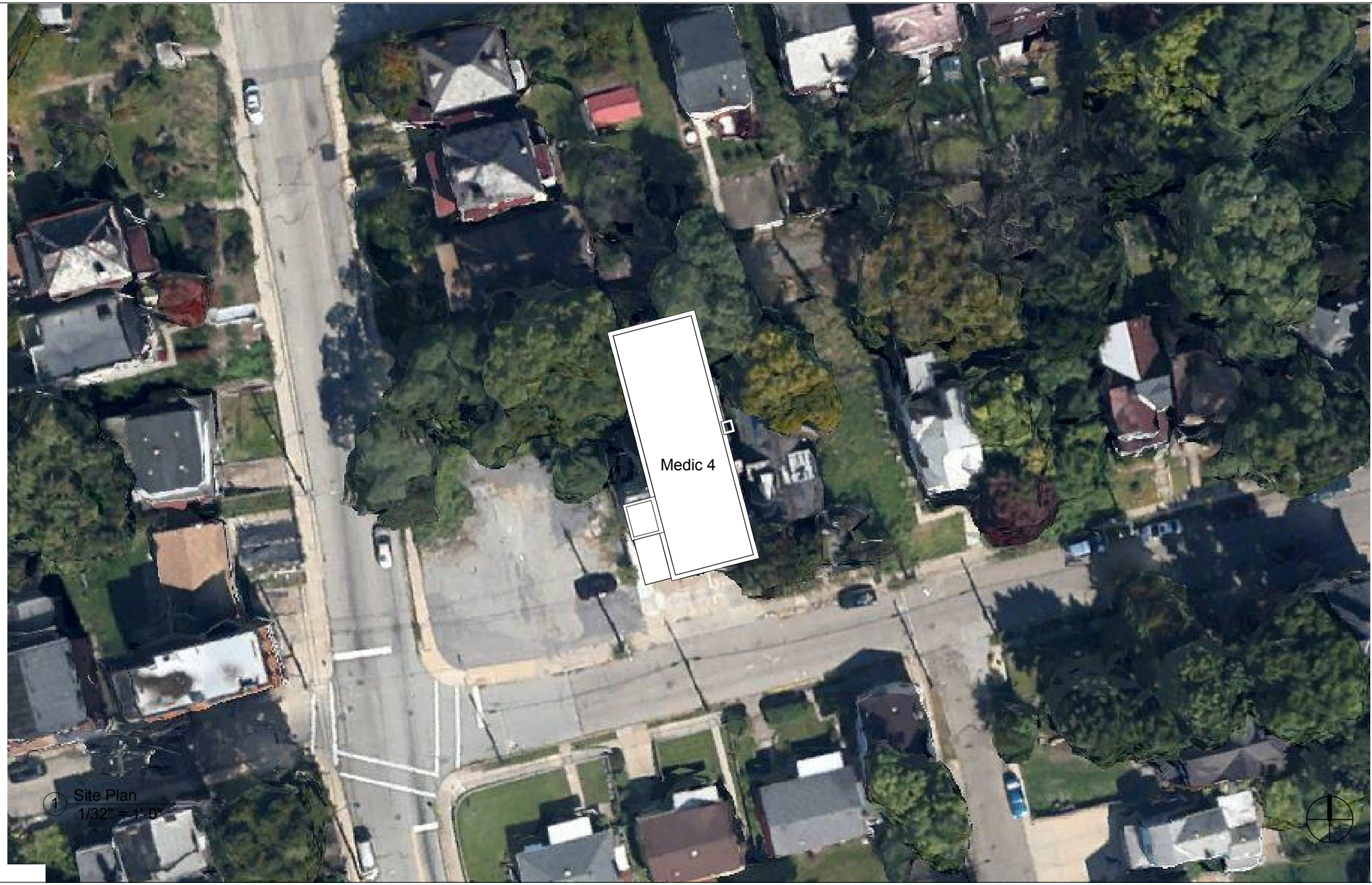
1 L2 Floor Plan
1/8" = 1'-0"

Massaro

Medic 4

City of Pittsburgh

L2 Floor Plan		A1.20
Date	08/07/13	
Drawn by	AS	Scale 1/8" = 1'-0"



1 Site Plan
1/32" = 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 4

City of Pittsburgh

Site Plan		C1.01
Date	08/07/13	
Drawn by	AS	Scale 1/32" = 1'-0"

B150 – MEDIC 4

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?	☐	☐	☑	NOT ACCESSIBLE
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

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)*

4.3 ASHRAE Level-1 Energy Audit

Executive Summary

The building systems for Medic 4 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.

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	7	1570	-	$167
February	0	7.8	1450	-	$161
March	0	7.9	1290	-	$147
April	21	7.1	1790	-	$180
May	94	7.8	1570	-	$175
June	182	11.4	2900	-	$260
July	397	8.4	2740	-	$275
August	206	9.4	3210	-	$319
September	78	9.3	2200	-	$239
October	0	8	2050	-	$218
November	0	7.1	1770	-	$189
December	0	7.4	1900	-	$202
		Annual Totals	**24,440**	**$0**	**$2,531**

2011 - Natural Gas

YEAR: 2011

Month	Heating Degree Days	MCF	Therms	Total Bill ($)
January	1240	107.5	1075	$1,291
February	917	91.4	914	$1,104
March	781	70.6	706	$850
April	350	63.3	633	$772
May	138	34.2	342	$431
June	12	0	0	$28
July	0	0.1	1	$29
August	1	0	0	$28
September	87	0.1	1	$28
October	401	11.4	114	$160
November	532	34.9	349	$431
December	849	65.5	655	$751
		Annual Totals	**4,790**	**$5,903**

2012 - Electricity

YEAR: 2012

Month	Cooling Degree Days	Billed Demand (kW)	Electric Use (kWh)	Demand Cost ($)	Total Bill ($)
January	0	7.8	1870	-	$202
February	0	7.9	1590	-	$181
March	4	9	1830	-	$207
April	7	7.6	1730	-	$189
May	114	9	1860	-	$210
June	181	8.3	1950	-	$194
July	347	9.5	2760	-	$252
August	226	8.2	2160	-	$202
September	110	8.2	2180	-	$205
October	24	6.8	1530	-	$151
November	0	6.6	1680	-	$159
December	0	6.8	1580	-	$154
		Annual Totals	**22,720**	**$0**	**$2,305**

2012 - Natural Gas

YEAR: 2012

Month	Heating Degree Days	MCF	Therms	Total Bill ($)
January	993	91.6	916	$1,039
February	860	74.6	746	$812
March	430	59.7	597	$652
April	456	34.2	342	$372
May	60	23.9	239	$264
June	29	10.8	108	$130
July	0	4	40	$61
August	1	3.8	38	$59
September	107	4.5	45	$67
October	343	19.9	199	$234
November	719	55.4	554	$615
December	795	66.4	664	$656
		Annual Totals	**4,488**	**$4,960**

2013 - Electricity

YEAR: 2013

Month	Cooling Degree Days	Billed Demand (kW)	Electric Use (kWh)	Demand Cost ($)	Total Bill ($)
January	0	8.3	1670	-	$171
February	0	8.1	1560	-	$163
March	0	7.6	1670	-	$166
April	22	6.9	1540	-	$153
May	92	7.2	1550	-	$156
June	-	8	2450	-	230
July	-	-	-	-	-
August	-	-	-	-	-
September	-	-	-	-	-
October	-	-	-	-	-
November	-	-	-	-	-
December	-	-	-	-	-
		Annual Sub-Totals	10,440	$0	$1,039

2013 - Natural Gas

YEAR: 2013

Month	Heating Degree Days	MCF	Therms	Total Bill ($)
January	988	91	910	$893
February	998	95.8	958	$939
March	911	88.9	889	$873
April	360	60.5	605	$599
May	151	32.9	329	$334
June	-	23.4	-	$242
July	-	-	-	-
August	-	-	-	-
September	-	-	-	-
October	-	-	-	-
November	-	-	-	-
December	-	-	-	-
	Annual Sub-Totals		3,691	$3,879

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 sections that follow will establish more a realistic target value in the context of a phased energy reduction program. The significant differences in these EUI rating will be treated in terms of potential opportunity.
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	24,710	kWh	3.412142	84,314	$ 4,336.74
Natural Gas	4,901	Therms	100	490,133	$ 5,243.11
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				**574,447**	**$ 9,579.85**

Gross Conditioned Area	**4565.00**
EUI (kBtu/ft^2)	**125.84**
Target Finder Score*	**145**
CBECS EUI (for comparable , kBtu/ft^2)	**88.3**
ECI ($/ft^2)	**$ 1.82**

Notes: The CBECS sampling pool for Public Order and Safety facilities is limited for buildings in the North East sectors and must be interpted accordingly.

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 - **Poor**
Fixture Deficiencies

- Lamp Efficiency (T12): **Poor**
- 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

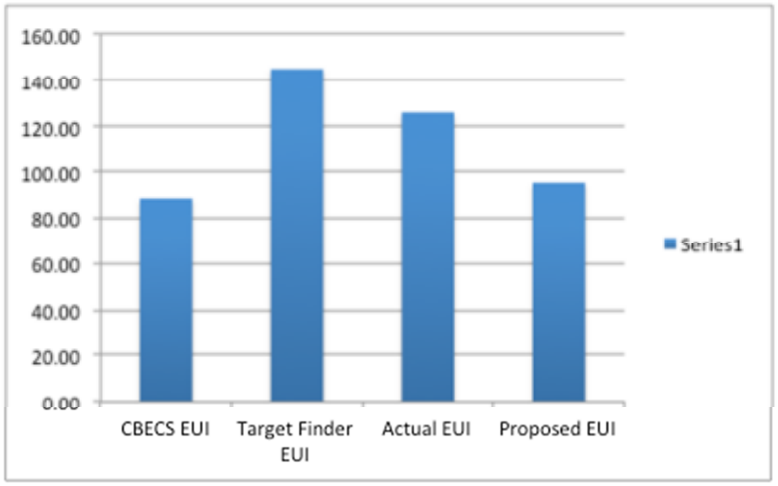
The EUI for Medic 4 is calculated at 125.84 kBtu/Ft2.

The CBECS (Commercial Building Energy Consumption Survey) and 'Target Finder' scores, calculated in the above ASHRAE Energy Performance Summary section, conflict with empirical evidence provided by utility consumption data, Degree-day weather patterns, and the energy systems condition assessment. However, these EUI ratings are useful as bracketing limits.

Basement areas are occasionally occupied, and without extensive terminal heating units, and are not treated formally as conditioned spaces.

An EUI of 95 is proposed as an initial working target pending level-2 modeling or future on-site system sub-metering and data logging efforts.

CBECS EUI	88.30
Target Finder EUI	145.00
Actual EUI	125.84
Proposed EUI	95.00



Potential savings from achieving proposed EUI target

Energy Type	Total Annual Use (EUI=100)	Units	Conversion Multiplier	kBtu	Total Annual Cost ($)
Electricity	18,654	kWh	3.412142	63,651	$ 3,273.92
Natural Gas	3,700	therms	100	369,990	$ 3,958.17
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				**433,641**	**$ 7,232.09**

Gross Conditioned Area*	**4565.00**
Actual EUI (kBtu/ft^2)	**125.84**
Proposed EUI (kBtu/ft^2)	**95.00**
Proposed ECI ($/ft^2)	**$ 1.58**

*Gross Conditioned Area excludes basement level, and the basis of the EUI calculations. Total building area including basement is 5,714 SF.

Proposed action plan: Phase #1

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

- One (1) Boiler Control
- Six (6) 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 piping
- Insulate basement level domestic water piping
- Re-lamping (T8) and De-lamping