



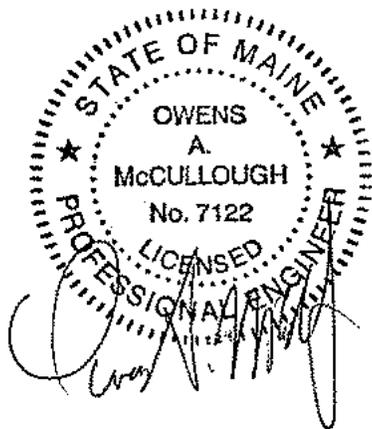
**SOUTH PORTLAND CENTRAL FIRE STATION
& POLICE STATION FACILITIES STUDY**

**684 Broadway & 30 Anthoine St,
South Portland, ME 04106**

CITY OF SOUTH PORTLAND, MAINE

AUGUST 25, 2021

18412



Grant Hays Associates, Inc.
ARCHITECTURE & INTERIOR DESIGN



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I. Executive Summary:

The purpose of this facilities study is to assist the City of South Portland with understanding the condition and needs of both the Central Fire Station and the Police Station. Through a facilities study, the city can begin the planning process and make informed decisions to address the current and future needs of these important public safety facilities. This facilities study is a comprehensive look at the buildings that included an architectural, structural, plumbing, electrical, air conditioning, heating, and ventilation assessments along with a review of the general site conditions, existing and future needs. The result is the development of a facility program for the foreseeable future of both Fire and Police.

The City of South Portland's work plan for FY22 also includes an ambitious goal "to use 100% clean renewable energy for municipal operations by 2040 and reduce greenhouse gas (GHG) emissions citywide by 80% by 2050. In addition to these goals, the City Council declared climate change an emergency in 2019 and expressed its desire to accelerate our transition away from fossil fuels by 2030." The City is therefore encouraging high-performance buildings (focusing on energy efficiency and electrification of heating and cooling), and transition to renewable energy" through "programs and policies to increase energy efficiency, electrification, and transition to renewable energy in City buildings." As part of this planning study, we have considered this goal and propose an integrated project approach to include high performing buildings through energy efficient building envelopes, systems and use of PV's and geothermal energy.

While there are many combinations of alternatives for renovation, new construction, or relocation, the following six (6) alternatives were identified as the most likely options for the Central Fire Station and Police Station.

- Option 1: Maintain a combined Police and Fire Station at the existing site with demolition, renovations, and additions as required to meet the space needs of each department. This option presents several logistical challenges if Fire and Police are to remain on site during the work. The result will be added phasing costs and time with inefficiencies for both Fire and Police during the construction process.
- Option 1a: This option is a hybrid of option 1 and eliminates new building construction with a focus on renovation of existing buildings only. It is important to note that this option does not full fill the programming needs and therefore will not accommodate spatial needs for both the Fire and Police.
- Option 2: Renovate the existing Central Fire/South Portland Police Station facility to create a standalone Police Station at the existing site and construct a new Fire Station at an alternate site. Under this scenario the new Fire Station would need to be constructed first, then move Fire to the new site and complete a phased renovation keeping Police onsite.

- Option 3: Demolish all of the existing Police and Fire Station except the Central Fire Apparatus Bay/Bunk House section and construct new additions at the existing site to accommodate the current programming needs of both departments, maintaining a combined facility at this location. Both Fire and Police will need to relocate to accommodate this option.
- Option 4: Construct a new three-story combined facility at the existing site outside the footprint of the existing facility, maintaining the existing facility on-site during construction, then demolish the existing facility after completion of construction and relocation for both departments. This option will create phasing challenges and will reduce useable space on the site during the construction process. As a result, both Fire and Police will need will experience loss of useable site space during construction and will experience significant operational inconveniences.
- Option 5: Temporarily relocate Police Department to an alternate site, demolish existing Police facilities, construct a new Fire Department on the site, then demolish the existing Fire Department and construct a new Police Station.
- Option 6: Construct a new combined Police and Fire Facility at an alternate site, demolish or re-purpose the existing facility.

Each of the six (6) options considered provides unique opportunities and constraints. Logistically, there will be practicable difficulties to maintain a presence at the current site under any of the alternatives due to the inherent space conflicts between new construction and maintaining an existing operation at the same location. The Police Station has more flexibility to relocate during construction or relocate entirely to another site since the Police Department covers the entire City and is less location-dependent as compared to the Fire Department.

Another important consideration will be the public's sentiment on the location. If an alternative is chosen to relocate one or both of the services, how will that be perceived by the public at large? As presented in this report, the costs are substantive for any of the options chosen. It is clear from this study, the facilities as they are today, are antiquated and not sufficient for the future of delivering emergency and police services to the community.

Our assessment suggests that in the Interim 3-5 years, the current facilities could operate basically "as is" assuming one of the above six (6) options would be planned, designed, and implemented during this time. During this interim period, the city must understand that some improvements may be needed such as exterior maintenance, roofing repairs, potential building HVAC systems repairs/replacements, modifications to accommodate apparatus, building controls repairs/replacement, and other related ongoing maintenance of aging building systems that are at or near their life expectancy.

Should the City decide to continue in the existing buildings beyond the 3-5 years, the cumulative impact of longer-term operational needs would result in progressively more substantive improvements over time due to building inadequacies, code requirements, and

thresholds requiring next tier investments. Examples include IBC requirements and ADA requirements for making buildings accessible and energy efficiency/sustainability. Additional, egress improvements, the need for elevators, structural modifications, building envelope improvements, HVAC systems for improved ventilation, sprinkler systems, and other related life safety requirements can come into play depending on the level of alternations to a building. The result would be significant investment in buildings that are antiquated, not in line with sustainability goals, and no longer able to meet the operational and functional needs of both departments.

While the facilities are serviceable with limitations at this time, investments in the facilities will be needed in the near future (3–5-year timeline) with longer more substantive improvements including major renovation and/or new construction beyond the 3–5-year timeline. Since it will take upwards of 3 to 4 years to plan, design, and construct a major project of this type, consideration will need to be given to a direction in the near term to avoid unplanned investments in the current buildings. It is important to note the Central Fire and Police Buildings are aging infrastructure with impending maintenance needs in the building envelopes, mechanical systems and contain non-code compliant areas as well as energy inefficiencies. The Allied report in Appendix B provides a detailed description of many building system deficiencies.

II. Existing Conditions

1. Central Fire Station:

General Description:

The existing Central Fire Station consists of a single-story, Small Apparatus Bay located at the rear of the Dispatch Facility, a two-story section which houses the Large Apparatus Bays, Decon Room, Kitchen/Dining, and Bunk Rooms, and a Hose Tower. The facility was constructed in approximately 1953.

Building Summary

Building Attributes	Central Fire Station
Square Footage	14,288 (Assessor)
Year Built	1940's
Type of Construction	Masonry
Location	684 Broadway
Parcel Size	1.08 Acres

Building Description:

The existing Central Fire Station is a masonry-bearing exterior wall structure with steel-framed roofs and is currently connected to the 1997 Dispatch Facility with a secured corridor. The Fire Station is comprised of a two-story main building and a single-story rear ell. The two-story section houses the 4 large apparatus bays and firefighter offices on the first floor, with bunk rooms, restrooms, kitchen, and dining areas in the second-floor living quarters. The rear ell houses 4 small apparatus bays, mechanic and maintenance personnel spaces, as well as storage for Hazmat/PPE supplies. The 4-story remote training tower structure behind the station is also constructed of masonry and steel and is utilized for firefighter training scenarios.

The existing fire station is a predominantly slab-on-grade structure with a small basement area for the Boiler room under the office portion of the first floor. The building is approximately 14,300 square feet in total area and is predominantly classified as Storage Use, Ordinary Hazard. Additional use classifications are Business, Residential, and Assembly. The construction classification for the facility is Type III, Combustible / Non-Combustible / Unprotected. The building is not sprinklered and has a detection alarm system. The occupant load based on the current code tabulations for the mixed uses would be 173 maximum occupants. This relatively high occupant load total is due to the second floor Day Room (Dining & TV areas)

classification as an Assembly use. It should be noted typical occupant loads for the Fire Station are 8-10 people per shift.

Exterior Building Conditions:

The exterior walls of the Fire Station are constructed of uninsulated multi-wythe brick masonry typical for a 1950's fire station, with cast concrete art-deco pier caps, keystones, sills, lintels, arches, and entablatures. The brick masonry has been repaired (repointed) in various locations over time to address weathering issues. The cast concrete elements are generally in fair-to-good condition, except for the three-story northeast corner section, which has experienced significant deterioration. This is visually evident from both the exterior and the interior, as exhibited by the peeling paint and decomposition of interior wall and ceiling plaster finishes due to moisture migration. The exterior spalling of concrete pieces from overhead sections has posed a significant safety issue around the ground-level entrance, fire apparatus bay overhead door, and in general for grounds maintenance. This area has been periodically spot-repaired, but a whole-scale solution has not been incorporated to date. A substantial effort would be required to replace these cast sections due to their Art Deco design and method of replacement requirements.

The exterior fenestration components have been replaced in the past decade. Apparatus bay overhead doors have been replaced with fully weather-stripped metal insulated sectional doors on motorized operators. All the windows have been replaced with thermally insulated double-hung units, some of which have difficulty operating at this time. The exterior pass doors have been replaced with self-closing insulated hollow metal doors and frames.

The original roof has been replaced with an adhered EPDM roofing system. The roof has been repaired in various locations over time, mostly along the edges where it ties into the protruding perimeter masonry and cast concrete deco elements and at the original stair tower and hose tower (no longer used since smoke within the tower for smoke training gets sucked into the PD and Dispatch HVAC and overall condition is poor). The roofing continues to be a fairly consistent source of maintenance due to leakage in these areas.

As none of the existing exterior walls are insulated, and the existing roof insulation is moderate, a substantial effort and investment would be required to bring the existing building envelope into current energy code compliance.

Interior Building Conditions:

The interior load-bearing walls at the ground floor level are three wythe thick painted brick masonry, similar to the exterior walls, and appear to be in fair condition. The non-load-bearing walls are plaster-finished framed construction and are in fair to poor condition, showing their age in some locations concerning spalling plaster, peeling paint, and damage from water migration from the exterior. The bathroom residential-type wainscot wall finish panels are in fair condition, and the residential-type wood paneling wainscot in one of the offices is also in fair condition.

The ground-level floor is cast-in-place concrete with an epoxy coating finish in the main apparatus bay and unfinished concrete in the small apparatus ell bays. The main apparatus bay floor exhibits significant cracking at the overhead door locations. Minor cracking is also present throughout both the main and ell apparatus bays. The office floors consist of carpet and vinyl tile, with a vinyl wall base. These finishes are in poor condition, showing evidence of significant wear, and delamination (vinyl products) in many locations.

The ground floor ceilings are plaster-finished in the main Apparatus Bay and the Stair Hall leading to the offices. The offices have suspended acoustical tile ceilings. The small apparatus bays in the ell have exposed steel bar joists and metal deck structures.

Ground floor level interior doors and frames are wood with predominantly clear finishes at the doors and paint at the frames. The doors have knob-type door hardware, except for the door leading from the main apparatus bay to the office area hall, which has a push/pull hardware set. The doors and frames on this level are in poor condition, do not have code-compliant hardware, and are not fire-rated in the required locations. Additionally, the interior wall borrowed lies at the main apparatus bay wall and the main office wall common with the stair hall are not fire-rated assemblies, as are required in fire egress corridor walls for mixed-use structures without a sprinkler system.

The second-floor level interior walls are plaster-finished framed construction, except at the TV Room, which has painted sheetrock in lieu of plaster at its framed walls. This room was not part of the original construction and was “carved out” of the center Dining area space. These walls are in mostly good condition. The walls in the stairwell location are in poor condition due to the aforementioned moisture migration issues at the exterior cast concrete/brick masonry components. These walls have spalling plaster and peeling paint. The bathroom walls have the same residential-type wainscot panel finish

system as the first floor. These locations are in poor condition, with damaged panels, rusty trim components, and deterioration in general.

Flooring finishes consist of vinyl tile predominantly, with vinyl sheet flooring at the stair, and carpet at the TV Room. One of the Bunk Rooms has vinyl plank flooring in a dark woodgrain pattern. Although well maintained for cleanliness, the vinyl tile and sheet floor materials are showing their age from general wear, and are becoming difficult to maintain. There are multiple patterns and colors from replacement efforts, which have left a very incohesive appearance to the facility.

Second-floor level ceilings are suspended acoustical tile in the stair and associated corridor, and the bunk rooms. The ceiling in the stair and associated corridor are in poor condition with evidence of significant water damage to the ceiling tile and the original plaster finish at the structure above. The ceilings in the bunk rooms are in fair condition, with some rooms showing evidence of sagging, which may be due to anchor failure at the original plaster finished structure above. The remaining spaces have smooth finished plaster ceilings in good condition.

The existing bathrooms are in poor condition concerning wall and floor finishes, especially the private bathroom off the first bunk room near the stair. The common bathroom is multi-user non-gender specific, has good quality fixtures, as well as a fairly new sink base vanity and countertop. The existing toilet compartments do not have latching doors and offer minimal privacy. The urinal is in an open space opposite the dual vanity. None of the bathrooms are code compliant from an accessibility standpoint. The common bathroom is not compliant with the Maine plumbing code with respect to gender-required fixture quantities or separation. The existing shower is located in the same space as the stack washer-dryer. The shower unit is in fair condition. The room finishes are in poor condition. The room is also not compliant with accessibility requirements.

The original two Fire Pole locations are still operational. They both have the original brass protection rails around the floor openings, which are not compliant with current codes.

The stair to the third-floor level, which leads to an open storage room and an access door onto the roof, also exhibits the same wall and floor finishes issues due to moisture migration thru the exterior walls. Multiple areas exhibit patching efforts over time, with some areas still in progress. The finishes in the Stair/Storeroom are spartan, with the vinyl floor tile in need of replacement. The wood-framed stair to the roof access door does not have a guard wall on the open side and does not have handrails on either side. The exterior roof access door is a residential-style metal insulated door with an

insulated glass half-lite. The door has a residential knob-style lock and does not have a closer. This opening should be upgraded to a commercial quality door, frame, and hardware.

Site:

The Central Fire Station is located on a shared parcel of land with the Police Station that is approximately 2.5 acres in size. Access to the fire station is from Armory Street and a fire apparatus apron onto Broadway. We would note that Armory Street is still listed as a public street but the Fire and Police have gated the entrance after the access to the abutting convenience store. We understand from City legal counsel, this section of Armory Street could be removed as a City Street by Council Action and rolled into the property.

The project site is fully developed with buildings and pavement with limited parking on site. The site is served by public water, sewer, and gas service. A review of the FEMA flood plain maps indicates the basements areas are with the 100-year flood zone and that periodically, flooding has been reported.

A small parking lot exists along Anthoine Street with one-way access adjacent to the Police Dispatch area. The third point of access is from Anthonie Street adjacent to the 1967 Police building and provides access to employee parking and Police Cruiser parking.

Under the planning scenarios, the site is adequate to accommodate the needs of the facility provided that the parking and circulation areas are reconfigured including building modifications. The surface pavement is aged and showing signs of advanced pavement deterioration and requires replacement. Given the spatial needs for a combined facility, the entire lot is needed for hardscape to accommodate parking, circulation, and building areas. As a result, there is little space available for landscaping or greenspace.

Redevelopment of the site will require new utility services and storm drainage. Under the City of South Portland ordinance, stormwater treatment would be required for a new facility on this location since more than 15,000 square of the land area will be disturbed. Space constraints on site are expected to require a below pavement stormwater chambered treatment system.

Since this is a public safety site, fencing, and gated access will need to be integrated into the facility planning and design.

Parcel Size: 2.5 Acres +/- Including a portion of Armory Street
Zoning: Shoreland Overlay and Residential District A

The use as a Fire and Police facility is considered a municipal building and therefore a special exception use under the Residential District A. The proposed use will not be able to comply with the Residential District A performance criteria separation between buildings) and may be subject to additional criteria under the special exception requirements and buffering. As a result, we believe the City Planning Department and Legal Counsel should be consulted to identify if zoning ordinance changes are needed or if a contract zone would be needed for this redevelopment project.

Primary building concerns include:

- a. The inside of the building has only passive ventilation and there are signs of moisture and potentially mold accumulation.
- b. The exterior of the facility (concrete façade near the entrance) is spalling and becoming a fall hazard to people that might use the entrance or walk under the entrance.
- c. The entire building systems are antiquated and inefficient.
- d. Building hazardous materials to included PCBs in window glazing and asbestos-containing materials requiring a full hazardous building materials investigation which has been completed.
- e. No sprinkler system.
- f. Non-compliant code considerations (egress, life safety, electrical, ventilation, others).
- g. The existing boiler (although recently replaced) is a steam boiler with poor operational efficiency.
- h. Interior finishes and space are aged and in need of modernization.
- i. Ventilation is limited to operable windows and should be improved for better climate control.
- j. New modern building control system is needed for energy efficiency.
- k. Building envelope is 1950's and energy efficiency is limited.
- l. Lighting controls and occupancy sensors recommended.
- m. Bathrooms need modernization and ventilation.
- n. Kitchen is not code compliant.
- o. ADA access improvements and facilities are needed.
- p. Bay door heights and space are inadequate.
- q. For additional detailed information on the condition of the systems and materials, refer to Appendix B and Appendix C for a systems assessment report and hazardous materials assessment report.

2. Police Station

General Description:

The Police station is comprised of two buildings with varying heat systems and limited ventilation/air conditioning. The relatively newer section (late 1990s) is approximately 13,800 square feet in total floor area. The building includes a forced air (heat/cooling)

system that has limited controllability with hot/cold spots within the building.

The older section of the building was constructed around 1967-1972 and is approximately 12,300 square feet in total building area. This section of the building relies primarily on passive ventilation and has experienced several interior renovations primarily to re-partition the interior space. The heat is primarily hot water with some areas that include wall-mounted heat pumps providing heating and air conditioning. A central ventilation system does not exist for the first-floor area. Ventilation is primarily passive relying on operable windows for circulation. The basement of both building is located within the 100-year flood elevation.

Building Summary

Building Attributes	Central Fire Station
Square Footage	13,884 (1990's) & 12,322 (1967), Assessor
Type of Construction	Masonry
Location	30 Anthoine Street
Parcel Size	1.20 Acres

Building Narratives:

a. 1967 Public Safety Building:

The existing Public Safety Building is a two-story masonry & steel structure consisting of a fully built-out basement and an above-grade-level. The building is 12,220 square feet in total area and is attached to the 1997 Dispatch Facility with a masonry & steel 8'-0" wide connector. The use classification of the facility is Business Use, Ordinary Hazard. The construction classification of the facility is Type III, Combustible/Non-Combustible/Unprotected. The building is not sprinklered and does not have a fire alarm system, although there are smoke detectors in a few corridors and rooms. The occupant load based on 100 sf/occupant would be 123 maximum people.

The exterior walls are cast-in-place concrete at the foundation with concrete masonry units and brick veneer cavity wall construction at the first-floor exterior bearing walls. The roof is framed with steel beams, bar joists, and a metal roof deck. Interior bearing walls are concrete masonry units. Interior partitions have been constructed over the years in the basement level to create the offices, storage rooms, shooting range, and other support spaces in addition to the originally built boiler room and custodial workshop. The first-floor spaces have remained primarily constructed except for the re-purposing of the original Waiting Room and Central Records spaces. These rooms were renovated into the Community Response Unit and Major Crimes spaces when the Dispatch Building was added in 1997. The original entry vestibule was also removed from the building. All of the original first-

floor walls were constructed with concrete masonry units. Subsequent partitions are drywall/framed construction.

Exterior doors are painted hollow metal, exterior windows are replacement casement units with fixed transoms above and painted panels below. Exterior finishes are primarily brick masonry veneer with exposed concrete piers, painted fascia panels, and aluminum louvers.

Interior finishes consist of vinyl tile and ceramic tile flooring, painted CMU, wood paneling, and painted sheetrock walls with vinyl base, painted exposed structure ceiling (partial lower level), and suspended acoustical tile ceilings. Doors were painted hollow metal and solid core wood in painted metal frames in original partitions, with hollow core wood in wood frames at non-original construction (paneling and sheetrock/framed partitions). There are multiple locations in which the non-original partitions do not extend to the underside of the floor structure above the basement level. A toilet room has been added in the basement level under one of the flights of the Anthoine Street stair.

b. 1997 Dispatch Facility

The existing Dispatch Facility is a two-story masonry & steel structure consisting of a fully built-out basement and an above-grade-level. The building is 13,340 square feet in total area and is attached to the 1967 Public Safety Building with masonry & steel 8'-0" wide connector. The use classification of the facility is Business Use, Ordinary Hazard. The construction classification of the facility is Type III, Combustible/Non-Combustible/Unprotected. The building is fully sprinklered per NFPA 13 and has an NFPA fire alarm system. The occupant load based on 100 sf/occupant would be 134 maximum people.

The exterior walls are cast-in-place concrete at the foundation with light gage metal framing and brick veneer cavity wall construction at the first-floor structural steel primary frame system. Cast stone panels sit atop the brick veneer at the roofline. The roof is framed with steel beams, bar joists, and metal roof deck. The roofing system is adhered EPDM atop rigid insulation. Interior first floor partitions are primarily non-load bearing light gage metal framed with painted sheetrock, except at the stair adjacent to the elevator, which has load-bearing concrete masonry unit walls. The first-floor spaces have remained as primarily constructed. The basement level was originally designed to have stair and elevator enclosure walls, as well as an enclosed HVAC/Boiler Room, and a large storage room with the sprinkler room located within. These partitions were light-gage metal framed with sheetrock, except the aforementioned concrete masonry unit stair walls at the first floor. The original drawings indicate the sheetrock thickness at 5/8" at all detailed locations. Currently, the basement level includes non-original spaces for Police Records, Fire Records, Joint Information Center, Large Conference Room, Emergency Operations Center, IT Room, Server Room, Toilet Room, and a Fitness Room.

Exterior doors are a combination of wood/glass doors in metal frames and painted hollow metal doors in metal frames. Exterior windows are aluminum-clad wood units with insulated glass. Exterior finishes are brick masonry veneer, concrete masonry units, metal siding, cast stone panels, and polished granite panels.

Interior finishes consist of quarry tile, vinyl tile, and carpet flooring; painted sheetrock walls with predominantly vinyl base on the first floor and painted CMU walls in the basement; and suspended acoustical ceilings. The areas with quarry tile flooring have quarry tile wall base. Interior doors are solid core wood with clear finish in painted hollow metal frames.

Primary building concerns include:

1967 Building

- a. Antiquated controls that can no longer be serviced need to be replaced. New Central Direct Digital Control Building Automation System.
- b. Mechanical and ventilation systems are in need of modernization.
- c. Exhaust hood for Range and new ventilation system needed.
- d. General Roof Maintenance
- e. Basement Level Code Compliance Improvements
- f. First Floor Code Compliance Improvements
- g. The basement of both buildings is located within the 100-year flood elevation.
- h. For additional detailed information on the condition of the systems and materials, refer to Appendices B and C for a systems assessment report and hazardous materials assessment report.

1997 Addition

- a. Replace Non-code Compliant Boiler Combustion air system.
- b. Mechanical and ventilation systems require modernization and to provide better controllability of systems.
- c. Exhaust hood and system needed for Range.
- d. Roof maintenance and possible replacement are needed.
- e. Basement Level Code Compliant Improvements
- f. First Floor Code Compliant Improvements
- g. The basement of both building is located within the 100-year flood elevation.
- h. For additional detailed information on the condition of the systems and materials, refer to Appendix B and Appendix C for a systems assessment report and hazardous materials assessment report.

Common Concerns to Both Buildings:

- a. *Inadequate space to accommodate current and future needs (Refer to programming assessment).*

- b. Building finishes and spaces are aged and don't adequately service modern Police operations.*
- c. Vehicle garage undersized.*

Site: Refer to site narrative under Central Fire Station.

III. Programming:

The programming phase of a planning study includes a review of each use, spatial needs currently and in the future to determine the adequacy of the existing building space and what additions might be needed to accommodate the full operational program for the planning period. This work was completed by Grant-Hays Associates.

The space needs for the City of South Portland’s Public Safety Facility, including a fully modernized Central Fire Station (CFS) and Police Station (PD) would require a building area size of 60,000 square feet. The existing size of these departments on the current parcel at 684 Broadway is 38,747 square feet. The current facility is undersized based on the current needs assessment.

The Summary of Space Needs by Department is as follows:

Current Police Department:	17,070 sf	(6,500 sf in Flood Plain)
Programmed Police Department:	28,420 sf	(Total Space Needed)
PD Space Deficiency	- 11,350 sf	(-17,850 sf)
Current Central Fire Station:	25,757 sf	(6,500 sf in Flood Plain)
Programmed Central Fire Station:	31,645 sf	
CFS Space Deficiency	-5,888 sf	(-12,388 sf)
TOTAL FACILITY SPACE Deficiency	-17,238 SF	(-30,238 sf) (Bulk deficit) (flood plain deficit)

The lower floor levels of the existing Police Station (originally called “Public Safety Building”) and the Dispatch Facility are below the current flood plain elevation. This equates to 6,500 square feet of area for each department with the potential of flooding during an emergency weather event. An additional 13,000 square feet of space would need to be added to the total facility delta to get a sense of the magnitude of new construction required if the existing buildings are to receive alterations and additions with the goal of attaining an essential facility classification.

CENTRAL FIRE STATION SPACE NEEDS

Central Station does not meet the current fire apparatus needs for the department. Due to the age of the facility (1953), the existing 4 large apparatus bays limit the size of fire engines, and do not accommodate a ladder truck. The existing overhead door sizes are too small for the larger apparatus, and the existing ramp pitches excessively from the bays down to Broadway. Valuable minutes are lost just getting out of the station and onto the public way.

The current apparatus bay configurations accommodate the following 9 apparatus:

- 1 Engine
- 2 Ambulances
- 1 Hazmat Trailer

- 1 Four-Up Gator
- 4 Command Vehicles
- 1 Prime Mover (Parked Outside)
- 1 Service Truck (Parked Outside)

Central Station needs to accommodate the following 14 apparatus:

- 1 Ladder Truck
- 2 Engines
- 2 Ambulances
- 1 Prime Mover
- 1 Foam Trailer
- 1 Four-Up Gator
- 5 Command Vehicles
- 1 Service Truck

Currently, Central Station lacks the following appropriately-sized apparatus bay dedicated support spaces:

- DECON / Gear Wash room
- Turn Out room
- Gear repair / tank compressor room
- Special operations storage room (Hazmat equipment)
- EMS supply room
- Training gear storage room
- PPE inventory room
- CPAT storage room
- Workshop & general storage rooms
- Outdoor maintenance equipment storage room (Snowblowers, lawn mowers, etc.)
- Restroom (Accessible)
- I.T. room

Central Station also needs firefighting equipment cold storage building, which can be a freestanding remote structure on the site, preferably adjacent to the outdoor training area.

In addition to Living Quarters' accessibility, building, and life safety code-related deficiencies, Central Station lacks the following dedicated spaces:

- Single-user shower rooms (3 required)
- Laundry room
- Linen's storage room
- Custodial room
- I.T. room
- Large kitchen suitable for multiple food preparers

The existing Central Station administrative spaces are undersized, lack the necessary conference and training rooms, and are generally not located in a manner conducive to operational efficiencies. One major issue, as previously stated, is the Emergency Operations Center (EOC/EMLT), Joint Information Center (JIC), and EOC Training Rooms are currently located in spaces within the flood plain, as well as records storage. The fitness room, also located in the

basement, is directly below the current Fire Chief, Administrative Assistant, and Deputy Chief's Offices. This presents an acoustical issue during normal business hours. The administrative area needs the following upgrades in addition to the currently identified spaces:

- Larger Chief office
- Assistant Chief office
- Larger Deputy Chief offices (4 positions)
- Larger Fire Inspectors office (2 positions)
- Spare office (Light Duty)
- Larger Administrative Assistant area
- Large Conference room (dividable for 2-10 person spaces)
- Centralized records storage room
- Multiple single-user Restrooms

Spaces that should be located adjacent to the apparatus bays are the Fitness room and the Fitness Lockers. These spaces could also be located adjacent to the living quarters, if necessary. They should not be located adjacent to the administrative areas.

POLICE STATION SPACE NEEDS

South Portland Police Department occupies the original 1967 Public Safety Building and half of the 1997 Dispatch Facility on the same parcel as the Central Fire Station at 684 Broadway. Both structures were designed as single-story buildings with full basements. The grade-level floors were fully built out with occupied spaces for offices, conference rooms, shared functions with the Fire Department, and related support spaces. Both basements were unfinished storage space, as it was apparently known during the design phase this level was in the Flood Plain. The city has subsequently built out the basement levels of both buildings with Police and Fire Department function spaces. As previously indicated, the basement level is prone to flooding during major weather events, and as such, the spaces have required repairs from water damage, as well as mold-mitigation.

Most of the spaces within the 1967 building are too small to adequately house the necessary personnel and functions, as Police policies, community interaction, and strategies have evolved over the past 50 years. The spaces in the main floor level of the Dispatch Facility are predominantly adequate in size, but lack space for all the administrative and public interaction functions necessary to meet current needs.

The Department has 56 sworn officers and consists of the following personnel:

- 1 Chief
- 1 Deputy Chief
- 2 Administrative Assistants
- 4 Lieutenants
- 7 Sergeants
- 28 Officers
- 1 Crime Analyst
- 1 Evidence Technician
- 1 MDEA
- 2 School Officers

- 1 Court Officer
- 1 Cyber Officer
- 1 Sergeant Detective
- 6 Detectives
- 1 Animal Control Officer
- 1 Mechanic
- 1 Behavioral Health Liaison

Patrol shifts consist of 4 officers (minimum) and 1 supervising officer. The existing facility is lacking the following functional spaces:

- Sally Port
- Secured Holding Area (with cell and restroom)
- SWAT Gear Secured Storage (with gear lockers)
- SWAT Gear Changing Room (with personnel lockers)
- Crowd Control Gear Storage Room
- Climate-Controlled Evidence Storage Rooms (Narcotics/Bio/Arson)
- Cyber Evidence Storage Room
- Driving Simulator Room
- DECON Room
- Drug Take-Back Storage Room
- Vehicle Evidence Storage Bay
- Mechanic's Office/Restroom/MEP Room
- Secured Interview Rooms
- Polygraph Room
- Media/Recording Room
- Community Meeting/Multi-Purpose room

The following existing spaces are undersized for current staffing needs:

- Briefing Room
- Patrol Firearms Storage
- Break Room & Kitchen
- Men's Lockers
- Men's Showers/Changing
- Women's Lockers
- Women's Showers/Changing
- Nursing Room
- General Storage
- Restrooms (single-user)
- Sergeant's offices
- Courts Officer office
- Mail/Copy/Supplies room
- IT/Server room
- Conference rooms
- Custodial room
- Shooting Range (non-operational for live fire)

Ideally, a new police station would group all the patrol and apparatus type activities, along with all primary public interaction activities on the first-floor level. Secondary public/community functions and first-tier administrative and investigation functions would occupy the second-floor level. The third-floor level would contain the balance of department functions, as well as modest future expansion space.

IV. Code Assessment

The following code narrative addresses general building life safety code considerations. This assessment was prepared by Grant-Hays Associates.

1967 PUBLIC SAFETY FACILITY

Refer to drawings A-1 and A-2 for specific code issues throughout this portion of the facility.

NFPA 101 Life Safety Code/International Building Code:

Since this building is not sprinklered, the egress components (exit corridor walls, doors and frames) are required to have a one-hour fire rating. It appears none of the existing corridor walls are fire rated and the existing door/frame assemblies do not have fire-rated label tags. A significant amount of these doors does not have automatic closers, which are required at fire-rated egress corridor locations.

A wood-framed storage closet was constructed in the Anthoine Street egress stairwell at the first-floor level, and a toilet room was constructed at the basement level of the same stairwell. Both these spaces are non-compliant since they are not fire rated and in a non-sprinklered egress component. A non-compliant wood-framed storage closet was also constructed at the end of the egress corridor at the rear stair of the basement level.

Some of the basement level egress corridor partitions do not extend from the floor to the ceiling structure above, thereby making them non-compliant for the required fire rating.

Storage rooms over 100 square feet in area must be fire-rated. It appears none of the basement level storage rooms over 100 sf have rated partitions or rated door/frames with closers.

The stairwells have handrail, treads and riser dimensions that comply with the building code in effect in 1967. However, none of these components comply with the current building code and would require reconfiguration if a significant renovation to the building is performed. Similarly, the travel distance from a remote point in the shooting Range to the first-floor exit via the Anthoine Street stairwell exceeds the 200' allowable travel distance. The travel distance from this same point of remoteness out the rear stairwell on the first floor complies with the allowable travel distance.

The stove at the first-floor kitchen does not have the required NFPA suppression exhaust hood.

The doors to the boiler room and the rear stairwell at the basement level do not have the required positive latching hardware.

Americans with Disabilities Act:

None of the toilet rooms or shower rooms comply with the dimensional criteria of ADA

None of the Kitchen cabinet/counter heights, nor the sink area comply with the dimensional criteria of ADA.

A majority of the doors at the basement level do not have the required lever hardware for ADA compliance.

The basement egress stairwells lack the required designated Area of Refuge for ADA compliance.

ADA compliant access to the basement is provided via the elevator and connector corridor from the 1997 Dispatch Facility.

1997 DISPATCH FACILITY

Refer to drawings A-3 and A-4 for specific code issues throughout this portion of the facility.

NFPA 101 Life Safety Code/International Building Code:

This building has a full NFPA 13 sprinkler system and fire alarm system. There are four rooms in the basement level that were constructed at a later date that do not have sprinkler coverage; Closet 012, Fire Records 013, Police Records 014, and Police Records 015.

The stairwells have handrail, treads and riser dimensions that comply with the building code in effect in 1997. However, none of these components comply with the current building code and would require reconfiguration if a significant renovation to the building is performed.

The basement kitchenette does not have an NFPA suppression exhaust hood at the stove.

The basement level “vestibule” at the elevator has a one-hour rated partition assembly but the door/frame assembly does not have fire rated label tags.

The ramp connector to the 1967 Public Safety Building does not have handrails at each side in the basement level. There is a handrail at only one side at the first-floor ramp connector, code requires handrails on both sides of the ramp.

The first-floor rear fire exit exterior steps do not have the required handrails and guardrails, and does not have an ADA ramp.

The Anthoine Street fire egress stairs have a common lobby with the elevator. Code does not permit this configuration, as the egress stairs must have a separate fire-rated enclosure and travel path to the exterior means of egress. Additionally, the elevator & stair” vestibule” at the first-floor level does not appear to have fire-rated label tags on the door/frame/glass assemblies.

Americans with Disabilities Act:

The basement level kitchenette does not comply with ADA dimensional criteria for countertop height or wheelchair clearance at the sink location.

The first-floor rear fire egress exit does not have an ADA ramp (stairs only).

The first-floor main entrance ramp/walkway approach exceeds the maximum slope allowed by ADA and does not have railings.

CENTRAL FIRE STATION

Refer to drawings A-5 and A-6 appended to this report for specific code issues throughout this portion of the facility.

NFPA 101 Life Safety Code/International Building Code:

The existing two-story building consist of residential living space above fire apparatus storage bays and offices. The building is not sprinklered, and has a basic coverage fire alarm system for the second floor living quarters.

Structures with second floor residential living spaces, such as the Bunk Rooms, Day Room, and the Dining Area, above a storage use must be sprinklered in accordance with NFPA 13. This is a significant code deficiency which will require attention once any level of alterations is pursued. Additionally, the existing basic level fire alarm system will need to be upgraded to current standards, which will entail adding notification devices to all the bunk rooms, restrooms, day room, and the entire first floor.

The first-floor offices are interconnected, which means a person travels thru one office to get to the next. Although not technically a "Suite", they qualify for a single egress due to the occupancy of less than 30 people and an exit travel distance of less than 75 feet to the nearest exit. The required fire rated door separating the Suite from the egress corridor has been removed.

The egress corridor, which also contains the stair to the second floor, does not have the required on-hour fire rating enclosure, as the walls have more glazing than is allowed. The doors leading into this exit corridor are not rated, and lack the appropriate positive latching hardware.

The existing stair does not meet current codes for tread and riser dimensions and lack compliant guardrails and handrails. The portion of the stair that accesses the basement boiler room is also non-compliant in width, tread, and riser dimensions, as well as lacks the required handrails. None of these components comply with current building codes and would require reconfiguration if a significant renovation is performed.

The living quarters on the second floor does not have a second means of egress, which is required. The existing single means of egress stair, as previously mentioned above, is non-compliant dimensionally, and does not have the required fire rated egress door at the second-floor level. The lack of a second means of egress as well as the lack of a sprinkler system and adequate fire alarm system coverage for this floor are significant code deficiencies. It should be noted fire poles are not legal means of egress. The two existing fire poles do not have code-compliant perimeter guards.

The living quarters kitchen stove has an alternative suppression hood, which the local AHJ has authority to approve for certain styles of “residential” ranges. If a commercial range is utilized as part of any future upgrade plan, a commercial suppression exhaust hood would be required.

The service stair from the Third level to the roof level does not have a guardrail on the open side, and does not have any handrails. This stairwell, which is open to the second-floor level, has a significant quantity of combustible storage in the form of wood framed shelves and cardboard boxes of paper files.

Americans with Disabilities Act:

Central Fire Station is currently accessed from the outside via the original entrance facing Amory Street, as well as off Anthoine street thru the Dispatch Building. The access thru the Dispatch Building offers an ADA accessible route. The original entrance off Armory Street will require a shim between the bituminous pavement walkway and the concrete entry slab for wheelchair travel. The existing entrance door at the rear Ell apparatus bays is not ADA accessible due the threshold elevation being one step up from grade.

None of the first-floor restrooms meet ADA dimensional criteria in size, fixtures, or accessories.

The front office (Day Watch) floor elevation is 8” above the main floor elevation and is not ADA compliant for wheelchair access.

The Anthoine Street fire exit door lacks the proper side wall clearance adjacent to the door hardware for ADA compliance wheelchair exiting. This issue also exists at the hall door separating the Offices from the main Apparatus Bay.

Office doors have non-ADA compliant knob hardware. Furniture and storage items are placed/stored so as to not allow for proper 12” -18” ADA side wall clearance for passage thru the door openings.

The stair to the second floor does not have ADA compliant height guardrails or handrails. The current configuration is not the correct height, lack proper top and bottom extensions, and are only on one side of the stair run. Tread and riser dimensions, as previously indicated, are non-compliant.

The second floor Residence Quarters are not ADA accessible due to the lack of elevator access.

None of the second-floor bathrooms, shower rooms, laundry room, or kitchen meet ADA dimensional criteria in size, fixtures, or accessories.

All the second-floor doors have non-ADA complaint knob hardware, except at the TV room.

The TV room does not have a designated floor area for a Wheelchair, but the furniture placement can be altered for this accommodation if the need arises.

In summary, Central Station will require significant investment to be brought into current building, life safety, and accessibility code compliance.

Refer to Appendix A for tabulated summary of the codes assessment.

V. Energy and Sustainability

Both buildings pre-date current trends and focus on energy and sustainability. “The Cities of Portland and South Portland developed a joint climate action & adaptation plan that will chart a course to meeting these shared goals. One Climate Future is an innovative regional approach that lays out the next steps to achieving aggressive carbon reduction goals, growing a circular economy, building community resilience, and creating more just and equitable cities. The South Portland City Council officially adopted the plan on October 13, 2020.” (Quote from City of South Portland Sustainability Office Website).

What this means is that both communities are following national trends to improve building envelopes and focus on the use of renewable energies to reduce the carbon footprint striving for carbon neutrality. This promotes waste reduction, high-performing buildings, climate resilience, a better environment and establishes leadership and awareness of a sustainable future.

The City of South Portland’s work plan for FY22 includes an ambitious goal “to use 100% clean renewable energy for municipal operations by 2040 and reduce greenhouse gas (GHG) emissions citywide by 80% by 2050. In addition to these goals, the City Council declared climate change an emergency in 2019 and expressed its desire to accelerate our transition away from fossil fuels by 2030.”

To accomplish this, the City will “Encourage high-performance buildings (focusing on energy efficiency and electrification of heating and cooling), and transition to renewable energy” through “programs and policies to increase energy efficiency, electrification, and transition to renewable energy in City buildings.”

Strategies include high-performance building envelopes, building energy modeling, use of renewable energy such as solar, geothermal, electric heat pump technologies, and electric vehicles as examples.

That challenge is that the Central Fire Station and Police Station are buildings that were not originally designed with enhanced building performance strategies. This facility plan anticipates that any of the alternatives selected will focus on an integrated solution consistent with the goals of the city’s climate action plan. Strategies will include building energy modeling to identify energy effective building envelopes and systems as well as the integration of photovoltaics, geothermal energy and inclusion of electric vehicle charging stations. Once a preferred building alternative is selected, the design will need to be advanced to a 30% design level to assess energy and building design alternatives.

It is also important to note that installing enough PV panels onsite to meet the programmed facility electrical loads (roof or ground) is expected not to be achievable. This is due to the likely volume of panels needs which would exceed the square footage of building roofs and limited site space that is useable. An alternative might include partial PV’s and purchasing green energy from other commercial PV arrays.

VI. Facility Alternatives

This assessment considered six (6) alternatives to cover a broad range of options for the South Portland Central Fire and Police Station. For ease of review, the alternatives are provided in a bulleted format that can be cross-referenced with the alternative site plans. Note that the square footages will vary from alternative to alternative. This is due to alternatives that included re-use of existing buildings and a various building and space configurations.

Option 1 (New Fire Apparatus Bays, New Police Apparatus Addition, Renovations of Both Fire and Police Buildings. Both Stay Onsite)

PD = 20,000 to 25,000 SF

FD = 30,300 SF

- Demolish existing rear apparatus bay ell at Central Station.
- Demolish existing Fire Training Tower structure.
- Demolish existing PD Maintenance Garage.
- PD fabric shelter for Large Apparatus to remain.
- Upgrade all buildings for energy, life safety, building, and accessibility code compliance.

- Interior renovations to Central Station (10,900 sf), Dispatch (13,000 sf), and Police Station (12,000 sf) on all existing floors. Renovations include programming, code, and energy upgrades.
- New 2-Story 11,400 sf Fire Apparatus addition at Central Station with access from Armory Street. 3 large apparatus bays, 1 small Apparatus Bay, Decon, Turn-Out, Gear Repair, SCBA, Maintenance Shop, Hazmat & PPE Storage, Stair/Elevator, M/E, Offices, Fitness, Training, and multi-use Storage.
- New 3-story 1,500 sf Training Tower addition. Shared use for FD & PD scenarios.
- New single-story Police Apparatus Maintenance Addition. 2 Apparatus Maintenance bays, 1 Evidence Vehicle Bay, 1 bay for cold storage, motorcycles & bicycles. Mechanic's office, toilet, parts storage area.

- Challenges: FD Apparatus Bay Addition layout not optimal both for interior configuration and for Apparatus turning radius in-and-out of the site. Access onto Armory Street challenging, even with additional traffic signal controls. Basement levels of existing Dispatch and Police Station are below Flood Plain, where flooding is frequent. EOC spaces are located in the Dispatch basement, which is not optimal. Significant expense for aging/outdated structures from a codes and energy efficiency standpoint. Existing Central Station and Police Station buildings significantly outdated. Existing Police Station built on piles; therefore, vertical expansion not fiscally possible. Existing Dispatch Facility will require roof structure upgrades due to drift loads imposed by the new 2-story Fire Apparatus addition. One Climate initiative not achievable.
- Phased construction will require multiple periods of displacement by both departments, which will be costly and possibly compromise effectiveness and quality of emergency services.

Option 1a (Renovate Existing Facilities with No New Construction)

PD = 17,000 SF with 6,500 SF in Flood Plain

FD = 14,300 SF

- Fire Department and Police Department moves off property during renovations or renovations will need to be phased to keep both operations onsite. This presents logistical challenges since operations will need to be consolidated to allow for other areas to be renovated. This approach adds cost and extends the timeline of the project significantly.
- Demolish Fire Training Tower and PD Maintenance Garage structure.
- Re-purpose PD Large Apparatus storage fabric structure.
- Eliminate any essential functions from basement levels of Dispatch and Police Station due to location in the Flood Zone. Non-essential storage only (if anything).
- Upgrade all buildings for energy, life safety, building, and accessibility code compliance.
- Interior renovations to existing Police Station. Redesigned for first floor uses only. Spaces to include administration function spaces directly related to patrol/community activities, such as Briefing room, weapons lockers, break room, kitchen, booking/holding cell(s), etc.
- Interior renovations to existing Dispatch Facility. Redesigned for first floor uses only. Spaces to include administration function spaces related to department management, public interaction, resources, meeting rooms, and interviews.
- Interior renovations to both floors of Central Station main structure (10,900 sf). Redesigned for Police Station technical space functions, which will include a new shooting range, SWAT lockers and Gear-Up room, fitness room with M/F lockers & showers, technical storage, labs, and related offices. Code upgrades will include 2 means of egress stairs and an elevator.
- Interior renovations to existing 4-bay garage at rear of Central Station into Police Apparatus Maintenance use. Spaces to include 3 mechanic's bays, 1 evidence vehicle bay, parts room, mechanic's office, toilet, large tools area (tire balancer, etc.), with Mezzanine above for additional parts storage.
- Challenges: This option does not achieve the space requirements identified in the programming and therefore the option does not meet current or future spatial needs. Renovations will present difficulties to achieve the climate action plan since the buildings are antiquated and do not readily adapt to modern energy codes and the city climate action plan.

Option 2 (Police Stays On-Site with Phased Renovations and Limited New Construction, Fire Department Moves Off-Site)

PD = 28,275 SF

FD = 34,500 SF (New Facility Off-Site)

- Fire Department moves off property to a new facility elsewhere. Highest probability is Mahoney School site.
- Demolish Fire Training Tower and PD Maintenance Garage structure.
- Re-purpose PD Large Apparatus storage fabric structure.
- Eliminate any essential functions from basement levels of Dispatch and Police Station due to location in the Flood Zone. Non-essential storage only (if anything).
- Upgrade all buildings for energy, life safety, building, and accessibility code compliance.
- Interior renovations to existing Police Station. Redesigned for first floor uses only. Spaces to include administration function spaces directly related to patrol/community activities, such as Briefing room, weapons lockers, break room, kitchen, booking/holding cell(s), etc.
- Interior renovations to existing Dispatch Facility. Redesigned for first floor uses only. Spaces to include administration function spaces related to department management, public interaction, resources, meeting rooms, and interviews.
- Interior renovations to both floors of Central Station main structure (10,900 sf). Redesigned for Police Station technical space functions, which will include a new shooting range, SWAT lockers and Gear-Up room, fitness room with M/F lockers & showers, technical storage, labs, and related offices. Code upgrades will include 2 means of egress stairs and an elevator.
- Interior renovations to existing 4-bay garage at rear of Central Station into Police Apparatus Maintenance use. Spaces to include 3 mechanic's bays, 1 evidence vehicle bay, parts room, mechanic's office, toilet, large tools area (tire balancer, etc.), with Mezzanine above for additional parts storage.
- New single-story addition for PD Large Apparatus and cold storage addition (motorcycles, bicycles, outdoor equipment, etc.)
- Challenges: FD/PD physical distancing loses some efficiencies for shared spaces and daily integration opportunities. Basements become "ghost towns" of useless space without investing significant expense to prevent future flooding. PD operations very spread out over a significant amount of square footage. One Climate initiative not achievable.
- Phased construction much more easily managed than Concept 1.

Option 3 (Phase Construction for New Fire and Police Onsite, Re-purpose or Demo Existing Fire Station).

PD = 28,800 SF

FD = 34,000 SF

- Demolish existing rear apparatus bay ell at Central Station.
- Demolish Police Station.
- Demolish existing Fire Training Tower structure.
- Demolish existing PD Maintenance Garage.
- PD fabric shelter for Large Apparatus to remain.
- Upgrade 2-Story Central Station building for energy, life safety, building, and accessibility code compliance.

- Interior renovations to both floors of Central Station main structure (10,900 sf). Redesigned for FD smaller Apparatus, EMS central supplies, and offices on the first floor. Redesigned for FD living quarters on the second floor – similar to Cash Corner.
- New two-story 20,000 sf FD Addition. First floor spaces for large and small Apparatus, Turn-Out, Decon, Gear Repair, SCBA, Maintenance Shop, Hazmat/PPE storage, training storage, general storage, stairs, elevator, and secured public functions (lobby, conference, office). Second floor spaces for administrative and technical offices, conference/training rooms, Fitness, EOC, and additional storage. Training tower internally located for use by FD & PD.
- New 3-story 28,800 sf PD structure for all PD functions, including improved Briefing, Lockers, SWAT, Firing Range, offices, Apparatus maintenance, storage, and public-related operations.

- Challenges: Large FD Apparatus roll-out onto Anthoine Street will be challenging due to current on-site grade differentials. Public parking locations not optimal. Separate entrances for FD and PD lack efficiency of shared functions and will require multiple elevator/stair locations. Does solve the flood plain problem since all spaces will now be slab on grade and above – no basements. One Climate initiative achievable, although invasive for existing 2-story Central Station building.
- Phasing will require temporarily relocating both PD and FD offsite during construction. FD could re-occupy before PD if multiple phased construction is desired.

Option 4 (Phase Construction for New Fire and Police Onsite, Re-purpose or Demo Existing Fire Station).

PD = 28,800 SF

FD = 34,750 SF

- Demolish PD Maintenance and Cold Storage structures, FD Fire Training Tower structure for new facilities construction.
- Demolish all remaining structures after new facilities are completed.

- New 3-story 28,800 sf PD Station.
- New 2-story 31,000 sf FD Station
- New 3-story 3,750 sf FD connector with some PD shared functions.
- FD & PD apparatus deploy onto Anthoine Street.
- FD large apparatus furthest from Broadway intersection.
- Public access options for either Anthoine or Armory Streets.

- Challenges: New construction timeframe severely limits current site's ability to provide parking for employee vehicles, PD apparatus, and moves PD apparatus maintenance off-site temporarily (Public Works Facility).
- Demolition phase of existing structures can only be completed after PD & FD move into their new facilities. Logistically impossible to use new facility until all demolition and sitework is completed as existing structures block apparatus access to Anthoine Street. Building location does not allow enough site for drive-thru fire apparatus bays, nor any access onto Armory Street for any vehicle. One Climate initiative achievable.
- Phased construction not required for new buildings.

Option 5 (New Facility On-Site for Fire and Police)

PD = 28,800 SF

FD = 32,000 SF

- Relocate both PD and FD offsite temporarily.
- Demolish all structures on site. Rework grades for better apparatus access onto Anthoine and Armory Streets.
- New Combined Public Safety Facility comprised of a 3-story 28,800 sf Police Department and 3-story 32,000 sf Fire department.
- Allows shared space utilization for building and functional efficiencies.
- Allows for a Category IV Essential Facility with a modernized EOC.
- Slab-on-grade construction = no spaces in flood plain.
- FD Apparatus bays would be drive-thru and access both Anthoine Street and Armory Street.
- Building location on parcel optimizes apparatus ramp lengths, locations, and grades.
- Building location on parcel optimizes quantity of employee parking and PD apparatus parking.
- Building location on parcel provides for public pedestrian and vehicular circulation remote of all FD & PD apparatus circulation.

- Challenges: Finding temporary locations for Police and Fire Departments during 12–16-month construction phase.
- Provides highest probability for achieving One Climate initiative.
- Phased construction not required.

Option 6 – New Construction Offsite (Fire and Police)

PD = 28,800 SF

FD = 33,000 SF

- Identify new parcel and construction new facilities offsite.
- Challenges: Finding a suitable location, public comment on new location.
- Avoids issues with temporary relocation of fire and/or police.
- Easier integration of South Portland's One Climate Plan.

VII. Projected Facility Costs

The following spreadsheet has been assembled to identify the probable cost for each option considered. At this level of planning, the costs are based upon general per square foot costs for similar construction types and sizes.

The Allied Engineering assessment provided in Appendix B describes multiple potential improvements should renovations be implemented outside of Options 1 – 6 as individual projects. It is important to note that should the city decide to implement improvements individually at the Central Fire and Police Station, the improvements are often interdependent on other improvements and would likely result in additional investment to comply with applicable codes and provide the desired benefit. In this regard, the city will need to be cautious to avoid an increasingly progressive investment in the facilities to the point that a holistic investment would result in a better overall value to the city including adaptation to the Climate Change goals and life cycle sustainability of the buildings.

It is also worthy to note the recent escalation in building material costs, shortages of materials, lack of labor and general busyness of the construction industry. As a result, construction costs have climbed appreciably with uncertainty as to what future construction costs will be. While we attempted to include allowances for this in the pricing, it is not possible to predict with certainty what building costs will be in 2, 3 or more years. Once the City chooses an alternative, it will be important to advance the alternative to at least a 30% design level and obtain more definitive pricing based upon the construction costs at the time of the 30% design.



<u>Option 1</u>	<u>Option 2</u>	<u>Option 3</u>	<u>Option 4</u>	<u>Option 5</u>	<u>Option 6</u>
\$29,069,900	\$36,922,450	\$40,896,150	\$43,740,930	\$43,345,930	\$43,015,800
<u>Option 1(a)</u>					
\$21,899,480					

OPTION 1 (New Fire Apparatus Bays, New Police Apparatus Addition, Renovations of Both Fire and Police Buildings. Both Stay Onsite)
OPTION 1a (Renovations of Both Fire and Police Buildings. Both Stay Onsite. (Option doesn't meet programming needs))
OPTION 2 (Police Stays On-Site with Phased Renovations and Limited New Construction, Fire Department Moves Off-Site)
OPTION 3 (Phase Construction for New Fire and Police Onsite, Re-purpose or Demo Existing Fire Station)
OPTION 4 (Phase Construction for New Fire and Police Onsite, Re-purpose or Demo Existing Fire Station).
OPTION 5 (New Facility On-Site for Fire and Police)
OPTION 6 - New Construction Offsite (Fire and Police)

PROJECT NAME: South Portland Central Fire and Police
 REVISED DATE: 8-11-21
 PRELIMINARY OPINION OF CONSTRUCTION COSTS
 OPTION 1 (New Fire Apparatus Bays, New Police Apparatus
 Addition, Renovations of Both Fire and Police Buildings. Both
 Stay Onsite)



<u>Description</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Total</u>
Option 1				
Earthwork	sf	\$18	130,000	\$2,340,000
Demolition	sf	\$15	38,000	\$570,000
Hazardous Building Materials	sf	\$8	20,000	\$160,000
Police Alterations	sf	\$225	12,000	\$2,700,000
Police Addition	sf	\$325	3,200	\$1,040,000
Dispatch Alterations	sf	\$225	13,000	\$2,925,000
Central Fire Station Alternations	sf	\$300	10,900	\$3,270,000
Central Fire Station Addition	sf	\$375	11,400	\$4,275,000
Training Tower Addition	sf	\$250	1,500	\$375,000
Subtotal				\$17,655,000
Phasing Costs	10%			\$1,765,500
General Conditions	10%			\$1,765,500
OH&P	15%			\$2,648,250
PV Solar - Assumes City uses a PPA Agreement				\$0
Geothermal (1 Well/1,500 s.f.)	Wells	\$15,000	35	\$525,000
Planning, Design, Construction Admin	8%			\$1,412,400
Geotechnical Study and Materials Testing	ls	\$50,000		\$50,000
Furnishings, Fixtures & Equipment	ls	\$300,000		\$300,000
Generator	ls	\$250,000		\$250,000
Permitting	ls	\$50,000		\$50,000
Contingency	15%			\$2,648,250
Total Project Cost				\$29,069,900

PROJECT NAME: South Portland Central Fire and Police
 REVISED DATE: 8-11-21
 PRELIMINARY OPINION OF CONSTRUCTION COSTS



OPTION 1a (Renovations of Both Fire and Police Buildings.
 Both Stay Onsite. (Option doesn't meet programming needs)

<u>Description</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Total</u>
Option 1a				
Earthwork	sf	\$15	130,000	\$1,950,000
Demolition - Selective Interior & Limited Bldg.	sf	\$12	38,000	\$456,000
Hazardous Building Materials	sf	\$8	20,000	\$160,000
Police Alterations	sf	\$225	12,000	\$2,700,000
Dispatch Alterations	sf	\$225	13,000	\$2,925,000
Central Fire Station Alternations	sf	\$300	10,900	\$3,270,000
Central Fire Station Addition - Stair Tower and Elevator	ls	\$500,000	1	\$500,000
Training Tower Addition	sf	\$250	1,500	\$375,000
Subtotal				\$12,336,000
Phasing Costs (Allowance - Higher Cost due to Both Staying Onsite During Rennovations)	20%			\$2,467,200
General Conditions	10%			\$1,233,600
OH&P	15%			\$1,850,400
PV Solar - Assumes City uses a PPA Agreement				\$0
Geothermal (1 Well/1,500 s.f.)	Wells	\$15,000	35	\$525,000
Planning, Design, Construction Admin	8%			\$986,880
Geotechnical Study and Materials Testing	ls	\$50,000		\$50,000
Furnishings, Fixtures & Equipment	ls	\$300,000		\$300,000
Generator	ls	\$250,000		\$250,000
Permitting	ls	\$50,000		\$50,000
Contingency	15%			\$1,850,400
Total Project Cost				\$21,899,480

PROJECT NAME: South Portland Central Fire and Police
 REVISED DATE: 8-11-21
 PRELIMINARY OPINION OF CONSTRUCTION COSTS
 OPTION 2 (Police Stays On-Site with Phased
 Renovations and Limited New Construction, Fire
 Department Moves Off-Site)



<u>Description</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Total</u>
Option 2				
Earthwork	sf	\$18	130,000	\$2,340,000
Demolition	sf	\$15	38,000	\$570,000
Hazardous Building Materials	sf	\$8	20,000	\$160,000
Police Alterations	sf	\$225	6,000	\$1,350,000
Police Addition	sf	\$325	1,500	\$487,500
Dispatch Alterations	sf	\$225	6,500	\$1,462,500
Central Fire Station Alternations	sf	\$300	10,900	\$3,270,000
Central Fire Station	sf	\$375	34,500	\$12,937,500
Subtotal				\$22,577,500
Phasing Costs (Allowance)	10%			\$2,257,750
General Conditions	10%			\$2,257,750
OH&P	15%			\$3,386,625
PV Solar - Assumes City uses a PPA Agreement				\$0
Geothermal (1 Well/1,500 s.f.)	Wells	\$15,000	40	\$600,000
Planning, Design, Construction Admin	8%			\$1,806,200
Geotechnical Study and Materials Testing	ls	\$50,000		\$50,000
Furnishings, Fixtures & Equipment	ls	\$300,000		\$300,000
Generator	ls	\$250,000		\$250,000
Permitting	ls	\$50,000		\$50,000
Contingency	15%			\$3,386,625
Total Project Cost				\$36,922,450

PROJECT NAME: South Portland Central Fire and Police
 REVISED DATE: 8-11-21
 PRELIMINARY OPINION OF CONSTRUCTION COSTS



**OPTION 3 (Phase Construction for New Fire and Police
 Onsite, Re-purpose or Demo Existing Fire Station)**

<u>Description</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Total</u>
Option 3				
Earthwork	sf	\$18	130,000	\$2,340,000
Demolition	sf	\$15	25,000	\$375,000
Hazardous Building Materials	sf	\$8	20,000	\$160,000
New Police Station	sf	\$375	28,800	\$10,800,000
Fire Station Addition	sf	\$375	20,000	\$7,500,000
Central Station Alterations	sf	\$325	10,900	\$3,542,500
Fire Training Tower	sf	\$250	1,500	\$375,000
Subtotal				\$25,092,500
Phasing Costs (Allowance)	10%			\$2,509,250
General Conditions	10%			\$2,509,250
OH&P	15%			\$3,763,875
PV Solar - Assumes City uses a PPA Agreement				\$0
Geothermal (1 Well/1,500 s.f.)	Wells	\$15,000	40	\$600,000
Planning, Design, Construction Admin	8%			\$2,007,400
Geotechnical Study and Materials Testing	ls	\$50,000		\$50,000
Furnishings, Fixtures & Equipment	ls	\$300,000		\$300,000
Generator	ls	\$250,000		\$250,000
Permitting	ls	\$50,000		\$50,000
Contingency	15%			\$3,763,875
Total Project Cost				\$40,896,150

PROJECT NAME: South Portland Central Fire and Police
 REVISED DATE: 8-11-21
 PRELIMINARY OPINION OF CONSTRUCTION COSTS



OPTION 4 (Phase Construction for New Fire and Police
 Onsite, Re-purpose or Demo Existing Fire Station).

<u>Description</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Total</u>
Option 4				
Earthwork	sf	\$18	130,000	\$2,340,000
Demolition	sf	\$15	38,900	\$583,500
Hazardous Building Materials	sf	\$8	20,000	\$160,000
New Police Station	sf	\$375	28,800	\$10,800,000
New Fire Station	sf	\$375	33,000	\$12,375,000
Renovation of Existing Central	ls	\$250,000	1	\$250,000
Fire Training Tower	sf	\$250	1,500	\$375,000
Subtotal				\$26,883,500
Phasing Costs (Allowance)	10%			\$2,688,350
General Conditions	10%			\$2,688,350
OH&P	15%			\$4,032,525
PV Solar - Assumes City uses a PPA Agreement				\$0
Geothermal (1 Well/1,500 s.f.)	Wells	\$15,000	41	\$615,000
Planning, Design, Construction Admin	8%			\$2,150,680
Geotechnical Study and Materials Testing	ls	\$50,000		\$50,000
Furnishings, Fixtures & Equipment	ls	\$300,000		\$300,000
Generator	ls	\$250,000		\$250,000
Permitting	ls	\$50,000		\$50,000
Contingency	15%			\$4,032,525
Total Project Cost				\$43,740,930

PROJECT NAME: South Portland Central Fire and Police
 REVISED DATE: 8-11-21
 PRELIMINARY OPINION OF CONSTRUCTION COSTS
 OPTION 5 (New Facility On-Site for Fire and Police)



<u>Description</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Total</u>
Option 5				
Earthwork	sf	\$18	130,000	\$2,340,000
Demolition	sf	\$15	38,900	\$583,500
Hazardous Building Materials	sf	\$8	20,000	\$160,000
New Police Station	sf	\$375	28,800	\$10,800,000
New Fire Station	sf	\$375	33,000	\$12,375,000
Fire Training Tower	sf	\$250	1,500	\$375,000
Subtotal				\$26,633,500
Phasing Costs (Allowance)	10%			\$2,663,350
General Conditions	10%			\$2,663,350
OH&P	15%			\$3,995,025
PV Solar - Assumes City uses a PPA Agreement				\$0
Geothermal (1 Well/1,500 s.f.)	Wells	\$15,000	41	\$615,000
Planning, Design, Construction Admin	8%			\$2,130,680
Geotechnical Study and Materials Testing	ls	\$50,000		\$50,000
Furnishings, Fixtures & Equipment	ls	\$300,000		\$300,000
Generator	ls	\$250,000		\$250,000
Permitting	ls	\$50,000		\$50,000
Contingency	15%			\$3,995,025
Total Project Cost				\$43,345,930



<u>Description</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Total</u>
Option 6				
Earthwork	sf	\$18	150,000	\$2,700,000
Demolition at Existing, Loam and Seed.	sf	\$15	100,000	\$1,500,000
Hazardous Building Materials	sf	\$8	20,000	\$160,000
Existing Central Fire Station Allowance	ls	\$300,000	1	\$300,000
New Police Station - Offsite	sf	\$375	28,800	\$10,800,000
New Fire Station - Offsite	sf	\$375	33,000	\$12,375,000
Fire Training Tower	sf	\$250	1,500	\$375,000
Subtotal				\$28,210,000
Phasing Costs - None - Offset New Construction				\$0
General Conditions	10%			\$2,821,000
OH&P	15%			\$4,231,500
PV Solar - Assumes City uses a PPA Agreement				\$0
Geothermal (1 Well/1,500 s.f.)	Wells	\$15,000	41	\$615,000
Land Acquisition (Assumes City Owned Land)	ls	\$0	0	
Planning, Design, Construction Admin	8%			\$2,256,800
Geotechnical Study and Materials Testing	ls	\$50,000		\$50,000
Furnishings, Fixtures & Equipment	ls	\$300,000		\$300,000
Generator	ls	\$250,000		\$250,000
Permitting	ls	\$50,000		\$50,000
Contingency	15%			\$4,231,500
Total Project Cost				\$43,015,800

VIII. Closing and Recommendations

The South Portland Central Fire and Police Station is comprised of aging buildings to include a 1950's vintage Fire Station and Police Station consisting of two (2) buildings that were constructed around 1967 and 1997. The Central Fire Station is not currently on the Historic Registry, but is eligible. This would ultimately be a city decision if they want to pursue placing it on the Historic Register. The implications could be significant if listing the building on the Historic Registry is pursued. We encourage the city to determine the relevance of listing this building on the historic registry as that decision would have a substantive impact on the ultimate option chosen.

The buildings and site are aging infrastructure that do not currently meet the needs of the Fire and Police Departments without modernization, renovations, new construction or a combination of both.

Six (6) fundamental alternatives were evaluated that cover a broad spectrum of options. Costs for any of the alternatives are substantive given the size of the project and needs to achieve the building program. The costs include options to address sustainability goals for energy to "Encourage high-performance buildings (focusing on energy efficiency and electrification of heating and cooling), and transition to renewable energy through programs and policies to increase energy efficiency, electrification, and transition to renewable energy in City buildings." Energy efficient and sustainable buildings should be an integral part of any municipal building project in the future to demonstrate compliance with the climate action plan, reduce the carbon footprint and achieve sustainability avoiding future costs for changing and increasing energy costs.

With the facilities study complete, we recommended the City consider undertaking the next steps within 5 years to allow for an appropriate time to design, fund, and construct the preferred option. The 5-year timeline was established based upon the reality of implementing a project of this size while recognizing the existing facilities have reached their functional design life and will require significant investment in the near future.

Recommendations:

1. Identify a preferred option and implement the planning and design process in 2022-2023. This is a critical first step in advancing the project and provides time to refine the preferred option and establish a budget including evaluating financing options. This will be interdependent on recommendation item 2.
2. Complete the facilities study of City Hall, Library and Mahoney School. These studies combined with the previously completed Hamlin School study and this study will provide the information needed to select a preferred approach whether that is a new combined municipal facility or separated facilities and to establish priorities.
3. Place the preferred alternative out to bid for contractors in the winter of 2024.
4. Construction Summer of 2024 through 2026.
5. If one of the six (6) options or a hybrid is not pursued, we recommend the City consider developing a sequenced Capital Improvement Plan (CIP) to address building HVAC systems,

controls, roofing and façade maintenance, interior renovations for bathrooms, kitchens and functional spaces, emergency generator, electrical upgrades equipment/vehicle storage, finishes, air quality, and comfort all of which are identified the Grant-Hays and Allied Engineering existing conditions assessments. The site will also need maintenance to include repaving parking, access drives, and circulation areas with storm drainage improvements. These needs are symptomatic of aging infrastructure that has served its full purpose over many years and is now in need of modernization.

In closing, we commend the City of South Portland for taking action to evaluate current facilities and plan for the future of these essential government facilities to serve the community. A complete facilities plan is a road map for the future and will allow the city to implement a thoughtful facilities asset management plan for the future.

We would also like to thank the Fire Department, Police Department, Water Resources Department, Sustainability Coordinator, City Facilities Manager and City Manager for their support and participation in this Facilities Study.

Thank you for the opportunity to serve the City of South Portland.

Sebago Technics, Inc.
Grant-Hays Associates
Allied Engineering.

Appendix A
Grant-Hays Tabulated Summary of Code Assessment.

CITY OF SOUTH PORTLAND – FIRE & POLICE FACILITY – 284 BROADWAY

EXISTING SPACE/PROGRAMMING INVENTORY – CENTRAL FIRE STATION

ROOM #	ROOM NAME	SIZE	AREA (SF)
BASEMENT LEVEL			
CFS001	MECHANICAL ROOM	10 X 48	480
CFS002	STAIR	3 X 12	36
001	SPRINKLER ROOM	8 X 10	80
002	FITNESS CENTER	29 X 41 +	1120
003	IT/SERVER ROOM	15.5 X 17.5	271
004	BOILER ROOM	9 X 13	117
005	STAIR #2	5 X 19	95
006	STORAGE	5 X 18	90
007	JOINT INFORMATION CENTER	10 X 20	200
008	HALL	4 X 10	40
009	STORAGE CLOSET	4.5 X 10	45
010	FIRE RECORDS	10 X 12	120
011	<i>POLICE RECORDS – 1</i>	<i>10 X 12</i>	<i>120</i>
012	<i>POLICE RECORDS - 2</i>	<i>6 X 10</i>	<i>60</i>
013	CORRIDOR	6.5 X 60.5	393
014	EOC CLASSROOM	IRREGULAR	975
015	EMERGENCY OPERATIONS CENTER (EOC)	20 X 21	420
016	EOC I.T.	6 X 21	126
017	ELEVATOR MACHINE ROOM	6 X 10	60
018	STAIR #1	9 X 23	207
019	ELEVATOR	6.5 X 9.5	62
020	ELEVATOR LOBBY	7 X 8	56
021	CORRIDOR	IRREGULAR	442
022	STORAGE CLOSET	3 X 8	24

023	BATH/LOCKERS	8 X 10	80
024	CORRIDOR	IRREGULAR	242
025	STORAGE CLOSET	2 X 10	20
TOTAL NET AREA			5981
TOTAL GROSS AREA (INCLUDES 663 CRAWL SPACE)			7372

ROOM #	ROOM NAME	SIZE	AREA (SF)
FIRST FLOOR LEVEL			
CFS101	LARGE APPARATUS BAY	61.5 x 68 (-)	4010
CFS102	RESTROOM	4 x 6.5	26
CFS103	GEAR WASH	7 x 6.5	46
CFS104	DUTY OFFICER	IRREGULAR	315
CFS105	STAIR & HALL	IRREGULAR	200
CFS106	OFFICE	10.5 X 11	116
CFS107	OFFICE	14 X 11	154
CFS108	RESTROOM / SHOWER	6.5 X 7 (+)	55
CFS109	OFFICE & CLOSET	11 X 13 (+)	155
CFS110	HALL	4 X 9.5	38
CFS111	SMALL APPARATUS BAY 1	31 X 44 (-)	1150
CFS112	SMALL APPARATUS BAY 2	31 X44 (-)	1150
CFS113	MAINTENANCE OFFICE	14 X 15	210
CFS114	STORAGE	14 X 15	210
101	EMS OFFICE	10 X 10	100
102	LHO OFFICE	10 X 10	100
103	CLOSET (TO 102)	3 X 5	15
104	CUSTODIAL	5 X 5	25
105	CLOSET (TO 106)	3 X 5	15
106	CONFERENCE ROOM	10 X 16	160
107	VESTIBULE	IRREGULAR	55

108	CORRIDOR	6.5 X 43	280
109	TOILET ROOM	7 X 7	49
110	ADMINISTRATIVE	11.5 X 24.5	282
111	FIRE DEPUTY 1	10 X 12.5	125
112	CLOSET (TO 111)	2 X 6	12
113	FIRE DEPUTY 2	10 X 11.5	115
114	CLOSET (TO 113)	2.5 X 4.5	11
115	FIRE DEPUTY 3	10 X 11.5	115
116	CLOSET (TO 115)	2.5 X 4.5	11
117	FIRE CHIEF	11.5 X 17	196
118	CLOSET (TO 117)	4.5 X 7	32
119	CORRIDOR	5.5 X 20	110
TOTAL NET AREA			9643
TOTAL GROSS AREA			10,870

ROOM #	ROOM NAME	SIZE	AREA (SF)
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SECOND FLOOR LEVEL

CFS201/202	DAY ROOM / TV ROOM	36 X 56	2016
CFS203	RESTROOM	8.5 X 12	102
CFS204	SHOWER/LAUNDRY	6.5 X 7.5	49
CFS205	KITCHEN	6 X 12 (+)	88
CFS206	BUNK ROOM 1	9 X 12 (+)	120
CFS207	BUNK ROOM 2	9 X 12 (+)	120
CFS208	BUNK ROOM 3	9 X 12 (+)	120
CFS209	BUNK ROOM 4	10 X 12 (+)	132
CFS210	BUNK ROOM 5	12 X 12 (+)	156
CFS211	BUNK ROOM 6	11 X 12 (+)	144
CFS212	BUNK ROOM 7	12 X 12 (+)	156
CFS213	BUNK ROOM 8	10 X 12 (+)	132

CFS214/215	BUNK ROOM 9 / RESTROOM	10 X 12 + 5 X 12	180
CFS216	BUNK ROOM 10	9 X 12 (+)	120
CFS217	OFFICE / BUNK ROOM 11	9 X 12	120
CFS218	PANTRY/LINENS/CUSTODIAL	7 X 12	84
CFS219	STORAGE / STAIR TO ROOF	6 X 10.5	63
CFS220	STAIR / HALL	IRREGULAR	183
TOTAL NET AREA			4085
TOTAL GROSS AREA			4520

ROOM #	ROOM NAME	SIZE	AREA (SF)
THIRD FLOOR LEVEL			
CFS301	STAIR / STORAGE	16 X 17	272
TOTAL AREA			272

ROOM #	ROOM NAME	SIZE	AREA (SF)
FIRE TOWER STRUCTURE			
CFS-FT1	FIRE TOWER – GROUND LEVEL	16 X 42	672
CFS-FT2	FIRE TOWER – SECOND LEVEL	16 X 32	512
CFS-FT3	FIRE TOWER – THIRD LEVEL	16 X 16	256
CFS-FT4	FIRE TOWER – FOURTH LEVEL	16 X 16	256
TOTAL AREA			1696

GRAND TOTAL NET AREA **21,677**

GRAND TOTAL GROSS AREA **24,800**

SHARED PUBLIC SAFETY SPACES – DISPATCH ADDITION

120	SHARED VESTIBULE	6.5 X 8	52
121	SHARED LOBBY	IRREGULAR	485
122	SHARED FRONT DESK	7 X 22	154

123	SHARED DISPATCH	21 X 28 +	594
124	SHARED KITCHENETTE	6.5 X 8.5	55
125	SHARED TOILET ROOM	7.5 X 8.5	64
126	SHARED COPY ROOM	6 X 8.5	51
127	SHARED RADIO	5 X 6	30
128	SHARED TOILET ROOM (LOBBY)	7.5 X 8.5	64
129	STAIR 1 / ELEVATOR LOBBY	IRREGULAR	306
130	ELEVATOR	6.5 X 9	59
TOTAL NET SHARED AREA			1914

EXISTING SPACE/PROGRAMMING INVENTORY - POLICE DEPARTMENT

ROOM #	ROOM NAME	SIZE	AREA (SF)
BASEMENT LEVEL			
026	CONNECTOR CORRIDOR	6 X 15	90
027	CORRIDOR	4 X 20	80
028	SWAT GEAR	14 X 19	266
029	STAIR	9.5 X 19	181
030	CORRIDOR	6 X 34	204
031	CUSTODIAL / WORKSHOP	9.5 X 32	304
032	BOILER ROOM	19.5 X 32	624
033	CORRIDOR	IRREGULAR	90
034	CORRIDOR	6 X 59	354
035	CRIME LAB	15 X 18	270
036	EVIDENCE TECHNICIAN	9.5 X 18	171
037	K-9 UNIT	9.5 X 18	171
038	DIVE TEAM	10 X 18	180
039	FILE STORAGE	13 X 18	234
040/041	STAIR / SUMP	9 X 18 (-)	126
042	TOILET ROOM	4.5 X 8	36

043	EVIDENCE ROOM	13.5 X 19	257
044	FIREARMS STORAGE	5.5 X 19	105
045	INTERVIEW ROOM	12 X 13.5	162
046	STORAGE ROOM	10.5 X 13.5	142
047	STORAGE ROOM	21.5 X 13.5	290
048	SHOOTING RANGE	19 X 64	1216
TOTAL NET AREA			5550
TOTAL GROSS AREA			6235

ROOM #	ROOM NAME	SIZE	AREA (SF)
FIRST FLOOR LEVEL			
132	CORRIDOR	7 X 37 (-)	250
133	BEHAVIOR HEALTH OFFICE	9 X 10	90
134	TOILET ROOM	7.5 X 7.5	56
135	CLOSET	2 X 4	8
136	STAIR	5 X 30	150
137	OFFICE	8.5 X 11	94
138	OFFICE	10 X 11	110
139	OFFICE	9.5 X 11	105
140	CORRIDOR	IRREGULAR	276
141	ADMINISTRATIVE	14 X 23.5 (+)	363
142	CONFERENCE	12 X 18	216
143	DEPUTY CHIEF	11 X 16.5	182
144	CLOSET TO 143	2 X 5	10
145	CHIEF	12 X 19.5	234
146	CLOSET TO 145	2 X 6	12
147	CONNECTOR CORRIDOR	6 X 15	90
148	CORRIDOR	5 X 12	60
149	NETWORK / I.T.	3.5 X 10	35

150	OFFICE	9.5 X 10	95
151	STAIR	9 X 15	135
152	CORRIDOR	5 X 55.5	278
153	DEBRIEFING ROOM	19 X 33	627
154	BREAK ROOM	IRREGULAR	136
155	KITCHEN	9.5 X 13	124
156	CORRIDOR	5 X 40	200
157	MEN'S LOCKERS	19 X 21 (+)	425
158	MEN'S SHOWER	6 X 7	42
159	MEN'S TOILET	6 X 7	42
160	SECURED PATROL FIREARMS	6 X 9	54
161	VESTIBULE	5 X 9	35
162	SARGENTS OFFICE (2)	9 X 10	90
163	SARGENT'S OFFICE	9 X 7	63
164	SARGENTS OFFICE (2)	9 X 11	99
165	REPORTS ROOM	9 X 14	126
166	STAIR	9 X 15.5 (-)	116
167	CLOSET IN 166	4 X 6	24
168	CORRIDOR	5 X 29	145
169	COMMUNITY RESPONSE UNIT	14 X 19	266
170	CLOSET TO 169	5 X 7	35
171	TOILET ROOM	5 X 7	35
172	CORRIDOR	4 X 7	28
173	CYBER CRIME OFFICE	8.5 X 15	128
174	DETECTIVE SARGENT OFFICE	10 X 19 (-)	178
175	CLOSET TO 174	2 X 6	12
176	CLOSET	3.5 X 4	14
177	MAJOR CRIMES BULLPEN	17 X 33 (+)	611
178	CLOSET	3.5 X 4	14

179	CORRIDOR	5 X 29	145
180	HOLDING AREA	5 X 15	75
181	CELL	5 X 7	35
182	CELL	5 X 7	35
183	UTILITY	5 X 7	35
184	STORAGE	4.5 X 12	54
185	CHASE	2.5 X 21.5	54
186	WOMEN'S LOCKERS	6 X 12	72
187	WOMEN'S TOILET	6 X 12	72
188	WOMEN'S SHOWER	7 X 12	84
189	TRAINING LEUTENANT OFFICE	10 X 20 (-)	188
190	CLOSET TO 189	2 X 6	12
191	TRAINING SARGEANT	10 X 13	130
192	CLOSET TO 191	2 X 5	10
193	SUPPLY CLOSET	3.5 X 10	35
194	SECURED SUPPLY CLOSET	2 X 5	10
TOTAL NET AREA			7564
TOTAL GROSS AREA			8435
101-102	MECHANIC'S GARAGE	40 X 40	1600
103-104	COLD STORAGE	40 X 20	800
TOTAL NET AREA			2300
TOTAL GROSS AREA			2400
GRAND TOTAL NET AREA			15,414
GRAND TOTAL GROSS AREA			17,070
COMBINED PUBLIC SAFETY GRAND TOTAL NET AREA			39,015
COMBINED PUBLIC SAFETY GRAND TOTAL GROSS AREA			41,810

SOUTH PORTLAND FIRE DEPARTMENT

CENTRAL FIRE STATION SPACE PROGRAM ANALYSIS / NEEDS

SPACE	SIZE	AREA (SF)
Outdoor Equipment Storage Building (Semi-Heated)	14 x 112	1568
Outdoor Dining/Grilling Patio	16 x 16	256
Outdoor Generator	16 x 20	320
Outdoor Hands-On Training Area	100 x100	10,000
<i>Outdoor Subtotal</i>		<i>12,144</i>
<u>First Floor – Apparatus & Support Spaces</u>		
Apparatus Bay –		
2 Ambulances	40 x 40	1600
1 Ladder Truck	20 x 60	1200
2 Engines	40 x 60	2400
1 Chief Vehicle	20 x 30	600
1 Shift Commander Vehicle	20 x 30	600
4 Service Vehicles	80 x 30	2400
1 Gator Quad	20 x 30	600
1 Foam Trailer	20 x 30	600
Decontamination Room	20 x 30	600
SCBA Compressor/Fill Station Room	16 x 16	256
Turn-Out Gear/PPE Lockers (40)	20 x 30	600
Training Storage Room	16 x 16	256
EMS Supply Room	16 x 20	320
Facilities Supply Room	16 x 20	320
Workshop & General Supply Room	16 x 20	320
PPE Inventory Room	16 x 20	320
Unisex Toilet Rooms (2)	7 x 8	112
Secured Vestibule	8 x 10	80
Mechanical/Electrical Room	16 x 30	480
Sprinkler Room	10 x 10	100
Life Safety Room	8 x 10	80
Gear Repair & Stock Room	12 x 16	192
Offices – Training & Watch	10 x 10	200
I.T Room	6 x 6	36
Custodial Room	6 x 6	36
Fitness Room	24 x 36	864
Lockers/Changing Rooms (M/F)	20 x 24	480
<i>Apparatus Subtotal</i>		<i>14,992</i>

Administrative Offices

Chief Office	14 x 18	252
Assistant Chief Office	14 x 14	196
Administrative Assistant Area	12 x 12	144
Deputy Chiefs Office (2 occupants)	12 x 20	240
Deputy Chiefs Office (2 occupants)	12 x 20	240
Fire Inspectors Office (2 occupants)	12 x 20	240
EMS Coordinator Office	12 x 14	168
LHO Office	12 x 14	168
Spare/Future (light Duty) Office	12 x 14	168
Dividable Conference Room (4 small)	24 x 48	1152
EOC Media/IT Room	10 x 24	240
EOC/Classroom (40 occupants)	24 x 50	1200
JIC Conference Room	16 x 30	480
Toilet Rooms (2)	8 x 12	192
Custodial	8 x 10	80
Fire Records Storage	20 x 20	400
Copy/Mail Room	10 x 12	120
Kitchenette/Break Room	12 x 16	192
IT/Server Room	12 x 12	144
Office Supplies	6 x 6	36
Circulation		600

Administrative Offices Subtotal**6652****Second Floor – Living Quarters**

Bunk Rooms (10 staff @ 4 shifts)	10 x 12	1200
Shower/Toilet Rooms (3)	10 x 10	300
Laundry Room	9 x 10	90
Linen/Uniform Storage	9 x 10	90
Custodial Room	7 x 10	70
Day Room (10-12 People)	16 x 30	480
Kitchen	16 x 12	192
Pantry	8 x 10	80
Offices (2 – Duty Officer & Shift Commander)	10 x 12	240
I.T. Closet	6 x 6	36
General Storage	6 x 6	36
Mechanical/Electrical	12 x 16	192
Circulation		800

Living Quarters Subtotal**3816**

2 Floors Add:

Elevator (2 floors)	10 x 10	200
Elevator Machine Room (1 floor)	8 x 10	80
Egress Stairs (2 at 2 floors)	10 x 24	960
Circulation		500

Second Floor Circulation Elements Subtotal ***1740***

TOTAL NET BUILDING AREA (INCL STORAGE BUILDING) ***28,756 SF***

TOTAL GROSS BUILDING AREA (X 1.10) ***31,645 SF***

SOUTH PORTLAND POLICE DEPARTMENT

PUBLIC SAFETY BUILDING SPACE PROGRAM ANALYSIS / NEEDS

ROOM NAME	SIZE	AREA (SF)
TECHNICAL FUNCTION SPACES		
FIRING RANGE	25 X 110	2750
FIRING RANGE STORAGE ROOM	8 X 10	80
FIRING RANGE CLEANING ROOM	8 X 10	80
FIRING RANGE ANTE ROOM	6 X 25	150
SWAT GEAR SECURED STORAGE	16 X 20	320
SWAT GEAR CHANGING ROOM	16 X 16	256
CROWD CONTROL GEAR STORAGE	16 X 16	256
UNIFORM/GENERAL GEAR STORAGE	12 X 16	192
CRIME LAB	16 X 20	320
EVIDENCE TECHNICIAN	14 X 16	224
K-9 UNIT	14 X 16	224
DIVE TEAM	14 X 16	224
EVIDENCE STORAGE ROOM	14 X 16	224
PROPERTY STORAGE ROOM	14 X 16	224
CLIMATE-CONTROLLED EVIDENCE ROOM	14 X 16	224
FIREARMS STORAGE	12 X 16	192
CYBER EVIDENCE STORAGE ROOM	12 X 14	168
CASE FILES STORAGE	14 X 16	224
PERSONNEL FILES STORAGE	10 X 16	160
GENERAL STORAGE	14 X 16	224
ARCHIVE STORAGE	16 X 16	256
MULTI-USER TOILET ROOMS (2)	8 X 12	192
FITNESS/TRAINING ROOM	24 X 36	864

MAINTENANCE/CUSTODIAL SUPPLIES	16 X 16	256
WORKSHOP	12 X 16	192
DRIVING SIMULATOR	10 X 16	160
DECON ROOM	16 X 20	320
DRUG TAKE-BACK STORAGE ROOM	8 X 8	64
OUTDOOR STORAGE BUILDING - MRAP	30 X 32	960
APPARATUS MAINTENANCE BAYS (5)	40 X 80	3200
<ul style="list-style-type: none"> • CRUISER REPAIR / LIFT BAY • LONG TERM PROJECT BAY • EVIDENCE VEHICLE BAY • PARTS / TOOLS BAY • OUTDOOR APPARATUS STORAGE (MOTORCYCLES/BICYCLES/ETC) • OFFICE/RESTROOM 		

SUBTOTAL TECHNICAL FUNCTION SPACES

13,080

<u>ROOM NAME</u>	<u>SIZE</u>	<u>AREA (SF)</u>
ADMINISTRATIVE FUNCTION SPACES		
CHIEF'S OFFICE	14 X 18	252
DEPUTY CHIEF OFFICE	14 X 16	224
ADMINISTRATIVE ASSISTANTS	12 X 24	288
CONFERENCE ROOM (CHIEF'S AREA)	14 X 20	280
DETECTIVE SARGEANT OFFICE	14 X 14	168
TRAINING LEUTENANT OFFICE	14 X 14	196
TRAINING SARGEANT OFFICE	14 X 14	196
SARGEANTS AREA (6 STATIONS)	14 X 32	448
REPORTS ROOM	12 X 16	192
COMMUNITY RESPONSE UNIT (4 STATIONS)	14 X 24	336
MAJOR CRIMES AREA (6 STATIONS)	14 X 32	448
BEHAVIOR HEALTH OFFICE	12 X 12	144
CYBER CRIMES OFFICE	12 X 14	168

COURTS OFFICER OFFICE	12 X 14	168
SCHOOL LIASSON OFFICE (2 OCCUPANTS)	12 X 16	192
FUTURE OFFICE	12 X14	168
GENERAL OFFICE STORAGE	12 X 12	144
MAIL/COPY SUPPLIES ROOM	10 X 14	140
COMMUNITY/MULTI-PURPOSE ROOM	20 X 36	720
MEETING STORAGE (TABLES/CHAIRS, ECT)	8 X 16	128
SECURED INTERVIEW ROOMS (2)	10 X 12	240
PUBLIC (LOBBY) INTERVIEW ROOMS (2)	12 X 14	336
POLYGRAPH ROOM	10 X 12	120
MEDIA/RECORDING ROOM	8 X 10	80
BRIEFING ROOM	20 X 36	720
BREAK ROOM (12 PEOPLE)	16 X 24	384
KITCHEN	8 X 12	96
SECURED HOLDING AREA/CELL (1)	12 X 24	288
SALLY PORT	16 X 24	384
SINGLE USER TOILET ROOMS (6)	7 X 8	336
MEN'S LOCKERS (50)	16 X 46	736
MEN'S SHOWER ROOM (3)	8 X 8	192
MEN'S TOILET ROOM	8 X 20	160
WOMEN'S LOCKERS (20)	16 X 16	256
WOMEN'S TOILET ROOM	8 X 20	160
WOMEN'S SHOWER ROOM (2)	8 X 8	128
NURSING ROOM	8 x 10	80
MAIN PUBLIC ENTRANCE VESTIBULE	8 X 12	96
SECURED PUBLIC LOBBY	12 X 20	240
DUTY OFFICER	12 X 12	144
IT/SERVER ROOM (4 RACKS)	12 X 12	144
CUSTODIAL (2)	6 X 6	72

SUBTOTAL ADMINISTRATIVE SPACES**10,396**

ROOM NAME	SIZE	AREA (SF)
GENERAL FUNCTION SPACES		
MECHANICAL/ELECTRICAL	16 X 30	480
SPRINKLER ROOM	10 X 12	120
NFPA LIFE SAFETY ROOM	8 X 10	80
ELEVATOR	10 X 10	100
EMR	8 X 10	80
STAIRS (2)	10 X 25	500
CIRCULATION		1000
SUBTOTAL GENERAL FUNCTIONS SPACES		2360
TOTAL NET AREA		25,836 SF
TOTAL GROSS AREA (X 1.10)		28,420 SF

Appendix B
Allied Engineering Existing Conditions and Report of Findings.

Facility Conditions Assessment Report and Feasibility Study

Central Fire Station

South Portland, Maine

Allied Project #20052
March 19, 2021



Prepared by:



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Appendix A: Conceptual Site Layout Options

Appendix B: South Portland Police Station Assessment (Previously Completed)



I. Introduction and Scope

This report is issued to document our conditions assessment for the mechanical, plumbing, electrical, fire protection, and structural/roofing systems at the Central Fire Station located in South Portland, Maine. The scope for this report includes assessment for the existing Mechanical, Plumbing, Fire Protection, Structural/Roofing, and Electrical systems, capacity for existing systems to support renovations required to meet the current programming needs and offer recommendations for upgrades to the existing systems as required to meet the current programming needs.

Additionally, this report shall analyze the potential for combining systems mechanical and electrical systems such that single plants/infrastructure serve both the Fire Station and the Police Station, which is attached to the Fire Station on the common site, currently.

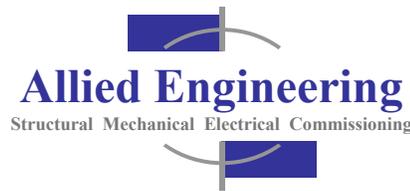
Finally, our assessment includes a walkthrough of the current Police Maintenance Building, not analyzed as part of the original Police Station Assessment, as this facility is included in the current programming needs.

This report is offered as a supplement to the Architectural programming study conducted by Grant Hays Associates and site analysis conducted by Sebago Technics, both of which analyze the potential for the following renovation/addition/new construction schemes:

- Maintain a combined Police and Fire Station at the existing site with demolition, renovations, and additions as required to meet the space needs of each department.
- Renovate the existing Central Fire/South Portland Police Station facility to create a standalone Police Station at the existing site and construct a new Fire Station at an alternate site.
- Demolish all of the existing Police and Fire Station except the historic Central Fire Apparatus Bay/Bunk House section and construct new additions at the existing site to accommodate the current programming needs of both departments, maintaining a combined facility.
- Construct a new three-story combined facility at the existing site outside the footprint of the existing facility, maintaining the existing facility on site during construction, then demolish the existing facility subsequent to completion of construction and relocation for both departments.
- Temporarily relocate Police Department to alternate site, demolish existing Police facilities, construct new Fire Department on the site, then demolish existing Fire Department and construct a new Police Station.
- Construct a new combined Police and Fire Facility at an alternate site, demolish or re-purpose the existing facility.

Refer to Appendix A, herein, for conceptual site layouts associated with the options presented above.

As an integral part of the assessment herein, Allied Engineering shall reference our previously completed assessment report for the South Portland Police Station in an effort to consider the potential for combining various plants and infrastructure within each department such as heating, ventilation, normal and emergency power, and cooling systems. Our previously completed report for the South Portland Police Station is included in Appendix B, herein. The current assessment includes a re-visit of the Police Station to report



on any upgrades that may have been completed since the time of our original assessment, which was dated September 25, 2018.

As a final note, we understand that the basement level of the entire existing combined Police/Fire Facility is below the flood plain and will be considered off limits for critical space programming.

The focus of this assessment shall be reporting on the condition of existing fire protection, mechanical, electrical, plumbing, and structural/roofing systems, analyzing their suitability for supporting current programming needs, analyzing the feasibility for reuse and/or re-purposing of the existing systems and equipment, and reporting on recommendations for upgrades and additions as required to facilitate the proposed renovations associated with the four concepts presented herein.

Services included in conducting this assessment are as follows:

1. Meet with designated representatives of the facility to gain an understanding of the use and environmental requirements of each functional space as well as current programming and systemic shortfalls associated with the facility based upon current occupancy and future expansion plans.
2. Conduct field visits to assess the configuration and condition of existing systems, analyze existing building design documentation, become familiar with prior renovations and functional space changes throughout the facility, and interview occupants within each of the spaces to gain an understanding as to the adequacy of the current systems to maintain acceptable conditions based upon use and occupancy.
3. Collaboration with Sebago Technics and Grant Hays Architects to understand the scope for the proposed renovations, additions, and new construction associated with each of the conceptual programming schemes.
4. Develop a report of recommendations for upgrades and additions to the Mechanical, Plumbing, Fire Protection, Structural, and Electrical systems as required to facilitate the renovation/addition/construction scope presented in each of the conceptual design options.

The assessment incorporates the following items:

1. Visual assessment of systems condition and operation
2. Interview of designated facility personnel to gather information relative to space comfort, systems efficiency, maintainability, and other relevant information.
3. Review of system design documentation to analyze the ability for systems to meet current code requirements and industry standards for occupant comfort, indoor air quality, and efficiency of operations.
4. Report of recommendations for upgrades based upon current facility use and proposed renovations and upgrades.
5. Preliminary estimates of probable construction cost based upon recommendations made herein.

II. Existing Conditions Narrative– Central Fire Station

A. General

1. The existing Central Fire Station consists of a single-story, Small Apparatus Bay located at the rear of the Dispatch Facility, a two-story section which houses the Large Apparatus Bays, Decon Room, Kitchen/Dining, and Bunk Rooms, and a Hose Tower. The facility was constructed in approximately 1953.

B. Structure

1. The roofing review for the Central Fire Station is based on observations made during a site visit. No specifics are known about the age, or makeup, of the existing roofing materials. Based on conversations it appears that the existing roofing is at least 20 years old. There are a number of repair areas visible for the existing roofing. Options 1, 2, 3 & 4 involve re-use of all/portions of the existing Central Fire Station. For this work, we have considered that any areas retained in these options will be 100% re-roofed. New roof is assumed to consist of R-30 insulation with 0.060 mil EPDM roofing. New insulation to be mechanically fastened and the membrane adhered.





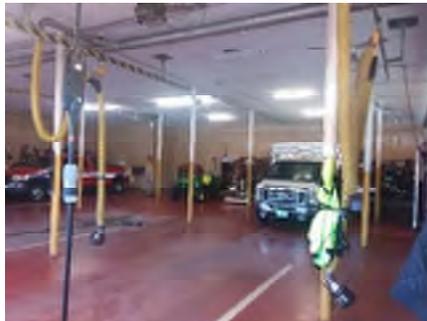
2. The structural review for the Central Fire Station is based on observations made during a site visit. No structural drawing materials were available for this work. Site observations were limited to framing conditions that were visible at the time of the site visit. No finishes/materials were removed to expose any existing framing conditions.
3. Our understanding is that the Central Fire Station was constructed in the early 1950's. The building has a two-story portion over an Apparatus Bay (Large Apparatus Bay) facing out

towards Broadway, and contiguous single-story portions along Armory Street (Office Area) currently containing a series of offices, and another single-story Apparatus Bay off

of the back of the Main Roof area (Small Apparatus Bay). The existing Central Fire Station also has small higher roofs above the main roof level at the southeast building corner (High Roof 1) and at the current main entry area (High Roof 2) at the northeast building corner.

4. The existing roof framing for the Central Fire Station appears to consist of steel roof decking supported by steel open-web roof joists supported by steel beams/columns or interior concrete masonry unit (CMU) walls or multi-wythe perimeter brick walls. There was no opportunity to observe any of the existing floor framing as all floor framing at the two-story Apparatus Bay was covered with existing finishes.

5. As part of a prior study, Allied Engineering reviewed the roofing/structure for the existing Police Station buildings. Modifications to the existing Police Station buildings are part of Options 1, 2 & 3 to be considered for this current work. No required structural modifications were identified for the Police Station buildings in the prior study. The roofing for the 1997 Police Dispatch Building was identified in the prior study as dating back to the original 1997 construction, and consists of an EPDM roofing membrane over insulation over metal roof decking. The available drawings indicate R-19 insulation level. The roofing for the 1967 Police Public Safety Building was identified in the prior study as dating back to re-roofing work done in 2004, and also consists of an EPDM roofing membrane over insulation over metal decking. Nothing is known about amount of insulation for 1967 building. Given the ages of the existing roofing materials, we have considered that any areas retained in the options identified for this current study will be 100% re-roofed with the removal of all insulation, membrane and flashing in their entirety. New roof is assumed to consist of R-30 insulation with 0.060 mil EPDM roofing. New insulation to be mechanically fastened and the membrane adhered. Reference is made here to the discussion in the original Allied report for the Police Station Buildings on additional steps/costs that would become involved if the existing metal roof decking proves to be inadequate for wind uplift resistance for re-roofing considerations.





C. Fire Protection

1. There is currently no system of automatic sprinkler protection within the Central Fire Station facility.

D. Mechanical

1. Heating:
 - a. Heat for the facility is generated by a Burnham cast iron sectional low pressure steam boiler with a natural gas fired Powerflame burner. The boiler is sized at approximately 650 MBH.
 - b. Steam for heating is distributed to functional spaces throughout via a two-pipe steam/condensate system to serve terminal heating units for space heating.
 - c. A condensate receiver set collects condensate from the heating equipment and serves as the boiler feed pump.
 - d. Combustion and ventilation air for the boiler room area is provided by sidewall louvers located high in the space at the exterior wall. There are a total of three louvers, however one is blocked off and not functional.
 - e. Heating for the large Apparatus Bays is provided by a vertical air handler located in the adjacent Small Apparatus Bay. The air handler is ducted to a single high sidewall supply grille and low sidewall return grille within the Large Apparatus Bay and incorporates a steam heating coil for heating the space via recirculated air.
 - f. Heating for the Small Apparatus Bays is provided by vertical steam unit heaters located near the ceiling in each bay as well as the storage room.
 - g. Heating for the first floor Administrative Offices, first floor Bathroom, Dining Room, Lounge, Kitchen, and Bunk Rooms is provided by a combination of cast iron steam radiators and steam finned tube radiation.
 - h. Thermal insulation for the steam and condensate piping, where present, consists of fibrous glass with all-service jacket.



2. Ventilation:
 - a. The Large Apparatus Bay incorporates a vehicle exhaust system with four hose drops for connection to the vehicle exhaust. The system utilizes a utility-set style fan ducted through the exterior wall.
 - b. The small apparatus bays do not incorporate any mechanical ventilation.
 - c. The small bathroom on the lower level adjacent to the large apparatus bays contains an exhaust grille at the ceiling but there does appear to be an operational fan at this area.
 - d. At the upper level of the fire station, the central Dining Room, Lounge, and Bunk Rooms do not incorporate a system of mechanical ventilation. Similarly, the upper level restrooms do not include any exhaust ventilation.

- e. The Kitchen at the upper level contains a recirculating range hood over the electric range. The hood has been outfitted with two fire suppression canisters which are suspended over the cook surface. Both the large and Small Apparatus Bays contain paddle style anti-stratification fans that are manually operated to help circulate stratified heat in the spaces.



3. Temperature Control System:
- a. Automated temperature control for the upper level of the facility is limited to a single thermostat at the Dining Room which appears to control a motorized steam valve at one of three major steam lines in the boiler room. It appears to allow steam to flow to the upper level of the facility when the thermostat falls below the heating setpoint in the Dining Room. Once steam flow to the upper level is enabled, all occupied spaces receive steam to their associated radiators and finned tube heaters. The steam flow is then regulated manually in each of the functional spaces through the use of globe valves located on each heating device.
 - b. The centrally located lower level Office has a wall mounted electric thermostat, which like the one in the upper level Dining Room, appears to control steam flow to the Office suite, however, the location of the motorized steam valve was not apparent. Within each individual Office, like the upper level spaces, the radiators each contain a manual globe valve for regulating steam flow.
 - c. The entry vestibule is heated by a steam convector which is controlled through an electric wall mounted thermostat and an electric radiator valve.
 - d. The Large Apparatus Bay air handling unit is controlled via an electric thermostat located at the entry door to the Large Apparatus Bay adjacent to the Administrative areas.
 - e. The small Apparatus Bay's steam unit heaters are controlled through the use of a line voltage electric thermostat at each heater.
 - f. Each of the control systems indicated herein are stand-alone controls and are not integrated with any central building automation system.

E. Plumbing

1. Domestic cold water enters the facility as an 1 ½” service at the basement level mechanical room. The service is slit within the facility to serve domestic use via a 1 ¼” service and “fast fill” service for trucks sized at 1 ½”.

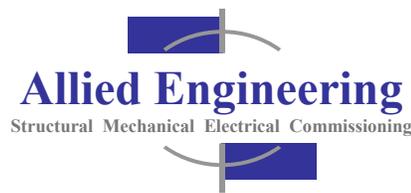
The domestic water service is protected with a Reduced Pressure Zone (RPZ) backflow prevention device, however, the “fast fill” service has no backflow prevention.

The “fast fill” service is metered through the use of an in line water meter. The domestic service appears to contain an electronic flow meter.



2. Domestic hot water is generated by an electric storage type heater, sized at 40 gallons/40,000 BTU/hr, manufactured by State, located in the basement mechanical room.





3. The domestic water is primarily constructed of copper with soldered fittings and is insulated with fibrous glass pipe insulation with all-service jacket.
4. Both the sanitary waste and the storm drain appear to exit the facility at the basement mechanical room. The main sanitary service, where visible, is constructed of cast iron with bell and spigot joints. Rough in piping for the sanitary waste at many of the fixtures is observed to be schedule 40 PVC with solvent cemented joints.
5. Plumbing fixtures include floor mounted flush valve style water closet of vitreous china construction, cast iron mop sinks, stainless steel kitchen sink, fiberglass shower pans with fiberglass surrounds, and a combination of counter mounted molded lavatories and wall mounted vitreous china lavatories.
6. Faucets, flush valves, and shower trim are manual throughout.
7. A commercial gear washer and dryer are located in the Decon Room at the base of the hose tower, adjacent to the Large Apparatus Bays.
8. A residential style washer and dryer are located in the Laundry Room adjacent to the Kitchen at the upper level.
9. An air compressor located at the Small Apparatus Bay area provides compressed air for general service and maintenance. The compressor is sized at 80 gallons of storage, 5 hp, of vertical configuration, manufactured by Ingersoll Rand. Compressed air distributed for use in the facility via ¾" diameter black iron pipe with threaded fittings.
10. A critical systems air compressor is located in the Large Apparatus Bay, with intake air piped to the exterior of the facility. Critical air is routed to bottle fill stations located in the Small Apparatus Bay area.





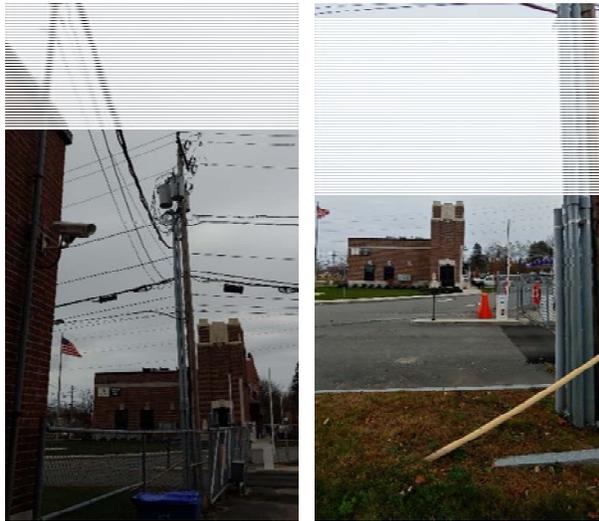
F. Electrical

1. The Central Fire Station has two 208/120-volt three phase overhead services, one serves the 10-horsepower SCBA compressor and the other serves the remainder of the building. The services originate at a pole-mounted utility-owned 112.5-kVA transformer that also serves the 1997 building of the Police Station. The service equipment is located in a vehicle bay that is used for washing vehicles; a shower curtain has been installed to protect the equipment from splashing water, but a vehicle washing area is typically classified as a wet location under the National Electrical Code (NEC), and the equipment is suitable only for dry locations.

Each service terminates at an enclosed circuit breaker. The circuit breaker for the SCBA service is rated 100 amps and is an obsolete Cutler Hammer breaker that appears to be approximately 40 years old and has exceeded its anticipated useful life. The building service circuit breaker is a 200-amp Square D breaker that we estimate was installed in the late 1990's.



It should be noted that the utility pole located adjacent to the fire station building, which is the last pole before the utility service drop connects at the building, serves an underground service to the former armory building across armory street. It may be necessary to modify the service to that building to facilitate construction of a new police/fire station building, depending on which renovation/construction option is selected.



2. The Fire Station has two branch-circuit load centers, both of which are Square D QO series. Panel 1 is located adjacent to the service equipment; it appears to be less than 10 years old but is fully utilized and is located in an area used for vehicle washing, for which it is not suitably rated. Panel 2 is a 20-circuit load center that also appears to have no available capacity for expansion based on the ratings of its branch circuit breakers.





3. A Kohler 230-kW diesel-fueled generator located outside of the fire station provides standby power for the entire fire station building service via an automatic transfer switch, as well as the police Station. The generator does not serve the fire station SCBA compressor.

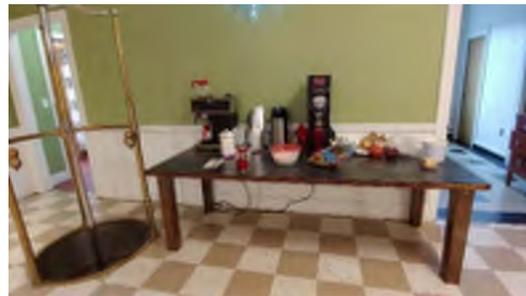
Power Products Systems, LLC, the local Kohler representative reports that the existing generator was placed in service in January of 1999. The generator is reported to be exercised weekly.



4. Receptacles throughout appear to have proper grounding. Extension cords with plug strips are currently used in some areas due to a lack of appropriately located receptacles for the existing uses of spaces. Basement receptacles and some receptacles in apparatus bays do not have ground-fault circuit-interrupter (GFCI) protection, and the bunk-room area

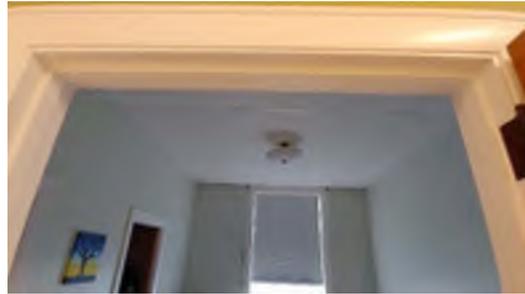
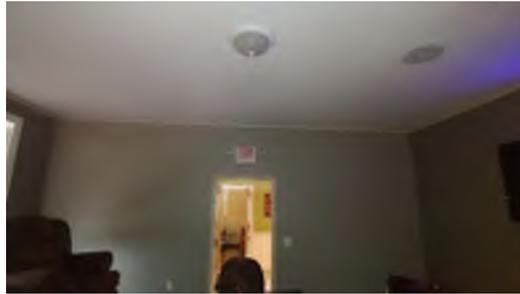
receptacle circuits do not have arc-fault circuit-interrupter (AFCI) protection. These protections would be required by code for a new installation; existing installations are not required to be updated except as part of substantial renovations.

Based on what can be seen from a simple walk-through of the facility, general line-voltage wiring appears to be a mixture of building wire in conduit and type MC metal-clad cable. The wiring varies in age and condition as the system has been modified over the years to accommodate changing needs, but some of the conduits likely house wiring that is quite old and exceeded its anticipated useful life. Open junction boxes were observed in some areas, exposing live wires within.



5. Interior lighting in most areas is provided by various styles of fluorescent luminaires. It appears that many fixtures utilize linear T8 fluorescent lamps and, presumably, electronic ballasts, although obsolete T12 lamps remain in the fixtures in the vehicle bays. Newer decorative ceiling mounted fixtures that appear to utilize Edison base bulbs are installed in the bunk rooms and TV room. The interior lighting is controlled by manual switches.

There are some battery powered emergency lights for means of egress and internally illuminated exit signs to mark means of egress, but the coverage is not up to current standards.



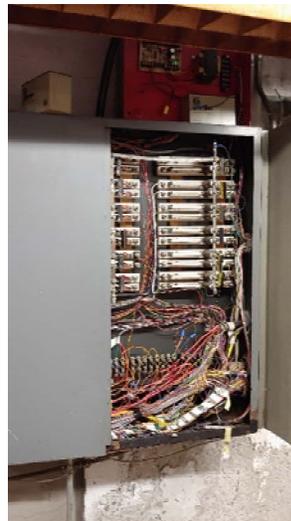
6. Exterior lighting is provided by a mixture of old decorative fixture and newer high-intensity discharge (HID) fixtures. The exterior lighting is controlled by photocells. The fixtures appear to be in fair to good condition but are obsolete.



7. The facility is equipped with a Simplex addressable fire alarm system controlled by a 4010 ES series control panel that is connected for remote monitoring via an AES radio master box. Bunk rooms are equipped with detectors that appear to have smoke and carbon monoxide sensors. Heat detectors are installed in the apparatus bays. While the control panel and installed detectors appear fairly new, occupant notification appliances are not located as would be required by current standards for a new facility; there are no notification appliances in the bunk rooms or apparatus bays.



8. A Zetron fire station alert system is in place to alert the station of alarm calls. There is a cabinet in the basement that contains numerous connections for a municipal call box loop; the City's insurance carrier has reportedly raised concerns about potential hazards associated with this wiring. At the time of our site visit, an electrician was reportedly scheduled to ascertain what voltages, if any, are present in the wiring.



9. Access to the Fire station is controlled by Altronix door controls, card readers, and electric locks. The controller is located in the basement, which is located below the flood plain.



10. Telecommunications services enter the basement in two (3)" conduits. The utility demarcation terminal is located in the basement on the wall opposite the conduit entrance.

Telecommunications horizontal network wiring in the Fire Station is Category 5 cable. The patch panel and network switch are located in the basement.

The current location for the data rack and utility demarcation is undesirable because the basement floor is below the flood plain.

Much old telecommunications wiring that is likely no longer in use and abandoned was observed in the basement and, to a lesser extent, in other areas of the building. Identifying and removing unused wiring would benefit the facility as it is mandated by current code and would simplify design and renovation efforts.



III. Existing Conditions – Police Maintenance Garage

A. General

1. The existing Police Maintenance Garage is a single-story facility, which incorporates two mechanic's bays as well as motorcycle and cold storage, located at the rear of the site behind the Police Station.

B. Fire Protection

1. There is no automatic sprinkler system within the Police Maintenance facility.

C. Mechanical Systems

1. Heating for the Police Maintenance Facility is provided by two separate systems. A natural gas fired unit heater, manufactured by Modine, located at the rear of the facility within the Maintenance Bay area provides the primary source of heat. Additionally, a Clean-Burn waste oil furnace, served by a 330 gallon fuel oil tank, both of which are located at the rear of the Maintenance Bay area, provide supplemental heating service.

2. There is a utility fan set ducted to three separate vehicle exhaust connections with the Maintenance area but it is reported that the system is not used/non functional. There is no general space ventilation within the Police Maintenance Facility.
3. Control for both the unit heater and the Clean-Burn furnace are provided by standalone electric thermostats.



D. Plumbing Systems

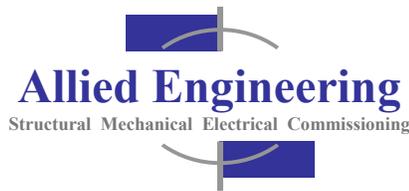
1. Domestic cold water enters the facility as a ¾” diameter service which is fed from the adjacent Police facility. There is no meter or backflow prevention on this service. The piping is copper with soldered fittings, primarily uninsulated.
2. Domestic hot water within the facility is generated by a Rudd storage type heater sized at 20 gallons of storage and 4,500 watt heating capacity. Like the cold water, the hot water is distributed through the facility using copper piping with soldered fittings, much of which is uninsulated.
3. Sanitary sewer exits the facility as a 3” diameter cast iron service with bell and spigot joints.
4. Plumbing fixtures within the Police Maintenance facility are limited to a single service sink and a trench drain within the Maintenance Bay. It is not clear whether the trench drain is routed to an oil/water separator.
5. The Maintenance Facility incorporates a NAPA vertical air compressor for general compressed air service. The unit is sized at 80 gallons of storage, 5 hp.



IV. Summary of Current Conditions/Upgrades at the Adjacent Police Station

A. Overview

1. As outlined in the 2018 Conditions Assessment Report for the South Portland Police Station and Dispatch Facility (refer to Appendix B herein), the facility comprises a two story Public Safety building constructed in 1967 and a two story Dispatch facility constructed in 1997. Both buildings have been determined to have their lower levels located below the flood plain for the area.
2. Both the Public Safety and Dispatch facilities incorporate individual boiler plants for heating.



3. The 1967 Public Safety Building utilizes an indoor air handler to provide heating and ventilation, with fintube radiation for supplemental heat while the 1997 Dispatch facility uses a package rooftop unit to provide heating, cooling, and ventilation, with fintube radiation for supplemental heat. The server room for the Emergency Operation Center (EOC) within the Dispatch facility incorporates a dedicated computer room air conditioning unit sized at 5 tons of cooling while the radio room incorporates a 1 ½ ton ductless split for dedicated cooling.
4. Temperature controls for the 1967 facility are outdated and non-integrated for stand-alone operation of systems throughout. The 1997 section has an electronic direct digital control system, however is antiquated by current standards and at the end of its useful service life.
5. Each section of the Police facility incorporates its own domestic cold service, domestic hot service, and sanitary waste.
6. With the exception of items noted below, the overall status and condition for systems throughout both sections of the facility remain as documented in the included assessment report for that facility.
7. The 1997 section of the facility includes a system of automatic sprinkler protection while the 1967 section has no sprinkler coverage.

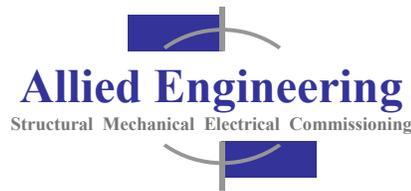
B. Summary of Recently Completed Upgrades

1. The locker rooms located at the center core of the facility have been recently renovated to add additional floor area within the female locker rooms, change/upgrade shower heads and controls throughout the locker rooms, replaced the exhaust fans for the locker rooms, and replaced the plumbing fixtures throughout the locker room area. The renovated spaces do not include code-required fire alarm occupant notification.
2. Exhaust fans throughout the facility have had the motors replaced to restore operation.
3. The rooftop unit serving the 1997 section of the facility has been replaced due to catastrophic failure.

V. Summary of Recommendations Associated with Renovation/Addition/Construction Options

A. Option 1

1. Demolish the rear apparatus bay and hose tower at the existing Fire Station.
2. Demolish the existing Police Maintenance Garage.
3. Renovate the existing two-story Fire Station and construct a new two-story Apparatus Bay addition to meet current programming needs for the Fire Department.
4. Renovate the existing two-story Dispatch Facility.
5. Renovate the existing two-story Police Station and construct a single-story Police Apparatus addition to accommodate the current Police Department programming needs.



B. Option 2

1. Construct a new Fire Station at an alternate site and relocate the existing Fire Department.
2. Demolish the existing hose tower and Police Maintenance Facility.
3. Renovate the entire existing Police/Fire facility to create a stand-alone Police Station meeting the current programming needs of the Police Department. The basement levels of both the Dispatch and Police Station will be abandoned as they are below the flood plain.
4. Emergency Operations Center moves to new Fire Station.
5. Abandon existing basements-relocate mechanical and electrical services and equipment to upper levels.

C. Option 3

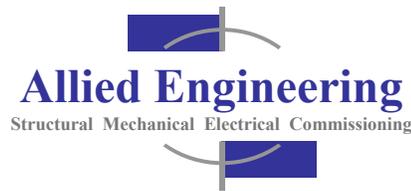
1. Demolish the existing rear Apparatus Bay at the Fire Station.
2. Demolish the hose tower.
3. Demolish the existing Police Maintenance Garage, Police Station, and Dispatch facility.
4. Construct a new two-story Fire Station Addition and renovate the existing two-story Fire Station to meet the current programming needs of the Fire Department.
5. Construct a new three-story Police Station Addition to meet the current programming needs of the Police Department.

D. Option 4

1. Construct a new multi-story combined Police and Fire Station to meet the current programming needs of both Departments. The new combined facility will be constructed outside of the existing building footprints to allow the existing police and fire departments to operate as existing during construction of the new facility.
2. Once the new facility is constructed and both departments are relocated, the existing facility will be demolished in its entirety.

E. Option 5

1. Police move off site, temporarily.
2. Demolish existing Police Station and construct a new three-story Fire Station.
3. Fire Department moves into new building.
4. Demolish existing Fire Station.
5. Construct new three-story Police Station at existing site.
6. Police move into new facility.



F. Option 6

1. Construct a new combined Police and Fire Station at an alternate site. The new facility will comprise approximately 20-25,000 sf for the Police Department and 25-30,000 sf for the Fire Department.

G. Option 7

1. Interim Improvements for current facilities to operate “as is” for the next 3 – 5 years assuming one of the above five options would be planned, designed, and implemented during this time period.

VI. Discussion/Conclusions-General

A. Structure

1. The Central Fire Station has several roof step conditions with low roofs adjacent to high roof areas. In the mid-1970’s model building codes introduced snow drift load provisions to account for snow depths/loads that can be generated from blowing drifting snow at the base of these roof steps to depths/load levels greater than need be considered away from such roof steps. The snow drift provisions did not exist in the 1950’s when the original fire station was constructed. There are no signs that the existing low roofs in the snow drift areas at the fire station have ever been reinforced with added framing to meet the more modern code-specified snow drift load provisions. If the Central Fire Station is to be reused the low roofs at the following areas should be reinforced to meet current building code snow drift load requirements.
 - a. The low roof at the Office Area along Armory Street
 - b. The Small Apparatus Bay off of the back of the two-story Large Apparatus Bay area,
 - c. The localized low roof areas at the Main Roof level adjacent to the High Roof 1 and High Roof 2 areas near the southeast and northeast corners of the fire station footprint.

Reinforcing will most likely consist of adding new steel roof joists installed between the existing steel roof joists, either from above or below the roof and possible reinforcement of some of the existing steel beams. Another option is to construct a new roof structure just above the existing capable of supporting current building code requirements. This would require stripping off existing roof materials down to metal decking and insulating at the new roof as well as the new perimeter wall extensions. This approach may be less disruptive and more cost effective than reinforcing the existing low roof. The Office Area and Main Roof levels near the High Roof 1 and High Roof 2 areas have plaster/lath ceilings which will complicate the installation of any new roof joists from below/inside the existing spaces. The Small Apparatus Bay area has no ceilings.

2. No plans are available for data for the foundations at the Central Fire Station. No significant signs of distress were observed in visible portions of the foundation elements or walls above that can be attributed to building foundation movements. Our sense is that the existing foundations consist of soil supported (not deep pile supported) perimeter walls and interior column footings.

The existing soil conditions may become an issue for any plans being considered involving new building construction on the current site. The drawings available for the 1996 addition to the Police Station show soil supported (not deep pile supported) foundations. The drawings available for the Police Garage along the south end of the site show pile supported foundations suggesting the possible presence of poor soils at the south end of the site unable to bear soil supported foundations.

New construction involving pile supported foundations will be more expensive than soil supported foundations. We recommend that a geotechnical investigation be performed to determine if any new buildings can have soil supported foundations, or may need to have more costly deep pile supported foundation systems. Our understanding is that such a geotechnical study is being proposed/planned as part of this study work.

3. The existing concrete façade elements along the Broadway street side of the Central Fire Station exhibit signs of significant deterioration, most likely from water infiltration/freezing. Our understanding is that 8+/- years ago some loose pieces of these concrete elements were falling to the ground. Concern was such at that time that repairs were done to remove any loose pieces and to seal surfaces of the concrete façade components to help inhibit water infiltration. It appears that this work did stop loose pieces from falling but the concrete still needs significant repair, and replacement of at least some sections, to bring the façade back to 'like new' conditions. Our understanding is that any schemes involving reuse of the Central Fire Station space are to involve repair/replacement of the concrete sections to bring them back up to 'like new' conditions.



4. The thickness of the existing concrete slabs-on-grade in the two Apparatus Bay areas where vehicles are currently parked are not known. The required slab thickness under applied

wheel loads is a function of the subgrade modulus of the soils below the slabs, the level of any reinforcing in the slabs, and the magnitude of wheel loads applied from vehicles parked on, or travelling over, the slab surfaces. Modern fire vehicles tend to be larger/heavier than older fire vehicles. Heavier vehicles can tend to overload/crack slab surfaces. No signs of distress were observed in the existing slab surfaces at the existing Apparatus Bay areas. If different/heavier vehicles are to be parked on any slab surfaces, or if the existing vehicles are to be moved to different slab areas than where they are currently located, we recommend that existing slab thicknesses/levels of reinforcing steel be determined to allow for review/analysis to verify that any existing slab thicknesses are adequate for any applied wheel loadings from new/existing vehicles.

5. Building codes contain provisions for lateral loads (wind/earthquake) that buildings must be able to resist to meet the code requirements. The code provisions for lateral loads have changed markedly since the construction of the original Central Fire Station back in the 1950's. There should be no expectation that the existing Central Fire Station meets the lateral load requirements from modern building codes given how different the current requirements are relative to those required in the 1950's.

As an example, modern codes will likely not allow for a fire station on the South Portland site to have unreinforced masonry walls. Some level of reinforcing steel will likely be required, by load or empirical code provisions, in at least the key masonry elements deemed required to resist any applied lateral loads. Adding new reinforcing steel to meet modern code requirements to an existing unreinforced masonry building is a substantial, costly and often prohibitive operation.

Under certain conditions the building code will allow existing buildings that do not meet all the modern codes provisions to be acceptable as 'legacy' structures. This can be the case when the existing buildings are not modified in a substantial manner by any new work to be performed. Non-substantial work for lateral load considerations would involve no changes, or only minor changes, to the existing structure to not degrade the lateral load capacity of the existing structure (usually by making new openings in existing walls) or by not adding new lateral loads to the existing structure (usually by adding new additions with common walls attached to the existing structure) to negatively impact any available lateral load resistance. At a minimum, all new buildings additions/structures with common walls to the existing Central Fire Station should be framed to be structurally independent from the sidewalls of the Central Fire Station so as to not impart any new lateral loads to the existing building. New openings in any existing walls resisting lateral loads will need to be kept to a minimum or eliminated entirely. Other code provisions will need to be checked as planning progresses to make sure that any planned changes do not require any lateral upgrades.

Buildings exempted by the local Code Enforcement Officer or buildings on the Historical Register may also be legacy structures

Discussions for the re-use of the Central Fire Station indicate that no/only minor modifications are planned for the existing structure. Our assumption here for this study is that any planned work for the Central Fire Station will not result in the need to perform an

upgrade to meet current lateral load code provisions. This assumption will need to be reviewed as planning progresses to make sure that any planned changes do not require any lateral upgrade per the modern building code provisions.

6. Option 7 in this study is related to identifying work that it is felt needs to be performed in the next 5 years or so. None of the roofing/structural items identified meet this threshold. We do recommend that the city adopt/continue routine maintenance of all roofing components during this period of time.
7. Option 1 involves the construction of a new two-story Fire Apparatus Addition right next to the existing single-story Police Dispatch building. It is likely the roof of the two-story addition will project up above the roof of the single-story police building. As noted in Item #1 above, this sort of high to low roof condition may result in code required snow drift loads for the low roof. If the new addition is kept far enough away from the existing building the snow drifting will not be an issue. If the new building is close to the existing building the snow drifting will be on the existing low roof and will require that some of the existing roof framing be reinforced to meet the snow drift loads. Best case scenario here is to keep the new building far enough away from the existing building to avoid the possible need to reinforce any of the existing roof framing. Reinforcement would likely include the removal of existing roof/decking to be able to install new roof joists and reinforce existing beams which would be a disruptive process to on-going police activities. It might be possible to construct a new area of roof above the existing roof for the new drift zone without the need to open up the existing roof to install new framing or upgrade existing framing for the new snow drift loads. It is not known at this time how close the new addition might need to be placed to the existing building. We have carried a line item cost here for Option 1 for this possibility as a possible cost placeholder should the reinforcing described need to take place as process moves forward.

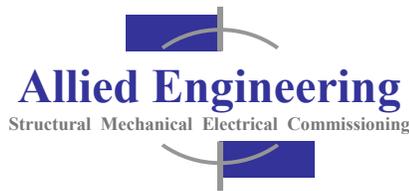
B. Fire Protection Systems

1. As noted herein, neither the Central Fire Station nor the Police Maintenance Facility incorporate automatic sprinkler systems. As noted in the Architectural Code Summary included within this report, this facility is required to be equipped with an automatic sprinkler system for coverage throughout in accordance with NFPA 13 requirements.

C. Mechanical Systems

1. The heating boiler within the Central Fire Station is only approximately two years old and in excellent overall condition. However, as currently operating, it is observed that the boiler routinely malfunctions, short-cycling and unable to build steam pressure. It is reported, and there is an instructional bulletin posted in the boiler room, that when the boiler acts up, each of the drain valves require bleeding followed by resetting the switch on the make-up water valves. This practice is currently being done on a weekly basis and appears to keep the boiler operational.

The boiler feedwater pump set, like the boiler is two years old and in excellent overall operating condition.



Although the boiler and ancillary equipment is very new and well within its published service life, it is set up to generate steam. Additionally, although converting the boiler to hot water is possible, the cost to do so, in light of the fact that it is a conventional style boiler with a maximum efficiency of around 85%, the cost to convert the boiler for use in an updated facility is likely not worth considering.

Although the age is unknown for both the unit heater and the waste oil furnace at the Police Maintenance Facility, they both appear to be in good condition.

2. There is no general ventilation throughout the Large and Small Apparatus Bay areas. Given the likelihood that vehicles will operate frequently within these bays, a system of general exhaust ventilation should be added to serve the spaces. Additionally, for the Small Apparatus Bays, if vehicles operate for longer durations than required to simply move them into and out of the bays, good engineering practice would dictate the installation of a vehicle exhaust system.

Although the Large Apparatus Bays already incorporate a system of vehicle exhaust, it is apparent that the system is nearing the end of its published dependable service life.

Similar to the Large and Small Apparatus Bays, the Police Maintenance facility contains no mechanical general ventilation system as would be required by current standards of care. Also, the vehicle exhaust system in this building is beyond its useful service life and reportedly out of commission.

There is no system of mechanical ventilation for the Bunk Rooms, Dining Room, or Lounge area. Although the spaces incorporate operable windows which allow for natural ventilation, this is impractical during winter heating season and hot summer days.

The bathrooms throughout do not incorporate exhaust ventilation as required by current standards.

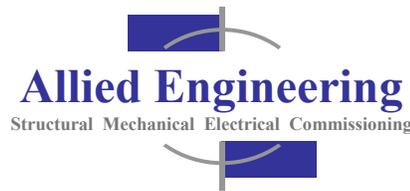
The kitchen hood does not meet the current requirements of NFPA 101 or NFPA 96.

3. The system of temperature controls throughout the Central Fire Station is antiquated and offers little control of the temperature with each of the individual functional spaces.

D. Plumbing Systems

1. The plumbing fixtures throughout the facility, although in serviceable condition, for the most part are nearing or at the end of their published service lives and showing signs of dilapidation. Most fixtures do not comply with the requirements set forth by the Americans with Disabilities Act (ADA) for accessibility.

It is apparent that various faucets and trim have been replaced as part of an overall maintenance program in maintaining the functionality of systems throughout.



2. The piping systems associated with the domestic hot, domestic cold, sanitary sewer, and storm piping appear to be original to the facility except where modified for fixture changes or additions.

As noted elsewhere, the domestic cold water service does not include provisions for backflow prevention as would be required by current standards.

Insulation systems at much of the piping throughout do not comply with current energy standards and are showing signs of damage and dilapidation.

E. Electrical Systems

1. The service entrance does not have adequate capacity to support additional mechanical equipment.
2. The two existing branch-circuit panelboards are theoretically suitable for re-use, but considering the extent of proposed renovations, it is unlikely that reusing them would prove cost effective.
3. The existing standby generator system is near the end of its anticipated useful life and does not have adequate capacity to support the proposed program.

The National Electrical Code (NEC) requires the wiring of emergency systems, such as code-required means-of-egress illumination and fire alarm systems, to be separated from the normal wiring system. The existing standby generator system includes only one transfer switch. Provision of a separate automatic transfer switch, which would supply an emergency panel within the building would comply with the current standard.

4. Much of the general wiring within the building appears to be original to the building and has exceeded its anticipated useful life. Much of the wiring is also located in walls that will be demolished. None of the wiring in the building is suitable for use in a Critical Operations power system.
5. The existing interior lighting fixtures are at or near the end of their anticipated useful lives and should be replaced as part of the renovations.
6. The existing exterior lighting fixtures are outdated and do not have modern full-cutoff optics to reduce light pollution. The facility would benefit from updating the exterior lighting as part of the proposed renovations.
7. The telecommunications entrances should be relocated out of the basement and above the flood plain. The existing telephone entrance conduits are under sized for a modern fire station. The data patch panel should be located in a dedicated telecommunications room with suitable infrastructure for accommodating network connectivity and to support the desired access control system and security cameras.

8. Fire alarm occupant notification generally does not comply with current standards. While the age and condition of the fire alarm control panel would theoretically permit its reuse, we believe the most cost-effective option is to include a complete new fire alarm system as part of the facility renovations considering the scope of proposed floor plan modifications.

If the building or a portion thereof is classified by a governmental agency having jurisdiction as a Critical Operations Power System in accordance with NEC Article 708, such classification will significantly affect cost and design of the fire alarm wiring. Please refer to the recommendations section of this report for further information.

9. We anticipate that, at a minimum, the EOC area in the new program will be classified as a Critical Operations Power System in accordance with NEC Article 708 by a governmental agency having jurisdiction. Such classification has significant design ramifications affecting the electrical service entrance, distribution equipment, emergency generator, general power wiring, fire alarm system wiring, HVAC controls wiring, and telecommunications systems infrastructure serving the Designated Critical Operations Area. Please refer to the recommendations section of this report for further information.

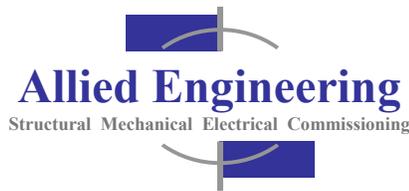
VII. Basis of Design Recommendations – Option 1

A. Structure

1. Codes, Standards and Authorities Having Jurisdiction:
 - a. International Building Code - IBC 2015
 - b. International Existing Building Code - IEBC 2015
 - c. American Society of Civil Engineers – Minimum Design Loads For Buildings and Other Structures – ASCE 7-2010

Option 1

- a. Reroof Central Fire Station spaces not noted to be demolished.
- b. Repair concrete façade elements on Central Fire Station, and repair/repoint existing perimeter brick walls.
- c. Reinforce low roof framing at Office Area along Armory Street, and for low roof areas near High Roof 1 and High Roof 2 high roofs at northeast and southeast corners of Main Roof for modern code snow drift provisions.
- d. Possible investigation of existing slab thicknesses depending on plan for vehicle parking locations.
- e. Construct new two-story Apparatus Bay addition and new single-story Police Apparatus addition. Additions to be structurally independent from existing buildings. Need results of geotechnical study to verify if new foundations for additions to be soil supported or pile supported.
- f. Reroof Existing Police Dispatch Building & Existing Police Public Safety Buildings to remain.



Estimated Cost:	Re-roofing Items a & f Above	\$300,000 - \$350,000
	Façade Repair Item b Above	\$200,000 - \$250,000
	Low Roof Reinforcement Item c Above	\$ 30,000 - \$40,000
	<u>TOTAL (S-1)</u>	<u>\$530,000 - \$640,000</u>

REFER TO ARCHITECTURAL/SITE PORTIONS OF STUDY FOR COST FOR NEW CONSTRUCTION AREAS AND ANY EXISTING BUILDING DEMOLITION COSTS.

POSSIBLE ADDITIONAL COST TO REINFORCE EXISTING POLICE DISPATCH BUILDING ROOF FOR NEW SNOW LOADS FROM DRIFTING OFF OF NEW TWO-STORY FIRE APPARATUS ADDITION. SEE ITEM 7 IN PART VI DISCUSSION SECTION - \$150,000 - \$200,000

B. Fire Protection

1. Codes, Standards and Authorities Having Jurisdiction-All Options:

a. International Building Code – 2009

- 1) NFPA 1, Fire Code with amendments
- 2) NFPA 13, Standard for the Installation of Sprinkler Systems
- 3) NFPA 101, Life Safety Code
- 4) State of Maine Fire Marshal 's Office
- 5) South Portland Fire Department
- 6) Owner's Insurance Agent

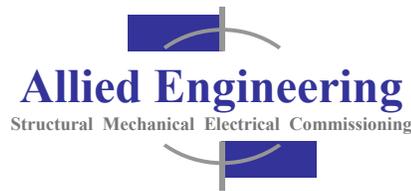
2. Recommendations for Sprinkler Systems

- a. Replace the existing 6” sprinkler main serving the existing Dispatch Facility with an 8” sprinkler main to facility full sprinkler coverage throughout the facility. The new service shall be routed to a new mechanical room located at the upper level of the facility to keep the service above the flood plain.

Estimated Cost: Refer to Site Utilities section herein.

- b. Relocate the existing wet pipe sprinkler riser and associated fire department connection, test, and drain to the new sprinkler room.

Estimated Cost: \$5,000.00



- c. Furnish and install revisions and extension to the existing wet pipe sprinkler system throughout the existing Dispatch Facility to facilitate renovations throughout and redirect the main from the relocated entrance.

Estimated Cost: \$39,000.00

- d. Extend the sprinkler service at the Dispatch facility to provide full sprinkler coverage throughout the renovated existing Public Safety Building and new Police Apparatus Addition.

Estimated Cost: \$84,000.00

- e. Extend sprinkler service from the new 8” entrance to provide automatic sprinkler protection throughout the existing renovated Fire Station, proposed two-story Fire Apparatus addition and Training Tower addition.

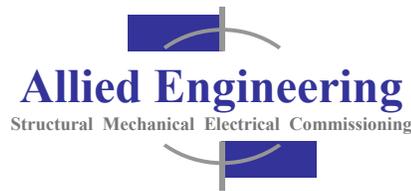
Estimated Cost: \$119,000.00

TOTAL (FP-1): \$247,000.00

C. Heating, Ventilating, and Air Conditioning

1. General Requirements – All Options

- a. Maine Uniform Building and Energy Code (MUBEC) consists of the following codes:
 - 1) IBC, International Building Code – 2015
 - 2) ASHRAE Standard 62.1 – 2013
 - 3) ASHRAE Standard 90.1 – 2013
 - 4) IECC, International Energy Conservation Code, 2009
 - 5) NFPA 54, National Fuel Gas Code
 - 6) NFPA 90A, Standard for the Installation of Air-Conditioning and Ventilating Systems
 - 7) NFPA 101, Life Safety Code
- b. HVAC system design to be based on 2017 ASHRAE Fundamentals Handbook Climatic design conditions for Portland, Maine:
 - 1) 99.6% Winter Frequency of Occurrence: 0.1 deg F dry bulb.



- 2) 0.4% Summer Frequency of Occurrence: 86.8 deg F dry bulb/71.3 deg F wet bulb.

c. Indoor Design Conditions

- 1) Office Areas
 - a) Winter: 70 deg F.
 - b) Summer: 75 deg F; 55% RH maximum.
- 2) Apparatus/Maintenance Areas/Utility Spaces
 - c) Winter: 65 deg F.
 - d) Summer: n/a

2. Green Energy Statement (Typical for all Options)

- a. The upgrades, alterations, and installations proposed herein for heating, ventilation, and air conditioning (HVAC) systems are made based upon current standards of care, code requirements, and our experience with the goals and expectations of the client.

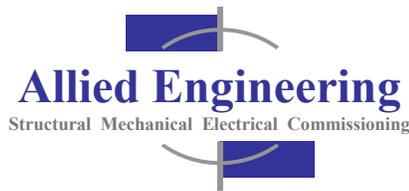
In selecting systems as outlined herein, consideration is given to the high expectations and demands of the City of South Portland with respect to energy efficiency, net zero targets, and environmental impact neutrality for the HVAC systems overall, while maintaining, to the extent possible, cost effectiveness, overall occupant comfort, system controllability, and owner operational requirements.

The systems selected herein are proposed based upon our experience with both these facility types and the client, in an effort to establish baseline facility renovation/addition costs. As the design for facility renovations and additions progresses, we anticipate a more detailed analysis of the HVAC systems to include energy modeling and life cycle costing for the selected systems versus several system enhancement alternates such that an informed final decision may be made by The City of South Portland. We propose to retain the services of Thornton Tomasetti to provide the energy modeling and life cycle cost analysis during the design development phase of the project.

As a final note, although the recommendations made herein, are made assuming that high efficiency condensing boilers, burning natural gas will be utilized to generate hydronic heat for radiant floor systems, we understand that net zero policies will tend to dictate electric based systems. As such, our life cycle cost analyses moving forward will consider electric based radiant heating systems for the maintenance areas.

3. Recommendations for HVAC Systems

- a. Given the age of the boilers at the existing Police Station and Dispatch Facilities and the current steam configuration at the Central Fire Station,



combined with the facts that all boilers and associated fuel conveyance systems are located within the flood plain of the site and all boilers are, at best capable 80-85% efficiency, we recommend construction of a new central boiler plant at the ground level of the proposed facility, located central to the facility and comprised of modular, high efficiency, natural gas fired condensing boilers capable of operating at 95-97% efficient.

The new heating plant will be sized to provide N+1 redundancy for the heating needs of the entire facility.

The heating plant will distribute heat throughout terminal heating systems throughout the new and renovated sections of the facility as described herein by means of a variable speed pumping system to match hot water flow and temperature to the heating needs of the facility.

Estimated Cost: \$360,000.00

- b. Re-feed the existing fin-tube radiation throughout the renovated Police Station for secondary heating and install a system of variable refrigerant flow (VRF) heat pumps throughout the occupied spaces within the renovated Police Station to provide cooling and primary space heating needs. (Upper Level only).

Estimated Cost: \$110,000.00

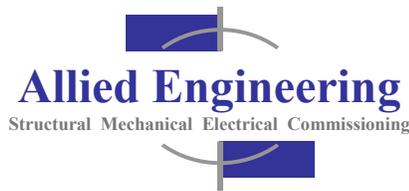
- c. Furnish and install VRF heat pumps for heating and cooling functional spaces throughout the upper level of the Dispatch Facility and the two renovated levels of the existing Fire Station. The existing Emergency Operations Center will be maintained on a separate dedicated system of environmental control, as currently configured. A new system will be installed to facilitate the renovations.

Estimated Cost: \$325,000.00

- d. Furnish and install in-slab radiant heating throughout the Fire Apparatus and Police Apparatus additions and hydronic unit heaters for quick pick-up in times of sustained opening of overhead doors.

Estimated Cost: \$185,000.00

Furnish and install new systems of mechanical ventilation throughout all sections of the renovations and additions. For the existing Police Station, an energy recovery ventilator (ERV) located on the roof is proposed to provide exhaust air for the restrooms and storage areas through the first-floor area while delivering tempered makeup air to the occupied spaces for ventilation. The existing air handling unit and associated ductwork within the lower level



will be removed complete and the air system serving the decommissioned firing range will be abandoned.

At the existing Dispatch Facility, the current HVAC rooftop unit will be removed along with the bypass VAV delivery system and an ERV will be installed on the roof to serve the upper level of the facility.

The Fire and Police Apparatus Bays will be outfitted with new vehicle exhaust capture systems as well as general emergency ventilation systems to evacuate CO₂ and NO_X as levels exceed permissible exposure limits. The Apparatus Bays shall each include natural gas fired makeup air units to provide replacement air for the exhaust fans.

A new ERV is proposed to serve the renovated Fire Station – both levels.

NFPA compliant exhaust hoods with fire suppression will be installed at all kitchen ranges. The ventilation system shall include a natural gas fired makeup air unit to provide replacement air for the exhaust hood.

Lower level areas of the entire facility will be heated via hydronic unit heaters and ventilated with exhaust fans as required based upon use.

Provide a system of mechanical dehumidification for the Decon Room in the Fire Apparatus Bay.

Estimated Cost: \$815,000.00

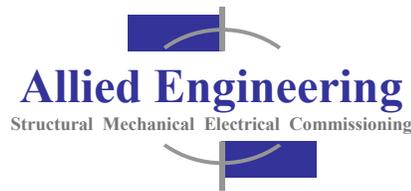
- e. Furnish and install a new system of automatic temperature controls to serve systems throughout the new and renovated areas. The system will be integrated with The City of South Portland's existing Invensys building automation system (BAS) and will provide control and monitoring for systems throughout.

Estimated Cost: \$430,000.00

- f. All new air and hydronic systems will be tested, adjusted, and balanced to NEBB and AABC standards. Additionally, independent commissioning will be conducted to document functional operation of the system in accordance with the design intent.

Estimated Cost: \$55,000.00

TOTAL (M-1): \$2,280,000.00



D. **Plumbing**

1. General Requirements – All Options

- a. Maine Uniform Building and Energy Code (MUBEC) consists of the following codes:

- 1) IBC, International Building Code – 2015
- 2) ASHRAE Standard 90.1 – 2013
- 3) IECC, International Energy Conservation Code, 2009
- 4) Maine Internal Plumbing Code – UPC 2015
- 5) NFPA 54, National Fuel Gas Code

2. Recommendations for Plumbing Systems:

- a. Furnish and install new plumbing fixtures throughout the new and renovated areas of both the Police and Fire Facilities.

Water closets shall be floor mount, flush valve configuration at the common and administrative areas and flush tank configuration at the bunk areas, constructed of white vitreous china.

Lavatories shall be undermount counter or wall mount configuration as dictated by the architectural casework. Lavatories at the bunk areas shall incorporate manual, two handle faucets while those at the common and administrative areas shall be electronic, sensor type faucets for hands free operation.

Showers shall be fiberglass or acrylic factory fabricated slide in units. Shower controls shall include hand and overhead showerheads and safety mix style control valves.

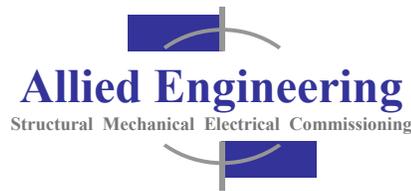
Mop sinks shall be 24” x 24’ molded stone with wall mounted utility faucets.

Apparatus Bays shall incorporate a semi-circular hand wash station and shall each include an emergency eyewash station.

The Decon Room shall include overhead and handheld drench showers and a decontamination sink with hand held spray hose.

Break Room sinks shall be undermount stainless steel with single handle faucets which include pull out sprayers.

Estimated Cost: \$268,000.00



- b. Furnish and install a new water entrance within the central mechanical room at the grade level of the facility. The three existing water entrances shall be removed. The new service will include metering for domestic use, metering for truck fill use, and reduced pressure zone backflow prevention devices.

Estimated Cost: \$20,000.00

- c. Furnish and install a new indirect water heater served by the new boiler plant to generate domestic hot water for the facility. The new domestic water heating system shall incorporate a digital mixing valve to accurately control the water supply temperature to the facility.

Estimated Cost: \$25,000.00

- d. Furnish and install all new domestic cold, hot, and hot water recirculation piping to serve fixtures throughout the facility. Piping shall be insulated to meet current energy standards.

Estimated Cost: \$482,400.00

- e. Furnish and install all new sanitary waste and vent piping and drainage specialties to serve fixtures throughout the facility. The sanitary waste at the existing buildings shall be directed to exit the facility at their current locations, while new exit points will be designated for the new building additions.

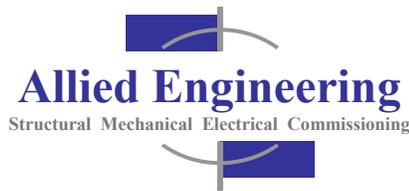
Estimated Cost: \$536,000.00

- f. Furnish and install new storm drain piping to serve the new additions and revise the existing roof drainage as required to facilitate the renovations. Like the sanitary piping, it is assumed that the existing facilities will maintain the current location for storm drain exiting the facility while storm drainage at the new facility will be directed to a new service at the site.

Estimated Cost: \$142,600.00

- g. Furnish and install natural gas piping to serve heating equipment throughout. The existing natural gas services shall be removed and a single central service installed near the central mechanical room.

Estimated Cost: \$82,000.00



- h. Furnish and install a new compressor and compressed air piping to provide general service compressed air throughout the Apparatus Bays. It is assumed that one will be required for Police and a separate one for Fire.

Estimated Cost: \$50,000.00

TOTAL (P-1): \$1,606,000.00

E. **Electrical**

General Requirements

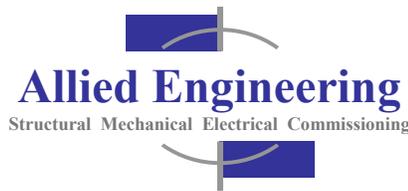
1. All electrical work under scope of this Contract shall comply fully with the following codes and standards:
 - a. American Society for Testing and Materials (ASTM).
 - b. Underwriters' Laboratories, Inc. (UL)
 - c. Insulated Power Cable Engineers Association (IPCEA)
 - d. National Electrical Manufacturers Association (NEMA).
 - e. Institute of Electrical and Electronic Engineers (IEEE).
 - f. American National Standards Institute (ANSI).
 - g. National Fire Protection Association (NFPA).
 - h. National Electrical Code (NEC).
 - i. Occupational Safety and Health Act (Public) (OSHA).
 - j. International Energy Conservation Code (IECC).
 - k. Local Inspection Department.
 - l. Local Fire Department.

Recommendations for upgrades to existing systems:

1. Upgrade the electrical service to 1200 amps, 480/277 volts, 3-phase, 4-wire. The new service shall be underground and shall terminate in a new electrical room. Underground feeders and service entrance conduits shall be concrete encased such that minimum concrete thickness is 2" around the entire conduit. Estimated cost includes and allowance of \$60,000 for utility construction charges.

Estimated Cost: \$300,000

2. Provide branch-circuit panels located within the electric room and elsewhere as required to supply branch circuits for mechanical systems, administrative areas, support areas and equipment areas.
 - a. Shall be circuit-breaker type construction with bolt-on type connections and shall be U.L. listed.
 - b. All circuit breakers shall be quick-make, quick-break, trip free U.L. listed.
 - c. All panelboard bussing shall be aluminum.
 - d. Panelboards shall be furnished with lockable doors all keyed for a master key.
 - e. Panelboards shall have 42 pole capacity and shall have mains rated at 100 amps minimum, single-phase, 3-wire with ground bus unless noted otherwise.



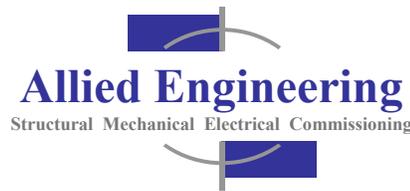
- f. Feeder distribution equipment to the Designated Critical Operations Area needs to be located in a 2-hour rated room.
- g. Selective coordination shall be provided for all overcurrent protection devices.

Estimated Cost: \$96,000

- 3. Provide a 750-kW, 480/277-volt, 3-phase, 4-wire diesel generator set to serve as the alternate power source. Provide a weatherproof generator enclosure with Level 2 sound attenuation. The generator shall include a subbase fuel tank with adequate capacity for at least 72 hours operation at full load. Provide separate automatic transfer switches for the emergency standby systems. The generator and automatic transfer switches shall be suitable for NFPA 110 level 1 emergency systems. A manual transfer switch and means of connecting a portable generator will be provided in addition to the permanently installed standby generator.

Estimated Cost: \$260,000

- 4. Provide a complete new general wiring system for the renovated facility.
 - a. Wiring insulation shall be Type “THWN/THHN” (75 de+grees C. minimum) for all single conductors in conduit. All insulation shall be rated for 600 volts, A.C. and will be color coded in accordance with the NEC. Minimum branch circuit wiring size shall be No. 12 A.W.G. with separate neutrals, except motor control circuit wiring and building interior fire alarm wiring may be No. 14 A.W.G. minimum.
 - b. All wiring and cable size 1/0 and smaller shall be copper. For conductors above 1/0 in copper size, aluminum may be used when proper de-rating is performed and confirmed with the engineer.
 - c. Wiring buried in earth or fill shall be single conductor installed in schedule 40 PVC conduit except at penetration of building where it shall be adapted to intermediate metal conduit, or where otherwise noted. Panelboard feeders within building shall be single conductor installed in electrical metallic tubing.
 - d. Interior branch circuit wiring shall be applied as follows:
 - 1) Branch-circuit wiring above hung or suspended ceilings, within furred spaces or metal partitions shall be Type MC, metal-clad cable with copper conductors and fully rated separate grounding conductor.
 - e. In areas with exposed structure ceilings, exposed wiring in conduit shall be permitted at the ceiling.
 - f. Where subject to physical damage, conduit shall be type “IMC” intermediate metal conduit.
 - g. Minimum size conduit shall be ½ in. unless noted otherwise.
 - h. Low voltage wiring for lighting control shall be 18 A.W.G. minimum and be installed in accordance with the NEC standards for low voltage conductors.
 - i. Wiring and raceways in finished areas shall be concealed in walls and above ceilings.
 - a. Branch-circuit wiring for fire alarm, security, emergency communications, and signaling systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.



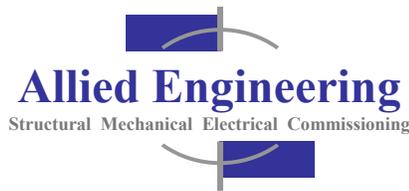
- a. Branch-circuit wiring for power, control, and monitoring of HVAC systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.
- b. All feeders serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated system.
- j. Wiring for HVAC control and monitoring serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated system.

Estimated Cost: \$140,000

- 5. Provide receptacle outlets throughout the facility as required to meet program needs.
 - a. All devices and switches shall be Specification grade and U.L. Listed.
 - b. Receptacle devices in toilet rooms, kitchen, near sinks and building exterior shall be GFCI protected.
 - 1) Exterior receptacle shall have weatherproof covers. The weatherproof integrity shall not be affected when heavy duty specification or hospital grade attachment plug caps are inserted.
 - 2) Rooftop receptacles shall be located within 25 feet of mechanical units.
 - c. Duplex receptacles will be provided in all areas in quantities suitable for space usage.
 - d. Specialty receptacles shall be provided for specific equipment.
 - e. Toggle switches shall be rated 20 amps.
 - f. Device plates shall be high-abuse nylon. Plates shall be of appropriate size and type.

Estimated Cost: \$65,000

- 6. Provide LED lighting with high-performance optics throughout the building. Provide full cut-off LED exterior lighting for all exterior areas.
 - a. The lighting systems will be in compliance with the Illuminating Engineering Society (IES) recommendations for foot-candle levels.
 - b. Luminaires shall utilize factory-installed LED light engines. Luminaires shall qualify for Efficiency Maine rebates to the greatest extent possible based upon programming requirements.
 - c. Emergency egress lighting and Exit signs shall be provided to meet all code requirements with back-up power from the emergency generator.
 - d. Mechanical, storage and utilitarian spaces will be provided with LED lensed strip type fixtures.
 - e. Control of exterior shall be auto-on/auto-off by an astronomical time clock or photocell.
 - f. Ceiling mounted or switchbox type Occupancy sensors shall be utilized in areas subject to intermittent use. Areas 150 square feet and less shall utilize switch-box mounted occupancy sensors. Areas greater than 150 square feet shall be controlled by a power pack and a low voltage manual switch connected to a local occupancy sensor.
 - 1) Power pack shall be dual voltage and capable of loads rated 20 amps.
 - 2) Occupancy sensor shall be powered from the power pack and be dual technology capable (PIR and ultrasonic). The low voltage switch shall



interface with the occupancy sensor to provide for manual-ON, occupancy sensor off. Sensor shall be capable of satisfying logic states using either or both technologies.

- 3) Occupancy sensor shall be ceiling mounted for areas with recessed lighting and wall mounted for pendant lighting. Mounting height to match pendant height.
- g. Lighting in selected areas shall be turned on automatically upon receipt of an alarm by the fire station.

Estimated Cost: \$485,000

7. Telecommunications:

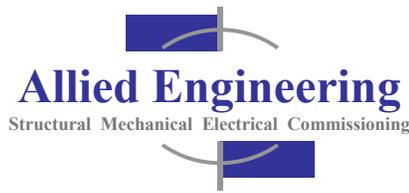
- a. Provide a new telecommunications underground duct bank to a telecommunications utility demarcation point in the new electrical room. The duct bank shall consist of three 4" conduits: (1) for telephone, (1) for CATV and (1) spare.
- b. Telecommunications work shall comply with BICSI and EIA/TIA standards.
- c. Horizontal cabling and terminations shall be Category 6.
- d. Cables shall be riser rated.
- e. Critical communications systems wiring serving the Designated Critical Operations Area shall be a 2-hour rated wiring method.

Estimated Cost: \$95,000

8. Provide an automatic, addressable electrically supervised, low-voltage fire alarm system.
 - a. Fire alarm systems shall generally comply with requirements of NFPA 72 for local building systems except as modified and supplemented by this specification.
 - b. All units of equipment shall be listed by Underwriters Laboratories and shall consist of a battery-backed fire alarm control panel, heat detectors, smoke detectors, and pull stations.
 - c. Occupant notification shall be audio/visual type with voice evacuation signals. Visual notification appliances shall be synchronized where multiple strobe flashes are visible.
 - d. Wiring shall be in accordance with NEC Article 760, and as recommended by the manufacturer of the fire alarm system and AHJ.
 - e. Duct smoke detectors shall be provided in all supplies that are 2000cfm or greater and returns that are 15,000cfm or greater.
 - f. System shall be connected to and monitor status of sprinkler devices.
 - g. All wiring for fire alarm, security, and emergency communications and signaling systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.

Estimated Cost: \$160,000

9. Provide Access control, intrusion detection, and a security camera system to suit program needs.
 - a. The access control system shall be integrated with the city's On-Guard system and shall consist of card readers, duress buttons, and associated hardware and software.
 - b. Cameras will be power-over-ethernet (POE) type network.



- c. Intrusion detection shall be controlled by a separate control panel, which shall monitor motion detectors and door switches and shall be connected to interface with the access control system.

Estimated Cost: \$150,000

Total (E-1): \$1,751,000

VIII. Basis of Design Recommendations – Option 2

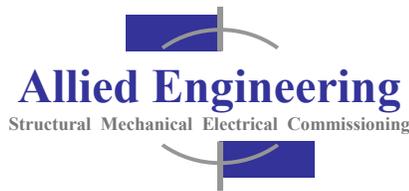
A. Structure

- 1. Codes, Standards and Authorities Having Jurisdiction:
 - a. International Building Code - IBC 2015
 - b. International Existing Building Code - IEBC 2015
 - c. American Society of Civil Engineers – Minimum Design Loads For Buildings and Other Structures – ASCE 7-2010
- 2. Option 2
 - a. Reroof Central Fire Station spaces not noted to be demolished.
 - b. Repair concrete façade elements on Central Fire Station, and repair/repoint existing perimeter brick walls.
 - c. Reinforce low roof framing at Office Area along Armory Street, at Small Apparatus Bay, and for low roof areas near High Roof 1 and High Roof 2 high roofs at northeast and southeast corners of Main Roof for modern code snow drift provisions.
 - d. Possible investigation of existing slab thicknesses depending on plan for vehicle parking locations.
 - e. Construct new single-story Police Apparatus/Cold Storage addition. Addition to be structurally independent from existing Central Fire Station. Need results of geotechnical study to verify if new foundations for additions to be soil supported or pile supported.
 - f. Reroof Existing Police Dispatch Building & Existing Police Public Safety Buildings to remain.

Estimated Cost:	Re-roofing Items a & f Above	\$350,000 - \$400,000
	Façade Repair Item b Above	\$200,000 - \$250,000
	Low Roof Reinforcement Item c Above	\$ 100,000 - \$125,000
	<u>TOTAL (S-2)</u>	<u>\$650,000 - \$775,000</u>

REFER TO ARCHITECTURAL/SITE PORTIONS OF STUDY FOR COST FOR NEW CONSTRUCTION AREAS AND ANY EXISTING BUILDING DEMOLITION COSTS

B. Fire Protection



1. Recommendations for Sprinkler Systems

- a. Replace the existing 6” sprinkler main serving the existing Dispatch Facility with an 8” sprinkler main to facility full sprinkler coverage throughout the facility. The new service shall be routed to a new mechanical room located at the upper level of the facility to keep the service above the flood plain.

Estimated Cost: Refer to Site Utilities section herein.

- b. Demolish the existing sprinkler system throughout the existing Dispatch Facility.

Estimated Cost: \$5,000.00

- c. Furnish and install revisions and extension to the existing wet pipe sprinkler system throughout the existing Dispatch Facility to facilitate renovations throughout and redirect the main from the relocated entrance. Assumes the lower level will be sprinklered for use as non-critical space.

Estimated Cost: \$39,000.00

- d. Extend the sprinkler service at the Dispatch Facility to provide full sprinkler coverage throughout the renovated existing Public Safety Building. Assumes the lower level will be sprinklered for use as non-critical space.

Estimated Cost: \$60,000.00

- e. Extend sprinkler service from the relocated 6” entrance to provide automatic sprinkler protection throughout the existing renovated Fire Station and Small Apparatus Bays.

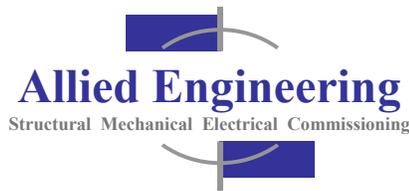
Estimated Cost: \$70,000.00

- f. Extend sprinkler service from the relocated 6” entrance to provide automatic sprinkler protection throughout the proposed Police Apparatus and Cold Storage Addition.

Estimated Cost: \$10,000.00

TOTAL (FP-2): \$334,000.00

C. **Heating, Ventilating, and Air Conditioning**



1. Recommendations for HVAC Systems

- a. As with Option 1, given the age of the boilers at the existing Police Station and Dispatch Facilities and the current steam configuration at the Central Fire Station, the existing boilers are not proposed for reuse in this renovation concept. We recommend that a new condensing, natural gas fired boiler plant be constructed central to the proposed Police Station and a second hot water boiler plant of similar configuration be constructed to serve the proposed new Fire Station at the alternate location.

The new heating plants will be sized to provide N+1 redundancy for the heating needs of each facility.

The heating plants will distribute heat throughout terminal heating systems throughout the new and renovated sections of the facility as described herein by means of a variable speed pumping system to match hot water flow and temperature to the heating needs of the facility.

Estimated Cost (Police Station): \$327,000.00

Estimated Cost (Fire Station): \$330,000.00

- b. Refeed the existing fin tube radiation throughout the renovated Police Station for secondary heating and install a system of variable refrigerant flow (VRF) heat pumps throughout the occupied spaces within the renovated Police Station to provide cooling and primary space heating needs. (Upper Level only).

Estimated Cost: \$110,000.00

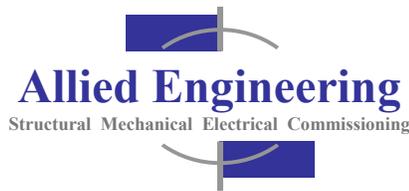
- c. Furnish and install VRF heat pumps for heating and cooling functional spaces throughout the upper level of the Dispatch Facility and the two renovated levels of the existing Fire Station. The existing Emergency Operations Center will be maintained on a separate dedicated system of environmental control, as currently configured. A new system will be installed to facilitate the renovations.

Estimated Cost: \$325,000.00

- d. Furnish and install unit heaters to heat the Small Apparatus Bays to Serve Police Maintenance.

Estimated Cost: \$30,000.00

- e. Furnish and install new systems of mechanical ventilation throughout all sections of the Police Station renovations and additions. For the existing



Police Station, an energy recovery ventilator (ERV) located on the roof is proposed to provide exhaust air for the restrooms and storage areas through the first-floor area while delivering tempered makeup air to the occupied spaces for ventilation. The existing air handling unit and associated ductwork within the lower level will be removed complete and the air system serving the decommissioned firing range will be abandoned.

At the existing Dispatch Facility, the current HVAC rooftop unit will be removed along with the bypass VAV delivery system and an ERV will be installed on the roof to serve the upper level of the facility.

The Police Apparatus Bays will be outfitted with new vehicle exhaust capture systems as well as general emergency ventilation systems to evacuate CO₂ and NO_X as levels exceed permissible exposure limits. The Apparatus Bays shall include a natural gas fired makeup air unit to provide replacement air for the exhaust fans.

A new ERV is proposed to serve the renovated existing Central Fire Station – both levels, to facilitate the Police occupancy.

NFPA compliant exhaust hoods with fire suppression will be installed at all kitchen ranges. The ventilation systems shall include natural gas fired makeup air units to provide replacement air for the exhaust hoods.

Lower level areas of the entire facility will be heated via hydronic unit heaters and ventilated with exhaust fans as required based upon use.

Estimated Cost: \$785,000.00

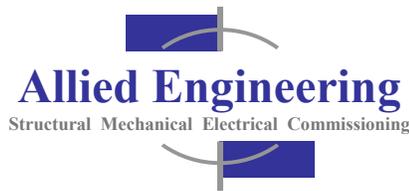
- f. New mechanical HVAC systems for the proposed new Fire Station are recommended as follows: VRF Heat Pumps to heat and cool occupied areas, ERV's for conditioned area ventilation, Kitchen Hood Exhaust, Vehicle Exhaust Capture Systems and Emergency General Area Ventilation for the Apparatus Bays, mechanical dehumidification for the Decon Room, radiant slab heat for the Apparatus Bays, and unit heaters for utility room and supplemental Bay heating.

Estimated Cost: \$600,000.00

- g. Furnish and install a new system of automatic temperature controls to serve systems throughout the new and renovated areas. The system will be integrated with The City of South Portland's existing Invensys building automation system (BAS) and will provide control and monitoring for systems throughout.

Estimated Cost (Police Facility): \$230,000.00

Estimated Cost (New Fire Station): \$240,000.00



- h. All new air and hydronic systems will be tested, adjusted, and balanced to NEBB and AABC standards. Additionally, independent commissioning will be conducted to document functional operation of the system in accordance with the design intent.

Estimated Cost (Police Facility): \$28,000.00
Estimated Cost (New Fire Station): \$30,000.00

TOTAL (M-2): \$3,035,000.00

D. **Plumbing**

1. Recommendations for Plumbing Systems:

- a. Furnish and install new plumbing fixtures throughout the new and renovated areas of both the Police and Fire Facilities. Fixture types shall be as outlined in Option 1 above.

Estimated Cost (Police): \$141,400.00
Estimated Cost (Fire): \$150,000.00

- b. Furnish and install a new water entrance within the central mechanical room at the grade level of the renovated Police facility and the proposed new Fire Station. The three existing water entrances shall be removed. The new service will include metering for domestic use, metering for truck fill use, and reduced pressure zone backflow prevention devices.

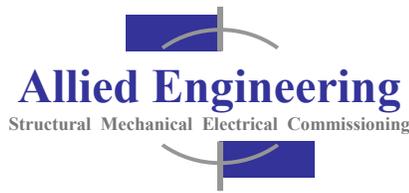
Estimated Cost (Police): \$20,000.00
Estimated Cost (Fire): \$20,000.00

- c. Furnish and install a new indirect water heater served by the new boiler plant at each of the two facilities to generate domestic hot water for each facility. The new domestic water heating systems shall each incorporate a digital mixing valve to accurately control the water supply temperature to each facility.

Estimated Cost (Police): \$25,000.00
Estimated Cost (Fire): \$25,000.00

- d. Furnish and install all new domestic cold, hot, and hot water recirculation piping to serve fixtures throughout the facility. Piping shall be insulated to meet current energy standards.

Estimated Cost (Police): \$367,000.00



Estimated Cost (Fire): \$270,000.00

- e. Furnish and install all new sanitary waste and vent piping and drainage specialties to serve fixtures throughout the facility. The sanitary waste at the existing buildings shall be directed to exit the facility at their current locations, while new exit points will be designated for the new building additions.

Estimated Cost (Police): \$407,700.00

Estimated Cost (Fire): \$300,000.00

- f. Furnish and install new storm drain piping to serve the new additions and revise the existing roof drainage as required to facilitate the renovations. Like the sanitary piping, it is assumed that the existing facilities will maintain the current location for storm drain exiting the facility while storm drainage at the new facility will be directed to a new service at the site.

g.

Estimated Cost (Police): \$64,000.00

Estimated Cost (Fire): \$120,000.00

- h. Furnish and install natural gas piping to serve heating equipment throughout. The existing natural gas services at the existing Police and Fire stations shall be removed and a single central service installed near the central mechanical room at each facility.

Estimated Cost (Police): \$28,500.00

Estimated Cost (Fire): \$30,000.00

- i. Furnish and install a new compressor and compressed air piping to provide general service compressed air throughout the Apparatus Bays. It is assumed that one will be required for Police and a separate one for Fire.

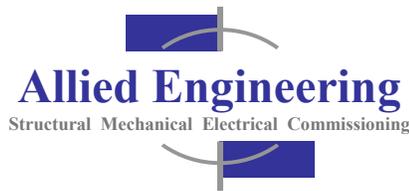
Estimated Cost (Police): \$20,000.00

Estimated Cost (Fire): \$30,000.00

TOTAL (P-2): \$2,018,600.00

E. **Electrical**

General Requirements



1. All electrical work under scope of this Contract shall comply fully with the following codes and standards:
 - m. American Society for Testing and Materials (ASTM).
 - n. Underwriters' Laboratories, Inc. (UL)
 - o. Insulated Power Cable Engineers Association (IPCEA)
 - p. National Electrical Manufacturers Association (NEMA).
 - q. Institute of Electrical and Electronic Engineers (IEEE).
 - r. American National Standards Institute (ANSI).
 - s. National Fire Protection Association (NFPA).
 - t. National Electrical Code (NEC).
 - u. Occupational Safety and Health Act (Public) (OSHA).
 - v. International Energy Conservation Code (IECC).
 - w. Local Inspection Department.
 - x. Local Fire Department.

Recommendations for electrical systems:

2. Provide 3-phase, 4-wire electrical service to each building. The new service shall be underground and shall terminate in a new electrical room. Underground feeders and service entrance conduits shall be concrete encased such that minimum concrete thickness is 2" around the entire conduit. Estimated cost includes and allowance of \$60,000 for utility construction charges for each building.

Estimated Cost (Police): \$195,000

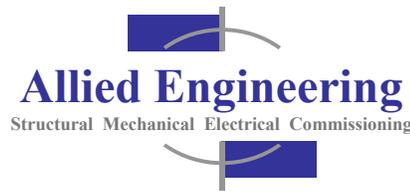
Estimated Cost (Fire): \$225,000

3. Provide branch-circuit panels located within the electric room and elsewhere as required to supply branch circuits for mechanical systems, administrative areas, support areas and equipment areas.
 - h. Shall be circuit-breaker type construction with bolt-on type connections and shall be U.L. listed.
 - i. All circuit breakers shall be quick-make, quick-break, trip free U.L. listed.
 - j. All panelboard bussing shall be aluminum.
 - k. Panelboards shall be furnished with lockable doors all keyed for a master key.
 - l. Panelboards shall have 42 pole capacity and shall have mains rated at 100 amps minimum, single-phase, 3-wire with ground bus unless noted otherwise.
 - m. Feeder distribution equipment to the Designated Critical Operations Area needs to be located in a 2-hour rated room.
 - n. Selective coordination shall be provided for all overcurrent protection devices.

Estimated Cost (Police): \$54,000

Estimated Cost (Fire): \$70,000

4. Provide a 3-phase, 4-wire diesel generator set to serve as the alternate power source to each building. Provide a weatherproof generator enclosure with Level 2 sound attenuation. The generator shall include a subbase fuel tank with adequate capacity for at least 72 hours operation at full load. Provide separate automatic transfer switches for the emergency standby systems. The generator and automatic transfer switches shall be suitable for NFPA



110 level 1 emergency systems. A manual transfer switch and means of connecting a portable generator will be provided in addition to the permanently installed standby generator.

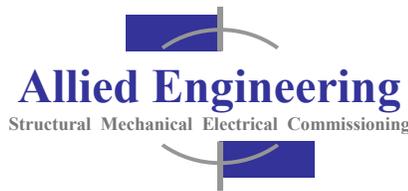
Estimated Cost (Police): \$150,000

Estimated Cost (Fire): \$180,000

5. Provide a complete new general wiring system for each building.
- k. Wiring insulation shall be Type “THWN/THHN” (75 de+grees C. minimum) for all single conductors in conduit. All insulation shall be rated for 600 volts, A.C. and will be color coded in accordance with the NEC. Minimum branch circuit wiring size shall be No. 12 A.W.G. with separate neutrals, except motor control circuit wiring and building interior fire alarm wiring may be No. 14 A.W.G. minimum.
 - l. All wiring and cable size 1/0 and smaller shall be copper. For conductors above 1/0 in copper size, aluminum may be used when proper de-rating is performed and confirmed with the engineer.
 - m. Wiring buried in earth or fill shall be single conductor installed in schedule 40 PVC conduit except at penetration of building where it shall be adapted to intermediate metal conduit, or where otherwise noted. Panelboard feeders within building shall be single conductor installed in electrical metallic tubing.
 - n. Interior branch circuit wiring shall be applied as follows:
 - 2) Branch-circuit wiring above hung or suspended ceilings, within furred spaces or metal partitions shall be Type MC, metal-clad cable with copper conductors and fully rated separate grounding conductor.
 - o. In areas with exposed structure ceilings, exposed wiring in conduit shall be permitted at the ceiling.
 - p. Where subject to physical damage, conduit shall be type “IMC” intermediate metal conduit.
 - q. Minimum size conduit shall be ½ in. unless noted otherwise.
 - r. Low voltage wiring for lighting control shall be 18 A.W.G. minimum and be installed in accordance with the NEC standards for low voltage conductors.
 - s. Wiring and raceways in finished areas shall be concealed in walls and above ceilings.
 - b. Branch-circuit wiring for fire alarm, security, emergency communications, and signaling systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.
 - c. Branch-circuit wiring for power, control, and monitoring of HVAC systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.
 - d. All feeders serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated system.
 - t. Wiring for HVAC control and monitoring serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated system.

Estimated Cost (Police): \$80,000

Estimated Cost (Fire): \$95,000



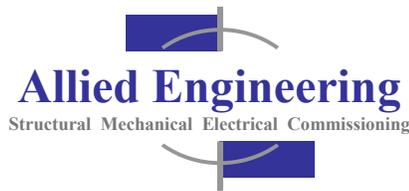
6. Provide receptacle outlets throughout the facility as required to meet program needs.
 - g. All devices and switches shall be Specification grade and U.L. Listed.
 - h. Receptacle devices in toilet rooms, kitchen, near sinks and building exterior shall be GFCI protected.
 - 3) Exterior receptacle shall have weatherproof covers. The weatherproof integrity shall not be affected when heavy duty specification or hospital grade attachment plug caps are inserted.
 - 4) Rooftop receptacles shall be located within 25 feet of mechanical units.
 - i. Duplex receptacles will be provided in all areas in quantities suitable for space usage.
 - j. Specialty receptacles shall be provided for specific equipment.
 - k. Toggle switches shall be rated 20 amps.
 - l. Device plates shall be high-abuse nylon. Plates shall be of appropriate size and type.

Estimated Cost (Police): \$40,000

Estimated Cost (Fire): \$44,000

7. Provide LED lighting with high-performance optics throughout each building. Provide full cut-off LED exterior lighting for all exterior areas.
 - h. The lighting systems will be in compliance with the Illuminating Engineering Society (IES) recommendations for foot-candle levels.
 - i. Luminaires shall utilize factory-installed LED light engines. Luminaires shall qualify for Efficiency Maine rebates to the greatest extent possible based upon programming requirements.
 - j. Emergency egress lighting and Exit signs shall be provided to meet all code requirements with back-up power from the emergency generator.
 - k. Mechanical, storage and utilitarian spaces will be provided with LED lensed strip type fixtures.
 - l. Control of exterior shall be auto-on/auto-off by an astronomical time clock or photocell.
 - m. Ceiling mounted or switchbox type Occupancy sensors shall be utilized in areas subject to intermittent use. Areas 150 square feet and less shall utilize switch-box mounted occupancy sensors. Areas greater than 150 square feet shall be controlled by a power pack and a low voltage manual switch connected to a local occupancy sensor.
 - 4) Power pack shall be dual voltage and capable of loads rated 20 amps.
 - 5) Occupancy sensor shall be powered from the power pack and be dual technology capable (PIR and ultrasonic). The low voltage switch shall interface with the occupancy sensor to provide for manual-ON, occupancy sensor off. Sensor shall be capable of satisfying logic states using either or both technologies.
 - 6) Occupancy sensor shall be ceiling mounted for areas with recessed lighting and wall mounted for pendant lighting. Mounting height to match pendant height.
 - n. Lighting in selected areas shall be turned on automatically upon receipt of an alarm by the fire station.

Estimated Cost (Police): \$275,000



Estimated Cost (Fire): \$330,000

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- 8. Telecommunications:
 - f. Provide a new telecommunications underground duct bank to a telecommunications utility demarcation point in each new electrical room. The duct bank shall consist of three 4” conduits: (1) for telephone, (1) for CATV and (1) spare.
 - g. Telecommunications work shall comply with BICSI and EIA/TIA standards.
 - h. Horizontal cabling and terminations shall be Category 6.
 - i. Cables shall be riser rated.
 - j. Critical communications systems wiring serving the Designated Critical Operations Area shall be a 2-hour rated wiring method.

Estimated Cost (Police): \$55,000

Estimated Cost (Fire): \$65,000

- 9. Provide an automatic, addressable electrically supervised, low-voltage fire alarm system.
 - h. Fire alarm systems shall generally comply with requirements of NFPA 72 for local building systems except as modified and supplemented by this specification.
 - i. All units of equipment shall be listed by Underwriters Laboratories and shall consist of a battery-backed fire alarm control panel, heat detectors, smoke detectors, and pull stations.
 - j. Occupant notification shall be audio/visual type with voice evacuation signals. Visual notification appliances shall be synchronized where multiple strobe flashes are visible.
 - k. Wiring shall be in accordance with NEC Article 760, and as recommended by the manufacturer of the fire alarm system and AHJ.
 - l. Duct smoke detectors shall be provided in all supplies that are 2000cfm or greater and returns that are 15,000cfm or greater.
 - m. System shall be connected to and monitor status of sprinkler devices.
 - n. All wiring for fire alarm, security, and emergency communications and signaling systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.

Estimated Cost (Police): \$90,000

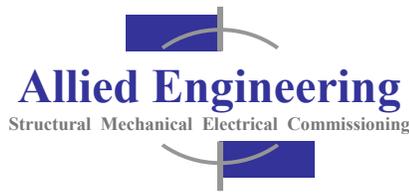
Estimated Cost (Fire): \$110,000

- 10. Provide Access control, intrusion detection, and a security camera system to suit program needs.
 - d. The access control system shall be integrated with the city’s On-Guard system and shall consist of card readers, duress buttons, and associated hardware and software.
 - e. Cameras will be power-over-ethernet (POE) type network.
 - f. Intrusion detection shall be controlled by a separate control panel, which shall monitor motion detectors and door switches and shall be connected to interface with the access control system.

Estimated Cost (Police): \$85,000

Estimated Cost (Police): \$105,000

Total (E-2): \$2,248,000



IX. Basis of Design Recommendations – Option 3

A. Structure

1. Codes, Standards and Authorities Having Jurisdiction:
 - a. International Building Code - IBC 2015
 - b. International Existing Building Code - IEBC 2015
 - c. American Society of Civil Engineers – Minimum Design Loads For Buildings and Other Structures – ASCE 7-2010

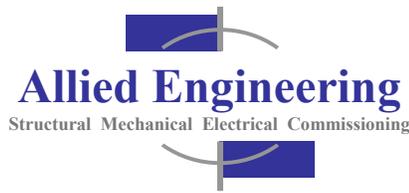
2. Option 3
 - a. Reroof Central Fire Station spaces not noted to be demolished.
 - b. Repair concrete façade elements on Central Fire Station, and repair/repoint existing perimeter brick walls.
 - c. Reinforce low roof framing at Office Area along Armory Street, and for low roof areas near High Roof 1 and High Roof 2 high roofs at northeast and southeast corners of Main Roof for modern code snow drift provisions.
 - d. Possible investigation of existing slab thicknesses depending on plan for vehicle parking locations.
 - e. Construct new two-story Fire Station addition and new three-story Police Station addition. Fire Station Addition to be structurally independent from existing Central Fire Station. Need results of geotechnical study to verify if new foundations for additions to be soil supported or pile supported.

Estimated Cost:	Re-roofing Item a Above	\$100,000 - \$120,000
	Façade Repair Item b Above	\$200,000 - \$250,000
	Low Roof Reinforcement Item c Above	\$ 30,000 - \$40,000
	<u>TOTAL (S3)</u>	<u>\$330,000 - \$410,000</u>

REFER TO ARCHITECTURAL/SITE PORTIONS OF STUDY FOR COST FOR NEW CONSTRUCTION AREAS AND ANY EXISTING BUILDING DEMOLITION COSTS

B. Fire Protection

1. Recommendations for Sprinkler Systems
 - a. Replace the existing 6” sprinkler main serving the existing Dispatch Facility with an 8” sprinkler main to facility full sprinkler coverage throughout the facility. The new service shall be routed to a new mechanical room located



at the upper level of the facility to keep the service above the flood plain.

Estimated Cost: Refer to Site Utilities section herein.

- b. Demolish the existing sprinkler system throughout the existing Dispatch Facility.

Estimated Cost: \$10,000.00

- c. Furnish and install automatic sprinkler coverage throughout the proposed new Fire Station and existing renovated Fire Station.

Estimated Cost: \$155,000.00

- d. Furnish and install a system of automatic sprinkler coverage throughout the proposed new Police Station addition.

Estimated Cost: \$130,000.00

TOTAL (FP-3): \$295,000.00

C. **Heating, Ventilating, and Air Conditioning**

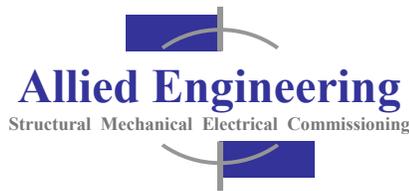
1. Recommendations for HVAC Systems

- a. As with above options, given the age of the boilers at the existing Police Station and Dispatch Facilities and the current steam configuration at the Central Fire Station, the existing boilers are not proposed for reuse in this renovation concept. We recommend that a new condensing, natural gas fired boiler plant be constructed central to the proposed facility to serve the entire facility.

The new heating plant will be sized to provide N+1 redundancy for the heating needs of each facility.

The heating plant will distribute heat throughout terminal heating systems throughout the new and renovated sections of the facility as described herein by means of a variable speed pumping system to match hot water flow and temperature to the heating needs of the facility.

Estimated Cost: \$550,000.00



- b. Furnish and install VRF heat pumps for heating and cooling functional spaces throughout the Administrative areas of the proposed Police Station as well as the Administrative and housing Areas of the renovated existing Fire Station. The EOC will be outfitted with a dedicated system of HVAC.

Estimated Cost: \$615,000.00

- c. Provide new systems of mechanical ventilation throughout all sections of the Police and Fire Stations. For the Police Station, an energy recovery ventilator (ERV) located on the roof is proposed to provide exhaust air for the restrooms and storage areas throughout the three floors of conditioned space while delivering tempered makeup air to the occupied spaces for ventilation.

The Police and Fire Station Apparatus Bays will be outfitted with new vehicle exhaust capture systems as well as general emergency ventilation systems to evacuate CO₂ and NO_x as levels exceed permissible exposure limits. The Apparatus Bays shall each include natural gas fired makeup air units to provide replacement air for the exhaust fans.

A new ERV is proposed to serve the renovated existing Central Fire Station – both levels.

NFPA compliant exhaust hoods with fire suppression will be installed at all kitchen ranges. The ventilation systems shall include natural gas fired makeup air units to provide replacement air for the exhaust hoods.

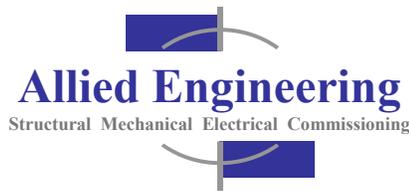
Furnish and install a system of mechanical dehumidification for the Decon Room in the Fire Apparatus Bay.

Lower level areas of the entire facility will be heated via hydronic unit heaters and ventilated with exhaust fans as required based upon use.

Estimated Cost: \$770,000.00

- d. Furnish and install a new system of automatic temperature controls to serve systems throughout the new and renovated areas. The system will be integrated with The City of South Portland's existing Invensys building automation system (BAS) and will provide control and monitoring for systems throughout.

Estimated Cost: \$455,000.00



- e. All new air and hydronic systems will be tested, adjusted, and balanced to NEBB and AABC standards. Additionally, independent commissioning will be conducted to document functional operation of the system in accordance with the design intent.

Estimated Cost: \$57,000.00

TOTAL (M-3): \$2,447,000.00

D. **Plumbing**

1. Recommendations for Plumbing Systems:

- a. Furnish and install new plumbing fixtures throughout the new and renovated areas of both the Police and Fire Facilities. Fixture types shall be as outlined in Option 1 above.

Estimated Cost: \$284,500.00

- b. Furnish and install a new water entrance within the central mechanical room at the grade level of the facility. The three existing water entrances shall be removed. The new service will include metering for domestic use, metering for truck fill use, and reduced pressure zone backflow prevention devices.

Estimated Cost: \$20,000.00

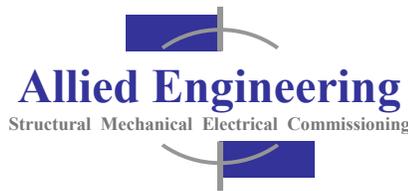
- c. Furnish and install a new indirect water heater served by the new boiler plant to generate domestic hot water for the facility. The new domestic water heating system shall incorporate a digital mixing valve to accurately control the water supply temperature to the facility.

Estimated Cost: \$25,000.00

- d. Furnish and install all new domestic cold, hot, and hot water recirculation piping to serve fixtures throughout the facility. Piping shall be insulated to meet current energy standards.

Estimated Cost: \$515,000.00

- e. Furnish and install all new sanitary waste and vent piping and drainage specialties to serve fixtures throughout the facility. The sanitary waste at the existing Fire Station shall be directed to exit the facility at its current location, while new exit points will be designated for the new building construction.



Estimated Cost: \$570,000.00

- f. Furnish and install new storm drain piping to serve the new additions and revise the existing roof drainage as required to facilitate the renovations. Like the sanitary piping, it is assumed that the existing facilities will maintain the current location for storm drain exiting the facility while storm drainage at the new facility will be directed to a new service at the site.

Estimated Cost: \$205,800.00

- g. Furnish and install natural gas piping to serve heating equipment throughout. The existing natural gas services shall be removed and a single central service installed near the central mechanical room.

Estimated Cost: \$57,000.00

- h. Furnish and install a new compressor and compressed air piping to provide general service compressed air throughout the Apparatus Bays. It is assumed that one will be required for Police and a separate one for Fire.

Estimated Cost: \$50,000.00

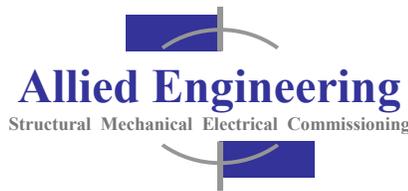
TOTAL (P-3): \$1,727,300.00

E. **Electrical**

General Requirements

1. All electrical work under scope of this Contract shall comply fully with the following codes and standards:
 - y. American Society for Testing and Materials (ASTM).
 - z. Underwriters' Laboratories, Inc. (UL)
 - aa. Insulated Power Cable Engineers Association (IPCEA)
 - bb. National Electrical Manufacturers Association (NEMA).
 - cc. Institute of Electrical and Electronic Engineers (IEEE).
 - dd. American National Standards Institute (ANSI).
 - ee. National Fire Protection Association (NFPA).
 - ff. National Electrical Code (NEC).
 - gg. Occupational Safety and Health Act (Public) (OSHA).
 - hh. International Energy Conservation Code (IECC).
 - ii. Local Inspection Department.
 - jj. Local Fire Department.

Recommendations for electrical systems:



2. Provide 3-phase, 4-wire electrical service to each building. The new service shall be underground and shall terminate in a new electrical room. Underground feeders and service entrance conduits shall be concrete encased such that minimum concrete thickness is 2" around the entire conduit. Estimated cost includes and allowance of \$60,000 for utility construction charges for each building.

Estimated Cost (Police): \$175,000

Estimated Cost (Fire): \$225,000

3. Provide branch-circuit panels located within the electric room and elsewhere as required to supply branch circuits for mechanical systems, administrative areas, support areas and equipment areas.
 - o. Shall be circuit-breaker type construction with bolt-on type connections and shall be U.L. listed.
 - p. All circuit breakers shall be quick-make, quick-break, trip free U.L. listed.
 - q. All panelboard bussing shall be aluminum.
 - r. Panelboards shall be furnished with lockable doors all keyed for a master key.
 - s. Panelboards shall have 42 pole capacity and shall have mains rated at 100 amps minimum, single-phase, 3-wire with ground bus unless noted otherwise.
 - t. Feeder distribution equipment to the Designated Critical Operations Area needs to be located in a 2-hour rated room.
 - u. Selective coordination shall be provided for all overcurrent protection devices.

Estimated Cost (Police): \$55,000

Estimated Cost (Fire): \$70,000

4. Provide a 3-phase, 4-wire diesel generator set to serve as the alternate power source to each building. Provide a weatherproof generator enclosure with Level 2 sound attenuation. The generator shall include a subbase fuel tank with adequate capacity for at least 72 hours operation at full load. Provide separate automatic transfer switches for the emergency standby systems. The generator and automatic transfer switches shall be suitable for NFPA 110 level 1 emergency systems. A manual transfer switch and means of connecting a portable generator will be provided in addition to the permanently installed standby generator.

Estimated Cost (Police): \$140,000

Estimated Cost (Fire): \$180,000

5. Provide a complete new general wiring system for each building.
 - u. Wiring insulation shall be Type "THWN/THHN" (75 de+grees C. minimum) for all single conductors in conduit. All insulation shall be rated for 600 volts, A.C. and will be color coded in accordance with the NEC. Minimum branch circuit wiring size shall be No. 12 A.W.G. with separate neutrals, except motor control circuit wiring and building interior fire alarm wiring may be No. 14 A.W.G. minimum.
 - v. All wiring and cable size 1/0 and smaller shall be copper. For conductors above 1/0 in copper size, aluminum may be used when proper de-rating is performed and confirmed with the engineer.
 - w. Wiring buried in earth or fill shall be single conductor installed in schedule 40 PVC conduit except at penetration of building where it shall be adapted to intermediate

metal conduit, or where otherwise noted. Panelboard feeders within building shall be single conductor installed in electrical metallic tubing.

- x. Interior branch circuit wiring shall be applied as follows:
 - 3) Branch-circuit wiring above hung or suspended ceilings, within furred spaces or metal partitions shall be Type MC, metal-clad cable with copper conductors and fully rated separate grounding conductor.
- y. In areas with exposed structure ceilings, exposed wiring in conduit shall be permitted at the ceiling.
- z. Where subject to physical damage, conduit shall be type “IMC” intermediate metal conduit.
- aa. Minimum size conduit shall be ½ in. unless noted otherwise.
- bb. Low voltage wiring for lighting control shall be 18 A.W.G. minimum and be installed in accordance with the NEC standards for low voltage conductors.
- cc. Wiring and raceways in finished areas shall be concealed in walls and above ceilings.
- c. Branch-circuit wiring for fire alarm, security, emergency communications, and signaling systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.
- e. Branch-circuit wiring for power, control, and monitoring of HVAC systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.
- f. All feeders serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated system.
- dd. Wiring for HVAC control and monitoring serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated system.

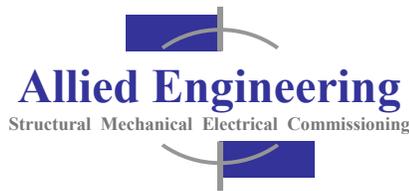
Estimated Cost (Police): \$75,000

Estimated Cost (Fire): \$95,000

- 6. Provide receptacle outlets throughout the facility as required to meet program needs.
 - m. All devices and switches shall be Specification grade and U.L. Listed.
 - n. Receptacle devices in toilet rooms, kitchen, near sinks and building exterior shall be GFCI protected.
 - 5) Exterior receptacle shall have weatherproof covers. The weatherproof integrity shall not be affected when heavy duty specification or hospital grade attachment plug caps are inserted.
 - 6) Rooftop receptacles shall be located within 25 feet of mechanical units.
 - o. Duplex receptacles will be provided in all areas in quantities suitable for space usage.
 - p. Specialty receptacles shall be provided for specific equipment.
 - q. Toggle switches shall be rated 20 amps.
 - r. Device plates shall be high-abuse nylon. Plates shall be of appropriate size and type.

Estimated Cost (Police): \$35,000

Estimated Cost (Fire): \$44,000



7. Provide LED lighting with high-performance optics throughout each building. Provide full cut-off LED exterior lighting for all exterior areas.
 - o. The lighting systems will be in compliance with the Illuminating Engineering Society (IES) recommendations for foot-candle levels.
 - p. Luminaires shall utilize factory-installed LED light engines. Luminaires shall qualify for Efficiency Maine rebates to the greatest extent possible based upon programming requirements.
 - q. Emergency egress lighting and Exit signs shall be provided to meet all code requirements with back-up power from the emergency generator.
 - r. Mechanical, storage and utilitarian spaces will be provided with LED lensed strip type fixtures.
 - s. Control of exterior shall be auto-on/auto-off by an astronomical time clock or photocell.
 - t. Ceiling mounted or switchbox type Occupancy sensors shall be utilized in areas subject to intermittent use. Areas 150 square feet and less shall utilize switch-box mounted occupancy sensors. Areas greater than 150 square feet shall be controlled by a power pack and a low voltage manual switch connected to a local occupancy sensor.
 - 7) Power pack shall be dual voltage and capable of loads rated 20 amps.
 - 8) Occupancy sensor shall be powered from the power pack and be dual technology capable (PIR and ultrasonic). The low voltage switch shall interface with the occupancy sensor to provide for manual-ON, occupancy sensor off. Sensor shall be capable of satisfying logic states using either or both technologies.
 - 9) Occupancy sensor shall be ceiling mounted for areas with recessed lighting and wall mounted for pendant lighting. Mounting height to match pendant height.
 - u. Lighting in selected areas shall be turned on automatically upon receipt of an alarm by the fire station.

Estimated Cost (Police): \$255,000

Estimated Cost (Fire): \$330,000

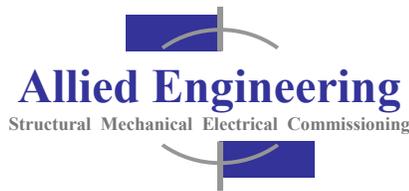
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8. Telecommunications:
 - k. Provide a new telecommunications underground duct bank to a telecommunications utility demarcation point in each new electrical room. The duct bank shall consist of three 4" conduits: (1) for telephone, (1) for CATV and (1) spare.
 - l. Telecommunications work shall comply with BICSI and EIA/TIA standards.
 - m. Horizontal cabling and terminations shall be Category 6.
 - n. Cables shall be riser rated.
 - o. Critical communications systems wiring serving the Designated Critical Operations Area shall be a 2-hour rated wiring method.

Estimated Cost (Police): \$50,000

Estimated Cost (Fire): \$65,000

9. Provide an automatic, addressable electrically supervised, low-voltage fire alarm system.



- o. Fire alarm systems shall generally comply with requirements of NFPA 72 for local building systems except as modified and supplemented by this specification.
- p. All units of equipment shall be listed by Underwriters Laboratories and shall consist of a battery-backed fire alarm control panel, heat detectors, smoke detectors, and pull stations.
- q. Occupant notification shall be audio/visual type with voice evacuation signals. Visual notification appliances shall be synchronized where multiple strobe flashes are visible.
- r. Wiring shall be in accordance with NEC Article 760, and as recommended by the manufacturer of the fire alarm system and AHJ.
- s. Duct smoke detectors shall be provided in all supplies that are 2000cfm or greater and returns that are 15,000cfm or greater.
- t. System shall be connected to and monitor status of sprinkler devices.
- u. All wiring for fire alarm, security, and emergency communications and signaling systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.

Estimated Cost (Police): \$85,000

Estimated Cost (Fire): \$110,000

- 10. Provide Access control, intrusion detection, and a security camera system to suit program needs.
 - g. The access control system shall be integrated with the city’s On-Guard system and shall consist of card readers, duress buttons, and associated hardware and software.
 - h. Cameras will be power-over-ethernet (POE) type network.
 - i. Intrusion detection shall be controlled by a separate control panel, which shall monitor motion detectors and door switches and shall be connected to interface with the access control system.

Estimated Cost (Police): \$85,000

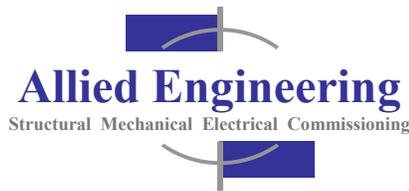
Estimated Cost (Police): \$105,000

Total (E-3): \$2,149,000

X. Basis of Design Recommendations – Option 4

A. Structure

- 1. Codes, Standards and Authorities Having Jurisdiction:
 - a. International Building Code - IBC 2015
 - b. International Existing Building Code - IEBC 2015
 - c. American Society of Civil Engineers – Minimum Design Loads For Buildings and Other Structures – ASCE 7-2010
- 2. Option 4
 - a. Reroof Central Fire Station spaces not noted to be demolished.



- b. Repair concrete façade elements on Central Fire Station, and repair/repoint existing perimeter brick walls.
- c. Reinforce low roof framing at Office Area along Armory Street, and for low roof areas near High Roof 1 and High Roof 2 high roofs at northeast and southeast corners of Main Roof for modern code snow drift provisions.
- d. Possible investigation of existing slab thicknesses depending on plan for vehicle parking locations.

Estimated Cost:	Re-roofing Items a Above	\$100,000 - \$120,000
	Façade Repair Item b Above	\$200,000 - \$250,000
	Low Roof Reinforcement Item c Above	\$ 30,000 - \$40,000
	<u>TOTAL (S-4)</u>	<u>\$3300,000 - \$410,000</u>

REFER TO ARCHITECTURAL/SITE PORTIONS OF STUDY FOR COST FOR NEW CONSTRUCTION AREAS AND ANY EXISTING BUILDING DEMOLITION COSTS

B. Fire Protection

1. Recommendations Sprinkler Systems

- a. Furnish and install a new 8” sprinkler service to serve the proposed new facility, while maintaining the existing 6” service for the Dispatch facility in place.

Estimated Cost: Refer to Site Utilities section herein.

- b. Furnish and install automatic sprinkler coverage throughout the proposed new Fire Station.

Estimated Cost: \$180,000.00

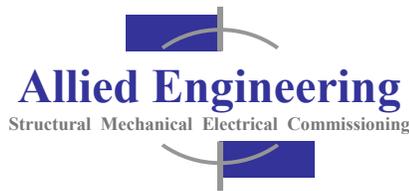
- c. Furnish and install a system of automatic sprinkler coverage throughout the proposed new Police Station.

Estimated Cost: \$132,000.00

- d. Subsequent to construction and occupancy for the new facility, demolish the existing sprinkler system throughout the existing Dispatch Facility.

Estimated Cost: \$10,000.00

TOTAL (FP-4): \$322,000.00



C. **Heating, Ventilating, and Air Conditioning**

1. Recommendations for HVAC Systems

- a. Furnish and install a new condensing, natural gas fired boiler plant central to the proposed new combined facility to serve the entire facility.

The new heating plant will be sized to provide N+1 redundancy for the heating needs of each facility.

The heating plant will distribute heat throughout terminal heating systems throughout the new facility as described herein by means of a variable speed pumping system to match hot water flow and temperature to the heating needs of the facility.

Estimated Cost: \$375,000.00

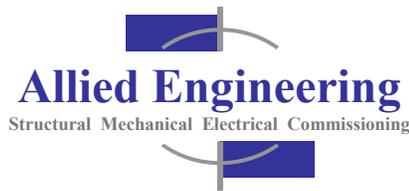
- b. Furnish and install VRF heat pumps for heating and cooling functional spaces throughout the Administrative areas and Housing areas of the proposed Police and Fire Station areas. The EOC will be outfitted with a dedicated system of HVAC.

Estimated Cost: \$590,000.00

Furnish and install new systems of mechanical ventilation throughout all sections of the Police and Fire Stations. For both the Police and Fire Stations, an energy recovery ventilator (ERV) located on the roof is proposed to provide exhaust air for the restrooms and storage areas throughout the three floors of conditioned space while delivering tempered makeup air to the occupied spaces for ventilation.

The Police and Fire Station Apparatus Bays will be outfitted with new vehicle exhaust capture systems as well as general emergency ventilation systems to evacuate CO₂ and NO_x as levels exceed permissible exposure limits. The Apparatus Bays shall each include natural gas fired makeup air units to provide replacement air for the exhaust fans.

NFPA compliant exhaust hoods with fire suppression will be installed at all kitchen ranges. The ventilation systems shall include natural gas fired makeup air units to provide replacement air for the exhaust hoods.



Furnish and install a system of mechanical dehumidification for the Decon Room in the Fire Apparatus Bay.

Estimated Cost: \$881,000.00

- c. Furnish and install a new system of automatic temperature controls to serve systems throughout the new and renovated areas. The system will be integrated with The City of South Portland's existing Invensys building automation system (BAS) and will provide control and monitoring for systems throughout.

Estimated Cost: \$500,000.00

- d. All new air and hydronic systems will be tested, adjusted, and balanced to NEBB and AABC standards. Additionally, independent commissioning will be conducted to document functional operation of the system in accordance with the design intent.

Estimated Cost: \$60,000.00

TOTAL (M-4): \$2,406,000.00

D. Plumbing

1. Recommendations for Plumbing Systems:

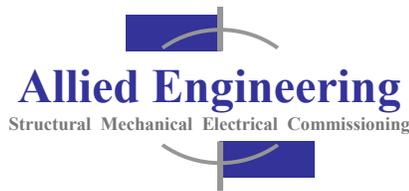
- a. Furnish and install new plumbing fixtures throughout the new construction areas of both the Police and Fire Facilities. Fixture types shall be as outlined in Option 1 above.

Estimated Cost: \$312,000.00

- b. Furnish and install a new water entrance within the central mechanical room at the grade level of the new facility. The new service will include metering for domestic use, metering for truck fill use, and reduced pressure zone backflow prevention devices.

Estimated Cost: \$20,000.00

- c. Furnish and install a new indirect water heater served by the new boiler plant to generate domestic hot water for the facility. The new domestic water heating system



shall incorporate a digital mixing valve to accurately control the water supply temperature to the facility.

Estimated Cost: \$25,000.00

- d. Furnish and install all new domestic cold, hot, and hot water recirculation piping to serve fixtures throughout the facility. Piping shall be insulated to meet current energy standards.

Estimated Cost: \$562,000.00

- e. Furnish and install all new sanitary waste and vent piping and drainage specialties to serve fixtures throughout the facility. All sanitary service at the existing facility shall be removed and decommissioned, with new sanitary service for the entire facility.

Estimated Cost: \$624,000.00

- f. Furnish and install new storm drain piping to serve the new construction. All existing Storm service shall be removed/re-directed.

Estimated Cost: \$250,000.00

- g. Furnish and install natural gas piping to serve heating equipment throughout.

Estimated Cost: \$60,000.00

- h. Furnish and install a new compressor and compressed air piping to provide general service compressed air throughout the Apparatus Bays. It is assumed that one will be required for Police and a separate one for Fire.

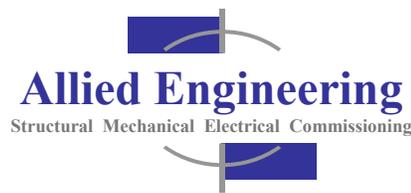
Estimated Cost: \$50,000.00

TOTAL (P-4): \$1,903,000.00

E. **Electrical**

General Requirements

- 1. All electrical work under scope of this Contract shall comply fully with the following codes and standards:
 - a. American Society for Testing and Materials (ASTM).
 - b. Underwriters' Laboratories, Inc. (UL)
 - c. Insulated Power Cable Engineers Association (IPCEA)



- d. National Electrical Manufacturers Association (NEMA).
- e. Institute of Electrical and Electronic Engineers (IEEE).
- f. American National Standards Institute (ANSI).
- g. National Fire Protection Association (NFPA).
- h. National Electrical Code (NEC).
- i. Occupational Safety and Health Act (Public) (OSHA).
- j. International Energy Conservation Code (IECC).
- k. Local Inspection Department.
- l. Local Fire Department.

Recommendations for Electrical systems:

- 2. Provide electrical service rated 1600 amps, 480/277 volts, 3-phase, 4-wire. The new service shall be underground and shall terminate in a new electrical room. Underground feeders and service entrance conduits shall be concrete encased such that minimum concrete thickness is 2" around the entire conduit. Estimated cost includes and allowance of \$60,000 for utility construction charges.

Estimated Cost: \$365,000

- 3. Provide branch-circuit panels located within the electric room and elsewhere as required to supply branch circuits for mechanical systems, administrative areas, support areas and equipment areas.
 - a. Shall be circuit-breaker type construction with bolt-on type connections and shall be U.L. listed.
 - b. All circuit breakers shall be quick-make, quick-break, trip free U.L. listed.
 - c. All panelboard bussing shall be aluminum.
 - d. Panelboards shall be furnished with lockable doors all keyed for a master key.
 - e. Panelboards shall have 42 pole capacity and shall have mains rated at 100 amps minimum, single-phase, 3-wire with ground bus unless noted otherwise.
 - f. Feeder distribution equipment to the Designated Critical Operations Area needs to be located in a 2-hour rated room.
 - g. Selective coordination shall be provided for all overcurrent protection devices.

Estimated Cost: \$120,000

- 4. Provide a 750-kW, 480/277-volt, 3-phase, 4-wire diesel generator set to serve as the alternate power source. Provide a weatherproof generator enclosure with Level 2 sound attenuation. The generator shall include a subbase fuel tank with adequate capacity for at least 72 hours operation at full load. Provide separate automatic transfer switches for the emergency standby systems. The generator and automatic transfer switches shall be suitable for NFPA 110 level 1 emergency systems. A manual transfer switch and means of connecting a portable generator will be provided in addition to the permanently installed standby generator.

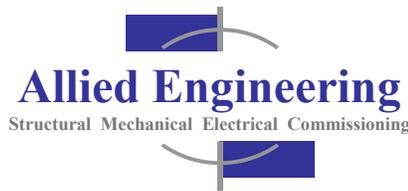
Estimated Cost: \$315,000

- 5. Provide a complete new general wiring system for the renovated facility.

- a. Wiring insulation shall be Type “THWN/THHN” (75 degrees C. minimum) for all single conductors in conduit. All insulation shall be rated for 600 volts, A.C. and will be color coded in accordance with the NEC. Minimum branch circuit wiring size shall be No. 12 A.W.G. with separate neutrals, except motor control circuit wiring and building interior fire alarm wiring may be No. 14 A.W.G. minimum.
- b. All wiring and cable size 1/0 and smaller shall be copper. For conductors above 1/0 in copper size, aluminum may be used when proper de-rating is performed and confirmed with the engineer.
- c. Wiring buried in earth or fill shall be single conductor installed in schedule 40 PVC conduit except at penetration of building where it shall be adapted to intermediate metal conduit, or where otherwise noted. Panelboard feeders within building shall be single conductor installed in electrical metallic tubing.
- d. Interior branch circuit wiring shall be applied as follows:
 - 4) Branch-circuit wiring above hung or suspended ceilings, within furred spaces or metal partitions shall be Type MC, metal-clad cable with copper conductors and fully rated separate grounding conductor.
- e. In areas with exposed structure ceilings, exposed wiring in conduit shall be permitted at the ceiling.
- f. Where subject to physical damage, conduit shall be type “IMC” intermediate metal conduit.
- g. Minimum size conduit shall be ½ in. unless noted otherwise.
- h. Low voltage wiring for lighting control shall be 18 A.W.G. minimum and be installed in accordance with the NEC standards for low voltage conductors.
- i. Wiring and raceways in finished areas shall be concealed in walls and above ceilings.
- d. Branch-circuit wiring for fire alarm, security, emergency communications, and signaling systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.
- g. Branch-circuit wiring for power, control, and monitoring of HVAC systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.
- h. All feeders serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated system.
- j. Wiring for HVAC control and monitoring serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated system.

Estimated Cost: \$170,000

- 6. Provide receptacle outlets throughout the facility as required to meet program needs.
 - a. All devices and switches shall be Specification grade and U.L. Listed.
 - b. Receptacle devices in toilet rooms, kitchen, near sinks and building exterior shall be GFCI protected.
 - 7) Exterior receptacle shall have weatherproof covers. The weatherproof integrity shall not be affected when heavy duty specification or hospital grade attachment plug caps are inserted.
 - 8) Rooftop receptacles shall be located within 25 feet of mechanical units.



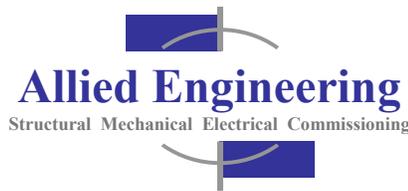
- c. Duplex receptacles will be provided in all areas in quantities suitable for space usage.
- d. Specialty receptacles shall be provided for specific equipment.
- e. Toggle switches shall be rated 20 amps.
- f. Device plates shall be high-abuse nylon. Plates shall be of appropriate size and type.

Estimated Cost: \$80,000

- 7. Provide LED lighting with high-performance optics throughout the building. Provide full cut-off LED exterior lighting for all exterior areas.
 - a. The lighting systems will be in compliance with the Illuminating Engineering Society (IES) recommendations for foot-candle levels.
 - b. Luminaires shall utilize factory-installed LED light engines. Luminaires shall qualify for Efficiency Maine rebates to the greatest extent possible based upon programming requirements.
 - c. Emergency egress lighting and Exit signs shall be provided to meet all code requirements with back-up power from the emergency generator.
 - d. Mechanical, storage and utilitarian spaces will be provided with LED lensed strip type fixtures.
 - e. Control of exterior shall be auto-on/auto-off by an astronomical time clock or photocell.
 - f. Ceiling mounted or switchbox type Occupancy sensors shall be utilized in areas subject to intermittent use. Areas 150 square feet and less shall utilize switch-box mounted occupancy sensors. Areas greater than 150 square feet shall be controlled by a power pack and a low voltage manual switch connected to a local occupancy sensor.
 - 1) Power pack shall be dual voltage and capable of loads rated 20 amps.
 - 2) Occupancy sensor shall be powered from the power pack and be dual technology capable (PIR and ultrasonic). The low voltage switch shall interface with the occupancy sensor to provide for manual-ON, occupancy sensor off. Sensor shall be capable of satisfying logic states using either or both technologies.
 - 3) Occupancy sensor shall be ceiling mounted for areas with recessed lighting and wall mounted for pendant lighting. Mounting height to match pendant height.
 - g. Lighting in selected areas shall be turned on automatically upon receipt of an alarm by the fire station.

Estimated Cost: \$585,000

- 8. Telecommunications:
 - a. Provide a new telecommunications underground duct bank to a telecommunications utility demarcation point in the new electrical room. The duct bank shall consist of three 4" conduits: (1) for telephone, (1) for CATV and (1) spare.
 - b. Telecommunications work shall comply with BICSI and EIA/TIA standards.
 - c. Horizontal cabling and terminations shall be Category 6.
 - d. Cables shall be riser rated.



- e. Critical communications systems wiring serving the Designated Critical Operations Area shall be a 2-hour rated wiring method.

Estimated Cost: \$115,000

- 9. Provide an automatic, addressable electrically supervised, low-voltage fire alarm system.
 - a. Fire alarm systems shall generally comply with requirements of NFPA 72 for local building systems except as modified and supplemented by this specification.
 - b. All units of equipment shall be listed by Underwriters Laboratories and shall consist of a battery-backed fire alarm control panel, heat detectors, smoke detectors, and pull stations.
 - c. Occupant notification shall be audio/visual type with voice evacuation signals. Visual notification appliances shall be synchronized where multiple strobe flashes are visible.
 - d. Wiring shall be in accordance with NEC Article 760, and as recommended by the manufacturer of the fire alarm system and AHJ.
 - e. Duct smoke detectors shall be provided in all supplies that are 2000cfm or greater and returns that are 15,000cfm or greater.
 - f. System shall be connected to and monitor status of sprinkler devices.
 - g. All wiring for fire alarm, security, and emergency communications and signaling systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.

Estimated Cost: \$195,000

- 10. Provide Access control, intrusion detection, and a security camera system to suit program needs.
 - a. The access control system shall be integrated with the city's On-Guard system and shall consist of card readers, duress buttons, and associated hardware and software.
 - b. Cameras will be power-over-ethernet (POE) type network.
 - c. Intrusion detection shall be controlled by a separate control panel, which shall monitor motion detectors and door switches and shall be connected to interface with the access control system.

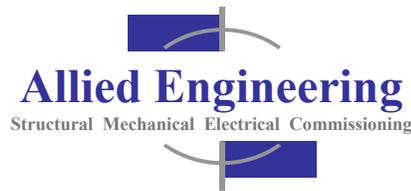
Estimated Cost: \$185,000

Total (E-4): \$2,130,000

XI. Basis of Design Recommendations – Option 5

A. Structure

- 1. Codes, Standards and Authorities Having Jurisdiction:
 - a. International Building Code - IBC 2015
 - b. International Existing Building Code - IEBC 2015
 - c. American Society of Civil Engineers – Minimum Design Loads For Buildings and Other Structures – ASCE 7-2010



2. Option 5

- a. All new construction on existing site. Need results of geotechnical study to verify if foundations to be soil supported or pile supported.

Estimated Cost: ALL NEW CONSTRUCTION. REFER TO ARCHITECTURAL/SITE PORTIONS OF STUDY FOR COST FOR NEW CONSTRUCTION AREAS AND ANY EXISTING BUILDING DEMOLITION COSTS.

B. Fire Protection

2. Recommendations Sprinkler Systems

- e. Furnish and install a new 8” sprinkler service to serve the proposed new facility.

Estimated Cost: Refer to Site Utilities section herein.

- f. Furnish and install automatic sprinkler coverage throughout the proposed new Fire Station.

Estimated Cost: \$140,000.00

- g. Furnish and install a system of automatic sprinkler coverage throughout the proposed new Police Station.

Estimated Cost: \$132,000.00

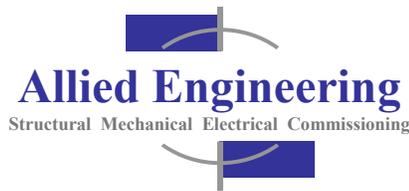
TOTAL (FP-5): \$272,000.00

C. Heating, Ventilating, and Air Conditioning

2. Recommendations for HVAC Systems

- e. Furnish and install a new condensing, natural gas fired boiler plant central to the proposed new combined facility to serve the entire facility.

The new heating plant will be sized to provide N+1 redundancy for the heating needs of each facility.



The heating plant will distribute heat throughout terminal heating systems throughout the new facility as described herein by means of a variable speed pumping system to match hot water flow and temperature to the heating needs of the facility.

Estimated Cost: \$293,000.00

- f. Furnish and install VRF heat pumps for heating and cooling functional spaces throughout the Administrative areas and Housing areas of the proposed Police and Fire Station areas. The EOC will be outfitted with a dedicated system of HVAC.

Estimated Cost: \$684,000.00

Furnish and install new systems of mechanical ventilation throughout all sections of the Police and Fire Stations. For both the Police and Fire Stations, an energy recovery ventilator (ERV) located on the roof is proposed to provide exhaust air for the restrooms and storage areas throughout the three floors of conditioned space while delivering tempered makeup air to the occupied spaces for ventilation.

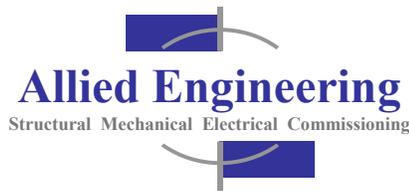
The Police and Fire Station Apparatus Bays will be outfitted with new vehicle exhaust capture systems as well as general emergency ventilation systems to evacuate CO₂ and NO_x as levels exceed permissible exposure limits. The Apparatus Bays shall each include natural gas fired makeup air units to provide replacement air for the exhaust fans.

NFPA compliant exhaust hoods with fire suppression will be installed at all kitchen ranges. The ventilation systems shall include natural gas fired makeup air units to provide replacement air for the exhaust hoods.

Furnish and install a system of mechanical dehumidification for the Decon Room in the Fire Apparatus Bay.

Estimated Cost: \$924,000.00

- g. Furnish and install a new system of automatic temperature controls to serve systems throughout the new and renovated areas. The system will be integrated with The City of South Portland's existing Invensys building automation system (BAS) and will provide control and monitoring for systems throughout.



Estimated Cost: \$515,000.00

- h.** All new air and hydronic systems will be tested, adjusted, and balanced to NEBB and AABC standards. Additionally, independent commissioning will be conducted to document functional operation of the system in accordance with the design intent.

Estimated Cost: \$60,000.00

TOTAL (M-5): \$2,476,000.00

D. Plumbing

1. Recommendations for Plumbing Systems:

- a.** Furnish and install new plumbing fixtures throughout the new construction areas of both the Police and Fire Facilities. Fixture types shall be as outlined in Option 1 above.

Estimated Cost: \$344,000.00

- b.** Furnish and install a new water entrance within the central mechanical room at the grade level of the new facility. The new service will include metering for domestic use, metering for truck fill use, and reduced pressure zone backflow prevention devices.

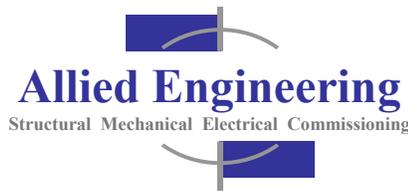
Estimated Cost: \$20,000.00

- c.** Furnish and install a new indirect water heater served by the new boiler plant to generate domestic hot water for the facility. The new domestic water heating system shall incorporate a digital mixing valve to accurately control the water supply temperature to the facility.

Estimated Cost: \$25,000.00

- d.** Furnish and install all new domestic cold, hot, and hot water recirculation piping to serve fixtures throughout the facility. Piping shall be insulated to meet current energy standards.

Estimated Cost: \$580,000.00



- e. Furnish and install all new sanitary waste and vent piping and drainage specialties to serve fixtures throughout the facility. All sanitary service at the existing facility shall be removed and decommissioned, with new sanitary service for the entire facility.

Estimated Cost: \$644,000.00

- f. Furnish and install new storm drain piping to serve the new construction. All existing Storm service shall be removed/re-directed.

Estimated Cost: \$257,000.00

- g. Furnish and install natural gas piping to serve heating equipment throughout.

Estimated Cost: \$65,000.00

- h. Furnish and install a new compressor and compressed air piping to provide general service compressed air throughout the Apparatus Bays. It is assumed that one will be required for Police and a separate one for Fire.

Estimated Cost: \$50,000.00

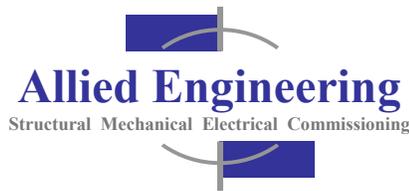
TOTAL (P-5): \$1,985,000.00

E. Electrical

General Requirements

- 1. All electrical work under scope of this Contract shall comply fully with the following codes and standards:
 - m. American Society for Testing and Materials (ASTM).
 - n. Underwriters' Laboratories, Inc. (UL)
 - o. Insulated Power Cable Engineers Association (IPCEA)
 - p. National Electrical Manufacturers Association (NEMA).
 - q. Institute of Electrical and Electronic Engineers (IEEE).
 - r. American National Standards Institute (ANSI).
 - s. National Fire Protection Association (NFPA).
 - t. National Electrical Code (NEC).
 - u. Occupational Safety and Health Act (Public) (OSHA).
 - v. International Energy Conservation Code (IECC).
 - w. Local Inspection Department.
 - x. Local Fire Department.

Recommendations for Electrical systems:



2. Provide electrical service rated 1600 amps, 480/277 volts, 3-phase, 4-wire. The new service shall be underground and shall terminate in a new electrical room. Underground feeders and service entrance conduits shall be concrete encased such that minimum concrete thickness is 2” around the entire conduit. Estimated cost includes and allowance of \$60,000 for utility construction charges.

Estimated Cost: \$365,000

3. Provide branch-circuit panels located within the electric room and elsewhere as required to supply branch circuits for mechanical systems, administrative areas, support areas and equipment areas.
 - h. Shall be circuit-breaker type construction with bolt-on type connections and shall be U.L. listed.
 - i. All circuit breakers shall be quick-make, quick-break, trip free U.L. listed.
 - j. All panelboard bussing shall be aluminum.
 - k. Panelboards shall be furnished with lockable doors all keyed for a master key.
 - l. Panelboards shall have 42 pole capacity and shall have mains rated at 100 amps minimum, single-phase, 3-wire with ground bus unless noted otherwise.
 - m. Feeder distribution equipment to the Designated Critical Operations Area needs to be located in a 2-hour rated room.
 - n. Selective coordination shall be provided for all overcurrent protection devices.

Estimated Cost: \$120,000

4. Provide a 750-kW, 480/277-volt, 3-phase, 4-wire diesel generator set to serve as the alternate power source. Provide a weatherproof generator enclosure with Level 2 sound attenuation. The generator shall include a subbase fuel tank with adequate capacity for at least 72 hours operation at full load. Provide separate automatic transfer switches for the emergency standby systems. The generator and automatic transfer switches shall be suitable for NFPA 110 level 1 emergency systems. A manual transfer switch and means of connecting a portable generator will be provided in addition to the permanently installed standby generator.

Estimated Cost: \$315,000

5. Provide a complete new general wiring system for the renovated facility.
 - k. Wiring insulation shall be Type “THWN/THHN” (75 de+grees C. minimum) for all single conductors in conduit. All insulation shall be rated for 600 volts, A.C. and will be color coded in accordance with the NEC. Minimum branch circuit wiring size shall be No. 12 A.W.G. with separate neutrals, except motor control circuit wiring and building interior fire alarm wiring may be No. 14 A.W.G. minimum.
 - l. All wiring and cable size 1/0 and smaller shall be copper. For conductors above 1/0 in copper size, aluminum may be used when proper de-rating is performed and confirmed with the engineer.
 - m. Wiring buried in earth or fill shall be single conductor installed in schedule 40 PVC conduit except at penetration of building where it shall be adapted to intermediate metal conduit, or where otherwise noted. Panelboard feeders within building shall be single conductor installed in electrical metallic tubing.
 - n. Interior branch circuit wiring shall be applied as follows:

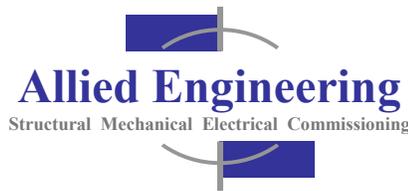
- 5) Branch-circuit wiring above hung or suspended ceilings, within furred spaces or metal partitions shall be Type MC, metal-clad cable with copper conductors and fully rated separate grounding conductor.
 - o. In areas with exposed structure ceilings, exposed wiring in conduit shall be permitted at the ceiling.
 - p. Where subject to physical damage, conduit shall be type “IMC” intermediate metal conduit.
 - q. Minimum size conduit shall be ½ in. unless noted otherwise.
 - r. Low voltage wiring for lighting control shall be 18 A.W.G. minimum and be installed in accordance with the NEC standards for low voltage conductors.
 - s. Wiring and raceways in finished areas shall be concealed in walls and above ceilings.
 - e. Branch-circuit wiring for fire alarm, security, emergency communications, and signaling systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.
 - i. Branch-circuit wiring for power, control, and monitoring of HVAC systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.
 - j. All feeders serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated system.
 - t. Wiring for HVAC control and monitoring serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated system.

Estimated Cost: \$170,000

- 6. Provide receptacle outlets throughout the facility as required to meet program needs.
 - g. All devices and switches shall be Specification grade and U.L. Listed.
 - h. Receptacle devices in toilet rooms, kitchen, near sinks and building exterior shall be GFCI protected.
 - 9) Exterior receptacle shall have weatherproof covers. The weatherproof integrity shall not be affected when heavy duty specification or hospital grade attachment plug caps are inserted.
 - 10) Rooftop receptacles shall be located within 25 feet of mechanical units.
 - i. Duplex receptacles will be provided in all areas in quantities suitable for space usage.
 - j. Specialty receptacles shall be provided for specific equipment.
 - k. Toggle switches shall be rated 20 amps.
 - l. Device plates shall be high-abuse nylon. Plates shall be of appropriate size and type.

Estimated Cost: \$80,000

- 7. Provide LED lighting with high-performance optics throughout the building. Provide full cut-off LED exterior lighting for all exterior areas.
 - h. The lighting systems will be in compliance with the Illuminating Engineering Society (IES) recommendations for foot-candle levels.



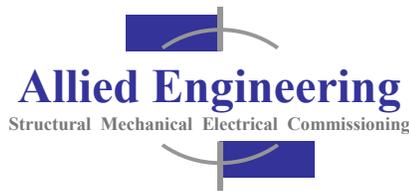
- i. Luminaires shall utilize factory-installed LED light engines. Luminaires shall qualify for Efficiency Maine rebates to the greatest extent possible based upon programming requirements.
 - j. Emergency egress lighting and Exit signs shall be provided to meet all code requirements with back-up power from the emergency generator.
 - k. Mechanical, storage and utilitarian spaces will be provided with LED lensed strip type fixtures.
 - l. Control of exterior shall be auto-on/auto-off by an astronomical time clock or photocell.
 - m. Ceiling mounted or switchbox type Occupancy sensors shall be utilized in areas subject to intermittent use. Areas 150 square feet and less shall utilize switch-box mounted occupancy sensors. Areas greater than 150 square feet shall be controlled by a power pack and a low voltage manual switch connected to a local occupancy sensor.
- 4) Power pack shall be dual voltage and capable of loads rated 20 amps.
- 5) Occupancy sensor shall be powered from the power pack and be dual technology capable (PIR and ultrasonic). The low voltage switch shall interface with the occupancy sensor to provide for manual-ON, occupancy sensor off. Sensor shall be capable of satisfying logic states using either or both technologies.
 - 6) Occupancy sensor shall be ceiling mounted for areas with recessed lighting and wall mounted for pendant lighting. Mounting height to match pendant height.
- n. Lighting in selected areas shall be turned on automatically upon receipt of an alarm by the fire station.

Estimated Cost: \$585,000

8. Telecommunications:
- f. Provide a new telecommunications underground duct bank to a telecommunications utility demarcation point in the new electrical room. The duct bank shall consist of three 4" conduits: (1) for telephone, (1) for CATV and (1) spare.
 - g. Telecommunications work shall comply with BICSI and EIA/TIA standards.
 - h. Horizontal cabling and terminations shall be Category 6.
 - i. Cables shall be riser rated.
 - j. Critical communications systems wiring serving the Designated Critical Operations Area shall be a 2-hour rated wiring method.

Estimated Cost: \$115,000

9. Provide an automatic, addressable electrically supervised, low-voltage fire alarm system.
- h. Fire alarm systems shall generally comply with requirements of NFPA 72 for local building systems except as modified and supplemented by this specification.
 - i. All units of equipment shall be listed by Underwriters Laboratories and shall consist of a battery-backed fire alarm control panel, heat detectors, smoke detectors, and pull stations.



- j. Occupant notification shall be audio/visual type with voice evacuation signals. Visual notification appliances shall be synchronized where multiple strobe flashes are visible.
- k. Wiring shall be in accordance with NEC Article 760, and as recommended by the manufacturer of the fire alarm system and AHJ.
- l. Duct smoke detectors shall be provided in all supplies that are 2000cfm or greater and returns that are 15,000cfm or greater.
- m. System shall be connected to and monitor status of sprinkler devices.
- n. All wiring for fire alarm, security, and emergency communications and signaling systems serving the Designated Critical Operations Area shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.

Estimated Cost: \$195,000

- 10. Provide Access control, intrusion detection, and a security camera system to suit program needs.
 - d. The access control system shall be integrated with the city's On-Guard system and shall consist of card readers, duress buttons, and associated hardware and software.
 - e. Cameras will be power-over-ethernet (POE) type network.
 - f. Intrusion detection shall be controlled by a separate control panel, which shall monitor motion detectors and door switches and shall be connected to interface with the access control system.

Estimated Cost: \$185,000

Total (E-5): \$2,130,000

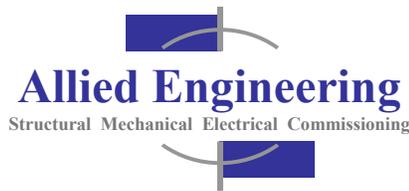
XII. Basis of Design Recommendations – Option 6

A. Structure

- 1. Codes, Standards and Authorities Having Jurisdiction:
 - a. International Building Code - IBC 2015
 - b. International Existing Building Code - IEBC 2015
 - c. American Society of Civil Engineers – Minimum Design Loads For Buildings and Other Structures – ASCE 7-2010
- 2. Option 6
 - a. All new construction on another site.

Estimated Cost: ALL NEW CONSTRUCTION. REFER TO ARCHITECTURAL/SITE PORTIONS OF STUDY FOR COST FOR NEW CONSTRUCTION AREAS AND ANY EXISTING BUILDING DEMOLITION COSTS.

B. Fire Protection



1. Recommendations for New Systems:

- a. Furnish and install a system of automatic sprinkler coverage throughout the proposed new Fire Station, Police Station, and Public Safety Building (55,000 sf).

Estimated Cost: \$275,000.00

TOTAL (FP-6): \$275,000.00

C. **Heating, Ventilating, and Air Conditioning**

1. Recommendations for New Systems:

- a. Furnish and install new HVAC systems throughout the proposed new combined Police and Fire Station. The systems shall be as described in other options above for each functional space. (55,000 sf).

Estimated Cost: \$2,200,000.00

TOTAL (M-6): \$2,200,000.00

D. **Plumbing**

1. Recommendations for Plumbing Systems:

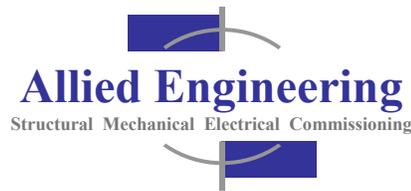
- b. Furnish and install new Plumbing systems throughout the proposed new combined Police and Fire Station. The systems shall be as described in other options above for each functional space. (55,000 sf).

Estimated Cost: \$2,200,000.00

TOTAL (P-6): \$2,200,000.00

E. **Electrical**

1. Recommendations and cost for electrical systems are similar to Options 4 and 5.



XIII. Basis of Design Recommendations – Option 7

A. Structure

1. Codes, Standards and Authorities Having Jurisdiction:
 - a. International Building Code - IBC 2015
 - b. International Existing Building Code - IEBC 2015
 - c. American Society of Civil Engineers – Minimum Design Loads For Buildings and Other Structures – ASCE 7-2010
2. Option 7
 - a. No roofing/structural work is required for Option 7.

Estimated Cost: NO STRUCTURAL COSTS RELATED TO OPTION 7 HERE.

B. Fire Protection

1. Although the facility, as currently configured and occupied, requires a system of automatic sprinkler protection by current codes, installation of such a system is not mandated unless renovations or alterations of the facility are undertaken. As such, we do not have any recommendations for installation of an automatic sprinkler system to accommodate the next 3 to 5 years of occupancy unless planned renovations or alterations in that time frame trigger the necessity.

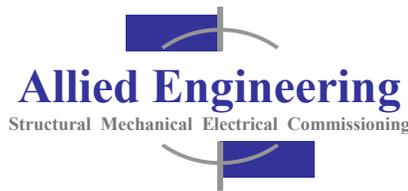
Estimated Cost: \$0.00

C. Mechanical Systems

1. The mechanical systems as they currently exist, although they are antiquated and do not provide for optimal occupant comfort, are operational and well maintained. As such, our recommendation is that the systems continue to be maintained as they currently exist based upon a 3 to 5 year plan.

Estimated Cost: \$0.00

D. Plumbing Systems



1. As with the mechanical systems, the plumbing systems, although antiquated and outdated, are functioning and well maintained. Our recommendation is that the ongoing maintenance be continued, based upon a 3 to 5 year occupancy plan.

Estimated Cost: \$0.00

E. Electrical Systems

1. Based upon a 3-to-5-year occupancy plan, we recommend the following:
 - a. Utilize plug-in GFCI units when utilizing non-GFCI receptacles in the apparatus bays and basement.
 - b. Install covers on open junction boxes.
 - c. Use LED replacement tubes and bulbs to replace existing lamps as they fail.
 - d. Identify and remove unused communications wiring.

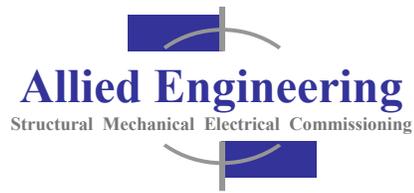
Estimated Cost: \$5,000 - \$10,000

XIV. Basis of Design Assumptions and Qualifiers with Respect to Construction Cost Estimates Presented Herein

- A. Estimates of probable construction costs presented herein are ballpark estimates based upon very conceptual plans for the six options of renovation and constructed presented herein. The numbers are square foot costs based upon our recent construction experience with several similar facilities and an anticipated extent for the layout and configuration of proposed new/renovated systems. The following qualifiers and assumptions are applicable:
1. Estimates do not include contingencies or GC mark-ups.
 2. Estimates are based upon current market trends and do not include escalation factors.
 3. Estimates do not include soft costs such as furniture/fixtures/equipment and engineering fees.

XV. Summary of Anticipated Soft Costs (Engineering Fees)

- A. Based upon an estimated square footage for new/renovation area that ranges between 55,000 and 70,000, assuming a total construction cost of \$375/sf, and 35% of total construction cost for MEPSFP Construction Cost, the following is offered as a range of engineering fees based upon the options presented:
1. MEPSFP Design and Construction Administration: **\$600,000.00 to \$750,000.00**



2. Construction Phase Third Party Commissioning: **\$60,000.00 to \$70,000.00**
3. Energy Modeling: **\$20,000.00 to \$25,000.00**

XVI. Closing

It is with pleasure that this report is submitted for your use and consideration. We look forward to working with Sebago Technics in the design development for this exciting project.

Appendix A - Refer to Sebago Appendix E for Alternative Site Plans

APPENDIX B

South Portland Police Station MEPS Assessment Report



September 25, 2018

Owens McCullough, P.E., LEED-AP
Vice President, Engineering
Sebago Technics
75 John Roberts Rd., Suite 1A
South Portland, ME 04106

Re: Mechanical-Electrical-Plumbing-Structural (MEPS) Assessment of the South Portland Police Station in South Portland, Maine

Owens:

This letter is issued to document our system assessment for the mechanical, plumbing, electrical, fire protection, structural, and roofing systems at the Police Station in South Portland, Maine. The scope for this report includes assessment for the existing Mechanical, Plumbing, Fire Protection, Structural, Roof, and Electrical systems and offers recommendations for upgrades to the current systems based upon their age, current condition, code compliance, and operational efficiency. Although the primary intent for the report is to offer prioritization for mechanical systems upgrades, the report is further intended to outline recommended upgrades to the plumbing, structural, and electrical systems as resultant from the mechanical upgrades and as otherwise prudent given the age and or condition for those systems.

Our services include the following:

1. Meet with designated representatives of the facility to gain an understanding of the use and environmental requirements of each functional space.
2. Conduct field visits to assess the configuration and condition of existing systems, analyze existing building design documentation, become familiar with prior renovations and functional space changes throughout the facility, and interview occupants within each of the spaces to gain an understanding as to the adequacy of the current systems to maintain acceptable conditions based upon use and occupancy.
3. Collaboration with Sebago Technics and Grant Hays Architects to establish the scope for the proposed renovations and upgrades.
4. Develop a Basis of Design for upgrades and additions to the Mechanical, Plumbing, Fire Protection, Structural, and Electrical systems based upon information collected during the assessment phase, as required to remediate the current mold growth and prevent its re-occurrence.

The assessment incorporates the following items:

1. Visual assessment of systems condition and operation
2. Interview of designated facility personnel to gather information relative to space comfort, systems efficiency, maintainability, and other relevant information.
3. Review of system design documentation to analyze the ability for systems to meet current code requirements and industry standards for occupant comfort, indoor air quality, and efficiency of operations.

4. Report of recommendations for upgrades based upon current facility use and proposed renovations and upgrades.

I. Existing Conditions

A. Roofing/Flashing

Roofing

1967 Building

1. The existing roof is surfaced with an EPDM membrane applied over insulation which is mechanically fastened to a metal decking system. The thickness of the insulation was not determined by AEI but could be from a coring sample performed by a roofing contractor. Given the age of the building and the presence of fiberglass batt insulation laid above the interior ACT ceiling system it is likely that only a minimal amount of insulation exists above metal deck/below EPDM membrane.

2. Conversations with Tecta Roofing indicate that the current roofing membrane was added in 2004. Tecta Roofing indicated that no insulation was added as part of the reroofing work in 2004.
3. Existing roofing membrane appears to be in decent condition.
4. Existing roofing seams/seams at patches appear to be in decent condition.
5. A number of small holes/openings in seams were noted.

1997 Addition

1. The existing roof is surfaced with an EPDM membrane applied over insulation which is mechanically fastened to a metal decking system. The thickness of the insulation was not determined by AEI but could be from a coring sample performed by a roofing contractor. Available drawings indicate R-19 insulation level from original construction. No indication that any additional insulation was ever added after initial construction activities.

2. Conversations with Maine Roofing suggest that the existing roof is from the original building construction in 1997.

3. Existing roofing membrane appears to be in decent condition.



4. Existing roofing seams/seams at patches appear to be in decent condition.

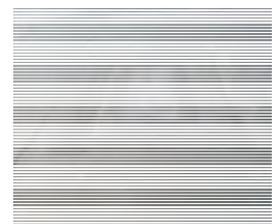
5. A number of small holes/openings in seams were noted.



Flashing

1967 Building

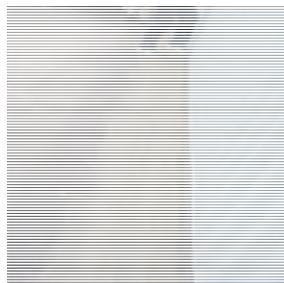
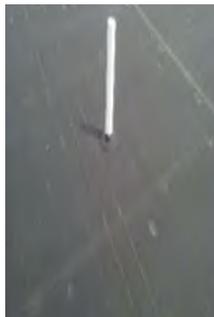
6. Flashing for roof vent pipes, goose neck vents, and various roof patches applied over the years are in fair condition. There are some cracked or lifted sealant joints and edges where the bond has broken down, which is evidenced by the accumulation of moisture that is collecting beneath the flashing and patch joint/edges. In some instances, boot flashing at vent stacks and utility penetrations only extend a few inches above the existing roof surface.



1997 Addition

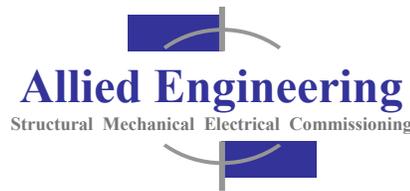
7. At most perimeter walls, roofing membrane runs up back side of perimeter concrete/CMU walls and is anchored to top of walls with termination bar. Membrane does not run across full-width of top of walls. No existing cap flashing over tops of walls.

8. In a few locations (3 sides of high roof over elevator and short run of sidewall towards front building corner of high middle roof) there is an exposed length of concrete perimeter wall cap. Caulking between cap joints is in poor condition.
9. Roof membrane at sidewalls of low roof adjacent to Fire Station is anchored to Fire Station Walls with termination bars attached to Fire Station walls. No counterflashing exists at these locations.
10. Flashing for roof vent pipes, goose neck vents, and various roof patches applied over the years are in fair condition. There are some cracked or lifted sealant joints and edges where the bond has broken down, which is evidenced by the accumulation of moisture that is collecting beneath the flashing and patch joint/edges. In some instances, boot flashing at vent stacks and utility penetrations only extend a few inches above the existing roof surface.
11. A gutter system is provided to collect roof runoff along a portion of low roof adjacent to the sidewall of the existing Fire Station.



B. Structure

The areas under consideration in the existing structure for this study include the original police station building constructed around 1967, and an addition currently containing the main dispatch area constructed around 1997. No structural drawings were available for the 1967 portion of the existing building. A few drawings for other disciplines were available which indicate that the building was designed by William & Robert Armitage Architects from Portland, Maine. All structural data generated for the 1967 building is based on field observations/measurements made for selected framing components during a site visit



conducted for this report. A complete set of structural drawings was made available for the 1997 portion of the existing building. Drawings were prepared by Oest Associates from South Portland, Maine. Structural data generated for the 1997 addition is based on the available drawings, and observations made during a site visit conducted for this report.

1967 Building

1. The existing 1967 structure is a two-story building with a full-height below grade occupied basement space. Building measurements are about 60' wide x 100' long with a flat, or very low slope, roof.
2. Roof structure consists of metal roof decking spanning about 5' to 12" deep open-web steel roof joists spanning to 10" deep steel beam and column support lines. Typical joist span is 20'. Typical beam span is 20'.
3. Floor framing consists of concrete floor slab on metal floor decking spanning to open-web steel joists that span to steel beam and column support lines. Typical joist span is 20'. Typical beam span is 20'.
4. It appears that any existing lateral load (wind/seismic) resistance for the original 1967 building comes from perimeter CMU walls. Given the vintage of the building, it is most likely that the walls are of unreinforced (no vertical steel rebar) construction.

1997 Addition

5. The existing 1997 addition is a two-story building with a full-height below grade occupied basement space. The addition is linked to the original 1967 building with a short two-story connector. Connector dimensions are about 6'-0" wide x 15'-0" long. The addition has a high roof in a middle section and lower roofs to both sides, front and back of the central high roof area. One corner of the high roof space has a raised roof area corresponding to an existing elevator. An additional low roof space exists at the end of the 1997 addition common to the sidewalls of the Fire Station building.
6. Low roof to high roof transitions exist along the front, back and to both sides of the high center roof area, and along two sidewalls of the low roof that butts to the walls of the Fire Station. There is potential for snow to collect on the low roofs at these roof step areas. Snow drift potential also exists off of the back of one of the low roof areas to the side of the center high roof where the low roof edge has only a small distance separation to an adjacent higher roof on the Fire Station.
7. Roof structure for the 1997 addition consists of 1-1/2" deep 22 gage steel roof decking spanning to open-web steel joists or steel beams that span to steel beam and column support lines.
8. Floor framing for the 1997 addition consists of concrete floor slab on 1" deep 22 gage non-composite metal floor decking spanning to open-web steel joists that span to steel beam and column support lines.

9. Foundations for the 1997 addition consist of conventional perimeter steel reinforcing bar concrete basement walls and interior steel reinforcing bar concrete spread footings.
10. Available drawings indicate that the existing lateral load (wind/seismic) resisting system consists of a series of ordinary steel moment connected frames.

C. Fire Protection

(1967 Building)

1. The building does not have a fire sprinkler system.

(1997 Building)

1. The building is fully protected by a NFPA 13 wet sprinkler system. The sprinkler entrance has a testable backflow preventer which complies with the Portland Water District's current requirements.



D. Mechanical

(1967 Building)

1. The building heating hot water is generated by a single cast iron sectional Weil McLain hot water boiler, model 978, gross output 1,007 MBH, firing #2 fuel with a Carlin burner. Heating fuel oil is stored in an underground storage tank with a monitored leak detection system. This boiler does not appear to be of original 1960's vintage, but no documentation is apparent which would offer to establish the year of installation.



2. The heating hot water is distributed through the facility for heating via four circulator pumps. One pump serves fin-tube radiation throughout the building while the other three pumps each serve hot water duct coils serving the lockers, cell blocks, and dispatch/admin on the first floor.



3. Air conditioning (AC) consists of thru wall portable style room air conditioners for the offices and separate ductless split AC units serving the major crimes and debriefing rooms.
4. Ventilation consists of two air handling units (AHUs) located in the boiler room, one makeup air unit (MAU) located in the Swat room, and rooftop exhaust fans (EFs). One AHU serves the lockers, cell block areas, and Major crimes at the first floor area. The debriefing and dispatch/admin offices at the first floor level do not have mechanical ventilation. The second AHU serves the Lab, Evidence technician, storage rooms, and interview room located at the lower level. The MAU serves the shooting range and operates in sequence with an exhaust fan located on the roof above. Additional roof top EFs serve exhaust for the lockers, cell blocks, and toilets. The holding cell exhaust ventilation has been terminated and abandoned in place. Fresh air to the AHUs and MAU is provided via through wall louvers located close to grade at the east wall. AHU relief air is duct up to the roof via vertical chases integral with the chimney. Combustion air for the boiler is ducted from a second louver located at the east wall to the boiler room by an inline supply fan.



The break room located at the first floor contains a 4 burner range with no exhaust hood. There is a ceiling exhaust grille in the space for general exhaust, served by a rooftop exhaust fan.

5. The building temperature controls are electric, standalone controls for the AHUs, MAU, boiler, and heating pumps controlled by central zone thermostats. Fintube radiation heating throughout the building is zoned by north and south exposure. (1) thermostat is located in the east corridor and one in the west corridor. Each fintube section is equipped with manually adjusted zone valves to further provide local room/space control.



(1997 Building)

1. The building heating hot water is generated by a single cast iron sectional Burnham Commercial hot water boiler; model V904A, mfg. 2006, gross output 483 MBH, firing #2 fuel with a Carlin burner. Fuel oil is piped directly from the main underground fuel oil storage tank at the 1967 building without return fuel oil piping or fuel oil transfer pump/day tank.
2. The heating hot water is distributed through the facility for heating via two building heating pumps that serve (12) VAV terminal reheat coils (1 thru 5 on Fire Dept side and 6 thru 12 on Police Dept side, and (3) added VAVs in the lower level rooms), cabinet unit heaters, suspended unit heaters, and the radiant snow melt system.
3. Air conditioning (AC) is provided by a 15 ton packaged roof top unit (RTU) operates as a by-pass VAV system. The RTU serves the first floor spaces via (12) VAV terminals as noted above. Similarly, the lower level rooms are served by (3) VAV terminals. The lower level server room is cooled by a dedicated 5 ton Bryant computer room air conditioning (CRAC) unit, manufactured in 2010. The radio room is cooled by a 1.5 ton ductless split heat pump unit manufactured in 2018 by Fujitsu.
4. Ventilation is provided to the first floor and lower level spaces through the RTU and ducted VAV terminals. Occupied space return air is partially relieved at the RTU to offset set outdoor air (OA) introduced at the RTU for ventilation. Toilet exhausts are operated via the toilet room light switch which provides intermittent toilet exhaust. Boiler combustion air is ducted from a window well grate to within 12" from the boiler room ceiling; there is no low ducted air opening.

Ventilation for the 4-burner range at the lower level break room is provided by a residential combination microwave and recirculating exhaust hood.
5. The building temperature controls is a Barber-Colman Network 8000, electric/electronic and direct digital (DDC) system, installed approximately in 1998. The Network 8000

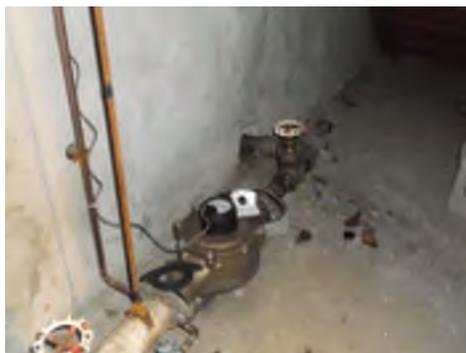
controls serve enable and disable of the RTU, boiler, and pumps. Space wall sensors control VAV cooling and heating directly. The radiant snow melt heats thru its own stand alone electronic controls.



E. Plumbing

(1967 Building)

1. Domestic cold water enters the facility at the west wall of the building in a closet under the stairway at the lower level. The water entrance size is 2" and currently does not have backflow prevention, only an inline water meter. Piping is copper with vintage pipe insulation.



2. Domestic hot water is generated by a 40 gallon AO smith electric water heater. The hot water service to the facility is sized at 3/4" and is comprised of soldered copper. There is a manual mixing valve in the hot water supply with a Taco domestic hot water circulator.



3. The sanitary sewer where accessible, is primarily vintage cast iron. The service, sized at 4" exits the facility at the west side of the building lower level. There is also a building low point sump pump at this location.
4. The storm drainage is provided by two vertical rain leaders above grade and drop below grade at the building exterior.
5. Bathroom fixtures consist of floor mounted water closets, urinal in men's locker, with wall mounted lavatories, all of white vitreous china. The men's and women's locker rooms also have shower stalls. The kitchen sink is a drop in double bowl stainless steel unit with gooseneck faucet and wrist blade faucet handles. A wall mounted stainless steel water cooler with bottle fills is located in the east corridor. There are stainless penal style fixtures located on the first floor holding area, however, they are no longer used.

(1997 Building)

1. Domestic cold water enters the facility at the south west wall of the building in the lower level sprinkler room. The water entrance size is 2" and immediately reduces to 1" before the water meter and reduced pressure backflow preventer. Piping is copper and fully insulated.



1. Domestic hot water is generated by a 50 gallon, General Electric heat pump water heater. The hot water service to the facility is sized at ¾” and is comprised of soldered copper. There is a manual mixing valve in the hot water supply with a Taco domestic hot water circulator.



2. The sanitary sewer where accessible is solvent welded schedule 40 PVC. The service, sized at 4” exits the facility at the west side of the building where it is increased to a 6” service, based upon the existing plans.
3. The storm drainage is provided by two vertical rain leaders above grade and drop below grade at the building exterior where they exit the facility as a 4” service at the west side of the facility.
4. Bathroom fixtures consist of floor mounted water closets with wall mounted lavatories, all of white vitreous china. The break room sink is a drop in single bowl stainless steel unit

with gooseneck faucet and wrist blade faucet handles. A wall mounted stainless steel water cooler is located in the lower level main corridor. The lower level bathroom also houses a fiberglass single stall shower with hand held faucet head.



F. Electrical

(1967 Building)

1. ***Service Entrance and Power Distribution:***

The building is powered by a 200amp 120/208volt three-phase 4-wire underground service that originates at a 25-kVA utility-owned pole mounted transformer. This feed enters the custodial Workshop located in Room 006 and is connected to a 200 amp disconnect which then runs through a meter to an Onan ATS and ultimately feeds a 200 amp panel named Panel 0001. Panel 0001 is a 54-circuit panel. The panel directory installed in this panel is a directory for another panel located elsewhere in the building and is incorrect. AEI believes that a 70 amp circuit breaker in this panel feeds the 1st Floor Subpanel located outside of the Holding Area (Room120). These two panels' combined circuit capability is 96 circuits. However, Panel 0001 appears to have no spare circuiting available. The 1st Floor Subpanel does have a few spare circuit breaker spaces, but little to no available power capacity given the system's ampacity.

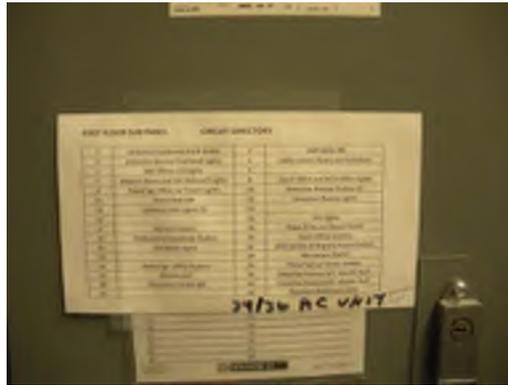
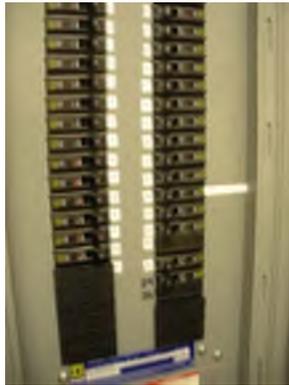


200 Amp Disconnect and Meter



Onan – ATS

Panel 0001



1st Floor Subpanel

As is the case with many older electrical installations a number of changes have occurred throughout the years and electrical panel schedules do not necessarily reflect the proper circuiting as it currently exists.

2. **Generator:**

Standby power for the 1967 Building is provided by a Kohler 230-kW generator that also serves the 1997 addition and the adjacent Fire Station. The ATS that serves the 1967 Building is an older type that has exceeded its anticipated useful life. At the time of our site visit the ATS appeared to be powered, however, the indicating lights on the face of the ATS switch were not functioning.

3. **Lighting:**

Generally the lighting fixtures in the police building are of an older style. However, in many cases existing fluorescent lighting has been updated to incorporate the use of T5 and T8 lighting. The lighting control located throughout the police building is a mix of various types of occupancy sensor and the more traditional On-Off control. As it exists

today the recessed lighting located in the firing range is in poor condition, non-energy-efficient, and the lighting control itself, while functional, is not listed or approved as required current NEC standards.



Discolored Lenses Create Dim Lighting (TYP)



Firing Range Lighting



Firing Range Lighting Control – Non- UL Listed Assembly

4. ***Fire Alarm System:***

The 1967 Building is served by the 1997 Building fire alarm system. Smoke detectors are located in selected areas, but occupant notification does not comply with current code or the Americans with Disabilities Act (ADA).



Type Written Labels Preferred



Improperly Terminated and Secured Fire Alarm Cable (TYP)

5. ***Existing Electrical Infrastructure:***

Typically as a building of this type ages many changes and modifications to the electrical systems occur. Sometimes these modifications are hurriedly installed with little attention to NEC requirements. Additionally advances in technology requiring power and the addition of personnel put a strain on the existing receptacle systems installed throughout the building. Such is the case with this building.



Poor Romex Installation (TYP)



Light Fixtures Improperly Supported



Questionable Functionality and Inadequate Labeling



Open Splices
(NEC and OSHA Code Violations)



Improper Use of Cord Cap and Romex





Extensive Use of Extension Cords and Power Strips (TYP)





Extensive Use of Extension Cords and Power Strips (TYP)



Poor Cable Management



While not particularly attractive, power poles may represent an acceptable alternative to power strips and extension cords. However, the existing police building power distribution system does not have available space to support additional panels that would be required to facilitate the extensive need of receptacle circuitry.

6. *Life Safety Issues:*

During our site visit it was observed that some exit fixtures and emergency battery pack lighting were questionable. While the standby generator provides back-up power for the facility's general lighting, none of the lighting is connected to a separate emergency wiring system as would be required by current code.

(1997 Building)

1. ***Service Entrance and Power Distribution:***

The 1997 Building is powered by a 400-amp underground service that originates at a 112.5-kVA utility-owned pole mounted transformer and terminates at a panelboard located in the basement fitness area. Branch-circuit panelboards are located in the fitness area, the server room, and the dispatch area on the first floor.



2. **Generator:**

A Kohler 230-kW diesel-fueled generator located outside of the 1997 addition provides standby power for the entire police station as well as the adjacent Fire Station. Power Products Systems, LLC, the local Kohler representative reports that the existing generator was placed in service in January of 1999. The generator is reported to be exercised weekly.



3. **Lighting:**

Generally the lighting fixtures in the 1997 building are fluorescent luminaires that incorporate the use of T8 lamps and electronic ballasts. The lighting control located throughout the police building is a mix of various types of occupancy sensors and traditional On-Off manual control.

4. **Fire Alarm System:**

1997 Building is equipped with a conventional zoned Notifier fire alarm System that also serves the 1967 building. The control panel is a System 500 series and appears to be original to the building. Alarms are initiated by manual pull stations at exits and smoke and heat detectors located in selected areas. There is also a separate Chemetron control panel that controls a dry-chemical fire suppression system in the basement server room. It was observed that some of the fire alarm cabling installed in the police building was not properly secured and terminated.



Main Fire Alarm Control Panel



Server Room Fire suppression control panel

5. ***Life Safety Issues:***

The standby generator provides back-up power for the facility's general lighting. However, the building does not have emergency lighting for means of egress that complies with current code because none of the lighting is connected to a separate emergency wiring system.

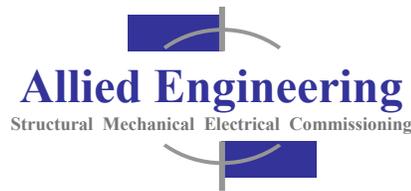
II. Discussion

A. Roofing/Flashing

Roofing

1967 Building

1. The existing roofing membrane appears to be in decent condition. Our judgment is that the lifespan of the existing roofing can be extended by 10-15 years if repairs are performed.
2. Any areas of existing insulation that have been comprised by moisture infiltration should be replaced. It appears that there may be areas of moisture infiltration at various roof patches/seams.
3. Roofing seams should be stripped and replaced within the field of roof, and at any other roof patches/seams.
4. We are currently recommending that repairs be undertaken to extend the lifespan of the existing roofing system. If any future roofing replacements are performed, consideration should be given to providing a minimum R-30 roof insulation application per ASHRAE 90.1 2013 requirements beneath a 0.060 mil EPDM roofing application. New insulation



would be mechanically fastened and the membrane adhered. Additional roofing fasteners should be added along edges and corners to meet uplift requirements from ASCE7 code provisions. As part of any future reroofing work, pullout testing of fasteners to the existing metal roof decking should be performed. If the existing metal roof decking provides adequate uplift resistance, replacement of the decking will not be required with any reroofing activity and roofing repairs as indicated above can be performed. It is our experience that the type of metal roof decking for the 1967 original building often cannot provide adequate resistance for roofing/insulation fasteners to meet current building code uplift requirements and may therefore require replacement. If the deck resistance is not adequate then the existing metal decking will need to be replaced with new metal decking capable of providing adequate uplift resistance, or new roof structure with new decking capable of providing adequate uplift resistance will need to be provided a few feet above the existing roof surface by extending up new support walls above the existing perimeter walls and interior support lines. Building any new roof above the existing roof surface should only be considered if judgment is made that replacing the existing roof decking is too intrusive an activity in the existing occupied spaces to be considered a viable alternative. We have provided some budget numbers at the end of this report for future reroofing considerations for these various alternatives.

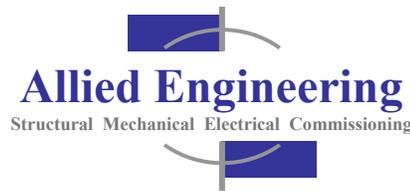
1997 Addition

5. The existing roofing membrane appears to be in decent condition. Our judgment is that the lifespan of the existing roofing can be extended by 7-10 years if repairs are performed.
6. Any areas of existing insulation that have been comprised by moisture infiltration should be replaced. Our judgment is that existing insulation felt 'spongy' underfoot indicating signs of moisture penetration extending out about 6' on low roofs at roof steps to sides of high roof at middle of 1997 addition, out from Fire Station sidewalls, and around existing roof top unit.
7. Roofing seams should be stripped and replaced within the field of roof, and at any other roof patches/seams.
8. If any future roofing replacements are performed, consideration should be given to providing a minimum R-30 roof insulation application per ASHRAE 90.1 2013 requirements beneath a 0.060 mil EPDM roofing application. New insulation would be mechanically fastened and the membrane adhered. Additional roofing fasteners should be added along edges and corners to meet uplift requirements from ASCE7 code provisions.

Flashing

1967 Building

9. Boot flashing at existing vent stacks should be replaced/extended up above roof surface by minimum industry standards.



10. Curbs at all roof penetrations should be replaced/extended up above roof surface by minimum industry standards.
11. At all perimeter walls, extend roofing membrane up and over tops of walls, provide cap flashing extending over outside face of walls and provide seam tape over cap flashing.
12. Any non-functioning roof penetrations should be eliminated. Those to remain should be flashed according to the manufacturer's standards for warranty. The existing chimney should be capped properly and flashed into the membrane at the base, according to manufacturer's standard detailing.

1997 Addition

13. Boot flashing at existing vent stacks should be replaced/extended up above roof surface by minimum industry standards.
14. Curbs at all roof penetrations should be replaced/extended up above roof surface by minimum industry standards.
15. At all perimeter walls, extend roofing membrane up and over tops of walls, provide cap flashing extending over outside face of walls and provide seam tape over cap flashing. This includes area all concrete parapet caps.
16. Add counterflashing over existing termination bars at low roof sidewalls common to Fire Station.
17. Any non-functioning roof penetrations should be eliminated. Those to remain should be flashed according to the manufacturer's standards for warranty. The existing chimney should be capped properly and flashed into the membrane at the base, according to manufacturer's standard detailing.

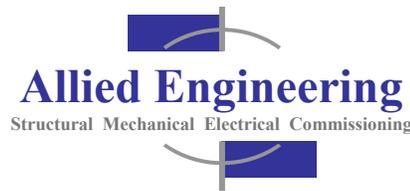
B. Structure

Codes, Standards and Authorities Having Jurisdiction:

- a. International Building Code (IBC) – 2015 edition
- b. American Society of Civil Engineers – Minimum Design Loads For Buildings and Other Structures (ASCE7) – 2010 edition

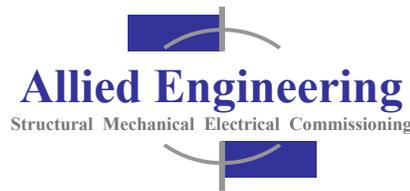
1967 Building

1. No structural drawings are available for the original 1967 building. No data is available for the original building design loads. During our site visit we gathered measurements for representative elements of the existing framing components. We have used these



measurements, and our assumptions on material properties, to calculate load capacities for these selected elements to generate an estimate of original building design loads.

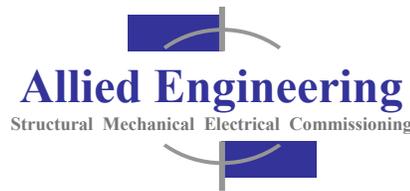
2. In accordance with the 2015 IBC, the minimum uniform roof design snow load for this structure in South Portland, assuming a “fully-exposed” structure, with a Ground Snow Load of 60 pounds per square foot (psf), an “Essential” Occupancy Category of IV, a Thermal Factor of 1.1 and an Importance Factor of 1.2 would be calculated at 50.0 psf.
3. Based on our calculations, it is our judgment that the original 1967 building roof framing was designed for a minimum total load of about 55.5 psf. Given the age of the building, it is most likely that some of total load was related to the weight of an original tar & gravel roof surface. It appears that at some point in time any original tar & gravel roof surface was likely removed. Conversations with Tecta Roofing indicate they do not believe any Tar & Gravel Roof was encountered when they did reroofing work in 2004. This reduction in weight of any original tar & gravel roof can now be claimed as additional capacity for the framing components to carry code-specified snow loadings. A roof core may be required to verify the makeup of the existing roofing, and to verify that no relic tar & gravel roof surface still exists below the visible EPDM roofing. We estimate the weight of the existing roof framing, roofing, ceiling and other suspended items to be about 9 psf, leaving 46.5 psf available to support code-specified uniform snow load requirements. As noted, current 2015 IBC provisions require a uniform snow load capacity of 50.0 psf so the existing roof framing is deficient by about 3.5 psf. Most of this deficiency has to do with parameters for thermal characteristics and building importance that increase the required roof snow load magnitudes. These factors have been introduced to building codes in the last 25 years or so. They did not exist at the time of the original 1967 building design. Our judgment is that this level of overstress is not large enough to warrant any structural upgrades to the existing roof framing components. No modifications to existing roof framing are required to meet current code provisions. If the metal decking is found to be deficient for pullout, and the decision is made to construct an overbuilt roof system above the existing, minor modifications to the existing roof framing elements will be necessary to accommodate additional roof structure loads. These modifications would be localized to the reinforcement of the existing support beams as the framing spans for the overbuilt roof structure would likely match those of the existing roof structure framing.
4. In accordance with the 2015 IBC, minimum floor live load design loads for this structure would be calculated as 100 psf for Lobby & Assembly spaces, 80 psf for Corridor spaces and 50 psf with a 15 psf allowance for partition walls for Office spaces.
5. It is our judgment that the existing floor framing is adequate to support floor live loads specified in current 2015 IBC provisions. No modifications to existing floor framing are required to meet current code provisions.
6. Lateral resistance for the original 1967 building appears to be provided from what are most likely unreinforced perimeter CMU walls. A total lateral load analysis of the existing building is beyond the scope of the current condition assessment work. The building code provisions for lateral load resistance have changed a great deal since the original building construction. There is no expectation that this portion of the existing building will meet



the lateral load requirements for current 2015 IBC provisions. It does not appear that any alterations have been made to the lateral resisting system since the original building construction. Given this, the structure can be considered 'grandfathered' according to the provisions of the International Existing Building Code (IEBC) unless subjected to changes as described in the IEBC that trigger the need to upgrade to current code provisions. The IEBC provisions should be reviewed at any future date if changes are considered here.

1997 Addition

7. Structural drawings were available for the 1997 addition to the original 1967 building. The drawings indicate that the addition was designed per the 1996 edition of the BOCA building code. The roof framing was designed for a uniform roof snow load of 50 psf plus snow drifting at roof steps, and the floor framing was designed for 100 psf live load at Lobby spaces, 80 psf live load at Corridor spaces and 50 psf live load with a 20 psf load allowance for partition walls at Office spaces.
8. In accordance with the 2015 IBC, the minimum uniform roof design snow load for this structure in South Portland, assuming a "partially-exposed" structure, with a Ground Snow Load of 60 pounds per square foot (psf), an "Essential" Occupancy Category of IV, a Thermal Factor of 1.1 and an Importance Factor of 1.2 would be calculated at 55.4 psf.
9. Our calculations indicate that all roof framing elements have available uniform roof snow load capacities in excess of the 55.4 psf required. No modifications to existing roof framing are required to meet current code provisions.
10. As noted earlier in this report, there are a number of transitions from low to high roofs where snow may collect on low roofs and generate snow loads in excess of the code-specified uniform snow loads. Since the mid-1970's, building codes have carried provisions for drifting snow loads at such roof steps. The 1997 addition was designed for the snow drift provisions contained in the 1996 BOCA code. We have reviewed the low roof framing at all the roof transitions and have determined that the existing framing meets the current snow drift load provisions in the 2015 IBC. No modifications to any roof framing are required to meet current code requirements for snow drift loadings. Note that there are no roof level transitions within the footprint of the original 1967 building so snow drift loadings are not an issue for the original building roof framing.
11. In accordance with the 2015 IBC, minimum floor live load design loads for this structure would be calculated as 100 psf for Lobby & Assembly spaces, 80 psf for Corridor spaces and 50 psf with a 15 psf allowance for partition walls for Office spaces.
12. It is our judgment that the existing floor framing is adequate to support floor live loads specified in current 2015 IBC provisions. No modifications to existing floor framing are required to meet current code provisions.
13. Lateral resistance for the 1997 addition is provided by a series of ordinary steel moment frames. A total lateral load analysis of the existing building is beyond the scope of the current condition assessment work. It does not appear that any alterations have been made



to the lateral resisting system since the original building construction. Given this, the structure can be considered 'grandfathered' according to the provisions of the IEBC unless subjected to changes as described in the IEBC that trigger the need to upgrade to current code provisions. The IEBC provisions should be reviewed at any future date if changes are considered here.

C. Fire Protection

(1967 Building)

1. Currently there is no system of automatic sprinklers within the facility. Based upon initial review of the Building Code (IBC 2015) the existing facility does not require the installation of an NFPA 13 compliant automatic sprinkler system.

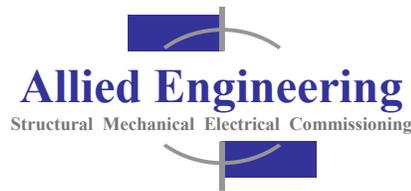
(1997 Building)

1. The existing NFPA 13 sprinkler system is original to the building. Recent backflow tests and sprinkler flow tests have been noted on attached tags in the sprinkler room.
2. Last winter season a section of sprinkler pipe located above the ceiling at the first floor elevator entrance had froze and burst leaking water throughout the building. Inspection of that area above the ceiling determined cold infiltration air around conduits as well as the steel that supports the entrance overhang. Building insulation has been added to the exterior wall as well as wrapped around the supporting steel at the exterior wall.

D. Mechanical Systems

(1967 Building)

1. The existing heating boiler is not of original vintage to the building. It has been operating without major issues but has had recent and ongoing repairs. There is no manufacturer's date on any of the boiler name plate information; however it is estimated to be around 1990. Light commercial cast iron boilers have a typical useful service life of 25 to 30 years depending on the maintenance program. Given this boiler is estimated at about 28 years old, it is at the end of its useful service life.
2. The hot water distribution system has had the main zone circulators replaced within the last 10 years and appear in good condition with no signs of water leaks. Hydronic heating appurtenances such the expansion tank and air scoop are of original vintage and at the end of their useful service life. Much of the heating distribution piping is missing insulation in the boiler room probably due to when the boiler was replaced. Most of the steel piping appears original to the building and is at the end of its useful service life of 35 years. All original vintage fin tube radiation is beyond its useful service life of 35 years.
3. The thru wall portable AC unit are of various age and conditions and have an expected service life of 10 years. The ductless split AC units in the de-briefing and crimes rooms appear to be in good operating condition and are within the 15 year expected service life.
4. The large 3-zone AHU and the firing range MUA appear to be original vintage to the building and are beyond their expected service life of 25 to 30 years. The smaller AHU



that serves the lab wing is newer vintage and within its expected service life. Rooftop exhaust fans that serve areas such as the lockers beyond their expected service life of 20 years.

On the date of the assessment, there did not appear to any exhaust fans operating.

The outside air dampers at the main AHU and the basement AHU were not accessible and could not be visually assessed for an estimation as to their current capacity for introducing ventilation air.

The boiler combustion air system is not code compliant and it appears that the inline fan supply fan is not original vintage, perhaps added later to try and address boiler burner combustion issues. Combustion air needs to be addressed and brought up to current code if the current boiler remains operational.

Current code requires the use of an exhaust hood with a fire suppression system to serve the cooking range.

The ventilation system associated with the shooting range does not comply with current OSHA and EPA requirements for ventilation design. The current requirements dictate laminar flow supply with no direct impact to the users with all exhaust at the bullet catch end of the range for uniform flow downrange.

5. The existing temperature controls are standalone electric for zoned heating control. There are a total of four circulator pumps, one of which delivers heating water to the fintube radiation throughout the 1967 building one which serves reheat coils at the 3-zone AHU, one for the heating coil at the shooting range MAU, and one for the heating coil at the basement AHU. These pumps appear to be set to operate when there is a call for heat.

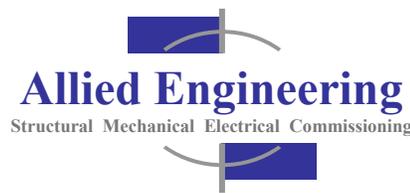
The two zone valves serving fintube radiation operate based upon the space thermostats at the east and west building zones, each located within the corridor. The individual sections of fintube radiation on each of the zones is controlled via a self-contained Danfoss valve in each functional space, to provide limited user control for heating temperature.

The duct and main heating coils each contain an electric control valve which cycles to satisfy the heating setpoint at their associated thermostat.

Although the thermostats have been replaced/added over the years. Electric/electronic controllers have an expected service life of 20 years which most of the existing units exceed.

(1997 Building)

1. The existing heating boiler is not original vintage to the building and was replaced in fall of 2006. The boiler appears in decent condition with no noticeable water leaks. Allied was told that the burner has been having safety lockout issues with the most likely reason being fuel starved. There is no fuel transfer pump other than what is on the burner and the



horizontal length from the fuel storage tank is about 80 feet away; it may be too long a distance for the burner or pump to maintain adequate flow. This boiler is well within its useful service life of 25 to 30 years, depending on the maintenance program. All boiler appurtenances appear to be original vintage but nearing the end their expected service life of 20 to 25 years, at which time replacement will be required as items fail.

2. The hot water distribution system main pumps appear to have been replaced within the last 10 years; however the exact year was not determined where the model tags were damaged. Hydronic heating appurtenances such the expansion tank and air scoop are of original vintage and are within their useful service life. Most all the distribution piping and insulation are in good condition with minimal insulation damage. VAV terminals with reheat, cabinet unit heaters and unit heaters appear in good operating condition and are within their expected service life of 20 to 25 years. The radiant snow melt system has an expected service life of 25 years, less controls. AEI was told that the existing snow melt does not operate as intended and appears to be undersized.
3. Air conditioning and ventilation is supplied to both levels with a 15 ton packaged RTU. However, the RTU has a failed compressor and is currently locked out of service. Since the RTU provides both cooling and ventilation air in addition to the lack of mechanical cooling to all the VAV zones, these zones are currently without code compliant ventilation air until the unit is repaired or replaced in kind. The existing RTU is beyond the 18 year expected service life for a packaged RTU. The server and radio rooms' AC units have been replaced/added and are within in their 15 years expected service life.

As stated above, the current ventilation hood serving the cooking range does not comply with current code requirements.

4. The existing toilet fan/light exhaust fans are compliant with the current ventilation code based on intermittent operation with the light switch.

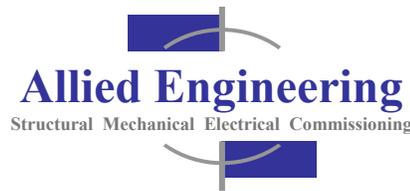
The exiting boiler room ducted combustion air does not meet current code. Code requires that there be two, 2 square foot openings duct openings, one 12" from the ceiling and one 12" from the floor, for the given boiler MBH capacity.

5. The existing Network 8000 DDC/electronic temperature controls system is beyond its useful service life of 15 years. Other system controllers such as the VAV controllers and snow melt controllers have an expected service life of 20 years.

E. Plumbing Systems

(1967 Building)

1. Most plumbing fixtures have been replaced at sometime over the years. Some original vintage fixtures remain and have exceeded their published service life. Many of the existing lavatory fixtures have been re-fitted with updated ADA style faucets.
2. The domestic water service is not protected by a backflow prevention device as may be required by the local water utility.



3. The domestic water heater has been replaced recently and is within its expected service life of 15 years.
4. Areas of the domestic hot and cold water piping throughout the building are uninsulated which is not compliant with the current energy code.
5. The sanitary and storm systems appear to be functioning properly with no observed recurring leaks.

(1997 Building)

1. Most plumbing fixtures have been replaced at sometime over the years. Some original vintage fixtures that remain and are within their expected service life of 30 years. Many of the existing lavatory and sink fixtures have been re-fitted with updated ADA style faucets. Faucets that are beyond their expected service life of 7-10 years should be replaced.
2. The domestic water service is protected by a backflow prevention device as is required by the local water utility.
3. The domestic water heater has been replaced recently and is within its expected service life of 15 years.
4. The sanitary and storm systems appear to be functioning properly with no observed recurring leaks.

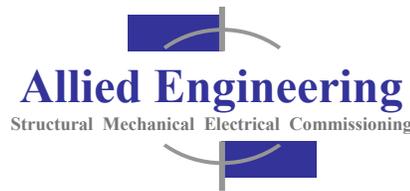
F. Electrical Systems

Except where specifically identified otherwise, the 1967 Building and the 1997 Building will be discussed together as one facility in this portion of the report because so much of the electrical system impacts both portions of the facility.

1. The existing electrical service to the 1967 Building provides approximately 5.8 volt-amps per square foot, which is under-sized by modern standards for a building of this size. The electrical service does not have adequate capacity to support recommended mechanical equipment.

The highest demand on the electrical service to the 1997 Building in the past twelve months as measured by Central Maine Power Company was 34 kW, which equates to approximately 33 percent of service capacity. However, the two main panelboards in the building are both fully utilized with no available space for adding circuit breakers.

The 1967 building and the 1997 building are considered one building under the National Electrical Code because they are physically connected and do not have a 2-hour fire rated assembly separating them. The current National Electrical Code permits only one service entrance of the same voltage system for one building unless special permission is granted by the Authority Having Jurisdiction. Considering that modifications to the 1997 building main panelboards are necessary in order to provide for additional circuits that are needed, as well as the fact that additional power capacity is needed within the 1967 building, we believe it would be prudent to provide one new electrical service to serve the entire police station.



If the building or a portion thereof is classified by a governmental agency having jurisdiction as a Critical Operations Power System in accordance with NEC Article 708, such classification will affect the design as the feeder distribution equipment to the Designated Critical Operations Area needs to be located in a 2-hour rated room. Please refer to the recommendations section of this report for further information.

2. The existing standby generator appears to provide adequate power for the current needs of the building, but may not support the entire proposed mechanical system. An assessment of the fire station is needed in order to understand the adequacy of the generator to support the overall facility. The existing generator is approximately 20 years old and is at the end of its anticipated useful life.

The National Electrical Code (NEC) requires the wiring of emergency systems, such as code-required means-of-egress illumination and fire alarm systems, to be separated from the normal wiring system. Because the existing standby generator system includes only one transfer switch, it does not provide the required separation. Provision of a separate automatic transfer switch, which would supply an emergency panel within the building would comply with the current standard.

If the building or a portion thereof is classified by a governmental agency having jurisdiction as a Critical Operations Power System in accordance with NEC Article 708, such classification will significantly affect cost and design of the standby generator system. Please refer to the recommendations section of this report for further information.

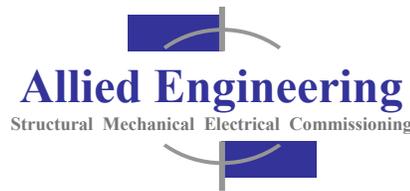
3. The existing interior lighting fixtures are at or near the end of their anticipated useful lives and should be replaced as part of the renovations.

Some existing exterior lighting fixtures have been updated to LED with full cutoff optics, but there are pole lights and a couple of HID flood fixtures that are outdated and do not have modern full-cutoff optics to reduce light pollution. The facility would benefit from updating the older exterior building mounted lighting and pole lighting as part of any proposed renovations.

4. Fire alarm occupant notification generally does not comply with current standards. The existing fire alarm control panel is near the end of its anticipated useful life, and a zoned conventional system is outdated for a building of this size and use. Considering these facts, a complete new addressable fire alarm system should be provided as part of any planned facility renovations.

If the building or a portion thereof is classified by a governmental agency having jurisdiction as a Critical Operations Power System in accordance with NEC Article 708, such classification will significantly affect cost and design of the fire alarm wiring. Please refer to the recommendations section of this report for further information.

III. Basis of Design Recommendations



A. Roofing/Flashing

Roofing/Flashing

1967 Building

1. Roof resurfacing assuming metal deck can accommodate code compliant fastener pullout requirements.
 - a. Repair membrane roofing/roofing seams.
 - b. Replace areas of insulation compromised by moisture infiltration.
 - c. Rework parapet conditions at perimeter walls.
 - d. Rework vent pipes, goose neck duct vents, chimneys and other roof penetrations to be flashed per manufacturer's recommendations.

Estimated Cost: \$12,000-\$15,000

2. Assuming deck fails fastener pullout test requirements.
 - a. Option 1: In place roofing on replaced roof deck (deck replacement covered below in "Structure" section).
 - 1) Mechanically fasten 5-1/2" polyisocyanurate insulation (average R-30)
 - 2) Adhere 1/2" HD cover board.
 - 3) Adhered 0.060 EPDM membrane.

Estimated Cost: \$45,000 - \$55,000

- b. Option 2: Roof structure overbuild.
 - 1) Remove current roof composition to expose decking.
 - 2) Mechanically fasten 1-1/2" polyisocyanurate insulation to metal decking.
 - 3) Adhere 1/2" HD cover board.
 - 4) Adhered 0.060 EPDM membrane.
 - 5) Provide 18" blown in fiberglass insulation on original deck.

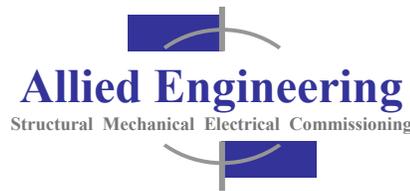
Estimated Cost: \$50,000 - \$60,000

1997 Addition

3. Roof Surface
 - a. Repair membrane roofing/roofing seams.
 - b. Replace areas of insulation compromised by moisture infiltration.
 - c. Rework parapet conditions at perimeter walls.
 - d. Rework vent pipes, goose neck duct vents, chimneys and other roof penetrations to be flashed per manufacturer's recommendations.
 - e. Provide new counterflashing along low roof sidewalls common to Fire Station.

Estimated Cost: \$10,000-\$15,000

B. Structure



1967 Building

1. No upgrade to existing structure is required if only reroofing is performed and insulation added to achieve an R-30 system. We recommend that you contract with a local roofing company to perform a sampling of roof deck pullout tests and provide us with the results. This will determine which scenario of reroofing this area of the building is recommended.
2. Assuming deck not adequate for code compliant fastener pullout resistance.
 - a. Option 1: Replace existing roof decking with 1-1/2" Type B, 22 gage metal decking with fastener patterns to be determined through design. Insulation and roof surface installations described above.

Estimated Cost: \$15,000 - \$20,000

- b. Option 2: New roof structure and decking built above existing roof elevation. Existing roofing removed down to exposed metal deck, perimeter walls extended up to receive new open-web joist framing, support line columns extended up to receive new beams to support joist framing, Type B, 22 gage metal decking, cold-formed metal draft partition walls, and developed cavity ventilation. Insulation and roof surface installations described above.

Estimated Cost: \$90,000 - \$100,000

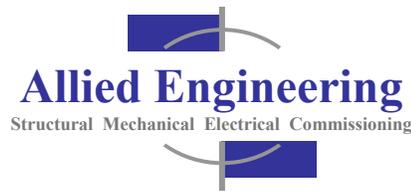
1997 Addition

3. No upgrade to existing structure is required.

Estimated Cost: No Cost

C. Fire Protection

1. Codes, Standards and Authorities Having Jurisdiction:
 - a. State of Maine Fire Marshal's Office
 - b. Local Fire Department
 - c. Owner's Insurance Agent
 - d. International Building Code
 - e. Maine Uniform Building Code
 - f. NFPA 1 – Fire Prevention Code
 - g. NFPA 13 – Standard for the Installation of Sprinkler Systems.
 - h. NFPA 101 – Life Safety Code.
2. Design Conditions:
 - a. Light Hazard Occupancy: Offices, Gym, Corridors, Restrooms, and similar areas
 - b. Ordinary Hazard Group 1 Occupancy: Mechanical, Storage, and similar areas



3. General Fire Protection Requirements:
 - a. Light Hazard Occupancies:
 - 1) 0.10 GPM/SF over the most remote 1500 SF with a 100 GPM hose allowance.
 - 2) Max Coverage per Sprinkler Head: 225 SF
 - b. Ordinary Hazard Group 1 Occupancies:
 - 1) 0.15 GPM/SF over the most remote 1500 SF with a 2500 GPM hose allowance.
 - 2) Max Coverage per Sprinkler Head: 130 SF

(1967 Building)

1. Recommendations:
 - a. If required, provide a NFPA 13 compliant automatic sprinkler system to serve the entire facility. Recent hydrant flow data will be required to ascertain whether an upgrade to the existing 4" water service will be required to satisfy the demand for flow. Refer to Architectural Code Analysis issued under separate cover for additional discussion on the requirements for sprinkler coverage within this section of the facility.

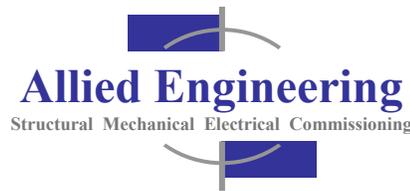
Estimated Cost (excludes new service entrance): \$35,000-\$45,000

(1997 Building)

1. Recommendations: No upgrades required.

D. Heating, Ventilating, and Air Conditioning

1. Codes, Standards and Authorities Having Jurisdiction:
 - a. State of Maine Fire Marshal's Office
 - b. Local Fire Department
 - c. International Building Code
 - d. Maine Uniform Building Code
 - e. 2015 Uniform Plumbing Code
 - f. NFPA 1 – Fire Prevention Code
 - g. NFPA 54: National Fuel Gas Code
 - h. NFPA 72: National Fire Alarm Code
 - i. NFPA 90A: Standard for the Installation of Air-Conditioning and Ventilating Systems
 - j. NFPA 101 – Life Safety Code.
 - k. IECC-2015 (Energy Standard)
 - l. ASHRAE 62.1-2010 Ventilation for Acceptable Indoor Air Quality
 - m. ASHRAE 90.1-2010 Energy Standard for Buildings Except Low-Rise Residential Buildings
2. Design Conditions:
 - a. Heating Outdoor DB / Indoor DB: -10°F / 68°F



- b. Cooling Outdoor DB, WB / Indoor DB: 87°F, 74°F / 74°F (no cooling in the Apparatus Bay)

3. Recommendations for Upgrades to Existing Systems

(1967 Building)

- a. Replace existing non code compliant boiler combustion air system with new fan powered combustion air supply system. (This item will be required if item “b &c” below are not implemented). If the existing boiler is retained, this upgrade is code required and therefore should be considered as priority one.

Estimated Cost: \$15,000-\$20,000

- b. Boiler replacement-Option #1: Replace the existing boiler that is beyond its useful service life with new gas fired condensing boiler sized, in kind, for fintube and duct coil heating loads. This condensing boiler plant would not require items “a or c” because the boiler utilizes piped vent and combustion air. This is a maintenance upgrade item which will serve to increase operational efficiency and should be considered within the 5 year plan. As discussed in the meeting at the site on August 16, 2018, this option for boiler replacement, when combined with the HVAC upgrades offered under recommendation paragraph “f” for VRF heat pumps throughout the occupied building areas will introduce redundancy to the heating system in that the electric heat pumps would be the primary source for space heating with the condensing gas fired boiler providing supplemental and back-up heat.

Estimated Cost: \$50,000-\$70,000

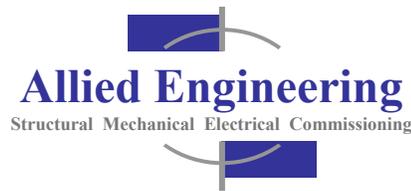
- c. Boiler replacement-Option #2: Replace the existing boiler that is beyond its useful service life with new gas fired condensing boiler sized, for both the 1967 and 1997 buildings. HWS and HWR piping (connecting 1967 & 1997 buildings) along with injection pumps would be included. This condensing boiler plant would not require items “a or b” above because the boiler utilizes piped vent and combustion air. This, like Option 1 is a maintenance item that will increase operational efficiency.

Estimated Cost: \$100,000-\$130,000

- d. Replace existing firing range MUA and exhaust fan system in kind, both are beyond their useful service life. Reconfigure the associated supply and exhaust ductwork to meet current guidelines. Rebalance water flows and air flows.

Estimated Cost: \$50,000-\$70,000

- e. Add a rooftop ERV to serve all occupied areas on both levels. The ERV will exhaust air from the bathroom areas and break room and provide tempered



ventilation air. The ERV will be ducted to serve the individual spaces throughout the building. Duct mounted hot water heating coil will be added to insure that ventilation air is delivered at room neutral temperature. This is an upgrade to improve operational efficiency while replacing the existing worn out air handlers and should be considered in the five year plan. To the extent possible, the existing ductwork will be reused.

Estimated Cost: \$30,000-\$40,000

- f. Add a Variable Refrigerant Flow (VRF) heat pump system to serve the offices and functional spaces throughout the upper and lower levels. This system will provide first stage heating in the winter, supplemented by the existing fin tube radiation, and will provide zoned cooling in the summer for occupied spaces. Each occupied room would have its own heat pump for optimum occupant comfort control. This item represents improvement to indoor air quality and offers great efficiency improvement over the current high temperature boiler and window mounted D_x air conditioning units.

Estimated Cost: \$90,000-\$100,000

- g. Add an exhaust hood with fire suppression to serve the break room range. The AHJ will dictate whether a recirculating life safety hood will be adequate or if an exhausting hood with makeup air is required.

Estimated Cost (life safety): \$5,000-\$7,000

Estimated Cost (NFPA 96 with makeup air): \$20,000-\$25,000

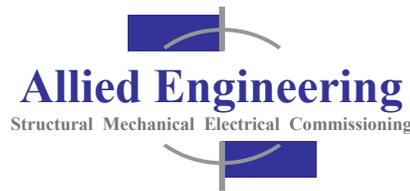
- h. Add a central direct digital control building automation system (BAS) to monitor and control the mechanical systems throughout. This system will provide an electronic direct digital control system to control the ERV, MAU, exhaust fans, and heating pumps. The system will also integrate with the VRF controller and boiler controller for start/stop and monitoring. Finally, the system will be expandable to allow integration with the HVAC components in the 1997 building. This upgrade will improve operational efficiency as well as occupant comfort throughout the building. Implementation should be done in unison with the upgrades recommended in the five year plan.

Estimated Cost: \$50,000-\$70,000

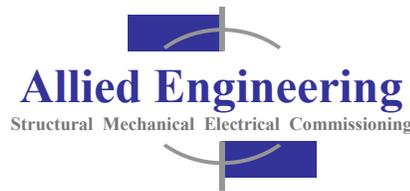
(1997 Building)

- a. Replace existing non code compliant boiler combustion air system with new fan powered combustion air supply system. (This item will not be required if the it is decided to utilizing a single gas fired condensing boiler, located in the 1967 building, and back feed heat hot water to the 1997 building). This is a code item required only if the oil boiler is retained and should be implemented immediately.

Estimated Cost: \$15,000-\$20,000



- b. Option 1 Boiler Upgrade (retain as oil fired): The existing boiler burner is starved for fuel at times and trips out. This is likely due to the burner fuel pump drawing fuel from the underground storage tank thru the long fuel line. Add a small fuel day tank with transfer pump to efficiently draw fuel from the storage tank and avoid nuisance burner trip outs. This option retains the existing fuel tank and does nothing to improve operational efficiency.
Estimated Cost: \$15,000-\$20,000
- c. Option 2 Boiler Upgrade: Convert the existing oil fired boiler to gas fired. This will slightly improve the operational efficiency, reduce maintenance costs, and allow for removal of the fuel tank once the 1967 building's boiler is replaced. This option could be combined with Option 1 to convert the burner to dual fuel, in order to introduce a redundant fuel source, as discussed for the 1967 Building's boiler.
Estimated Cost: \$20,000-\$25,000
- d. Option 3 Boiler Upgrade: Refer to combined boiler plant option above for adding two boilers to the 1967 building to serve both the 1967 and 1997 buildings.
Estimated Cost: \$20,000-\$25,000
- e. The existing RTU is reportedly under contract for replacement in kind/size. The system will continue to operate as a by-pass VAV system per the original design. As such, wholesale replacement for this system is not recommended. Rebalance the complete VAV system air flow and coils hot water flow.
Estimated Cost: \$3,000-\$6,000
- f. Add an exhaust hood with fire suppression to serve the break room range. The AHJ will dictate whether a recirculating life safety hood will be adequate or if an exhausting hood with makeup air is required.
Estimated Cost (life safety): \$5,000-\$7,000
Estimated Cost (NFPA 96 with makeup air): \$20,000-\$25,000
- g. Inspect the existing snow melt system for proper operation. Adjust water flow balance as required to bring back to original design criteria. Also inspect and clean the heat exchanger as needed.
Estimated Cost: \$1,000-\$1,500
- h. Add a second floor mounted cabinet unit heater (CUH) at the upper floor area elevator/stair lobby to increase space heating capacity to prevent future sprinkler piping freeze up at this location. Recommended CUH size is 15 MBH. Work would include extending HWS/R piping, controls, water balance, and electrical.
Estimated Cost: \$7,500-\$10,000
- i. Add a central direct digital control building automation system (BAS) to monitor and control the mechanical systems throughout. This system will replace the controllers at the existing VAV terminals, replace control valves at the cabinet unit heaters, and integrate with the boiler controller for start/stop and monitoring. The system will be an extension to the DDC system outlined for the 1967 building.



Estimated Cost: \$45,000-\$55,000

E. Plumbing

(1967 Building)

1. Recommendations for upgrades to existing systems:
 - a. Add a backflow preventer sized to handle the entire domestic water requirement for the facility.

Estimated Cost: \$2,000-\$4,000

- b. Complete replacing original plumbing fixtures throughout the building.

Estimated Cost: \$8,000-\$15,000

(1997 Building)

- a. Replace original plumbing faucets throughout the building where beyond the useful service life of 7-10 years.

Estimated Cost: \$2,000-\$4,000

F. Electrical

1. Power Distribution System:

Properly identify all circuitry within the building and update the existing panel schedules to ensure they properly identify what each circuit currently feeds.

Estimated Cost: \$8,000 - \$12,000.

Provide a new 3-phase, 4-wire underground electrical service to serve both the 1967 building and the 1997 addition. Provide additional receptacles and associated branch-circuits as required to alleviate the need for extension cords. Provide branch circuit panelboards as required to support the needed receptacle circuits and recommended mechanical systems.

Estimated Cost for Service Upgrade and Panelboards: \$75,000. - \$100,000.

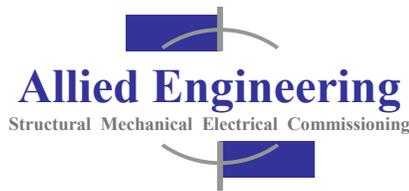
Estimated Cost for added receptacles, circuits, and equipment connections: \$50,000. - \$75,000.

2. Generator:

Replace the existing generator and automatic transfer switches with a modern generator system sized to include upgrades recommended in other sections of this report. Provide A manual transfer switch and means of connecting a portable generator to the facility when the permanent standby generator is disabled due to malfunction or maintenance.

Estimated Cost: 115,000. - \$125,000.

3. NEC Code and Life Safety Violations:



Replace existing non-compliant wiring with methods and materials that comply with current code.

Estimated Cost: \$10,000. - \$15,000.

4. **Lighting Systems:**

Provide a lighting and lighting control system taking into consideration the intended use of each illuminated area and utilizing the most current energy efficient lighting and lighting control options. This design would incorporate all applicable rebate programs currently available that can be achieved within facility requirements.

Estimated Cost: \$210,000. - \$280,000.

5. **Fire Alarm System:**

Provide a complete new addressable fire alarm system to serve the police station.

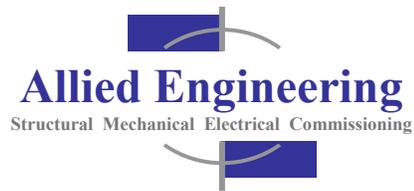
Estimated Cost: \$45,000 to \$55,000

6. **Critical Operations Power System:**

The following features are required by NEC Article 708 if the building or a portion thereof is classified as a Critical Operations Power System by a governmental agency having jurisdiction. The estimated cost provided below is in addition to the costs associated with the basic system recommendations described above:

- a. Underground feeders and service entrance conduits shall be concrete encased such that minimum concrete thickness is 2" around the entire conduit.
- b. Feeder distribution equipment to the Designated Critical Operations Area needs to be located in a 2-hour rated room.
- c. Selective coordination shall be provided for all overcurrent protection devices.
- d. Branch-circuit wiring for fire alarm, security, emergency communications, and signaling systems shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.
- e. Branch-circuit wiring for power, control, and monitoring of HVAC systems shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.
- f. All feeders shall be type MI mineral insulated cable in order to provide a 2-hour fire rated system.
- g. Wiring for HVAC control and monitoring shall be type MI mineral insulated cable in order to provide a 2-hour fire rated system.
- h. Fuel capacity to operate the generator for 72 hours at full load without refueling shall be provided.
- i. Critical communications systems wiring shall be a 2-hour rated wiring method.
- j. All wiring for fire alarm, security, and emergency communications and signaling systems shall be type MI mineral insulated cable in order to provide a 2-hour fire rated wiring system.

Estimated Cost: \$250,000-\$280,000



IV. Closing

It is with pleasure that this report is submitted for your use and consideration. We look forward to working with Sebago Technics in the design development for this exciting project.

Regards,
Allied Engineering, Inc.

Anthony Davis, P.E., LEED AP
Principal

Appendix C

Hazardous Building Materials Assessment



Air Quality Management Services, Inc.

“Discovering Solutions for Healthier Living”

RENOVATION IMPACT SURVEY

CENTRAL FIRE STATION – SOUTH PORTLAND, MAINE



PREPARED FOR

Sebago Technics, Inc,
C/o Owens McCullough, P.E., LEED A.P.
75 John Roberts Road - Suite 4A
South Portland, Maine 04106

Date of Inspection(s)

December 10th, 2020 (AQM Inspection)
January 8th & 9th, 2021 (Haley Ward Lead Paint Determination)

AQM PROJECT #20-720

Randy Geoffroy, CMI
MEDEP Cert #: Asbestos Inspector AI-0395

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ASBESTOS BULK SAMPLING RESULTS

PCB BULK SAMPLING RESULTS

MOLD SAMPLING RESULTS

LEAD TESTING REPORT (Haley Ward)

PHOTO DOCUMENTATION

EXECUTIVE SUMMARY

Air Quality Management Services, Inc. (AQM) was retained to conduct a hazardous material evaluation to prepare for renovations and the Central Fire Station. The property is located at 684 Broadway in South Portland, Maine. Testing was conducted throughout the building to identify potential Asbestos Containing Building Materials and to determine Polychlorinated Biphenyls (PCBs) in caulking / glazing (windows and overhead doors). Asbestos / PCB / Mold survey was conducted by Mr. Randy Geoffroy (certified asbestos inspector) of Air Quality Management Services, Inc. This survey was conducted on December 10th, 2020.

ASBESTOS BULK SAMPLING

AQM collected bulk samples from suspected building materials in the aforementioned building. Bulk samples were collected and analyzed by Polarized Light Microscopy (PLM) using EPA 600/R-93/116 and / or EPA 600/M4-82-020 methodologies. Please refer to the Excel spreadsheet of this report for a detailed break-down of the samples and the results.

Asbestos containing material means any material containing asbestos in quantities greater than or equal to 1%. Asbestos containing building materials **were** identified in this sampling event. Refer to attached Excel spreadsheets for further details regarding locations and areas.

All testing of suspect materials was in accordance with OSHA 29 CFR 1926.1101, and the State of Maine Chapter 425 Asbestos Management Regulations.

LEAD-BASED PAINT TESTING

The lead determination was performed utilizing a Radiation Monitoring Device Lead Paint Analyzer (RMD LPA-1), which non-destructively tests for the presence of lead in building components. The analyzer was satisfactorily pre and post calibrated in accordance with both the State and Federal regulations and the manufacturer's specifications. All of the calibration readings were within the designated limits. All X-ray Fluorescence Analyzer (XRF) readings for components that were tested have been included on the forms contained herein. Components, which contain Lead-Based Paint, are those with XRF readings in excess of 1.0 milligram (mg) of lead per square centimeter (cm²).

Paint chip samples **were not** collected as the Analyzer did not detect inconclusive results.

Please refer to the Attached Report as produced by Haley Ward (Formerly CES, Inc.) for sample locations and results.

PCB SAMPLING

AQM collected bulk samples from window /door caulking. Bulk samples were collected and analyzed using EPA SW-846 method 3540C. Please refer to the Excel spreadsheet of this report for a detailed outline of the samples and the results.

PCB-containing caulking was not identified in the survey

MOLD SAMPLING

I. Background

Building is suffering from water intrusion, through roof / façade / window details

II. Testing

Air samples: Air samples were collected using a high-volume sampling pump and Air-O-Cell media (Spore-Trap) cassettes. Samples were collected in representative locations to determine airborne particle and fungal burdens. Samples were collected at 15 liters per minute flow rate for either 5 or 10 minutes. An ambient outdoor sample was collected as a comparative reference.

Surface samples: Tape lift samples were collected from representative surfaces to evaluate mold growth and/or settled spores / dust. Samples were collected using special microscope slides fitted with clear tape tabs.

Samples for mold analysis were submitted to EMSL Analytical in South Portland, Maine.

III. Observations

AQM observed water damage in the EMS Storage Ceiling (mold growth not observed) and water damage in the Stairwell (to the 2nd floor Day Room) and in the 2nd floor Hallway (Hallway to the Day Room). Mold growth was observed in the Stairwell area and not in the 2nd floor Hallway.

IV. Results

Area Characterization of Fungal Presence, per IICRC S520 Standard (1)

Condition-1 Areas: Each area tested (except noted below)

Condition-2 Areas: Stairwell (landing between 1st and 2nd floors)

Condition-3 Areas: None

See Photos and Lab Results for basis of characterization, and Definitions Section for Area Characterization Notes

(1) ANSI/IICRC S520/R520 Standard and Reference Guide for Professional Mold Remediation - Third Edition: 2015, The Institute of Inspection, Cleaning and Restoration Certification, www.iicrc.org

IV. Results (Continued)

Airborne Mold Sampling (refer to lab report for full details)

Air sample results are summarized as follows:

Sample #	Location	Comments	Overall Airborne Mold Level (1)	Mold Type(s) of Concern / Amplified Mold (2)
A1	Outdoors	Comparative Air Sample	Very Low	Not Applicable
A2	Senior Man Office	Area Appeared Clean	Trace	None
A3	Large Bay	Area Appeared Clean	None Detected	None
A4	Small Bay	Area Appeared Clean	None Detected	None
A5	2 nd floor Hallway	Water Damage Nearby	Trace	None
A6	Day Room	Area Appeared Clean	None Detected	None
A7	1 st floor Hallway	Area Appeared Clean	Trace	None
A8	Basement	Relatively Clean	Very Low	None

(1) Based on AQM experience

(2) Based on industry consensus and AQM experience. Note that for Aspergillus/Penicillium-like spores, a common spore that is also commonly involved in air quality issues, the typical outdoor level in Maine through much of the warmer months is 200 to 300 counts per cubic meter of air (though wide variations can occur). This common outdoor level may be considered when identifying slight elevations of these spore types, regardless of outdoor levels at the time of sampling.

Results for air samples A2, A5, A7, & A8 identified levels of mold spores similar to or lower than the outdoor control. Mold spores were not identified in samples A3, A4, & A6. No risks anticipated with these results.

Surface Mold Sampling (refer to lab report for full details)

Surface sample results are summarized as follows:

Sample #	Location	Comments	Mold Type(s) Present at Excess Level (1) or Mold Type(s) of Concern (2)
T1	Wall in Stairwell (Landing Between 1 st & 2 nd floors)	Visible / Suspected Mold	Stachybotrys (growth), High

(1) Based on AQM experience and/or industry consensus; represents mold growth unless stated otherwise

(2) Spore types strongly correlated with water damage and/or air quality concerns, based on scientific literature and/or industry consensus

Result for this surface sample identified levels and types of mold growth and/or spores of concern.

V. Recommendations

- Enlist the services of a certified / qualified mold remediation company.
- Isolate Remediation Areas (Stairwell and 2nd floor Hallway, as well as other areas suffering from roof / façade leaks) from other areas of the Building, using plastic / polyethylene barrier and negative-air pressure (if possible).
- Remove all wall / floor / ceiling systems (remove two feet in each direction of water damage and mold growth).
- Detail Clean (See Definitions) all surfaces & contents in each Remediation Area.

V. Recommendations (Continued)

- **IMPORTANT:** With any recommendations for material removal (e.g. wall or ceiling systems), expand area of removal if damages and/or mold growth are found to extend beyond the boundaries initially specified (the Remediation Contractor should ensure that areas / surfaces are carefully inspected in order to make any such determination). Note that in general, building systems / materials should always be removed 2-feet beyond the visible extent of mold growth or water damage / staining.
- Detail Clean, Clean / Treat (see Definitions) all surfaces exposed through remedial actions (e.g. removal of wall / ceiling / floor systems).
- Replace building materials / Release Remediation area ONLY after a successful post remedial evaluation.
- Ensure to repair all water intrusion issues.

VI. Definitions:

- ***Finished System*** includes the underlying wall / ceiling insulations and appropriate vapor barriers.
- ***Detail Cleaning*** involves HEPA vacuuming and damp wiping with a mild detergent (including hard-to-reach areas / inside / underside / behind furniture and other objects).
- ***Clean / Treat*** involves the application of an appropriate cleaning / treatment system. Surfaces should be thoroughly cleaned including damp / wet cleaning and wiping of surfaces; use cleaning / scrubbing method with appropriate abrasiveness based on characteristics of the material surfaces as well as types and extent of mold growth. Application of any coating must be light; encapsulation is unacceptable unless done after post-remediation testing.

Area Characterization Notes (According to the IICRC S520 Standard):

A "**Condition 1**" environment contains what would be considered normal background amounts of fungal spores and fragments, as well as trace amounts of fungal growth. Normal housekeeping and cleaning procedures can keep a Condition 1 environment under control. Most residential homes and commercial office space would be considered Condition 1.

A "**Condition 2**" environment is associated with an area that has a limited amount of fungal growth present. Condition 2 environments are also associated with areas adjacent to heavy contamination that may contain elevated levels of spores or fungal fragments generated by the adjacent contamination. Condition 2 environments also may contain a limited amount of porous materials and can usually be returned to Condition 1 by diligent cleaning and thorough drying.

"**Condition 3**" environments contain heavy mold growth and usually are associated with persistent moisture or water intrusions. Condition 3 environments often contain hidden mold growth, due to water damage being present in closed areas such as wall cavities.

VI. Definitions: (Continued)

The overall goal of mold remediation as presented in IICRC S520 Standard is to return the area to a Condition 1. This means that trace amounts of mold may still be present, but the type and amount of mold is consistent with measurements made outdoors or in an adjacent indoor area that is free from amplified levels of mold.

OBSERVATIONS

Note 1: AQM utilized testing combination sampling techniques during this survey. Note that materials not labeled on the spreadsheets may have been considered a testing combination with other similar materials listed for like areas or similar units in each building. Testing combination in this case is known as; building component type and substrate.

Note 2: There is 9x9 Floor Tiles in the Attic area, these tiles shall be presumed positive for asbestos or tested to determine content.

SURVEY LIMITATIONS

As with any scientific study, there are certain assumptions which are made, and certain limitations to the scope of information that can be derived. Some restrictions on the conduct of the survey are imposed by outside sources while others are established through the designed scope and methodology of the study. This survey is subject to a variety of limitations and restrictions. Limitations that should be considered in the interpretation of the results of this survey include the following:

- A. Surveys may not be able to identify all hazardous materials present throughout a facility. A thorough study should be capable of identifying approximately 95 percent of accessible materials.
- B. The inspection protocols used for this project were in accordance with U.S. Environmental Protection Agency (USEPA) - National Emission Standard for Hazardous Air Pollutants (NESHAP) and with the Maine Department of Environmental Protection (MEDEP) protocols.
- C. Limitations to the scope of the survey can result from limited access to hidden materials and areas. For example, multiple layers of materials or structural components may restrict access to suspect materials thus affecting the thoroughness of the survey. In most cases surveys are limited to accessible suspect materials with some minor demolition or destructive sampling.
- D. In some cases, hidden materials may be identified during renovations, general maintenance or demolition. Due to the limited nature of this survey, AQM recommends any suspect material not identified in this report be sampled and analyzed or treated as (asbestos or PCB) until otherwise determined.

POTENTIAL ASBESTOS HAZARDS / ABATEMENT OPTIONS

Asbestos containing material means any material containing asbestos in quantities greater than or equal to 1%. Removal & Disposal of materials:

- Large Brown w/dark brown streaks 12x12 Floor Tiles & Mastic
- All 9x9 Floor Tiles and Mastic (with exception of Mastic on Bathroom wall) in the 2nd floor.

is regulated by the State of Maine DEP and/or the Occupational Safety and Health Administration (OSHA). Removal shall be performed per DEP Asbestos Management Regulations Chapter 425.

POTENTIAL PCB ABATEMENT OPTIONS

Not Applicable, based on test results.

ASBESTOS BULK SAMPLING RESULTS

Sample #	Location	Material	% Asbestos	Type
B1 - B3	1st floor	Large Brown (w/dark brown) 12x12 Floor Tile	9.4%	Chrysotile
B4	1st floor Hallway	Black Mastic	10.1%	Chrysotile
B5 - B7	EMS Storage	Floor Tiles	None Detected	
B8 - B10	EMS Storage	Textured Ceiling	None Detected	
B11 - B13	EMS Storage	Sheetrock Ceiling	None Detected	
B14 - B16	Stair to Basement	Flooring & Tap Paper	None Detected	
B17 - B21	Boiler Room	Ceiling	None Detected	
B22 - B24	Senior Man & 2nd floor	Beige Floor Tile and Mastic	None Detected	
B25 - B27	Senior Man & 2nd floor	Brown Floor Tile (not Mastic)	None Detected	
B28 - B30	Senior Man Bathroom	Floor Tile	None Detected	
B31 - B37	Throughout	Plaster (Base & Skim Coats)	None Detected	
B38 - B40	Throughout	Ceiling Tiles	None Detected	
B41 - B43	Throughout	Sheetrock	None Detected	
B44 - B46	2nd floor	Beige (w/green streaks) 9x9 Floor Tile	9.1%	Chrysotile
B47 - B49	2nd floor	Black 9x9 Floor Tile	7.2%	Chrysotile
B50 - B52	2nd floor	Red 9x9 Floor Tile	10.3%	Chrysotile
B53 - B54	2nd floor	Black Mastic (from 9x9 Floor Tiles)	6.2%	Chrysotile
B55 - B57	2nd floor	Grey (w/black streaks) 9x9 Floor Tile	8.7%	Chrysotile
B58 - B60	2nd floor	Blue 9x9 Floor Tile	6.7%	Chrysotile
B61 - B63	2nd floor Bathroom	Light Purple (w/purple streaks) 9x9 Floor Tile (on wall)	7.2%	Chrysotile
B64 - B66	Throughout	Cove Base Mastic	None Detected	
B67 - B69	Exterior	Window / Overhead Door Glazing	6.0%	Chrysotile



Asbestos Chain of Custody
EMSL Order Number (Lab Use Only):

622001779

Cinnaminson, NJ 08077
PHONE: 1-800-220-3675
FAX: (856) 786-5974

EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS TRAINING

Company: Air Quality Management Services		EMSL-Bill to: <input checked="" type="checkbox"/> Different <input type="checkbox"/> Same <small>* Bill to is Different note instructions in Comments**</small>	
Street: PO Box 2491		Third Party Billing requires written authorization from third party	
City: Lewiston	State/Province: ME	Zip/Postal Code: 04241	Country: United States
Report To (Name): Randy Geoffroy		Telephone #: 207-657-7360	
Email Address: See Account Notes		Fax #: 207-657-7361	Purchase Order: 20-720
Project Name/Number: 20-720 - South Portland		Please Provide Results: <input type="checkbox"/> FAX <input checked="" type="checkbox"/> E-mail <input type="checkbox"/> Mail	
U.S. State Samples Taken: MAINE		Connecticut Samples: <input type="checkbox"/> Commercial <input type="checkbox"/> Residential	

Turnaround Time (TAT) Options* - Please Check

3 Hour
 6 Hour
 24 Hour
 48 Hour
 72 Hour
 96 Hour
 1 Week
 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.

PCM - Air <input type="checkbox"/> Check if samples are from NY <input type="checkbox"/> NIOSH 7400 <input type="checkbox"/> w/ OSHA 8hr. TWA	TEM - Air <input type="checkbox"/> 4-4.5hr TAT (AHERA only) <input type="checkbox"/> AHERA 40 CFR, Part 763 <input type="checkbox"/> NIOSH 7402 <input type="checkbox"/> EPA Level II <input type="checkbox"/> ISO 10312	TEM - Dust <input type="checkbox"/> Microvac - ASTM D 5755 <input type="checkbox"/> Wipe - ASTM D6480 <input type="checkbox"/> Carpet Sonication (EPA 600/J-93/167)
PLM - Bulk (reporting limit) <input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%) <input checked="" type="checkbox"/> PLM EPA NOB (<1%) Point Count <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%) <input type="checkbox"/> NYS 198.1 (friable in NY) <input type="checkbox"/> NYS 198.6 NOB (non-friable-NY) <input type="checkbox"/> NIOSH 9002 (<1%)	TEM - Bulk <input type="checkbox"/> TEM EPA NOB <input type="checkbox"/> NYS NOB 198.4 (non-friable-NY) <input type="checkbox"/> Chatfield SOP <input type="checkbox"/> TEM Mass Analysis-EPA 600 sec. 2.5	Soil/Rock/Vermiculite <input type="checkbox"/> PLM CARB 435 - A (0.25% sensitivity) <input type="checkbox"/> PLM CARB 435 - B (0.1% sensitivity) <input type="checkbox"/> TEM CARB 435 - B (0.1% sensitivity) <input type="checkbox"/> TEM CARB 435 - C (0.01% sensitivity) <input type="checkbox"/> TEM Qual. via Filtration Technique <input type="checkbox"/> TEM Qual. via Drop-Mount Technique
<input checked="" type="checkbox"/> Check For Positive Stop - Clearly Identify Homogenous Group		Filter Pore Size (Air Samples): <input type="checkbox"/> 0.8µm <input type="checkbox"/> 0.45µm

Samplers Name: Randy Geoffroy AI0395 Samplers Signature: *[Signature]*

Sample #	Sample Description	Volume/Area (Air) HA # (Bulk)	Date/Time Sampled
B1 - B3	Large Brown w/Dark Brown 12x12 Floor Tile (No Mastic)		12/10/20
B4	Black Mastic on floor in 1st Floor Hallway		↓
B5 - B7	Floor Tiles in EMS Storage		
B8 - B10	Textured Ceiling in EMS Storage		
B11 - B13	Sheetrock Ceiling in EMS Storage		
B14 - B16	Flooring & Tap Paper on Stairs (Stairs to Basement)		
B17 - B21	Boiler Room Ceiling		
B22 - B24	Senior Man & 2nd Floor Beige Floor Tile & Mastic		

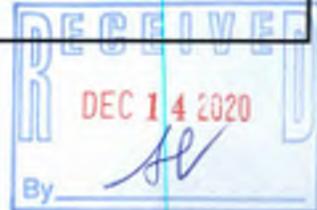
Client Sample # (s): 11 - 369 Total # of Samples: 69

Relinquished (Client): *[Signature]* Date: 12/10/20 Time: 10:30

Received (Lab): *[Signature]* Date: 12/14/2020 Time: 11:00 am

Comments/Special Instructions:

Email invoices to: corrie@aqmservices.com





EMSL Analytical, Inc.

161 John Roberts Road South Portland, ME 04106
Phone/Fax: (207) 517-6921 / (207) 517-6922
<http://www.EMSL.com> / portlandlab@emsl.com

EMSL Order ID: 622001779
Customer ID: AIRQ51A
Customer PO: 20-720
Project ID:

Attn: Randy Geoffroy
Air Quality Management Services, Inc.
PO Box 2491
Lewiston, ME 04241
Phone: (207) 657-7360
Fax:
Collected: 12/10/2020
Received: 12/14/2020
Analyzed: 12/21/2020
Proj: 20-720 - South Portland

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: B1 **Lab Sample ID:** 622001779-0001

Sample Description: LARGE BROWN W/DARK BROWN 12 X 12 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Brown	0.0%	90.6%	9.4% Chrysotile	

Client Sample ID: B2 **Lab Sample ID:** 622001779-0002

Sample Description: LARGE BROWN W/DARK BROWN 12 X 12 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020				Positive Stop (Not Analyzed)	

Client Sample ID: B3 **Lab Sample ID:** 622001779-0003

Sample Description: LARGE BROWN W/DARK BROWN 12 X 12 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020				Positive Stop (Not Analyzed)	

Client Sample ID: B4 **Lab Sample ID:** 622001779-0004

Sample Description: BLACK MASTIC ON FLOOR IN 1ST FLOOR HALLWAY

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Black	0.0%	89.9%	10.1% Chrysotile	

Client Sample ID: B5 **Lab Sample ID:** 622001779-0005

Sample Description: FLOOR TILES IN EMS STORAGE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	White	0.0%	100%	None Detected	

Client Sample ID: B6 **Lab Sample ID:** 622001779-0006

Sample Description: FLOOR TILES IN EMS STORAGE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	White	0.0%	100%	None Detected	

Client Sample ID: B7 **Lab Sample ID:** 622001779-0007

Sample Description: FLOOR TILES IN EMS STORAGE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	White	0.0%	100%	None Detected	



EMSL Analytical, Inc.

161 John Roberts Road South Portland, ME 04106
Phone/Fax: (207) 517-6921 / (207) 517-6922
<http://www.EMSL.com> / portlandlab@emsl.com

EMSL Order ID: 622001779
Customer ID: AIRQ51A
Customer PO: 20-720
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: B8 **Lab Sample ID:** 622001779-0008

Sample Description: TEXTURED CEILING IN EMS STORAGE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: B9 **Lab Sample ID:** 622001779-0009

Sample Description: TEXTURED CEILING IN EMS STORAGE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: B10 **Lab Sample ID:** 622001779-0010

Sample Description: TEXTURED CEILING IN EMS STORAGE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: B11 **Lab Sample ID:** 622001779-0011

Sample Description: SHEETROCK CEILING IN EMS STORAGE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: B12 **Lab Sample ID:** 622001779-0012

Sample Description: SHEETROCK CEILING IN EMS STORAGE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: B13 **Lab Sample ID:** 622001779-0013

Sample Description: SHEETROCK CEILING IN EMS STORAGE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: B14-Flooring **Lab Sample ID:** 622001779-0014

Sample Description: FLOORING & TAR PAPER ON STAIRS (STAIRS TO BASEMENT)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Brown	0.0%	100%	None Detected	

Client Sample ID: B14-Tar Paper **Lab Sample ID:** 622001779-0014A

Sample Description: FLOORING & TAR PAPER ON STAIRS (STAIRS TO BASEMENT)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Black	0.0%	100%	None Detected	



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Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: B15-Flooring **Lab Sample ID:** 622001779-0015

Sample Description: FLOORING & TAR PAPER ON STAIRS (STAIRS TO BASEMENT)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Brown	0.0%	100%	None Detected	

Client Sample ID: B15-Tar Paper **Lab Sample ID:** 622001779-0015A

Sample Description: FLOORING & TAR PAPER ON STAIRS (STAIRS TO BASEMENT)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Black	0.0%	100%	None Detected	

Client Sample ID: B16-Flooring **Lab Sample ID:** 622001779-0016

Sample Description: FLOORING & TAR PAPER ON STAIRS (STAIRS TO BASEMENT)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Brown	0.0%	100%	None Detected	

Client Sample ID: B16-Tar Paper **Lab Sample ID:** 622001779-0016A

Sample Description: FLOORING & TAR PAPER ON STAIRS (STAIRS TO BASEMENT)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Black	0.0%	100%	None Detected	

Client Sample ID: B17 **Lab Sample ID:** 622001779-0017

Sample Description: BOILER ROOM CEILING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: B18 **Lab Sample ID:** 622001779-0018

Sample Description: BOILER ROOM CEILING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: B19 **Lab Sample ID:** 622001779-0019

Sample Description: BOILER ROOM CEILING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: B20 **Lab Sample ID:** 622001779-0020

Sample Description: BOILER ROOM CEILING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	0.0%	100.0%	None Detected	



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Client Sample ID: B21 **Lab Sample ID:** 622001779-0021

Sample Description: BOILER ROOM CEILING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: B22-Floor Tile **Lab Sample ID:** 622001779-0022

Sample Description: SENIOR MAN & 2ND FLOOR BEIGE FLOOR TILE & MASTIC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Beige	0.0%	100%	None Detected	

Client Sample ID: B22-Mastic **Lab Sample ID:** 622001779-0022A

Sample Description: SENIOR MAN & 2ND FLOOR BEIGE FLOOR TILE & MASTIC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Black	0.0%	100%	None Detected	

Client Sample ID: B23-Floor Tile **Lab Sample ID:** 622001779-0023

Sample Description: SENIOR MAN & 2ND FLOOR BEIGE FLOOR TILE & MASTIC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Beige	0.0%	100%	None Detected	

Client Sample ID: B23-Mastic **Lab Sample ID:** 622001779-0023A

Sample Description: SENIOR MAN & 2ND FLOOR BEIGE FLOOR TILE & MASTIC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Black	0.0%	100%	None Detected	

Client Sample ID: B24-Floor Tile **Lab Sample ID:** 622001779-0024

Sample Description: SENIOR MAN & 2ND FLOOR BEIGE FLOOR TILE & MASTIC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Beige	0.0%	100%	None Detected	

Client Sample ID: B24-Mastic **Lab Sample ID:** 622001779-0024A

Sample Description: SENIOR MAN & 2ND FLOOR BEIGE FLOOR TILE & MASTIC

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Black	0.0%	100%	None Detected	

Client Sample ID: B25 **Lab Sample ID:** 622001779-0025

Sample Description: SENIOR MAN & 2ND FLOOR BROWN FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Brown	0.0%	100%	None Detected	



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Client Sample ID: B26 **Lab Sample ID:** 622001779-0026

Sample Description: SENIOR MAN & 2ND FLOOR BROWN FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Brown	0.0%	100%	None Detected	

Client Sample ID: B27 **Lab Sample ID:** 622001779-0027

Sample Description: SENIOR MAN & 2ND FLOOR BROWN FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Brown	0.0%	100%	None Detected	

Client Sample ID: B28 **Lab Sample ID:** 622001779-0028

Sample Description: SENIOR MAN BATHROOM FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	White	0.0%	100%	None Detected	

Client Sample ID: B29 **Lab Sample ID:** 622001779-0029

Sample Description: SENIOR MAN BATHROOM FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	White	0.0%	100%	None Detected	

Client Sample ID: B30 **Lab Sample ID:** 622001779-0030

Sample Description: SENIOR MAN BATHROOM FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	White	0.0%	100%	None Detected	

Client Sample ID: B31-Base Coat **Lab Sample ID:** 622001779-0031

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: B31-Skim Coat **Lab Sample ID:** 622001779-0031A

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: B32-Base Coat **Lab Sample ID:** 622001779-0032

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	0.0%	100.0%	None Detected	



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Client Sample ID: B32-Skim Coat **Lab Sample ID:** 622001779-0032A

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: B33-Base Coat **Lab Sample ID:** 622001779-0033

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: B33-Skim Coat **Lab Sample ID:** 622001779-0033A

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: B34-Base Coat **Lab Sample ID:** 622001779-0034

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: B34-Skim Coat **Lab Sample ID:** 622001779-0034A

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: B35-Base Coat **Lab Sample ID:** 622001779-0035

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: B35-Skim Coat **Lab Sample ID:** 622001779-0035A

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: B36-Base Coat **Lab Sample ID:** 622001779-0036

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	0.0%	100.0%	None Detected	



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Client Sample ID: B36-Skim Coat **Lab Sample ID:** 622001779-0036A

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: B37-Base Coat **Lab Sample ID:** 622001779-0037

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	0.0%	100.0%	None Detected	

Client Sample ID: B37-Skim Coat **Lab Sample ID:** 622001779-0037A

Sample Description: PLASTER BASE & SKIM COATS

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	White	0.0%	100.0%	None Detected	

Client Sample ID: B38 **Lab Sample ID:** 622001779-0038

Sample Description: CEILING TILES

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	95.0%	5.0%	None Detected	

Client Sample ID: B39 **Lab Sample ID:** 622001779-0039

Sample Description: CEILING TILES

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	95.0%	5.0%	None Detected	

Client Sample ID: B40 **Lab Sample ID:** 622001779-0040

Sample Description: CEILING TILES

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	95.0%	5.0%	None Detected	

Client Sample ID: B41 **Lab Sample ID:** 622001779-0041

Sample Description: SHEETROCK

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	4.0%	96.0%	None Detected	

Client Sample ID: B42 **Lab Sample ID:** 622001779-0042

Sample Description: SHEETROCK

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	5.0%	95.0%	None Detected	



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Client Sample ID: B43 **Lab Sample ID:** 622001779-0043

Sample Description: SHEETROCK

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/21/2020	Gray	5.0%	95.0%	None Detected	

Client Sample ID: B44 **Lab Sample ID:** 622001779-0044

Sample Description: BEIGE W/ GREEN STREAK 9X9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Beige	0.0%	90.9%	9.1% Chrysotile	

Client Sample ID: B45 **Lab Sample ID:** 622001779-0045

Sample Description: BEIGE W/ GREEN STREAK 9X9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020				Positive Stop (Not Analyzed)	

Client Sample ID: B46 **Lab Sample ID:** 622001779-0046

Sample Description: BEIGE W/ GREEN STREAK 9X9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020				Positive Stop (Not Analyzed)	

Client Sample ID: B47 **Lab Sample ID:** 622001779-0047

Sample Description: BLACK 9X9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Black	0.0%	92.8%	7.2% Chrysotile	

Client Sample ID: B48 **Lab Sample ID:** 622001779-0048

Sample Description: BLACK 9X9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020				Positive Stop (Not Analyzed)	

Client Sample ID: B49 **Lab Sample ID:** 622001779-0049

Sample Description: BLACK 9X9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020				Positive Stop (Not Analyzed)	

Client Sample ID: B50 **Lab Sample ID:** 622001779-0050

Sample Description: RED 9X9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Red	0.0%	89.7%	10.3% Chrysotile	



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Client Sample ID: B51 **Lab Sample ID:** 622001779-0051

Sample Description: RED 9X9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020					Positive Stop (Not Analyzed)

Client Sample ID: B52 **Lab Sample ID:** 622001779-0052

Sample Description: RED 9X9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020					Positive Stop (Not Analyzed)

Client Sample ID: B53 **Lab Sample ID:** 622001779-0053

Sample Description: BLACK MASTIC (NO TILE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Black	0.0%	93.8%	6.2% Chrysotile	

Client Sample ID: B54 **Lab Sample ID:** 622001779-0054

Sample Description: BLACK MASTIC (NO TILE)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020					Positive Stop (Not Analyzed)

Client Sample ID: B55 **Lab Sample ID:** 622001779-0055

Sample Description: GREY W/ BLACK STREAK 9X9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Gray	0.0%	91.3%	8.7% Chrysotile	

Client Sample ID: B56 **Lab Sample ID:** 622001779-0056

Sample Description: GREY W/ BLACK STREAK 9X9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020					Positive Stop (Not Analyzed)

Client Sample ID: B57 **Lab Sample ID:** 622001779-0057

Sample Description: GREY W/ BLACK STREAK 9X9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020					Positive Stop (Not Analyzed)

Client Sample ID: B58 **Lab Sample ID:** 622001779-0058

Sample Description: BLUE 9 X 9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Blue	0.0%	93.3%	6.7% Chrysotile	



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Client Sample ID: B59 **Lab Sample ID:** 622001779-0059

Sample Description: BLUE 9 X 9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020				Positive Stop (Not Analyzed)	

Client Sample ID: B60 **Lab Sample ID:** 622001779-0060

Sample Description: BLUE 9 X 9 FLOOR TILE (NO MASTIC)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020				Positive Stop (Not Analyzed)	

Client Sample ID: B61-Floor Tile **Lab Sample ID:** 622001779-0061

Sample Description: LIGHT PURPLE W/ PURPLE STREAK 9 X 9 WALL TILE & MASTIC (2ND FLOOR BATHROOM)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Purple	0.0%	92.8%	7.2% Chrysotile	

Client Sample ID: B61-Mastic **Lab Sample ID:** 622001779-0061A

Sample Description: LIGHT PURPLE W/ PURPLE STREAK 9 X 9 WALL TILE & MASTIC (2ND FLOOR BATHROOM)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Tan	0.0%	100%	None Detected	

Client Sample ID: B62-Floor Tile **Lab Sample ID:** 622001779-0062

Sample Description: LIGHT PURPLE W/ PURPLE STREAK 9 X 9 WALL TILE & MASTIC (2ND FLOOR BATHROOM)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020				Positive Stop (Not Analyzed)	

Client Sample ID: B62-Mastic **Lab Sample ID:** 622001779-0062A

Sample Description: LIGHT PURPLE W/ PURPLE STREAK 9 X 9 WALL TILE & MASTIC (2ND FLOOR BATHROOM)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Tan	0.0%	100%	None Detected	

Client Sample ID: B63-Floor Tile **Lab Sample ID:** 622001779-0063

Sample Description: LIGHT PURPLE W/ PURPLE STREAK 9 X 9 WALL TILE & MASTIC (2ND FLOOR BATHROOM)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020				Positive Stop (Not Analyzed)	

Client Sample ID: B63-Mastic **Lab Sample ID:** 622001779-0063A

Sample Description: LIGHT PURPLE W/ PURPLE STREAK 9 X 9 WALL TILE & MASTIC (2ND FLOOR BATHROOM)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Tan	0.0%	100%	None Detected	



EMSL Analytical, Inc.

161 John Roberts Road South Portland, ME 04106
Phone/Fax: (207) 517-6921 / (207) 517-6922
<http://www.EMSL.com> / portlandlab@emsl.com

EMSL Order ID: 622001779
Customer ID: AIRQ51A
Customer PO: 20-720
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

Client Sample ID: B64 **Lab Sample ID:** 622001779-0064

Sample Description: VINYL COVEBASE ADHESIVE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Brown	0.0%	100%	None Detected	

Client Sample ID: B65 **Lab Sample ID:** 622001779-0065

Sample Description: VINYL COVEBASE ADHESIVE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Brown	0.0%	100%	None Detected	

Client Sample ID: B66 **Lab Sample ID:** 622001779-0066

Sample Description: VINYL COVEBASE ADHESIVE

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Brown	0.0%	100%	None Detected	

Client Sample ID: B67 **Lab Sample ID:** 622001779-0067

Sample Description: WINDOW GLAZING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020	Gray	0.0%	94.0%	6.0% Chrysotile	

Client Sample ID: B68 **Lab Sample ID:** 622001779-0068

Sample Description: WINDOW GLAZING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020					Positive Stop (Not Analyzed)

Client Sample ID: B69 **Lab Sample ID:** 622001779-0069

Sample Description: WINDOW GLAZING

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	12/21/2020					Positive Stop (Not Analyzed)



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161 John Roberts Road South Portland, ME 04106

Phone/Fax: (207) 517-6921 / (207) 517-6922

<http://www.EMSL.com> / portlandlab@emsl.com

EMSL Order ID: 622001779

Customer ID: AIRQ51A

Customer PO: 20-720

Project ID:

Summary Test Report for Asbestos Analysis of Bulk Material via EPA 600/R-93/116

PLM: ME CERT # BA-0178, BA-0188

PLM EPA NOB: ME CERT # BA-0178

Analyst(s):

Samantha Voigt PLM (20)
Stephen Severn PLM (11)
PLM Grav. Reduction (37)

Reviewed and approved by:

Samantha Voigt, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. This test report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. EMSL bears no responsibility for sample collection activities or analytical method limitations. The laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. PLM alone is not consistently reliable in detecting asbestos in floor coverings and similar NOBs

Samples analyzed by EMSL Analytical, Inc. South Portland, ME NVLAP Lab Code 500094-0, MA AA000236, VT AL197271, ME LM-0039, CT PH-0346

Initial report from: 12/21/2020 05:14

PCB BULK SAMPLING RESULTS

EPA SW-846 Method: 3540C				
Sample #	Location	Material	Result (PPM)	Parameter
P1	White Caulk on Windows	Window Caulking	ND	
P2	Green Caulk on Windows	Window Caulking	ND	
P3	Green Caulk on Overhead Doors	Window Caulking	ND	
P4	White Caulk on Overhead Doors	Caulking	ND	



ANALYTICAL REPORT

Lab Number:	L2053752
Client:	Air Quality Management Services, Inc. PO Box 2491 Lewiston, ME 04241
ATTN:	Randy Geoffroy
Phone:	(207) 657-7360
Project Name:	20-720
Project Number:	20-720
Report Date:	12/10/20

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: 20-720
Project Number: 20-720

Lab Number: L2053752
Report Date: 12/10/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2053752-01	P1-WHITE CAULK ON WINDOW	SOLID	S. PORTLAND	12/02/20 00:00	12/03/20
L2053752-02	P2-GREEN CAULK ON WINDOW	SOLID	S. PORTLAND	12/02/20 00:00	12/03/20
L2053752-03	P3-GREEN CAULK ON OVER	SOLID	S. PORTLAND	12/02/20 00:00	12/03/20
L2053752-04	P4-WHITE CAULK ON OVER	SOLID	S. PORTLAND	12/02/20 00:00	12/03/20

Project Name: 20-720
Project Number: 20-720

Lab Number: L2053752
Report Date: 12/10/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: 20-720
Project Number: 20-720

Lab Number: L2053752
Report Date: 12/10/20

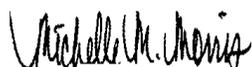
Case Narrative (continued)

PCBs

L2053752-01, -02, -03, and -04: The sample has elevated detection limits due to limited sample volume available for analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 12/10/20

ORGANICS

PCBS



Project Name: 20-720
Project Number: 20-720

Lab Number: L2053752
Report Date: 12/10/20

SAMPLE RESULTS

Lab ID: L2053752-01
 Client ID: P1-WHITE CAULK ON WINDOW
 Sample Location: S. PORTLAND

Date Collected: 12/02/20 00:00
 Date Received: 12/03/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8082A
 Analytical Date: 12/10/20 10:06
 Analyst: JM
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
 Extraction Date: 12/08/20 19:35
 Cleanup Method: EPA 3630
 Cleanup Date: 12/10/20
 Cleanup Method: EPA 3665A
 Cleanup Date: 12/10/20
 Cleanup Method: EPA 3660B
 Cleanup Date: 12/10/20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	749	--	1	A
Aroclor 1221	ND		ug/kg	749	--	1	A
Aroclor 1232	ND		ug/kg	749	--	1	A
Aroclor 1242	ND		ug/kg	374	--	1	A
Aroclor 1248	ND		ug/kg	749	--	1	A
Aroclor 1254	ND		ug/kg	749	--	1	A
Aroclor 1260	ND		ug/kg	749	--	1	A
Aroclor 1262	ND		ug/kg	749	--	1	A
Aroclor 1268	ND		ug/kg	374	--	1	A
PCBs, Total	ND		ug/kg	374	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		30-150	A
Decachlorobiphenyl	100		30-150	A
2,4,5,6-Tetrachloro-m-xylene	83		30-150	B
Decachlorobiphenyl	89		30-150	B

Project Name: 20-720
Project Number: 20-720

Lab Number: L2053752
Report Date: 12/10/20

SAMPLE RESULTS

Lab ID: L2053752-02
 Client ID: P2-GREEN CAULK ON WINDOW
 Sample Location: S. PORTLAND

Date Collected: 12/02/20 00:00
 Date Received: 12/03/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8082A
 Analytical Date: 12/10/20 10:13
 Analyst: JM
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
 Extraction Date: 12/08/20 19:35
 Cleanup Method: EPA 3630
 Cleanup Date: 12/10/20
 Cleanup Method: EPA 3665A
 Cleanup Date: 12/10/20
 Cleanup Method: EPA 3660B
 Cleanup Date: 12/10/20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	1200	--	1	A
Aroclor 1221	ND		ug/kg	1200	--	1	A
Aroclor 1232	ND		ug/kg	1200	--	1	A
Aroclor 1242	ND		ug/kg	602	--	1	A
Aroclor 1248	ND		ug/kg	1200	--	1	A
Aroclor 1254	ND		ug/kg	1200	--	1	A
Aroclor 1260	ND		ug/kg	1200	--	1	A
Aroclor 1262	ND		ug/kg	1200	--	1	A
Aroclor 1268	ND		ug/kg	602	--	1	A
PCBs, Total	ND		ug/kg	602	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	65		30-150	A
Decachlorobiphenyl	80		30-150	A
2,4,5,6-Tetrachloro-m-xylene	71		30-150	B
Decachlorobiphenyl	68		30-150	B



Project Name: 20-720
Project Number: 20-720

Lab Number: L2053752
Report Date: 12/10/20

SAMPLE RESULTS

Lab ID: L2053752-03
Client ID: P3-GREEN CAULK ON OVER
Sample Location: S. PORTLAND

Date Collected: 12/02/20 00:00
Date Received: 12/03/20
Field Prep: Not Specified

Sample Depth:

Matrix: Solid
Analytical Method: 1,8082A
Analytical Date: 12/10/20 10:20
Analyst: JM
Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
Extraction Date: 12/08/20 19:35
Cleanup Method: EPA 3630
Cleanup Date: 12/10/20
Cleanup Method: EPA 3665A
Cleanup Date: 12/10/20
Cleanup Method: EPA 3660B
Cleanup Date: 12/10/20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	1440	--	1	A
Aroclor 1221	ND		ug/kg	1440	--	1	A
Aroclor 1232	ND		ug/kg	1440	--	1	A
Aroclor 1242	ND		ug/kg	719	--	1	A
Aroclor 1248	ND		ug/kg	1440	--	1	A
Aroclor 1254	ND		ug/kg	1440	--	1	A
Aroclor 1260	ND		ug/kg	1440	--	1	A
Aroclor 1262	ND		ug/kg	1440	--	1	A
Aroclor 1268	ND		ug/kg	719	--	1	A
PCBs, Total	ND		ug/kg	719	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	85		30-150	A
Decachlorobiphenyl	102		30-150	A
2,4,5,6-Tetrachloro-m-xylene	92		30-150	B
Decachlorobiphenyl	87		30-150	B



Project Name: 20-720
Project Number: 20-720

Lab Number: L2053752
Report Date: 12/10/20

SAMPLE RESULTS

Lab ID: L2053752-04
 Client ID: P4-WHITE CAULK ON OVER
 Sample Location: S. PORTLAND

Date Collected: 12/02/20 00:00
 Date Received: 12/03/20
 Field Prep: Not Specified

Sample Depth:

Matrix: Solid
 Analytical Method: 1,8082A
 Analytical Date: 12/10/20 10:27
 Analyst: JM
 Percent Solids: Results reported on an 'AS RECEIVED' basis.

Extraction Method: EPA 3540C
 Extraction Date: 12/08/20 19:35
 Cleanup Method: EPA 3630
 Cleanup Date: 12/10/20
 Cleanup Method: EPA 3665A
 Cleanup Date: 12/10/20
 Cleanup Method: EPA 3660B
 Cleanup Date: 12/10/20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	1440	--	1	A
Aroclor 1221	ND		ug/kg	1440	--	1	A
Aroclor 1232	ND		ug/kg	1440	--	1	A
Aroclor 1242	ND		ug/kg	719	--	1	A
Aroclor 1248	ND		ug/kg	1440	--	1	A
Aroclor 1254	ND		ug/kg	1440	--	1	A
Aroclor 1260	ND		ug/kg	1440	--	1	A
Aroclor 1262	ND		ug/kg	1440	--	1	A
Aroclor 1268	ND		ug/kg	719	--	1	A
PCBs, Total	ND		ug/kg	719	--	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	92		30-150	A
Decachlorobiphenyl	111		30-150	A
2,4,5,6-Tetrachloro-m-xylene	101		30-150	B
Decachlorobiphenyl	97		30-150	B

Project Name: 20-720
Project Number: 20-720

Lab Number: L2053752
Report Date: 12/10/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 12/10/20 09:41
Analyst: JM

Extraction Method: EPA 3540C
Extraction Date: 12/08/20 19:35
Cleanup Method: EPA 3630
Cleanup Date: 12/10/20
Cleanup Method: EPA 3665A
Cleanup Date: 12/10/20
Cleanup Method: EPA 3660B
Cleanup Date: 12/10/20

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01-04 Batch: WG1442521-1						
Aroclor 1016	ND		ug/kg	515	--	A
Aroclor 1221	ND		ug/kg	515	--	A
Aroclor 1232	ND		ug/kg	515	--	A
Aroclor 1242	ND		ug/kg	258	--	A
Aroclor 1248	ND		ug/kg	515	--	A
Aroclor 1254	ND		ug/kg	515	--	A
Aroclor 1260	ND		ug/kg	515	--	A
Aroclor 1262	ND		ug/kg	515	--	A
Aroclor 1268	ND		ug/kg	258	--	A
PCBs, Total	ND		ug/kg	258	--	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	62		30-150	A
Decachlorobiphenyl	96		30-150	A
2,4,5,6-Tetrachloro-m-xylene	69		30-150	B
Decachlorobiphenyl	85		30-150	B



Lab Control Sample Analysis Batch Quality Control

Project Name: 20-720
Project Number: 20-720

Lab Number: L2053752
Report Date: 12/10/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01-04 Batch: WG1442521-2 WG1442521-3									
Aroclor 1016	102		98		40-140	4		50	A
Aroclor 1260	94		95		40-140	1		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		81		30-150	A
Decachlorobiphenyl	103		104		30-150	A
2,4,5,6-Tetrachloro-m-xylene	88		86		30-150	B
Decachlorobiphenyl	86		85		30-150	B



Project Name: 20-720

Project Number: 20-720

Sample Receipt and Container Information

Were project specific reporting limits specified?

YES

Cooler Information**Cooler** **Custody Seal**

A Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2053752-01A	Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PCB-8082-CAULK(14)
L2053752-02A	Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PCB-8082-CAULK(14)
L2053752-03A	Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PCB-8082-CAULK(14)
L2053752-04A	Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PCB-8082-CAULK(14)

Project Name: 20-720
Project Number: 20-720

Lab Number: L2053752
Report Date: 12/10/20

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report



Project Name: 20-720
Project Number: 20-720

Lab Number: L2053752
Report Date: 12/10/20

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the reporting limit (RL) for the sample.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where

Report Format: Data Usability Report



Project Name: 20-720
Project Number: 20-720

Lab Number: L2053752
Report Date: 12/10/20

Data Qualifiers

the identification is based on a mass spectral library search.

- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Project Name: 20-720

Lab Number: L2053752

Project Number: 20-720

Report Date: 12/10/20

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

EPA TO-12 Non-methane organics

EPA 3C Fixed gases

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:** Ammonia-N, **LACHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300:** Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.

EPA 522.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY PAGE 1 OF 1



WESTBORO, MA
TEL: 508-898-8220
FAX: 508-898-0183

MASSFIELD, MA
TEL: 508-833-8300
FAX: 508-833-2288

Project Information

Project Name: 20-720

Project Location: S. Portland

Project #: 20-720

Project Manager: Andy Gentry

ALPHA Quote #:

Date Rec'd in Lab: 12/3/20

ALPHA Job #: L2053192

Client Information

Client: AQM

Address: 10 Sox 2491
Leicester, ME 04241

Phone: 207 657 7760

Fax: 207 657 7761

Email: andy.gentry@alpha.com

These samples have been previously analyzed by Alpha

Report Information - Data Deliverables

FAX EMAIL

ADEx Add'l Deliverables

Billing Information

Same as Client Info PO #: 20-720

Regulatory Requirements/Report Limits

State / Fed Program	Criteria

Turn-Around Time

Standard RUSH (only valid with pre-approval)

Date Due: _____ Time: _____

Other Project Specific Requirements/Comments/Detection Limits:

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS	SAMPLE HANDLING	Sample Specific Comments
		Date	Time					
537500	01-White Caulk on Window	12/2/20		Caulk	MB	<div style="writing-mode: vertical-rl; transform: rotate(180deg);">ANALYSIS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">LCS</div>	SAMPLE HANDLING Filtration _____ <input type="checkbox"/> Done <input type="checkbox"/> Not needed <input type="checkbox"/> Lab to do <input type="checkbox"/> Preservation <input type="checkbox"/> Lab to do (Please specify below)	
-02	02-Green Caulk on Window							
-03	03-Green Caulk on Door							
04	04-White Caulk on Door							

Container Type: 6/15

Preservative: _____

Relinquished By: <u>[Signature]</u>	Date/Time: <u>12/3/20 3:23</u>	Received By: <u>[Signature]</u>	Date/Time: <u>12/3/20 3:23</u>
-------------------------------------	--------------------------------	---------------------------------	--------------------------------

FORM MX-01-01 (rev. 14-OCT-07)

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

MOLD TESTING RESULTS



EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS TRAINING

Microbiology Chain of Custody

EMSL Order Number (Lab Use Only):

622001781

Cinnaminson, NJ 08077
PHONE: 1-800-220-3675
FAX: (856) 786-5974

Company: Air Quality Management Services		EMSL-Bill to: <input checked="" type="checkbox"/> Different <input type="checkbox"/> Same <small>If Bill to is Different note instructions in Comments**</small>	
Street: PO Box 2491		<i>Third Party Billing requires written authorization from third party</i>	
City: Lewiston	State/Province: ME	Zip/Postal Code: 04241	Country: United States
Report To (Name): Randy Geoffroy		Telephone #: 207-657-7360	
Email Address: See Account Notes		Fax #: 207-657-7361	Purchase Order: 20-720
Project Name/Number: 20-720 - South Portland		Please Provide Results: <input type="checkbox"/> FAX <input checked="" type="checkbox"/> E-mail <input type="checkbox"/> Mail	
U.S. State Samples Taken: Maine		Connecticut Samples: <input type="checkbox"/> Commercial <input type="checkbox"/> Residential	

Turnaround Time (TAT) Options* - Please Check

3 Hour
 6 Hour
 24 Hour
 48 Hour
 72 Hour
 96 Hour
 1 Week
 2 Week

*Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide. TATs are subject to methodology requirements

Non Culturable Air Samples (Spore Traps) - Test Codes

- | | | | | |
|-------------------|-------------------|--------------------|---------------------|-------------------|
| • M001 Air-O-Cell | • M173 Allegro M2 | • M004 Allergenco | • M032 Allergenco-D | • M172 Versa Trap |
| • M049 BioSIS | • M003 Burkard | • M043 Cyclex | • M002 Cyclex-d | |
| • M030 Micro 5 | • M174 MoldSnap | • M176 Relle Smart | • M130 Via-Cell | |

Other Microbiology Test Codes

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> • M041 Fungal Direct Examination • M005 Viable Fungi ID and Count • M006 Viable Fungi ID and Count (Speciation) • M007 Culturable Fungi • M008 Culturable Fungi (Speciation) • M009 Gram Stain Culturable Bacteria • M010 Bacterial Count and ID - 3 Most Prominent • M011 Bacterial Count and ID - 5 Most Prominent • M013 Sewage Contamination in Buildings | <ul style="list-style-type: none"> • M014 Endotoxin Analysis • M015 Heterotrophic Plate Count • M180 Real Time Q-PCR-ERMI 36 Panel • M018 Total Coliform (Membrane Filtration) • M020 Fecal Streptococcus (Membrane Filtration) • M210-215 Legionella Detection • M026 Recreational Water Screen • M027 Mycotoxin Analysis | <ul style="list-style-type: none"> • M029 Enterococci • M019 Fecal Coliform • M133 MRSA Analysis • M028 Cryptococcus neoformans Detection • M120 Histoplasma capsulatum Detection • M033-39 Allergen Testing • M044 Group Allergen (Cat, Dog, Cockroach, Dustmites) • Other See Analytical Price Guide |
|---|--|--|

Preservation Method (Water):

Name of Sampler: Randy Geoffroy

Signature of Sampler:

Sample #	Sample Location	Sample Type	Test Code	Volume/Area	Date/Time Collected
A1	Outdoors	Air	M001	75L	12/10/20
A2	Senior Man Office	↓	↓	↓	↓
A3	Large Bay				
A4	Small Bay				
A5	2nd floor Hallway				
A6	Day Room				
A7	1st floor Hallway				
A8	Basement				
T1	Wall in Stairwell (Landing Between 1st & 2nd floor)	Tape	M041	N/A	

Client Sample # (s): A1 - A8 + T1 Total # of Samples: 9

Relinquished (Client): Date: 12/10/20 Time: 16:30

Received (Client): Date: 12/14/2020 Time: 11:00

Comments:
Email invoices to: connie@aqrservices.com





EMSL Analytical, Inc.

161 John Roberts Road South Portland, ME 04106

Tel/Fax: (207) 517-6921 / (207) 517-6922

<http://www.EMSL.com> / portlandlab@emsl.com

EMSL Order: 622001781
Customer ID: AIRQ51A
Customer PO: 20-720
Project ID:

Attention: Randy Geoffroy Air Quality Management Services, Inc. PO Box 2491 Lewiston, ME 04241	Phone: (207) 657-7360 Fax: Collected Date: 12/10/2020 Received Date: 12/14/2020 11:00 AM Analyzed Date: 12/21/2020
Project: 20-720 - South Portland	

Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	622001781-0001 A1 75 OUTDOORS			622001781-0002 A2 75 SENIOR MAN OFFICE			622001781-0003 A3 75 LARGE BAY			
	Spore Types	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	-	-	-	-	-	-
Basidiospores	19	800	88.9	-	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-	-
Cladosporium	3	100	11.1	2	80	100	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-	-
Total Fungi	22	900	100	2	80	100	-	None Detect	-	-
Hyphal Fragment	-	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-	-
Skin Fragments (1-4)	-	-	-	-	1	-	-	1	-	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-	-
Background (1-5)	-	1	-	-	1	-	-	1	-	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.



Samantha Voigt, Laboratory Manager
or other Approved Signatory

No discernable field blank was submitted with this group of samples.

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed.

Samples analyzed by EMSL Analytical, Inc. South Portland, ME

Initial report from: 12/21/2020 12:27 PM

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com



EMSL Analytical, Inc.

161 John Roberts Road South Portland, ME 04106

Tel/Fax: (207) 517-6921 / (207) 517-6922

<http://www.EMSL.com> / portlandlab@emsl.com

EMSL Order: 622001781
Customer ID: AIRQ51A
Customer PO: 20-720
Project ID:

Attention: Randy Geoffroy Air Quality Management Services, Inc. PO Box 2491 Lewiston, ME 04241	Phone: (207) 657-7360 Fax: Collected Date: 12/10/2020 Received Date: 12/14/2020 11:00 AM Analyzed Date: 12/21/2020
Project: 20-720 - South Portland	

Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	622001781-0004 A4 75 SMALL BAY			622001781-0005 A5 75 2ND FLOOR HALLWAY			622001781-0006 A6 75 DAY ROOM			
	Spore Types	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total
Alternaria (Ullocladium)	-	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	-	-	-	-	-	-	-	-	-	-
Basidiospores	-	-	-	-	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	2	80	100	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-	-
Myxomycetes++	-	-	-	-	-	-	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-	-
Total Fungi	-	None Detect	-	2	80	100	-	None Detect	-	-
Hyphal Fragment	-	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	42	-	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	13*	-	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	1	-	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	1	-	-
Background (1-5)	-	1	-	-	1	-	-	1	-	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.


Samantha Voigt, Laboratory Manager
or other Approved Signatory

No discernable field blank was submitted with this group of samples.

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed.

Samples analyzed by EMSL Analytical, Inc. South Portland, ME

Initial report from: 12/21/2020 12:27 PM

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com



EMSL Analytical, Inc.

161 John Roberts Road South Portland, ME 04106

Tel/Fax: (207) 517-6921 / (207) 517-6922

<http://www.EMSL.com> / portlandlab@emsl.com

EMSL Order: 622001781

Customer ID: AIRQ51A

Customer PO: 20-720

Project ID:

Attention: Randy Geoffroy
Air Quality Management Services, Inc.
PO Box 2491
Lewiston, ME 04241

Phone: (207) 657-7360

Fax:

Collected Date: 12/10/2020

Received Date: 12/14/2020 11:00 AM

Analyzed Date: 12/21/2020

Project: 20-720 - South Portland

Test Report: Air-O-Cell™ Analysis of Fungal Spores & Particulates by Optical Microscopy (Methods MICRO-SOP-201, ASTM D7391)

Lab Sample Number: Client Sample ID: Volume (L): Sample Location:	622001781-0007 A7 75 1ST F LOOR HALLWAY			622001781-0008 A8 75 BASEMENT						
	Spore Types	Raw Count	Count/M³	% of Total	Raw Count	Count/M³	% of Total			
Alternaria (Ulocladium)	-	-	-	-	-	-	-	-	-	-
Ascospores	-	-	-	-	-	-	-	-	-	-
Aspergillus/Penicillium	2	80	66.7	2	80	15.4	-	-	-	-
Basidiospores	-	-	-	-	-	-	-	-	-	-
Bipolaris++	-	-	-	-	-	-	-	-	-	-
Chaetomium	-	-	-	-	-	-	-	-	-	-
Cladosporium	-	-	-	9	400	76.9	-	-	-	-
Curvularia	-	-	-	-	-	-	-	-	-	-
Epicoccum	-	-	-	-	-	-	-	-	-	-
Fusarium	-	-	-	-	-	-	-	-	-	-
Ganoderma	-	-	-	-	-	-	-	-	-	-
Myxomycetes++	1	40	33.3	1	40	7.7	-	-	-	-
Pithomyces++	-	-	-	-	-	-	-	-	-	-
Rust	-	-	-	-	-	-	-	-	-	-
Scopulariopsis/Microascus	-	-	-	-	-	-	-	-	-	-
Stachybotrys/Memnoniella	-	-	-	-	-	-	-	-	-	-
Unidentifiable Spores	-	-	-	-	-	-	-	-	-	-
Zygomycetes	-	-	-	-	-	-	-	-	-	-
Total Fungi	3	120	100	12	520	100	-	-	-	-
Hyphal Fragment	-	-	-	-	-	-	-	-	-	-
Insect Fragment	-	-	-	-	-	-	-	-	-	-
Pollen	-	-	-	-	-	-	-	-	-	-
Analyt. Sensitivity 600x	-	42	-	-	42	-	-	-	-	-
Analyt. Sensitivity 300x	-	13*	-	-	13*	-	-	-	-	-
Skin Fragments (1-4)	-	1	-	-	1	-	-	-	-	-
Fibrous Particulate (1-4)	-	1	-	-	1	-	-	-	-	-
Background (1-5)	-	1	-	-	1	-	-	-	-	-

++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.

Samantha Voigt, Laboratory Manager
or other Approved Signatory

No discernable field blank was submitted with this group of samples.

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. High levels of background particulate can obscure spores and other particulates, leading to underestimation. Background levels of 5 indicate an overloading of background particulates, prohibiting accurate detection and quantification. Present = Spores detected on overloaded samples. Results are not blank corrected unless otherwise noted. The detection limit is equal to one fungal spore, structure, pollen, fiber particle or insect fragment. "*" Denotes particles found at 300X. "-" Denotes not detected. Due to method stopping rules, raw counts in excess of 100 are extrapolated based on the percentage analyzed.

Samples analyzed by EMSL Analytical, Inc. South Portland, ME

Initial report from: 12/21/2020 12:27 PM

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com



EMSL Analytical, Inc.

161 John Roberts Road South Portland, ME 04106
Tel/Fax: (207) 517-6921 / (207) 517-6922
<http://www.EMSL.com> / portlandlab@emsl.com

EMSL Order: 622001781
Customer ID: AIRQ51A
Customer PO: 20-720
Project ID:

Attention: Randy Geoffroy
Air Quality Management Services, Inc.
PO Box 2491
Lewiston, ME 04241

Phone: (207) 657-7360
Fax:
Collected Date: 12/10/2020
Received Date: 12/14/2020
Analyzed Date: 12/21/2020

Project: 20-720 - South Portland

Test Report: Microscopic Examination of Fungal Spores, Fungal Structures, Hyphae, and Other Particulates from Tape Samples (EMSL Method MICRO-SOP-200)

Lab Sample Number:	622001781-0009				
Client Sample ID:	T1				
Sample Location:	WALL IN STAIRWELL (LANDING BETWEEN 1ST & 2ND FLOOR)				
Spore Types	Category				
Alternaria (Ulocladium)	-				
Ascospores	-				
Aspergillus/Penicillium	-				
Basidiospores	-				
Bipolaris++	-				
Chaetomium	-				
Cladosporium	-				
Curvularia	-				
Epicoccum	-				
Fusarium	-				
Ganoderma	-				
Myxomycetes++	-				
Pithomyces++	-				
Rust	-				
Scopulariopsis/Microascus	-				
Stachybotrys/Memnoniella	*High*				
Unidentifiable Spores	-				
Zygomycetes	-				
Hyphal Fragment	-				
Insect Fragment	-				
Pollen	-				

Category: Count/per area analyzed - Rare: 1 to 10 Low: 11 to 100 Medium: 101 to 1000 High: >1000
- Denotes Not Detected.
++ Includes other spores with similar morphology; see EMSL's fungal glossary for each specific category.
* = Sample contains fruiting structures and/or hyphae associated with the spores.


Samantha Voigt, Laboratory Manager
or other Approved Signatory

No discernable field blank was submitted with this group of samples.

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc. South Portland, ME

Initial report from: 12/21/2020 12:27 PM

For information on the fungi listed in this report, please visit the Resources section at www.emsl.com

LEAD-BASED PAINT DETERMINATION



HALEY WARD

ENGINEERING | ENVIRONMENTAL | SURVEYING

FORMERLY
CES
INC

January 23, 2021

Mr. Randy Geoffroy
Air Quality Management Services, Inc.
P.O. Box 2491
Lewiston, Maine 04241-2491

**Re: Lead-Based Paint Determination | Central Fire Station | South Portland Fire Department
| South Portland, Maine**

Dear Mr. Geoffroy:

Haley Ward, Inc. (Haley Ward), formerly CES, Inc., has completed the lead-based paint (LBP) determination of the Central Fire Station located in South Portland, Maine. The LBP determination was performed in all accessible areas relevant to the fire station, including basement areas and the exterior. The LBP determination was conducted to identify surface coatings that contain lead-based paint to support planned renovations at the facility.

Central Fire Station is a two-story, masonry structure with both basements and an attic space. The first floor consists of garage areas for fire engine/rescue equipment, equipment storage areas, and office spaces. Bunk rooms for fire/rescue personnel, a theater room, kitchen, pantry, men's room, laundry and main gathering area are located on the second floor. The basement consists of boiler rooms, exercise area, conference room, training room, and additional office spaces.

LEAD-BASED PAINT DETERMINATION

The LBP determination of the fire station was conducted on both January 8 and January 9, 2021. Haley Ward representative Deborah Kasik, a Maine Department of Environmental Protection (MDEP) certified lead risk assessor (LR-0003) conducted the LBP testing. A copy of Ms. Kasik's Lead Risk Assessor's certification is included in **Attachment A**.

The purpose of the determination was to identify LBP, if present, on the interior and exterior surfaces relevant to the fire station. The LBP determinations were performed in accordance with the established protocols outlined in the MDEP Lead Management Regulations, 06-096



One Merchants Plaza, Suite 701, Bangor, ME 04401
T: 207.989.4824 | HALEYWARD.COM



C.M.R. Chapter 424 § 7 (2016) and as applicable to this project. The testing provides information on the LBP content and assessment of condition for the surfaces tested.

The LBP testing was conducted utilizing a portable X-Ray Fluorescence (XRF) Lead Paint Analyzer (RMD LPA-1), which non-destructively tests for the presence of LBP. The XRF analyzer is licensed with the Maine Department of Human Services Radiation Control Program and operated in accordance with all applicable regulations and conditions of licensure. The determination as to whether a component contains LBP is based upon the MDEP Lead Management Regulations (Chapter 424). The MDEP defines a component as lead-containing if the XRF result is greater than or equal to (\geq) 1.0 milligrams per square centimeter (mg/cm²). A visual assessment of the existing condition of the identified LBP was also completed at the time of the determination.

A detailed LBP determination report for the building, including field sketches provided for area identification, is included as **Attachment B**. Refer to the report for specific type, location, and condition of materials tested for LBP.

LBP was identified on interior surfaces of the building in good condition. The following components have been identified with LBP:

Attic:

- Lead flashing

First Floor:

- Glazing on the bathroom sink (near hazardous storage)
- Glazing on the slop sink (Fire Chief's garage area)

Basement:

- Boiler room fire door.

This report was prepared by Haley Ward for the sole use of Air Quality Management and should not be reproduced without their full, written authorization. Please contact the undersigned at (207) 989-4824 if you have any questions related to this project or if additional services are required.

Sincerely,
Haley Ward, Inc.

Deborah A. Kasik
Project Scientist
Lead Risk Assessor (LR-0003)

DAK/
Enc.



ATTACHMENTS



ATTACHMENT A

LEAD RISK ASSESSOR CERTIFICATION(S)

Certificate of Completion

Lead Risk Assessor Refresher Certification Training

This certifies that

Deb Kasik

Has Met the Attendance Requirements, Successful Completion of the Exam,
and the 8-Hour Curriculum Course Entitled Lead Risk Assessor Refresher
Certification Course.



Instructor: Bruce M. Hackett, Sr.
346 South Street Gorham, Maine 04038
(207)245-3232 LP0010



Class Date(s): 8/14/20
Test Date: 8/14/20
Certification #: RA20-04261962
Expiration Date: 8/14/21
Test Score: 88%



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JANET T. MILLS
GOVERNOR

GERALD D. REID
COMMISSIONER

September 7, 2020

Attn: Deborah A. Kasik
CES, Inc.
1 Merchant's Plaza, 7th Floor
Bangor, ME 04401

Dear Ms. Kasik,

Your lead application for certification has been received and **approved**. You have been granted certification as a **Lead Inspector LI-0371**. Enclosed is your wallet card, with an expiration date of **August 31, 2021**. All employees working on a lead abatement project must carry this photo ID wallet card. The card is property of the individual to whom it is issued. Your responsibility as a licensee is to ensure delivery of the card to person in your employment. This letter should be retained for your company files as record of certification. **Please attach 1 updated passport size photo with every application.**

Thank you for your cooperation and your completed application(s). Applications can now be found on our DEP webpage at the following:
<https://www.maine.gov/dep/waste/lead/forms/index.html>

If you have any questions on this certification or on any other aspect of DEP's lead abatement licensing program, please call Sandy Moody (207) 287-7751 or email sandy.j.moody@maine.gov

Sincerely,

Sandra J. Moody, Environmental Specialist
Division of Remediation
Bureau of Remediation and Waste Management

Enclosure

State of Maine
Lead Abatement Program
Deborah A. Kasik
Inspector
Cert 1: LI-0371
Trn.Exp.Date 08/14/2021
Risk Assessor
Cert 2: LR-0003
Trn.2 Exp Date 08/14/2021
Expiration Date: 08/31/2021
This is not a legal form of official identification



AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD, SUITE 6
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04679-2094
(207) 764-0477 FAX: (207) 760-3143

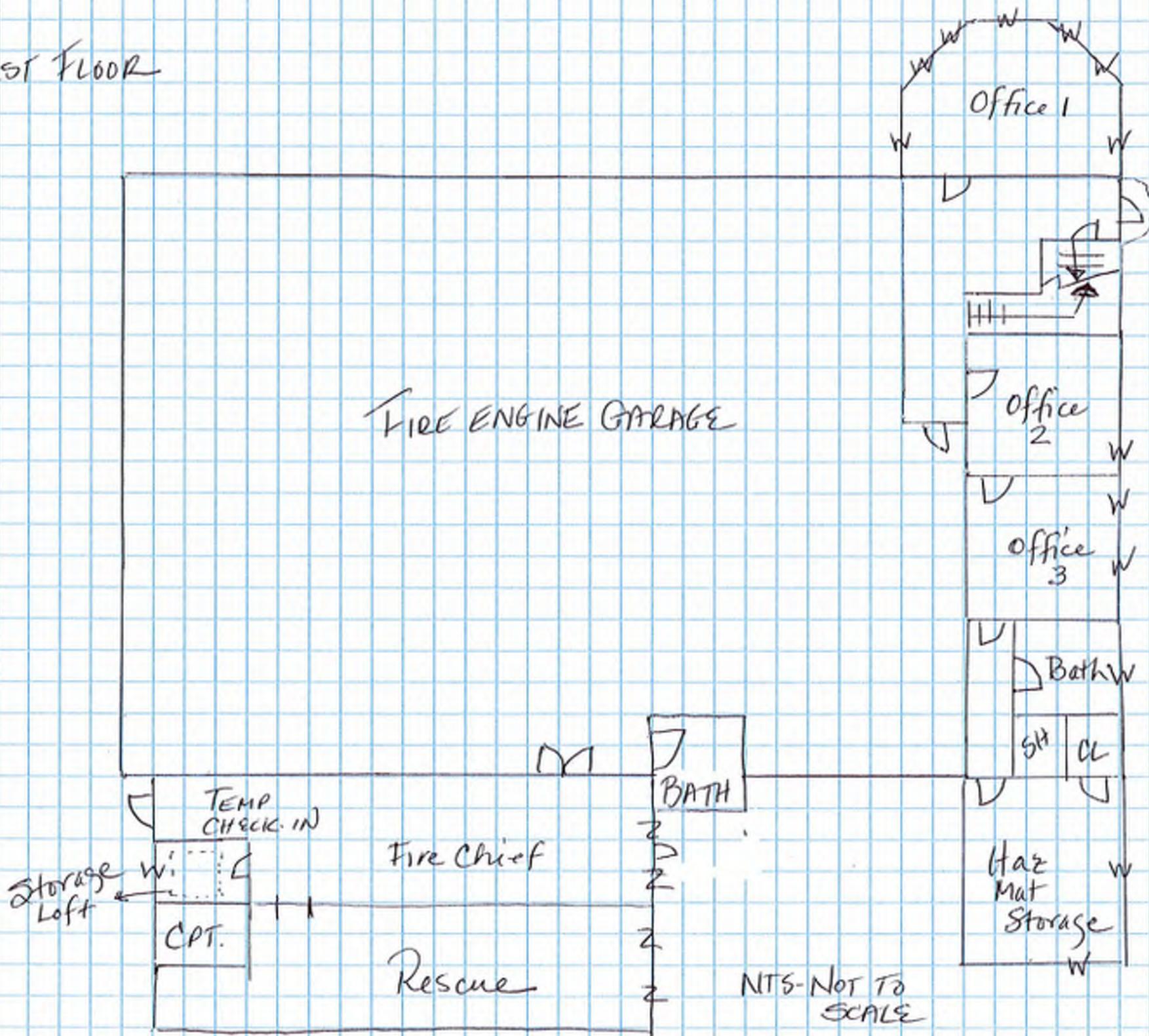


ATTACHMENT B

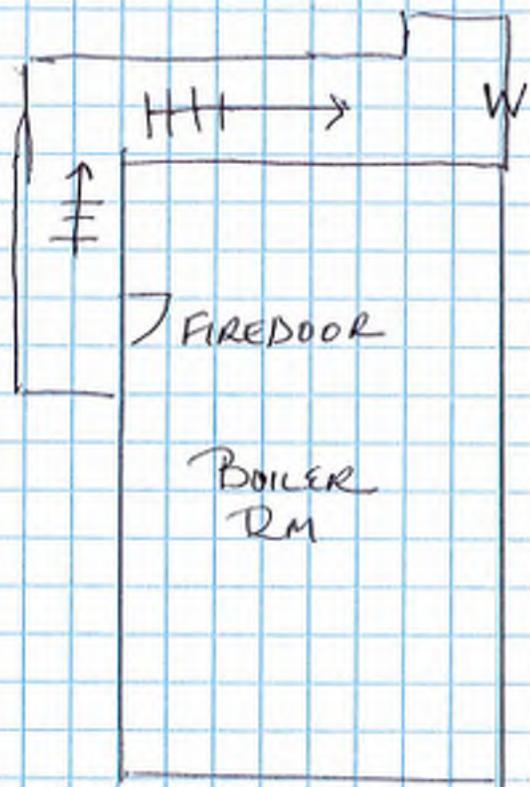
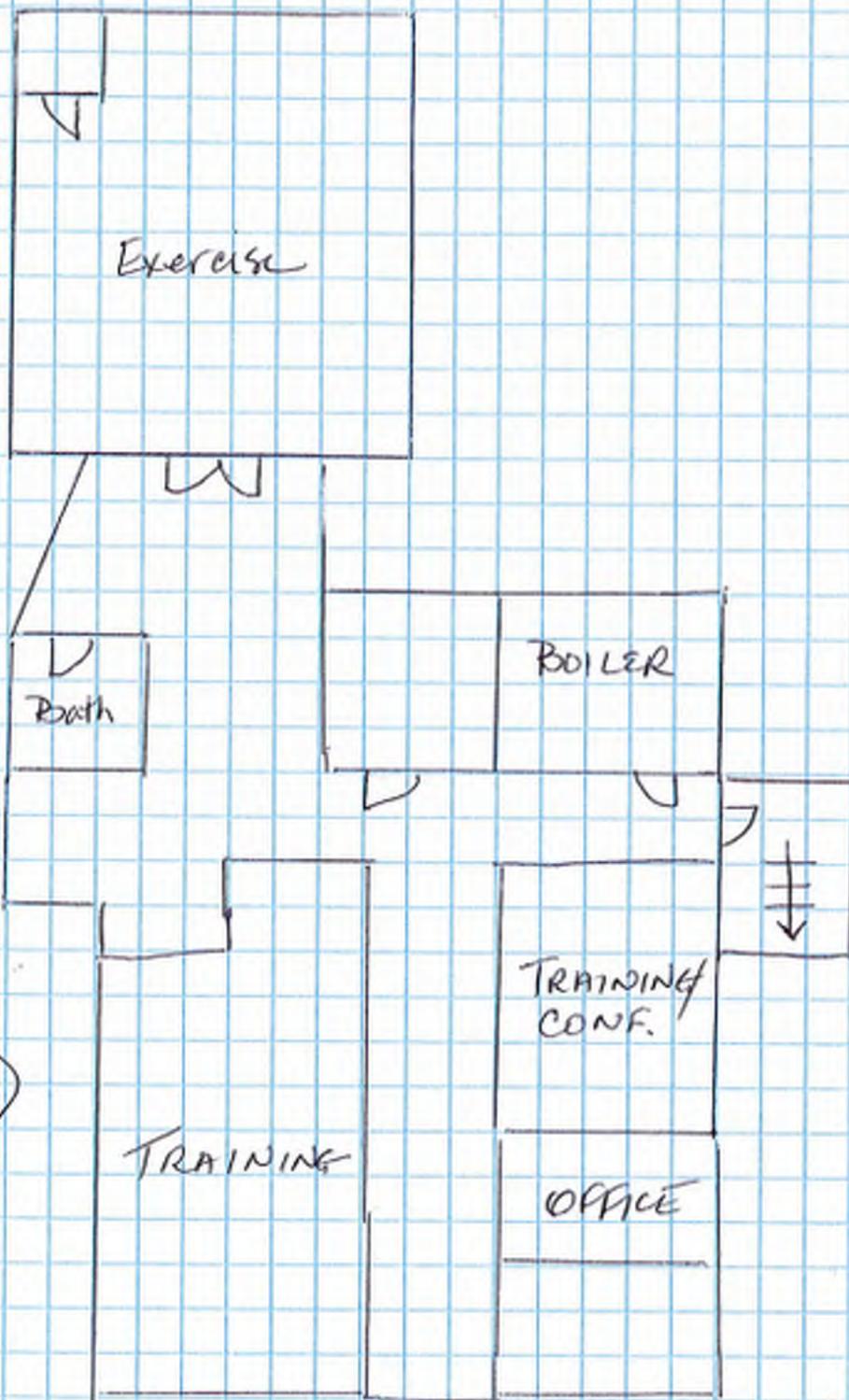
FIELD SKETCHES

LEAD-BASED PAINT DETERMINATION

FIRST FLOOR



BASEMENTS



(Beneath Fire Dept)

NTS = NOT TO SCALE

ENVIRONMENTAL LEAD-BASED PAINT XRF RESULTS

 HALEY WARD <small>CES INC.</small>	CLIENT: SITE: BLDG:	AIR QUALITY MANAGEMENT SOUTH PORTLAND FIRE DEPARTMENT INTERIOR	DATE: HALEY WARD #: Page:	1/22/2021 11490.003-01 1 of 8
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XRF # RMD LPA-1 #3305; ME Radiation License #31223	Inspector Signature: <i>Deborah A. Kasik/LR#0003</i>
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FIELD ID #	SAMPLE LOCATION	SIDE	COMPONENT(S)	COLOR	SUBSTRATE TYPE:	RESULTS mg/cm ²	CONDITION	NOTES:
L-1	CALIBRATION		NIST	YELLOW	WOOD	1.1		
L-2	CALIBRATION		NIST	YELLOW	WOOD	1.0		
L-3	CALIBRATION		NIST	YELLOW	WOOD	1.1		
L-4	SECOND FLOOR; MAIN AREA		WALLS - UPPER	GREEN	DRYWALL / PLASTER	0.0/0.0/0.0/0.0		
L-5			WALLS - LOWER	WHITE	WOOD	0.0/0.1/0.0		
L-6			CHAIR RAIL	WHITE	WOOD	0.0/0.0		
L-7			DOOR CASING AND JAMB	WHITE	WOOD	0.0/0.0		DOOR (2)0.0; INCLUDES ALL SIMILAR DOORS
L-8			DOOR CASING AND JAMB	WHITE	METAL	0.0/0.0		INCLUDES ALL
L-9			CEILING	OFF WHITE	DRYWALL / PLASTER	0.0/0.0		
L-10			CEILING TRIM	WHITE	WOOD	0.0		
L-11			BASEBOARD	WHITE	WOOD	0.0		
L-12	SECOND FLOOR; BUNK #3		WALLS - UPPER	GREEN	DRYWALL / PLASTER	0.0/0.0/0.0		REPRESENTATIVE BUNK ROOM
L-13			WALLS - LOWER	WHITE	WOOD	0.0		
L-14			CHAIR RAIL	WHITE	WOOD	0.0		
L-15			BASEBOARD	WHITE	WOOD	0.0		
L-16			WINDOW SILL, APRON, AND CASING	WHITE	WOOD	0.0/0.0/0.0		
L-17			WINDOW INNER STOPS	WHITE	WOOD	0.0		
L-18			WINDOW SASH	WHITE	VINYL	0.0		
L-19			HEATER AND ASSOC. PIPING	GREEN	METAL	0.0/0.0		
L-20	SECOND FLOOR; BUNK #3 CLOSET		WALLS	OFF WHITE	DRYWALL / PLASTER	0.0		TWO CLOSETS

D = Drywall; P = Plaster; W = Wood; M = Metal; C = Concrete; B = Brick; V = Vinyl; CER = Ceramic; O = Other (indicate material). Results expressed as mg/cm² (milligrams per square centimeter)

ENVIRONMENTAL LEAD-BASED PAINT XRF RESULTS

 HALEY WARD <small>CFS</small>	CLIENT: SITE: BLDG:	AIR QUALITY MANAGEMENT SOUTH PORTLAND FIRE DEPARTMENT INTERIOR	DATE: HALEY WARD #: Page:	1/22/2021 11490.003-01 2 of 8
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XRF # RMD LPA-1 #3305; ME Radiation License #31223 **Inspector Signature:** Deborah A. Kasik/LR#0003

FIELD ID #	SAMPLE LOCATION	SIDE	COMPONENT(S)	COLOR	SUBSTRATE TYPE:	RESULTS mg/cm ²	CONDITION	NOTES:
L-21	SECOND FLOOR; BUNK #3 CLOSET		BASEBOARD	TAN	WOOD	0.0		VINYL BASEBOARD ATTACHED TO WOOD BB
L-22			DOOR CASING AND JAMB	WHITE	WOOD	0.0/0.0		
L-23			POCKET DOORS	STAIN	WOOD	0.0		
L-24			SHELVES/SUPPORTS	STAIN	WOOD	0.0		
L-25			DOOR CASING AND JAMB TO MAIN AREA	NATURAL	WOOD	0.0		
L-26	SECOND FLOOR; PANTRY		CEILING	WHITE	DRYWALL	0.0		
L-27			WALLS	YELLOW	DRYWALL	0.0/0.0/0.1		
L-28			SHELVES	CREAM	WOOD	0.0		
L-29			HEATER / PIPING	TAN	METAL	0.0		
L-30			WINDOW TRIM	WHITE	WOOD	0.0		
L-31	SECOND FLOOR; MEN'S ROOM		CEILING	WHITE	DRYWALL	0.0		
L-32			WALLS	CREAM	DRYWALL	0.0/0.0		
L-33			WINDOW TRIM	WHITE	WOOD	0.0/0.0/0.0		
L-34			HEATER	TAN	METAL	0.1/0.0		
L-35			WINDOW SASH	WHITE	VINYL	0.0		
L-36			EXTERIOR WINDOW TRIM	NO ID	WOOD	0.0		READING TAKEN THROUGH METAL COILSTOCK
L-37			ACCESS PANEL TRIM	TAN	METAL	0.0		
L-38	SECOND FLOOR; LAUNDRY		WALLS - UPPER	GREEN	DRYWALL / PLASTER	0.0/0.0		LOWER WALL IS COVERED
L-39	SECOND FLOOR; KITCHEN		CEILING	WHITE	DRYWALL / PLASTER	0.0/0.0		
L-40			WALLS	PALE BLUE	DRYWALL / PLASTER	0.0/0.0		

D = Drywall; P = Plaster; W = Wood; M = Metal; C = Concrete; B = Brick; V = Vinyl; CER = Ceramic; O = Other (indicate material). Results expressed as mg/cm² (milligrams per square centimeter)

ENVIRONMENTAL LEAD-BASED PAINT XRF RESULTS

	CLIENT: SITE: BLDG:	AIR QUALITY MANAGEMENT SOUTH PORTLAND FIRE DEPARTMENT INTERIOR	DATE: HALEY WARD #: Page:	1/22/2021 3 of 8
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XRF # RMD LPA-1 #3305; ME Radiation License #31223 **Inspector Signature:** Deborah A. Kasik/LR#0003

FIELD ID #	SAMPLE LOCATION	SIDE	COMPONENT(S)	COLOR	SUBSTRATE TYPE:	RESULTS mg/cm ²	CONDITION	NOTES:
L-41	SECOND FLOOR; KITCHEN		CABINETS - DOORS AND FRAME	WHITE	WOOD	0.0/0.0		
L-42			CABINETS - INTERIOR SHELVES	BLUE	WOOD	0.0/0.0		
L-43			DOOR CASING AND JAMB	WHITE	WOOD	0.0/0.0		TO MINI HALLWAY
L-44	SECOND FLOOR; THEATER (TV ROOM)		CEILING	WHITE	DRYWALL	0.0/0.0		
L-45			CEILING TRIM	WHITE	WOOD	0.2		
L-46			WALLS	GRAY	DRYWALL	0.0/0.0		
L-47			BASEBOARDS	WHITE	WOOD	0.0/0.0		
L-48	SECOND FLOOR; STAIRS TO ATTIC		WALLS - UPPER	BARE	BRICK	0.0		
L-49			WALLS - LOWER	CREAM	PLASTER	0.0		
L-50			STAIR SYSTEM	NO ID	WOOD	0.0/0.0		
L-51	ATTIC SPACE		WALLS	BARE	BRICK	0.0		
L-52			FLASHING	BLACK	OTHER	>9.9	GOOD	VISIBLE AROUND PERIMETER WALLS
L-53			LADDER TO ROOF	SILVER	METAL	0.0/0.0		
L-54			STRUCTURAL SUPPORTS	BLACK	METAL	0.0/0.0		BRIDGING SUPPORTS
L-55	STAIRS TO FIRST FLOOR		WALLS - UPPER AND LOWER	OFF WHITE	DRYWALL / PLASTER	0.0/0.0/0.0/0.0		
L-56			CHAIR RAIL	WHITE	WOOD	0.0		
L-57			STAIR RISERS	WHITE	METAL	0.0		
L-58			STAIR MOPBOARD	WHITE	METAL	0.0/0.0		
L-59			STAIR NEWEL POST AND CAP	WHITE	METAL	0.0/0.0		
L-60			STAIR FASCIA	WHITE	WOOD	0.0		

D = Drywall; P = Plaster; W = Wood; M = Metal; C = Concrete; B = Brick; V = Vinyl; CER = Ceramic; O = Other (indicate material). Results expressed as mg/cm² (milligrams per square centimeter)

ENVIRONMENTAL LEAD-BASED PAINT XRF RESULTS

 HALEY WARD <small>CES, INC.</small>	CLIENT: SITE: BLDG:	AIR QUALITY MANAGEMENT SOUTH PORTLAND FIRE DEPARTMENT INTERIOR	DATE: HALEY WARD #: Page:	1/22/2021 11490.003-01 4 of 8
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XRF # RMD LPA-1 #3305; ME Radiation License #31223 **Inspector Signature:** Deborah A. Kasik/LR#0003

FIELD ID #	SAMPLE LOCATION	SIDE	COMPONENT(S)	COLOR	SUBSTRATE TYPE:	RESULTS mg/cm ²	CONDITION	NOTES:
L-61	STAIRS TO FIRST FLOOR CONT'D		WINDOW SILL	WHITE	WOOD	0.0		
L-62			WINDOW CASING, APRON, AND STOPS	WHITE	WOOD	0.0/0.0/0.0		
L-63	FIRST FLOOR; HALLWAY (BASE OF STAIRS)		CEILING	WHITE	PLASTER	0.0		
L-64			WALLS - UPPER AND LOWER	OFF WHITE	PLASTER	0.0/0.0		
L-65			CHAIR RAIL	WHITE	WOOD	0.0		
L-66			BASEBOARDS	WHITE	WOOD	0.1/0.0		
L-67			HEATER	OFF WHITE	METAL	0.0		
L-68			INTERIOR WINDOW TRIM	NO ID	WOOD	0.0/0.0		
L-69			INTERIOR WINDOW FRAMES	WHITE	WOOD	0.0/0.0		
L-70			EXIT DOOR	GREEN	METAL	0.0		
L-71			EXIT DOOR CASING AND JAMB	GREEN	METAL	0.0		
L-72			OVERHANG TRANSOM	GREEN	METAL	0.0		
L-73			STAIR STRINGER	WHITE	METAL	0.0		
L-74			CEILING TRIM	WHITE	WOOD	0.2		
L-75	FIRST FLOOR; OFFICE #1		WALLS - UPPER	OFF WHITE	PLASTER	0.0		
L-76			WALLS - LOWER	GREEN	WOOD	0.0		
L-77			CHAIR RAIL	WHITE	WOOD	0.0		
L-78			BASEBOARDS	WHITE	WOOD	0.0		
L-79			WINDOW TRIM	WHITE	WOOD	0.0/0.0		
L-80			WINDOW SASHES	WHITE	VINYL	0.0		

D = Drywall; P = Plaster; W = Wood; M = Metal; C = Concrete; B = Brick; V = Vinyl; CER = Ceramic; O = Other (indicate material). Results expressed as mg/cm² (milligrams per square centimeter)

ENVIRONMENTAL LEAD-BASED PAINT XRF RESULTS

 HALEY WARD <small>CI&S</small>	CLIENT: SITE: BLDG:	AIR QUALITY MANAGEMENT SOUTH PORTLAND FIRE DEPARTMENT INTERIOR	DATE: HALEY WARD #: Page:	1/22/2021 11490.003-01 5 of 8
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XRF # RMD LPA-1 #3305; ME Radiation License #31223	Inspector Signature: <i>Deborah A. Kasik/LR#0003</i>
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FIELD ID #	SAMPLE LOCATION	SIDE	COMPONENT(S)	COLOR	SUBSTRATE TYPE:	RESULTS mg/cm ²	CONDITION	NOTES:
L-81	FIRST FLOOR; OFFICE #1 CONT'D		DOOR	STAIN	WOOD	0.0		
L-82			DOOR CASING AND JAMB	WHITE	WOOD	0.0/0.0		
L-83	FIRST FLOOR; OFFICE #2		WALLS	OFF WHITE	PLASTER	0.0/0.0		
L-84			CEILING ABOVE CEILING TILES	WHITE	PLASTER	0.0		
L-85			BASEBOARDS	STAIN	WOOD	0.0		
L-86			HEATER AND STEAM TRAP	NO ID	METAL	0.0/0.0		
L-87			WINDOW TRIM	WHITE	WOOD	0.0/0.0		
L-88			DOOR CASING AND JAMB	STAIN	WOOD	0.0		
L-89	FIRST FLOOR; OFFICE #3		WALLS	OFF WHITE	PLASTER	0.0/0.0		CEILING TILES PRESENT
L-90			BASEBOARDS	STAIN	WOOD	0.0		
L-91			WINDOW TRIM	OFF WHITE	WOOD	0.0/0.0		
L-92			DOOR CASING AND JAMB	STAIN	WOOD	0.0/0.0		
L-93	FIRST FLOOR; HALLWAY NEAR OFFICE #3		WALLS	LT CREAM	PLASTER	0.0		
L-94	FIRST FLOOR; HAZ MAT STORAGE		WALLS	WLLPPR	DRYWALL / PLASTER	0.0/0.0		
L-95			HEATER AND STEAM TRAP	YELLOW	METAL	0.0/0.1		
L-96			CLOSET CEILING	WHITE	PLASTER	0.2		
L-97			CLOSET WALLS	GREEN	PLASTER	0.0		
L-98	FIRST FLOOR; BATH NEAR HAZ STORAGE		WALLS - UPPER	OFF WHITE	PLASTER	0.0/0.0		LOWER WALL COVERED WITH MARLITE
L-99			DOOR AND TRIM	STAIN	WOOD	0.0		
L-100			SINK	WHITE	GLAZING	3.4	GOOD	

D = Drywall; P = Plaster; W = Wood; M = Metal; C = Concrete; B = Brick; V = Vinyl; CER = Ceramic; O = Other (indicate material). Results expressed as mg/cm² (milligrams per square centimeter)

ENVIRONMENTAL LEAD-BASED PAINT XRF RESULTS

 HALEY WARD <small>NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES</small>	CLIENT: SITE: BLDG:	AIR QUALITY MANAGEMENT SOUTH PORTLAND FIRE DEPARTMENT INTERIOR	DATE: HALEY WARD #: Page:	1/22/2021 11490.003-01 6 of 8
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XRF # RMD LPA-1 #3305; ME Radiation License #31223 **Inspector Signature:** Deborah A. Kasik/LR#0003

FIELD ID #	SAMPLE LOCATION	SIDE	COMPONENT(S)	COLOR	SUBSTRATE TYPE:	RESULTS mg/cm ²	CONDITION	NOTES:
L-101	FIRST FLOOR; BATH NEAR HAZ CONT'D		HEATER	OFF WHITE	METAL	0.0		
L-102	FIRST FLOOR; FIRE ENGINE GARAGE		FLOOR	RED	CONCRETE	0.0/0.0/0.0		
L-103			WALLS - UPPER	TAN	BRICK	0.0/0.0/0.0/0.0		
L-104			WALLS - LOWER	TAN	CONCRETE	0.0/0.0		
L-105			CEILING	WHITE	CONCRETE	0.0		
L-106	FIRST FLOOR; BATH AT REAR OF GARAGE		WALLS - UPPER	CREAM / BROWN	BRICK	0.0		LOWER WALL - MARLITE
L-107			CHAIR RAIL	CREAM	WOOD	0.0		
L-108			DOOR AND TRIM TO EMS AREA	CREAM	WOOD	0.0		
L-109	FIRST FLOOR; FIRE ENGINE GARAGE		LALLY COLUMNS	CREAM / YELLOW	METAL	0.0/0.0		
L-110			WINDOW TRIM	WHITE	WOOD	0.0/0.0		
L-111			FIRE DOOR TRIM	WHITE	WOOD	0.0/0.0		
L-112			PIPING	CREAM	METAL	0.0		
L-113	FIRST FLOOR; REAR FIRE CHIEF GARAGE		WALLS	CREAM	BRICK	0.0/0.0		METAL CORRUGATED CEILING
L-114			WALLS	BLACK / TAN	BRICK	0.0/0.0		
L-115			GARAGE DOOR TRIM	CREAM	WOOD	0.0		
L-116			DOOR TO FIRE ENGINE GARAGE	CREAM	WOOD	0.0		
L-117			DOOR CASING AND JAMB	CREAM	WOOD	0.0/0.0		
L-118			SLOP SINK	WHITE	GLAZING	>9.9	GOOD	
L-119	FIRST FLOOR; STORAGE WITH LOFT		TEXTURED CEILING	WHITE	DRYWALL	0.0		
L-120			WALLS	CREAM	BRICK	0.0/0.0		

D = Drywall; P = Plaster; W = Wood; M = Metal; C = Concrete; B = Brick; V = Vinyl; CER = Ceramic; O = Other (indicate material). Results expressed as mg/cm² (milligrams per square centimeter)

ENVIRONMENTAL LEAD-BASED PAINT XRF RESULTS

 HALEY WARD <small>NEW HAMPSHIRE CDS</small>	CLIENT: SITE: BLDG:	AIR QUALITY MANAGEMENT SOUTH PORTLAND FIRE DEPARTMENT INTERIOR	DATE: HALEY WARD #: Page:	1/22/2021 11490.003-01 7 of 8
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XRF # RMD LPA-1 #3305; ME Radiation License #31223	Inspector Signature:	Deborah A. Kasik/LR#0003
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FIELD ID #	SAMPLE LOCATION	SIDE	COMPONENT(S)	COLOR	SUBSTRATE TYPE:	RESULTS mg/cm ²	CONDITION	NOTES:
L-121	FIRST FLOOR; STORAGE WITH LOFT CONT'D		DOOR TRIM	CREAM	WOOD	0.0		
L-122			STRUCTURAL STEEL	RED	METAL	0.0/0.0		
L-123			WINDOW TRIM	WHITE	WOOD	0.0		
L-124	FIRST FLOOR; FIRE AND RESCUE		WALLS	WHITE / TAN	BRICK	0.0		
L-125			WINDOW TRIM	WHITE	WOOD	0.0		
L-126			GARAGE DOOR FRAMES	TAN	WOOD	0.0		
L-127	BASEMENT; BOILER RM (BENEATH OFFICES)		FLOOR	RED	CONCRETE	0.0/0.0		
L-128			CEILING	OFF WHITE	CONCRETE	0.0		
L-129			WALLS AROUND BASEMENT WINDOW	WHITE	CONCRETE	0.0		
L-130			WALLS NEAR FURNACE	WHITE	CONCRETE	0.0		
L-131			CHIMNEY WALLS	WHITE	CONCRETE	0.0		
L-132			FIRE DOOR	RED	METAL	>9.9	GOOD	
L-133			FIRE DOOR CASING AND JAMB	RED	METAL	0.0/0.0		
L-134			STRIPE ON FLOOR	YELLOW	CONCRETE	0.0		
L-135	STAIRS TO BOILER ROOM		CEILING	OFF WHITE	PLASTER	0.0		
L-136			WALLS - LOWER	OFF WHITE	CONCRETE	0.0		
L-137			WALLS - UPPER	TAN	BRICK	0.0		
L-138			WINDOW TRIM	WHITE	METAL	0.0		
L-139			HANDRAIL	MUSTARD GREEN / NAT	WOOD	0.0/0.0		
L-140			DOOR/TRIM		WOOD	0.0		

D = Drywall; P = Plaster; W = Wood; M = Metal; C = Concrete; B = Brick; V = Vinyl; CER = Ceramic; O = Other (indicate material). Results expressed as mg/cm² (milligrams per square centimeter)

ENVIRONMENTAL LEAD-BASED PAINT XRF RESULTS

 HALEY WARD <small>NEW HAMPSHIRE CDS</small>	CLIENT: SITE: BLDG:	AIR QUALITY MANAGEMENT SOUTH PORTLAND FIRE DEPARTMENT INTERIOR AND EXTERIOR	DATE: HALEY WARD #: Page:	1/22/2021 11490.003-01 8 of 8
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XRF # RMD LPA-1 #3305; ME Radiation License #31223	Inspector Signature:	Deborah A. Kasik/LR#0003
---	-----------------------------	--------------------------

FIELD ID #	SAMPLE LOCATION	SIDE	COMPONENT(S)	COLOR	SUBSTRATE TYPE:	RESULTS mg/cm ²	CONDITION	NOTES:
L-141	BASEMENT; EXERCISE ROOM		WALLS	PURPLE	CONCRETE	0.0		
L-142			FLOOR	GRAY	CONCRETE	0.0		
L-143			VERTICAL STRUCTURAL STEEL	RED	METAL	0.0		
L-144			DOOR CASING AND JAMB	TAN	WOOD	0.0		
L-145	BASEMENT; HALLWAY		WALLS	LT BLUE	CONCRETE	0.0		
L-146			FLOOR	GRAY	CONCRETE	0.0		INCLUDES WOOD RAMP
L-147	BASEMENT; BATHROOM		WALLS	CREAM	DRYWALL	0.0		
L-148			BASEBOARDS	WHITE	WOOD	0.0		
L-149			DOOR CASING AND JAMB	WHITE	WOOD	0.0		
L-150	BASEMENT; BOILER ROOM		FLOOR	GRAY	CONCRETE	0.0		
L-151			CEILING	WHITE	CONCRETE	0.0		
L-152			WALLS	OFF WHITE	CONCRETE	0.0		
L-153			CHIMNEY WALL	WHITE	CONCRETE	0.0		CMU BLOCK
L-154	BASEMENT; TRAINING, CONFERENCE, OFFICES		WALLS	MULTI	DRYWALL	0.0/0.0/0.0/0.0		
L-155			CEILINGS	WHITE	DRYWALL	0.0		
L-156			FLOORS	GRAY	CONCRETE	0.0		
L-157	EXTERIOR		FOUNDATION	CREAM	CONCRETE	0.0		
L-158			COILSTOCK ON TRIM	GREEN	METAL	0.0		
L-159			DOOR OVERHANGS	GRAY	CONCRETE	0.0		
L-160			DOOR AND TRIM	GREEN	METAL	0.0/0./0.0		

D = Drywall; P = Plaster; W = Wood; M = Metal; C = Concrete; B = Brick; V = Vinyl; CER = Ceramic; O = Other (indicate material). Results expressed as mg/cm² (milligrams per square centimeter)

PHOTO DOCUMENTATION

Photo Oder – top to bottom left, top to bottom right



Water stained ceiling tile (Senior Man's Office)



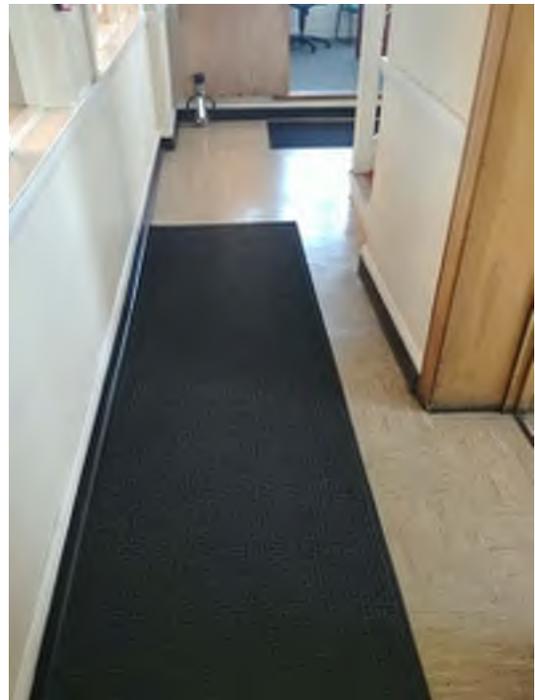
Water stained ceiling tile (Senior Man's Office)



Peeling Paint in Bays



Peeling Paint in Bays



Brown w/dark brown speck 12x12 Floor Tiles



Brown w/dark brown speck 12x12 Floor Tiles



Flooring in Stairs to Basement



Water damaged ceiling in EMS Storage



Floor Tiles in EMS Storage



View of Boiler Room



Beige & Brown 12x12 Floor Tiles in Senior Man's Office



Beige & Brown 12x12 Floor Tiles in 2nd floor Hallway



Floor Tile in Senior Man's Bathroom



Water damage in 2nd floor Hallway



Water damage in 2nd floor Hallway, plaster above ceiling tiles



Water damage in Stairwell to Attic



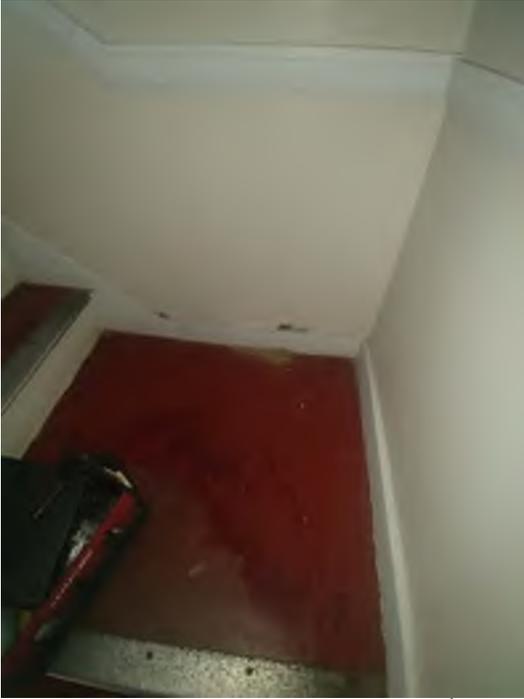
Caulking



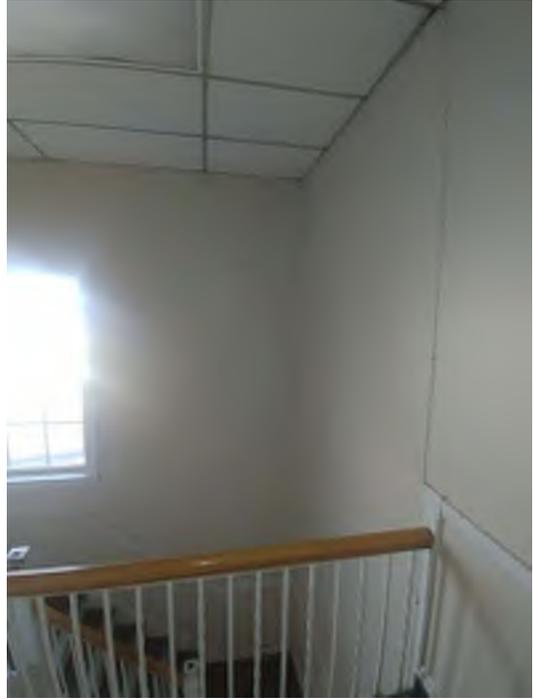
9x9 Floor Tiles in Attic



Caulking



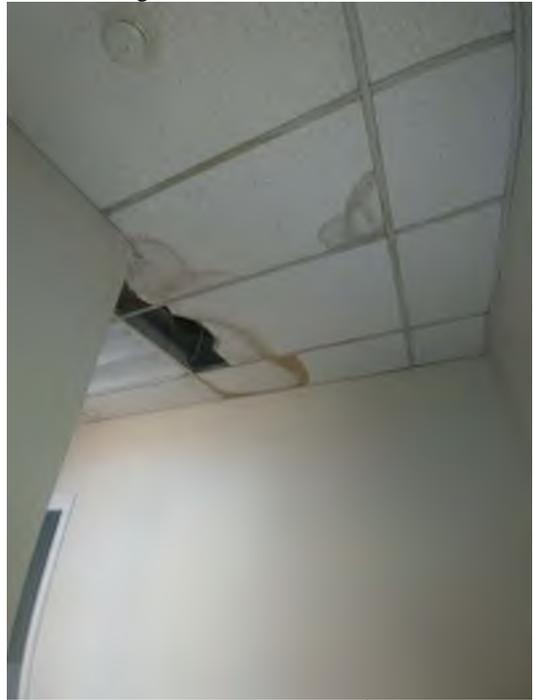
Water damage in Stairwell Landing (to 2nd floor), location of sample T1



Water damage in Stairwell



Close-up image of previous photo



Water damaged ceiling tiles in 2nd floor Hallway



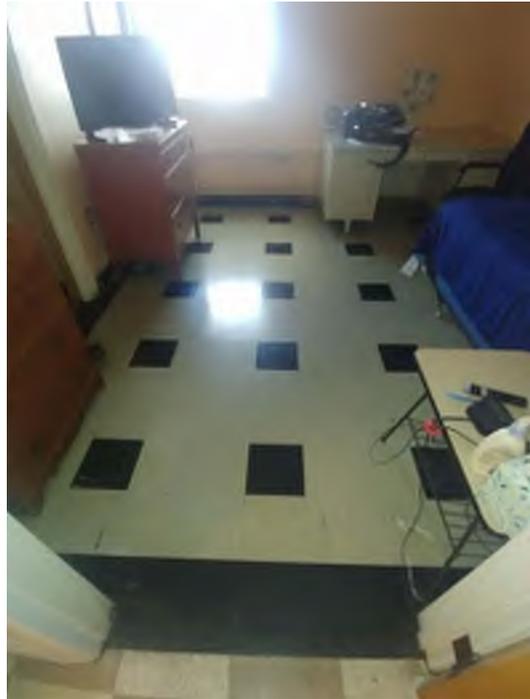
Water damage 2nd floor Hallway



View of Purple 9x9 Tiles on wall in 2nd floor Bathroom



View of Blue 9x9 Floor Tiles, 2nd floor



View of Beige and Black 9x9 Floor Tiles in 2nd floor



View of Red 9x9 Floor Tiles in 2nd floor



View of Grey 9x9 Floor Tiles, 2nd floor

Appendix D
Grant-Hays Codes Assessment Plan

CODE ANALYSIS – CENTRAL FIRE STATION

NFPA 101 Life Safety Code - 2018 Edition

Building Classification: Business/Storage – 14,300 sf gross area
 Building Occupancy Classifications: Business (326 sf), Storage (7,360 sf), Residential (2,331 sf), Assembly (2,109 sf)
 Utility & Circulation (2,174 sf), Kitchen (110 sf)
 Hazard Classification: Ordinary Hazard
 Construction Type: Type III (000)
 Occupant Loads: Business @ 150 sf/occ = 3
 Storage @ 500sf/occ = 15
 Residential @ 200sf/occ = 12
 Assembly @ 15sf/occ = 141 (@7sf/occ = 302)
 Kitchen @ 100sf/occ = 2
 Total Occupant Load = 173 occupants (334)

Egress Criteria	Business	Storage	Residential	Assembly
Max. Allowable Travel Distance:	200'	200'	100'	200'
Max. Allowable Common Path:	75'	50'	35'	20'/75'
Max. Dead End Corridor Length:	20'	50'	35'	20'
Minimum Egress Corridor Width:	44"	44"	44"	44"
Minimum Number of Required Exits	2	2	2	2
Minimum Horz. Egress Enclosure rating:	1 hr	1 hr	1 hr	1 hr
Minimum Separation of Exits:	0.5 diagonal distance	Same	Same	Same
Fire Escapes as means of egress:	Allowed	Allowed	Allowed	Allowed
Minimum Egress Door Width:	36"	36"	36"	36"

Protection Systems Criteria

Exit Lighting:	Required	Required	Required	Required
Emergency Lighting:	Required	Required	Required	Required
Fire Alarm System:	Required	Required	Required	Required
Fire Sprinkler System:	Required	Required	Required#	Required
Portable Fire Extinguishers:	Required	Required	Required	Required
Smoke Detection System	Required	Required	Required*	Required
Carbon Monoxide Alarm/Detection System	Required	Required	Required*	Required
Smoke Partitions between Bunk Rooms	NA	NA	Required	NA
Exit Device Hardware	Required	Required	Required	Required

“#” Residential occupancy not allowed above Storage occupancy without a fire suppression system.

“*” Mixed Use with Residential component – all alarms and detectors shall be interconnected throughout entire building

Separation of Use Rating:	2 hours
Janitor, Mech, Stor Rating:	1 hour
Kitchen – NFPA Exhaust Hood with Suppression	Required at Range; K-type portable fire extinguisher also required
Minimum Headroom – Occupied Rooms:	7’-6”
Minimum Stair width:	44” clear
Maximum Riser height:	7”
Minimum Tread width:	11”
Minimum Headroom - Stairs:	6’-8”
Maximum ht between landings:	12’-0”
Handrail height:	34”-38” @ 42” guardrail
Handrail top extension:	12” horz.
Handrail bottom extension:	11” angled + 12” horz.
Handrail diameter:	1-1/4” O.D.
Maximum baluster open space:	less than 4”

Interior Finishes Class:

Exits	A or B	A or B	A or B	A or B
All other spaces	A, B, or C			

2015 INTERNATIONAL BUILDING CODE

Building Classification:	Business/Storage – 14,300 sf gross area 2-Story Non-Sprinkled Building
Building Occupancy Classifications:	Business (326 sf), Storage (7,360 sf), Residential (2,331 sf), Assembly (2,109 sf) Utility & Circulation (2,174 sf), Kitchen (110 sf)
Hazard Classification:	Ordinary Hazard
Construction Type:	Type IIIB – Protected/Unprotected/Sprinkled
Occupant Loads:	Business (B) @ 100 sf/occ = 4 Storage (S-2) @ 300sf/occ = 25 Residential (R-2) @ 50sf/occ = 47 Assembly (A-2/A-3) @ 15sf/occ = 141 (@7sf/occ = 302) Utility (U) (Mechanical) @ 300sf/occ = 8 Kitchen @ 200sf/occ = 1 Total Occupant Load = 226 occupants (387)

Building Limitations

Construction Type:	IIIB - Sprinkled / Multi-Story
Maximum Height:	55'
Maximum Floors:	2 @ A; 3 @ B; 4 @ R; 3 @ S
Maximum Area:	9,500 @ A; 19,000 @ B; 16,000 @ R; 26,000 @ S

Fire Resistance Ratings

	IIIB
Primary Structural Frame	None
Load Bearing Exterior Walls:	2 Hours
Load Bearing Interior Walls	None
Floor Structure	None
Roof Structure	None
Fire Separation of Uses:	2 Hours @ A/R, A/B, R/S, R/B & S/R; 1 Hour @ A/S
Exit Corridors:	1 hour
Other Assemblies:	1 hour at Utility

Building Egress Criteria

Minimum Number of Exits:	2
Minimum Separation of Exits:	0.5 diagonal

Maximum Dead End Corridor Length: 20'
Maximum Common Travel Path: 75'
Maximum Travel Distance: 200' @ A-2/A-3 & R-2; 200' @ B; 300' @ S-2

Building Dimensional Criteria

Minimum Headroom – Occupied Rooms: 7'-6"
Minimum Stair width: 44" clear
Maximum Riser height: 7"
Minimum Tread width: 11"
Minimum Headroom - Stairs: 6'-8"
Maximum ht. between landings: 12'-0"
Handrail height: 34"-38" @ 42" guardrail
Handrail top extension: 12" horz.
Handrail bottom extension: 11" angled + 12" horz.
Handrail diameter: 1-1/4" O.D.
Maximum baluster open space: less than 4"

Fire Protection Systems Criteria

Fire Alarm System: Required (mixed use)
Fire Sprinkler System: Required (mixed use & Assembly occupancy of Second Floor))
Portable Fire Extinguishers: Required (with K-type in Kitchen)
Exit Lighting: Required
Emergency Lighting: Required
Exit (Panic) Devices: Required

Building Live Load:

Assembly: 100 psf
Dining Rooms: 100 psf
Offices: 50 psf
Residential: 40 psf
Corridors: 100 psf
Storage: 125 psf @ light/250 psf @ heavy

Interior Finish Requirements (Sprinkled)	Business	Assembly	Residential	Storage
Interior Stairs & Exit Passageways	Class B	Class B	Class C	Class C
Corridors	Class B	Class B	Class C	Class C
Rooms & enclosed spaces	Class C	Class C	Class C	Class C

Maine State Plumbing Code/UPC Minimum Fixture Requirements

Occupancy Classification: Mixed – Business/Residential/Storage/Assembly
Occupancy Area: 14,300 sf (gross)
Occupancy Load: 226; Actual is 10 per shift; 40 for Trainings/Meetings

Occupants: 5 MALE/5 FEMALE for R
20 MALE/20 FEMALE for A, B, & S

<u>R FIXTURES</u>	<u>TOILETS</u>	<u>URINALS</u>	<u>LAVS</u>	<u>SHOWERS</u>
Men	1	1	1	1
Women:	1	0	1	1
TOTAL	2	1	2	2
<u>A, B & S FIXTURES</u>	<u>TOILETS</u>	<u>URINALS</u>	<u>LAVS</u>	<u>SHOWERS</u>
Men	2	1	1	0
Women:	3	0	1	0
TOTAL (Use B & S-2)	5	1	2	0
TOTAL FOR BUILDING	7	2	4	2

Drinking Fountains: 1 per 150 occupants – 1 required
Service Sink: 1 per floor – 2 required

MUBEC (Maine Uniform Building Energy Code) MINIMUM INSULATION VALUES

Per 2009 IECC; Table 502.1.2, 502.2(1) and 502.3

<u>ZONE 6A</u>	<u>R-VALUE (MIN)</u>	<u>U-FACTOR (MIN)</u>	<u>SHGC</u>	<u>PROPOSED R</u>	<u>PROPOSED U</u>
Exterior wall	18.5	0.054	NA	30.0	0.031
Roof (above deck)	20.0c.i.	0.048	NA	40.0	0.025
Slab (24" band)	15.0	0.052	NA	15.0	0.052
Slab (Heated)	12.5c.i.	0.064	NA	15.0	0.052
Frost Wall	7.5	0.133	NA	7.5	0.133
Doors – Solid	2.0	0.50	NA	10.0	0.100
Doors – Glazed	1.25	0.80	NR	2.9	0.350
Windows	2.9	0.35	NR	2.9	0.350
Storefront	2.2	0.45	NR	2.9	0.350

End of Analysis

CODE ANALYSIS – PUBLIC SAFETY & DISPATCH BUILDINGS

NFPA 101 Life Safety Code - 2018 Edition

Building Classification:	Business (Existing) 25,560 sf 12,220 sf – Public Safety Building No Sprinkler System / No Fire Alarm System 13,340 sf – Dispatch Building Sprinkler System / Fire Alarm System
Hazard Classification:	Ordinary Hazard
Construction Type:	Type III (000)
Occupant Loads:	Business @ 150 sf/occupant = 171 occupants
Janitor, Mech, Storage Rating:	1 hour
Stair Rating:	1 hour
Elevator Shaft Rating:	1 hour
Minimum Stair width:	44" clear
Maximum Riser height:	7"
Minimum Tread width:	11"
Minimum Headroom:	6'-8" at stairs; 7'-6" at occupied areas
Maximum ht. between landings:	12'-0"
Handrail height:	34"-38" @ 42" guardrail
Handrail top extension:	12" horz.
Handrail bottom extension:	11" angled + 12" horz.
Handrail diameter:	1-1/4" O.D.
Maximum baluster open space:	less than 4"

Building Uses

Business

“(#)” denotes if building is fully sprinkled

Max. Allowable Travel Distance:	200' (300')
Max. Allowable Common Path:	75' (100')
Max. Dead End Corridor Length:	20' (50')
Minimum Egress Corridor Width:	44"
Minimum Number of Required Exits	2
Minimum Horz Egress Enclosure rating:	1 hr (none)
Minimum Separation of exits:	0.5 diagonal' (0.33)
Minimum Egress Door Width:	36"

Exit Lighting:	Required
Emergency Lighting:	Required
Fire Alarm System:	Required
Fire Sprinkler System:	Not Required
Portable Fire Extinguishers:	Required
Exit Devices/Panic Hardware	Required

2015 International Building Code

“(x)” denotes if building is fully sprinkled

Use Group Classification:	Business - Use Group B – 25,560 sf 12,220 sf – Public Safety Building No Sprinkler System / No Fire Alarm System 13,340 sf – Dispatch Building Sprinkler System / Fire Alarm System
Construction:	Type III – Combustible, Non-Combustible, Unprotected
Occupant Loads:	B @ 100 sf/occupant = 256 occupants
Janitor, Mech & Storage Rooms:	1 hour

Building Limitations

Construction Type:	IIIB Unprotected
Maximum Height:	55’ (75)
Maximum Stories:	3 (4)
Maximum Area / Floor:	19,000 (57,000 for multiple stories)
Actual Area/Height:	2 stories; less than 50’ 25,560 sf

Fire Resistance Ratings

Primary Structure:	None
Load Bearing Exterior Walls:	2 Hours
Load Bearing Interior Partitions:	None
Floor Structure:	None
Roof Structure:	None
Elevator Shafts:	1 hour (less than 3 stories)
Fire Separation Exits (Stairs):	1 hour (less than 3 stories)
Fire Separation of Uses:	2 hours (1 hour)
Exit Corridors:	1 hour (none)
Minimum Number of Exits:	2

Maximum Dead-End Corridor Length:	20' (50')
Maximum Travel Distance:	200' (300')
Minimum Corridor Width:	44"
Minimum Stair Width:	44"
Maximum Riser Height:	7"
Minimum Tread Depth:	11"
Minimum Ramp Width:	44"
Maximum Ramp Pitch:	1:12
Handrails:	Same as NFPA 101
Minimum Ceiling Height:	7'-6"

Fire Alarm System:	Required
Fire Sprinkler System:	Required (Area exceeds 19,000 gross sf) Not Required at existing Public Safety with 2 hour separation between Public Safety and Dispatch Buildings
Portable Fire Extinguishers:	Required
Exit Lighting	Required
Emergency Lighting	Required

Building Live Loads

Office:	50 psf
Lobbies:	100 psf
Corridors:	80 psf
Storage:	125 psf @ light; 250 psf @ heavy

Interior Finishes

Stairs, Ramps, Exit Passageways:	A (B)
Corridors and exit access to stairs/ramps	A (C)
Rooms and enclosed spaces	C (C)

Maine State Plumbing Code/UPC

Occupancy Classification: Business
IBC Table Occupants: 256

Business (Bus): 256 Occupants (128 male/128 female)				
<u>FIXTURES</u>	<u>TOILETS</u>	<u>URINALS</u>	<u>LAVS</u>	<u>SHOWERS</u>
Men	5	3	4	NR
Women:	5	0	4	NR
TOTAL	10	3	8	0

(1) Drinking Fountain or Water Fill Station for public

MUBEC (Maine Uniform Building Energy Code) MINIMUM INSULATION VALUES

Per 2009 IECC; Table 502.1.2, 502.2(1) and 502.3

<u>ZONE 6A</u>	<u>R-VALUE</u>	<u>U-FACTOR</u>	<u>SHGC</u>
Roof (above deck)	20.0 ci	0.048	NA
Exterior Wall	13+5.6 ci	0.054	NA
Mass Wall (above Grade)	13.3 ci	0.077	NA
Slab (24" band)	15.0	0.052	NA
Frost Wall	7.5 ci	0.133	NA
Doors – Swinging	1.42	0.70	NA
Doors – Overhead	2.00	0.50	NA
Windows	2.9	0.35	NR
Storefront	2.2	0.45	NR

End of Analysis

SEAL



REVISIONS

PROJECT NAME

CITY OF SOUTH PORTLAND
PUBLIC SAFETY BUILDING

30 ANTHONY STREET
 S. PORTLAND, MAINE 04106

SHEET

PUBLIC SAFETY BUILDING
BASEMENT CODE COMPLIANCE PLAN

DATE
 10 FEB 2021

SCALE
 3/16"=1'-0"

DRAWN
 MFH / mgk

JOB NO.
 180608

SHEET
AC-1

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CODE ANALYSIS

NFPA 101 Life Safety Code - 2015 Edition
 (#) denotes if building is fully sprinkled

Building Classification: Business (Existing) 25,560 sf
 12,220 sf - Public Safety Building
 No Sprinkler System / No Fire Alarm System
 13,340 sf - Dispatch Building
 Sprinkler System / Fire Alarm System
 Hazard Classification: Ordinary Hazard
 Type III (000)
 Occupant Loads: Business @ 100 sf/occupant = 256 occupants
 Janitor, Mech, Storage Rating: 1 hour
 Stair Rating: 1 hour
 Elevator Shaft Rating: 1 hour
 Minimum Stair width: 44" clear
 Maximum Riser height: 7"
 Minimum Tread width: 11"
 Minimum Headroom: 6'-8" at stairs; 7'-6" at occupied areas
 Maximum ht between landings: 12'-0"
 Handrail height: 34"-38" @ 42" guardrail
 Handrail top extension: 12" horz
 Handrail bottom extension: 11" angled + 12" horz
 Handrail diameter: 1-1/4" O.D.
 Maximum baluster open space: less than 4"

Building Uses: Business
 (#) denotes if building is fully sprinkled
 Max. Allowable Travel Distance: 200' (300)
 Max. Allowable Common Path: 75' (100)
 Max. Dead End Corridor Length: 20' (50)
 Minimum Egress Corridor Width: 44"
 Minimum Number of Required Exits: 2
 Minimum Horz Egress Enclosure rating: 1 hr (none)
 Minimum Separation of exits: 0.5 diagonal (0.33)
 Minimum Egress Door Width: 36"

Exit Lighting: Required
 Emergency Lighting: Required
 Fire Alarm System: Required
 Fire Sprinkler System: Not Required
 Portable Fire Extinguishers: Required
 Exit Devices/Panic Hardware: Required

2015 International Building Code
 (#) denotes if building is fully sprinkled

Use Group Classification: Business - Use Group B - 25,560 sf
 12,220 sf - Public Safety Building
 No Sprinkler System / No Fire Alarm System
 13,340 sf - Dispatch Building
 Sprinkler System / Fire Alarm System
 Type III - Combustible, Non-Combustible.
 Construction: Unprotected
 Occupant Loads: B @ 100 sf/occupant = 256 occupants
 Janitor, Mech & Storage Rooms: 1 hour
 Building Limitations: IIB Unprotected
 Construction Type: 55' (75)
 Maximum Height: 3 (4)
 Maximum Stories: 19,000 (57,000 for multiple stories)
 Actual Area/Height: 2 stories; less than 50'
 25,560 sf

Fire Resistance Ratings
 Primary Structure: None
 Load Bearing Exterior Walls: 2 Hours
 Load Bearing Interior Partitions: None
 Floor Structure: None
 Roof Structure: None
 Elevator Shafts: 1 hour (less than 3 stories)
 Fire Separation Exits (Stairs): 1 hour (less than 3 stories)
 Fire Separation of Uses: 2 hours (1 hour)
 Exit Corridors: 1 hour (none)
 Minimum Number of Exits: 2
 Maximum Dead-End Corridor Length: 20' (50)
 Maximum Travel Distance: 200' (300)
 Minimum Corridor Width: 44"
 Minimum Stair Width: 44"
 Maximum Riser Height: 7"
 Minimum Tread Depth: 11"
 Minimum Ramp Width: 44"
 Maximum Ramp Pitch: 1:12
 Handrails: Same as NFPA 101
 Minimum Ceiling Height: 7'-6"

Fire Alarm System: Required
 Fire Sprinkler System: Required (Area exceeds 19,000 gross sf)
 Not Required if 2 hour separation between
 Public Safety and Dispatch Buildings

Portable Fire Extinguishers: Required
 Exit Lighting: Required
 Emergency Lighting: Required

Building Live Loads
 Office: 50 psf
 Lobbies: 100 psf
 Corridors: 80 psf
 Storage: 125 psf @ light; 250 psf @ heavy

Interior Finishes
 Stairs, Ramps, Exit Passageways: A (B)
 Corridors and exit access to stairs/ramps: A (C)
 Rooms and enclosed spaces: C (C)

Maine State Plumbing Code/UPC
 Occupancy Classification: Business
 IBC Table Occupants: 256

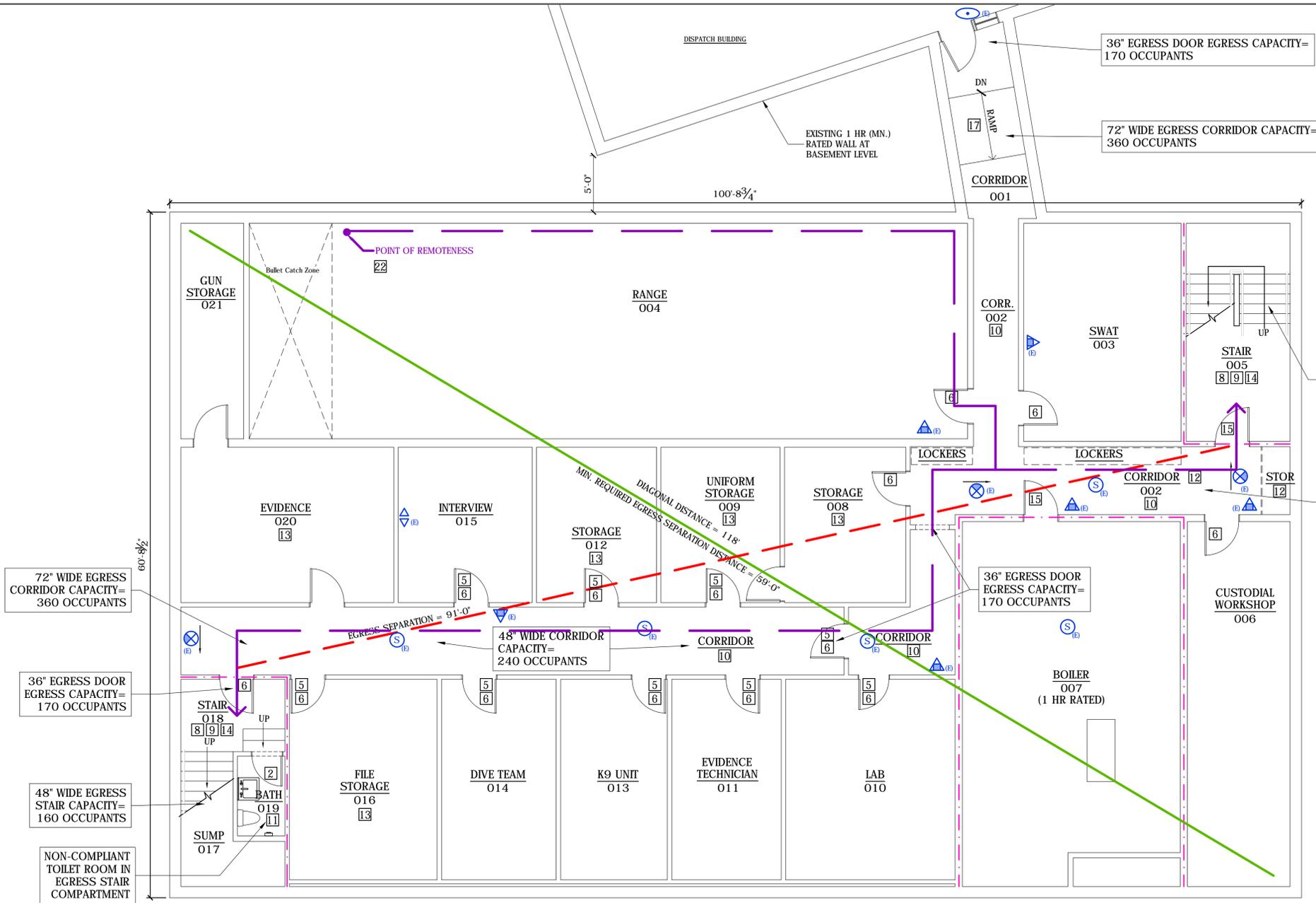
Business (Bus):	256 Occupants (128 male/128 female)			
	TOILETS	URINALS	LAVS	SHOWERS
Men	5	3	4	NR
Women	5	0	4	NR
TOTAL	10	3	8	0

(1) Drinking Fountain or Water Fill Station for public

MUBEC (Maine Uniform Building Energy Code) MINIMUM INSULATION VALUES
 Per 2009 IECC, Table 502.1.2, 502.2(1) and 502.3

ZONE 6A	R-VALUE	U-FACTOR	SHGC
Roof (above deck)	20.0 ci	0.048	NA
Exterior Wall	13+5.6 ci	0.054	NA
Mass Wall	13.3 ci	0.077	NA
(above Grade)			
Slab (24" base)	15.0	0.052	NA
Frost Wall	7.5 ci	0.133	NA
Doors - Swinging	1.42	0.70	NA
Doors - Overhead	2.00	0.50	NA
Windows	2.9	0.35	NR
Storefront	2.2	0.45	NR

End of Analysis



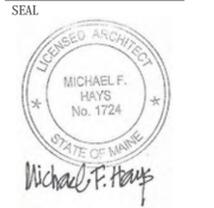
PUBLIC SAFETY BUILDING BASEMENT CODE COMPLIANCE PLAN
 SCALE: 3/16" = 1'-0" 6,110 SF

BUILDING KEYED NOTES LEGEND	
1 REQUIRED EXIT DOES NOT COMPLY WITH ADA (NEEDS RAMP +/- 13'-0").	14 STAIR RISER / TREAD DO NOT COMPLY.*
2 TOILET ROOM DOES NOT COMPLY WITH ADA (DIMENSIONAL CRITERIA).	15 FIRE RATED DOOR DOES NOT HAVE POSITIVE LATCHING HARDWARE.
3 SINK DOES NOT COMPLY WITH ADA (NOT WHEELCHAIR ACCESSIBLE).	16 SHOWER NOT ADA COMPLIANT.
4 DOOR DOES NOT COMPLY WITH ADA (NOT WHEELCHAIR ACCESSIBLE).	17 RAMP DOES NOT HAVE ADA HANDRAIL BOTH SIDES.
5 DOOR HARDWARE NOT ADA COMPLIANT (KNOB).	18 NO SPRINKLER IN ROOM.
6 DOOR ASSEMBLY NOT 1 HR FIRE RATED AT EGRESS CORRIDOR (NON-SPRINKLED).	19 TOILET ACCESSORY HEIGHT DOES NOT COMPLY w/ ADA.
7 DOOR DOES NOT HAVE ADA WHEELCHAIR MINIMUM CLEARANCE APPROACH @ HARDWARE.	20 RANGE DOES NOT HAVE NFPA EXHAUST HOOD.
8 STAIR RAILING DOES NOT HAVE CODE COMPLIANT EXTENSIONS.*	21 ELEVATOR LOBBY NOT SEPARATED FROM EGRESS STAIR FIRE RATED ENCLOSURE.
9 STAIR RAILING HEIGHT / OPENINGS DO NOT COMPLY.*	22 MAXIMUM ALLOWED EGRESS TRAVEL DISTANCE DOES NOT COMPLY WITH IBC / NFPA 101
10 PARTITION @ EGRESS CORRIDOR NOT 1 HR FIRE RATED.	(*) PER 2015 IBC / NFPA 101
11 BATHROOM / STORAGE IN STAIRWELL.	
12 STORAGE / FIXTURES IN NON-RATED EGRESS CORRIDOR.	
13 STORAGE AREA OVER 100 S.F. NOT RATED.	

NFPA LEGEND (EXISTING)	
SYMBOL	DESCRIPTION
(X)	EXIT LIGHT
EXIT	EXIT SIGN (NOT ILLUMINATED)
(A)	ABC FIRE EXTINGUISHER w/ BRACKET
(E)	EMERGENCY LIGHT
(S)	SMOKE DETECTOR
(X)	EMERGENCY / EXIT LIGHT
(H)	HORN / STROBE UNIT
(S)	STROBE UNIT
(P)	FIRE ALARM PULL STATION
(FACP)	FIRE ALARM PANEL
(K)	KNOX BOX
(E)	"NOT AN EXIT" SIGN
(E)	EXTERIOR EMERGENCY LIGHT
(H)	HORN / STROBE - CEILING (WHITE)
(E)	EXISTING

SYMBOLS LEGEND	
(Green line)	DIAGONAL
(Red dashed line)	EGRESS PATH w/ DISTANCE
(Purple line)	POINT OF REMOTENESS
(#)	EGRESS LOAD
(A)	EXIT DISTANCE (MAX ALLOWED = 200')

PUBLIC SAFETY BUILDING GENERAL CODE NOTES - EXISTING CONDITIONS	
NFPA NOTES	
1.	EXISTING BUILDING DOES NOT HAVE AN NFPA SPRINKLER SYSTEM.
2.	EXISTING BUILDING DOES NOT HAVE A COMPLIANT NFPA ALARM/ DETECTION SYSTEM.
3.	EXISTING BUILDING LACKS COMPLIANT EMERGENCY & EXIT LIGHTS.
4.	CORRIDOR DOORS / FRAMES / SIDELITES ARE NOT LABEL / RATED AND DO NOT HAVE CLOSERS AT ALL LOCATIONS.
ADA NOTES	
1.	MAJORITY OF DOORS DO NOT HAVE ADA COMPLIANT HARDWARE (LEVERS).
2.	TOILET ROOMS ARE NON-COMPLIANT.
3.	KITCHENETTE SINKS ARE NON-COMPLIANT.
4.	REAR EXIT IS NON-COMPLIANT.
5.	STAIRS ARE NON-COMPLIANT - NO AREA OF REFUGE COMMUNICATOR.



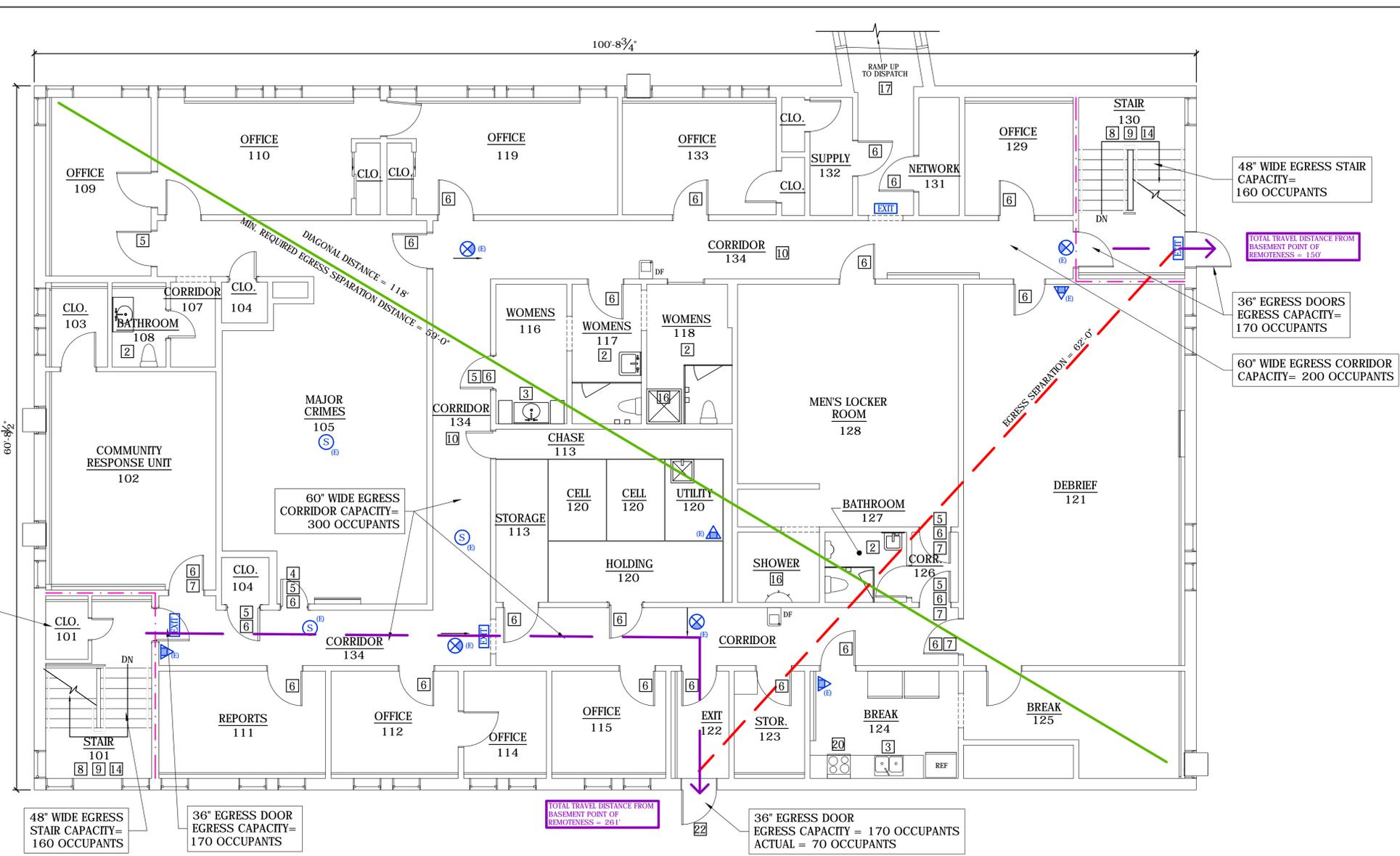
REVISIONS

PROJECT NAME:
**CITY OF SOUTH PORTLAND
PUBLIC SAFETY BUILDING**
30 ANTHONIE STREET
S. PORTLAND, MAINE 04106

**PUBLIC SAFETY
BUILDING
LEVEL 1 CODE
COMPLIANCE PLAN**

DATE: **10 FEB 2021**
SCALE: **3/16"=1'-0"**
DRAWN: **MFH / mgk**
JOB NO.: **180608**

SHEET: **AC-2**
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CODE ANALYSIS

NFPA 101 Life Safety Code - 2015 Edition
*(#) denotes if building is fully sprinkled

Building Classification: Business (Existing) 25,560 sf
12,220 sf - Public Safety Building
No Sprinkler System / No Fire Alarm System
13,340 sf - Dispatch Building
Sprinkler System / Fire Alarm System
Ordinary Hazard
Construction Type: Type III (000)
Occupant Loads: Business @ 100 sf/occupant = 256 occupants
Janitor, Mech. Storage Rating: 1 hour
Stair Rating: 1 hour
Elevator Shaft Rating: 1 hour
Minimum Stair width: 44" clear
Maximum Riser height: 7"
Minimum Tread width: 11"
Minimum Headroom: 6'-8" at stairs; 7'-6" at occupied areas
Maximum ht between landings: 12'-0"
Handrail height: 34"-38" @ 42" guardrail
Handrail top extension: 12" horiz.
Handrail bottom extension: 11" angled + 12" horiz.
Handrail diameter: 1-1/4" O.D.
Maximum baluster open space: less than 4"

Building Uses: Business
*(#) denotes if building is fully sprinkled

Max. Allowable Travel Distance: 200' (300)
Max. Allowable Common Path: 75' (100)
Max. Dead End Corridor Length: 20' (50)
Minimum Egress Corridor Width: 44"
Minimum Number of Required Exits: 2
Minimum Horiz Egress Enclosure rating: 1 hr (none)
Minimum Separation of exits: 0.5 diagonal (0.33)
Minimum Egress Door Width: 36"

Exit Lighting: Required
Emergency Lighting: Required
Fire Alarm System: Required
Fire Sprinkler System: Not Required
Portable Fire Extinguishers: Required
Exit Devices/Panic Hardware: Required

2015 International Building Code
*(#) denotes if building is fully sprinkled

Use Group Classification: Business - Use Group B - 25,560 sf
12,220 sf - Public Safety Building
No Sprinkler System / No Fire Alarm System
13,340 sf - Dispatch Building
Sprinkler System / Fire Alarm System
Type III - Combustible, Non-Combustible.

Construction: Unprotected
Occupant Loads: B @ 100 sf/occupant = 256 occupants
Janitor, Mech & Storage Rooms: 1 hour

Building Limitations: IIB Unprotected
Construction Type: 55' (75)
Maximum Height: 3 (4)
Maximum Area / Floor: 19,000 (57,000 for multiple stories)
Actual Area/Height: 2 stories; less than 50' / 25,560 sf

Fire Resistance Ratings
Primary Structure: None
Load Bearing Exterior Walls: 2 Hours
Load Bearing Interior Partitions: None
Floor Structure: None
Roof Structure: None
Elevator Shafts: 1 hour (less than 3 stories)
Fire Separation Exits (Stairs): 1 hour (less than 3 stories)
Fire Separation of Uses: 2 hours (1 hour)
Exit Corridors: 1 hour (none)
Minimum Number of Exits: 2
Maximum Dead-End Corridor Length: 20' (50)
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Minimum Stair Width: 44"
Maximum Riser Height: 7"
Minimum Tread Depth: 11"
Minimum Ramp Width: 44"
Maximum Ramp Pitch: 1:12
Handrails: Same as NFPA 101
Minimum Ceiling Height: 7'-6"

Fire Alarm System: Required
Fire Sprinkler System: Required (Area exceeds 19,000 gross sf)
Not Required if 2 hour separation between Public Safety and Dispatch Buildings

Portable Fire Extinguishers: Required
Exit Lighting: Required
Emergency Lighting: Required

Building Live Loads
Office: 50 psf
Lobbies: 100 psf
Corridors: 80 psf
Storage: 125 psf @ light; 250 psf @ heavy

Interior Finishes
Stairs, Ramps, Exit Passageways: A (B)
Corridors and exit access to stairs/ramps: A (C)
Rooms and enclosed spaces: C (C)

Maine State Plumbing Code/UPC

Occupancy Classification: Business
IBC Table Occupants: 256

Business (Bus):	256 Occupants (128 male/128 female)				
FIXTURES	TOILETS	URINALS	LAVS	SHOWERS	
Men	5	3	4	NR	
Women:	5	0	4	NR	
TOTAL	10	3	8	0	

(1) Drinking Fountain or Water Fill Station for public

MUBEC (Maine Uniform Building Energy Code) MINIMUM INSULATION VALUES
For 2009 IECC; Table 502.1.2, 502.2(1) and 502.3

ZONE 6A	R-VALUE	U-FACTOR	SHGC
Roof (above deck)	20.0 ci	0.048	NA
Exterior Wall	13+5.6 ci	0.054	NA
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Frost Wall	7.5 ci	0.133	NA
Doors - Swinging	1.42	0.70	NA
Doors - Overhead	2.00	0.50	NA
Windows	2.9	0.35	NR
Storefront	2.2	0.45	NR

End of Analysis

PUBLIC SAFETY BUILDING LEVEL 1 CODE COMPLIANCE PLAN
SCALE: 3/16" = 1'-0" 6,110 SF

BUILDING KEYED NOTES LEGEND

1 REQUIRED EXIT DOES NOT COMPLY WITH ADA (NEEDS RAMP +/- 13'-0").	14 STAIR RISER / TREAD DO NOT COMPLY.*
2 TOILET ROOM DOES NOT COMPLY WITH ADA (DIMENSIONAL CRITERIA).	15 FIRE RATED DOOR DOES NOT HAVE POSITIVE LATCHING HARDWARE.
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13 STORAGE AREA OVER 100 S.F. NOT RATED.	

NFPA LEGEND

SYMBOL	DESCRIPTION
(X)	EXIT LIGHT
EXIT	EXIT SIGN (NOT ILLUMINATED)
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(E)	EMERGENCY LIGHT
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(E)	EMERGENCY / EXIT LIGHT
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(S)	STROBE UNIT
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(PACP)	FIRE ALARM PANEL
(K)	KNOX BOX
(E)	"NOT AN EXIT" SIGN
(E)	EXTERIOR EMERGENCY LIGHT
(H)	HORN / STROBE - CEILING (WHITE)
(E)	EXISTING

SYMBOLS LEGEND

(Green line)	DIAGONAL
(Red dashed line)	EGRESS PATH w/ DISTANCE
(Purple dot)	POINT OF REMOTENESS
(#)	EGRESS LOAD
(A)	EXIT DISTANCE (MAX ALLOWED = 200')

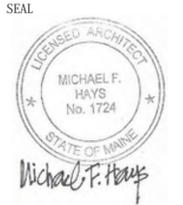
PUBLIC SAFETY BUILDING GENERAL CODE NOTES - EXISTING CONDITIONS

NFPA NOTES

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- EXISTING BUILDING DOES NOT HAVE A COMPLIANT NFPA ALARM/ DETECTION SYSTEM.
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- MAJORITY OF DOORS DO NOT HAVE ADA COMPLIANT HARDWARE (LEVERS).
- TOILET ROOMS ARE NON-COMPLIANT.
- KITCHENETTE SINKS ARE NON-COMPLIANT.
- REAR EXIT IS NON-COMPLIANT.
- STAIRS ARE NON-COMPLIANT - NO AREA OF REFUGE COMMUNICATOR.



REVISIONS

PROJECT NAME

**CITY OF SOUTH PORTLAND
PUBLIC SAFETY BUILDING**

30 ANTHONIE STREET
S. PORTLAND, MAINE 04106

SHEET

**DISPATCH BUILDING
BASEMENT
CODE COMPLIANCE
PLAN**

DATE
10 FEB 2021

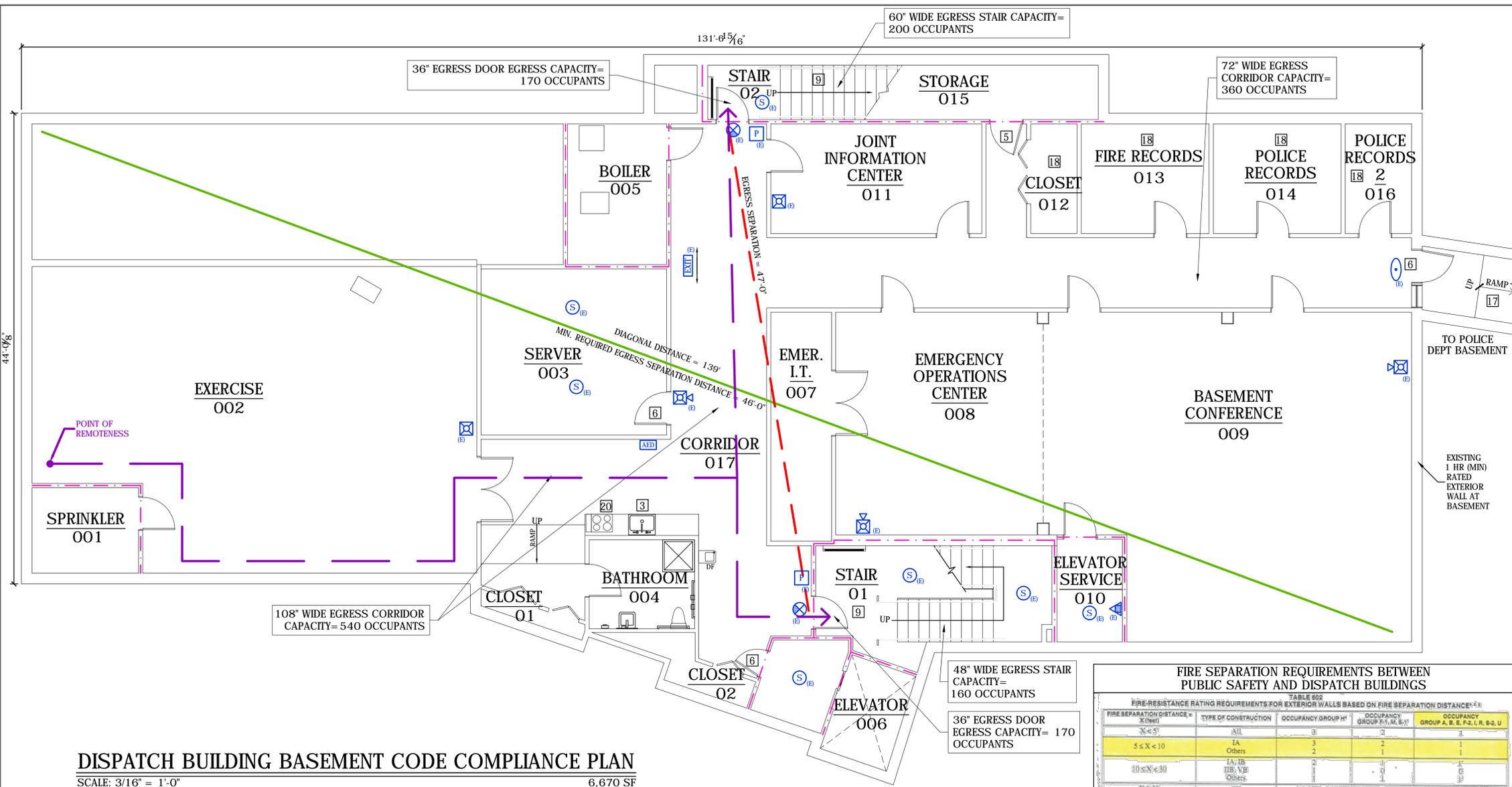
SCALE
3/16"=1'-0"

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JOB NO.
180608

SHEET
AC-3

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DISPATCH BUILDING BASEMENT CODE COMPLIANCE PLAN
SCALE: 3/16" = 1'-0" 6,670 SF

CODE ANALYSIS
NFA 101 Life Safety Code - 2015 Edition
(#) denotes if building is fully sprinkled

Building Classification: Business (Existing) 25,560 sf
12,220 sf - Public Safety Building
No Sprinkler System / No Fire Alarm System
13,340 sf - Dispatch Building
Sprinkler System / Fire Alarm System

Hazard Classification: Ordinary Hazard
Construction Type: Type III (000)
Occupant Loads: Business @ 100 sf/occupant = 256 occupants

Janitor, Mech. Storage Rating: 1 hour
Stair Rating: 1 hour
Elevator Shaft Rating: 1 hour
Minimum Stair width: 44" clear
Maximum Riser height: 7"
Minimum Tread width: 11"
Minimum Headroom: 6'-8" at stairs; 7'-6" at occupied areas
Maximum ht between landings: 12'-0"
Handrail height: 34"-38" @ 42" guardrail
Handrail top extension: 12" horiz
Handrail bottom extension: 11" angled + 12" horz
Handrail diameter: 1-1/4" O.D.
Maximum baluster open space: less than 4"

Building Uses: Business
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Max. Allowable Travel Distance: 200' (300)
Max. Allowable Common Path: 75' (100)
Max. Dead End Corridor Length: 20' (50)
Minimum Egress Corridor Width: 44"
Minimum Number of Required Exits: 2
Minimum Horiz Egress Enclosure rating: 1 hr (none)
Minimum Separation of exits: 0.5 diagonal (0.33)
Minimum Egress Door Width: 36"

Exit Lighting: Required
Emergency Lighting: Required
Fire Alarm System: Required
Fire Sprinkler System: Not Required
Portable Fire Extinguishers: Required
Exit Devices/Panic Hardware: Required

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Use Group Classification: Business - Use Group B - 25,560 sf
12,220 sf - Public Safety Building
No Sprinkler System / No Fire Alarm System
13,340 sf - Dispatch Building
Sprinkler System / Fire Alarm System
Type III - Combustible, Non-Combustible.

Construction: Unprotected
Occupant Loads: B @ 100 sf/occupant = 256 occupants
Janitor, Mech & Storage Rooms: 1 hour

Building Limitations
Construction Type: IIIB Unprotected
Maximum Height: 55' (75)
Maximum Stories: 3 (4)
Maximum Area / Floor: 19,000 (57,000 for multiple stories)
Actual Area/Height: 2 stories; less than 50' 25,560 sf

Fire Resistance Ratings

Primary Structure: None
Load Bearing Exterior Walls: 2 Hours
Load Bearing Interior Partitions: None
Floor Structure: None
Roof Structure: None
Elevator Shafts: 1 hour (less than 3 stories)
Fire Separation Exits (Stairs): 1 hour (less than 3 stories)
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Maximum Ramp Pitch: 1:12
Handrails: Same as NFPA 101
Minimum Ceiling Height: 7'-6"

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Fire Sprinkler System: Required (Area exceeds 19,000 gross sf)
Not Required if 2 hour separation between Public Safety and Dispatch Buildings

Portable Fire Extinguishers: Required
Exit Lighting: Required
Emergency Lighting: Required

Building Live Loads

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Storage: 125 psf @ light; 250 psf @ heavy

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Stairs, Ramps, Exit Passageways: A (B)
Corridors and exit access to stairs/ramps: A (C)
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Maine State Plumbing Code/UPC

Occupancy Classification: Business
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Business (Bus):	256 Occupants (128 male/128 female)			
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(1) Drinking Fountain or Water Fill Station for public

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Exterior Wall	13+-5.6 ci	0.054	NA
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Doors - Swinging	1.42	0.70	NA
Doors - Overhead	2.00	0.50	NA
Windows	2.9	0.35	NR
Storefront	2.2	0.45	NR

End of Analysis

FIRE SEPARATION REQUIREMENTS BETWEEN PUBLIC SAFETY AND DISPATCH BUILDINGS

TABLE 705.2 FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE

FIRE SEPARATION DISTANCE = X (feet)	TYPE OF CONSTRUCTION	OCCUPANCY GROUP # ^a	OCCUPANCY GROUP #1, M, S, U ^b	OCCUPANCY GROUP A, B, E, F, 2, I, R, S-2, U ^c
5 < X < 10	All	3	2	1
10 < X < 30	IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, IK, IL, IM, IN, IO, IP, IQ, IR, IS, IT, IU, IV, IW, IX, IY, IZ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, JK, JL, JM, JN, JO, JP, JQ, JR, JS, JT, JU, JV, JW, JX, JY, JZ, KA, KB, KC, KD, KE, KF, KG, KH, KI, KJ, KK, KL, KM, KN, KO, KP, KQ, KR, KS, KT, KU, KV, KW, KX, KY, KZ, LA, LB, LC, LD, LE, LF, LG, LH, LI, LJ, LK, LL, LM, LN, LO, LP, LQ, LR, LS, LT, LU, LV, LW, LX, LY, LZ, MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK, ML, MM, MN, MO, MP, MQ, MR, MS, MT, MU, MV, MW, MX, MY, MZ, NA, NB, NC, ND, NE, NF, NG, NH, NI, NJ, NK, NL, NM, NN, NO, NP, NQ, NR, NS, NT, NU, NV, NW, NX, NY, NZ, OA, OB, OC, OD, OE, OF, OG, OH, OI, OJ, OK, OL, OM, ON, OO, OP, OQ, OR, OS, OT, OU, OV, OW, OX, OY, OZ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, PK, PL, PM, PN, PO, PP, PQ, PR, PS, PT, PU, PV, PW, PX, PY, PZ, QA, QB, QC, QD, QE, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QQ, QR, QS, QT, QU, QV, QW, QX, QY, QZ, RA, RB, RC, RD, RE, RF, RG, RH, RI, RJ, RK, RL, RM, RN, RO, RP, RQ, RR, RS, RT, RU, RV, RW, RX, RY, RZ, SA, SB, SC, SD, SE, SF, SG, SH, SI, SJ, SK, SL, SM, SN, SO, SP, SQ, SR, SS, ST, SU, SV, SW, SX, SY, SZ, TA, TB, TC, TD, TE, TF, TG, TH, TI, TJ, TK, TL, TM, TN, TO, TP, TQ, TR, TS, TT, TU, TV, TW, TX, TY, TZ, UA, UB, UC, UD, UE, UF, UG, UH, UI, UJ, UK, UL, UM, UN, UO, UP, UQ, UR, US, UT, UY, UZ, VA, VB, VC, VD, VE, VF, VG, VH, VI, VJ, VK, VL, VM, VN, VO, VP, VQ, VR, VS, VT, VY, VZ, WA, WB, WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL, WM, WN, WO, WP, WQ, WR, WS, WT, WY, WZ, XA, XB, XC, XD, XE, XF, XG, XH, XI, XJ, XK, XL, XM, XN, XO, XP, XQ, XR, XS, XT, XU, XV, XW, XX, XY, XZ, YA, YB, YC, YD, YE, YF, YG, YH, YI, YJ, YK, YL, YM, YN, YO, YP, YQ, YR, YS, YT, YU, YV, YW, YX, YZ, ZA, ZB, ZC, ZD, ZE, ZF, ZG, ZH, ZI, ZJ, ZK, ZL, ZM, ZN, ZO, ZP, ZQ, ZR, ZS, ZT, ZU, ZV, ZW, ZX, ZY, ZZ			

TABLE 705.3 MAXIMUM AREA OF EXTERIOR WALL OPENINGS BASED ON FIRE SEPARATION DISTANCE AND DEGREE OF OPENING PROTECTION

FIRE SEPARATION DISTANCE (feet)	DEGREE OF OPENING PROTECTION	ALLOWABLE AREA ^a
5 to less than 10 ^b	Unprotected, Non-sprinklered (U.P./NS)	Not Permitted ^c
	Unprotected, Sprinklered (U.P./S)	Not Permitted ^c
	Protected (P)	Not Permitted ^c
10 to less than 15 ^b	Unprotected, Non-sprinklered (U.P./NS)	15%
	Unprotected, Sprinklered (U.P./S)	15%
	Protected (P)	15%
15 to less than 20 ^b	Unprotected, Non-sprinklered (U.P./NS)	10%
	Unprotected, Sprinklered (U.P./S)	25%
	Protected (P)	25%
20 to less than 25 ^b	Unprotected, Non-sprinklered (U.P./NS)	15%
	Unprotected, Sprinklered (U.P./S)	45%
	Protected (P)	45%
25 to less than 30 ^b	Unprotected, Non-sprinklered (U.P./NS)	25%
	Unprotected, Sprinklered (U.P./S)	75%
	Protected (P)	75%
30 to less than 35 ^b	Unprotected, Non-sprinklered (U.P./NS)	45%
	Unprotected, Sprinklered (U.P./S)	No Limit
	Protected (P)	No Limit
35 to less than 40 ^b	Unprotected, Non-sprinklered (U.P./NS)	70%
	Unprotected, Sprinklered (U.P./S)	No Limit
	Protected (P)	No Limit
40 or greater	Unprotected, Non-sprinklered (U.P./NS)	No Limit
	Unprotected, Sprinklered (U.P./S)	No Limit
	Protected (P)	No Limit

SYMBOLS LEGEND

- DIAGONAL
- EGRESS PATH w/ DISTANCE
- POINT OF REMOTENESS
- EGRESS LOAD
- EXIT DISTANCE (MAX ALLOWED = 200)

BUILDING KEYED NOTES LEGEND

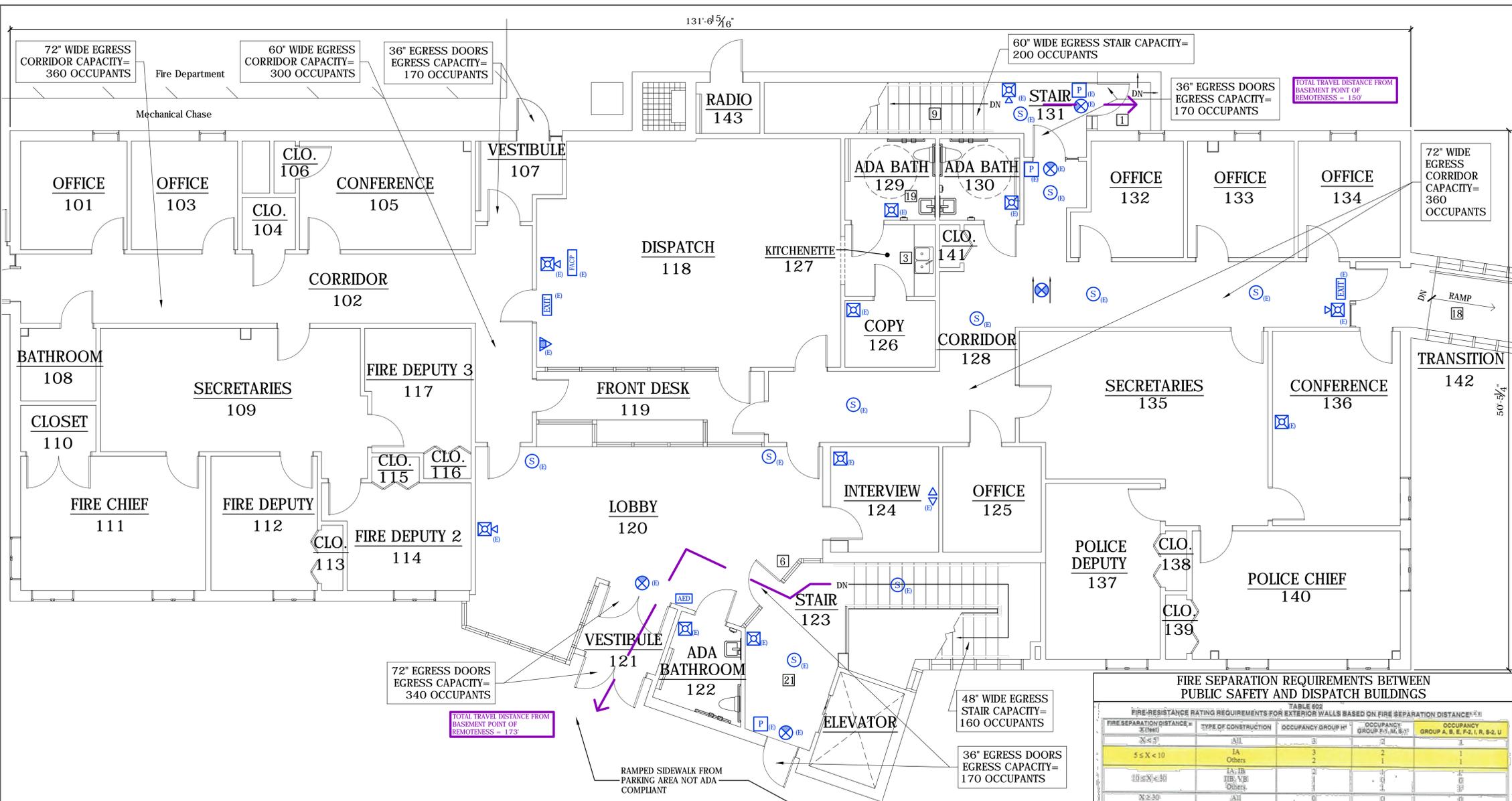
1 REQUIRED EXIT DOES NOT COMPLY WITH ADA (NEEDS RAMP +/- 13'-0").	14 STAIR RISER / TREAD DO NOT COMPLY.*
2 TOILET ROOM DOES NOT COMPLY WITH ADA (DIMENSIONAL CRITERIA).	15 FIRE RATED DOOR DOES NOT HAVE POSITIVE LATCHING HARDWARE.
3 SINK DOES NOT COMPLY WITH ADA (NOT WHEELCHAIR ACCESSIBLE).	16 SHOWER NOT ADA COMPLIANT.
4 DOOR DOES NOT COMPLY WITH ADA (NOT WHEELCHAIR ACCESSIBLE).	17 RAMP DOES NOT HAVE ADA HANDRAIL BOTH SIDES.
5 DOOR HARDWARE NOT ADA COMPLIANT (KNOB).	18 NO SPRINKLER IN ROOM.
6 DOOR ASSEMBLY NOT 1 HR FIRE RATED AT EGRESS CORRIDOR (NON-SPRINKLED).	19 TOILET ACCESSORY HEIGHT DOES NOT COMPLY w/ ADA.
7 DOOR DOES NOT HAVE ADA WHEELCHAIR MINIMUM CLEARANCE APPROACH @ HARDWARE.	20 RANGE DOES NOT HAVE NFPA EXHAUST HOOD.
8 STAIR RAILING DOES NOT HAVE CODE COMPLIANT EXTENSIONS.*	21 ELEVATOR LOBBY NOT SEPARATED FROM EGRESS STAIR FIRE RATED ENCLOSURE.
9 STAIR RAILING HEIGHT / OPENINGS DO NOT COMPLY.*	22 MAXIMUM ALLOWED EGRESS TRAVEL DISTANCE DOES NOT COMPLY WITH IBC / NFPA 101
10 PARTITION @ EGRESS CORRIDOR NOT 1 HR FIRE RATED.	(*) PER 2015 IBC / NFPA 101
11 BATHROOM / STORAGE IN STAIRWELL.	
12 STORAGE / FIXTURES IN NON-RATED EGRESS CORRIDOR.	
13 STORAGE AREA OVER 100 S.F. NOT RATED.	

NFPA LEGEND

SYMBOL	DESCRIPTION
EXIT LIGHT	EXIT LIGHT
EXIT SIGN (NOT ILLUMINATED)	EXIT SIGN (NOT ILLUMINATED)
ABC FIRE EXTINGUISHER w/ BRACKET	ABC FIRE EXTINGUISHER w/ BRACKET
EMERGENCY LIGHT	EMERGENCY LIGHT
SMOKE DETECTOR	SMOKE DETECTOR
EMERGENCY / EXIT LIGHT	EMERGENCY / EXIT LIGHT
HORN / STROBE UNIT	HORN / STROBE UNIT
STROBE UNIT	STROBE UNIT
FIRE ALARM PULL STATION	FIRE ALARM PULL STATION
FIRE ALARM PANEL	FIRE ALARM PANEL
KNOX BOX	KNOX BOX
"NOT AN EXIT" SIGN	"NOT AN EXIT" SIGN
EXTERIOR EMERGENCY LIGHT	EXTERIOR EMERGENCY LIGHT
HORN / STROBE - CEILING (WHITE)	HORN / STROBE - CEILING (WHITE)
EXISTING	EXISTING

SYMBOLS LEGEND

- DIAGONAL
- EGRESS PATH w/ DISTANCE
- POINT OF REMOTENESS
- EGRESS LOAD
- EXIT DISTANCE (MAX ALLOWED = 200)



DISPATCH BUILDING LEVEL 1 CODE COMPLIANCE PLAN
 SCALE: 3/16" = 1'-0" 6,670 SF

BUILDING KEYED NOTES LEGEND	
1 REQUIRED EXIT DOES NOT COMPLY WITH ADA (NEEDS RAMP +/- 13'-0").	14 STAIR RISER / TREAD DO NOT COMPLY.*
2 TOILET ROOM DOES NOT COMPLY WITH ADA (DIMENSIONAL CRITERIA).	15 FIRE RATED DOOR DOES NOT HAVE POSITIVE LATCHING HARDWARE.
3 SINK DOES NOT COMPLY WITH ADA (NOT WHEELCHAIR ACCESSIBLE).	16 SHOWER NOT ADA COMPLIANT.
4 DOOR DOES NOT COMPLY WITH ADA (NOT WHEELCHAIR ACCESSIBLE).	17 RAMP DOES NOT HAVE ADA HANDRAIL BOTH SIDES.
5 DOOR HARDWARE NOT ADA COMPLIANT (KNOB).	18 NO SPRINKLER IN ROOM.
6 DOOR ASSEMBLY NOT 1 HR FIRE RATED AT EGRESS CORRIDOR (NON-SPRINKLED).	19 TOILET ACCESSORY HEIGHT DOES NOT COMPLY W/ ADA.
7 DOOR DOES NOT HAVE ADA WHEELCHAIR MINIMUM CLEARANCE APPROACH @ HARDWARE.	20 RANGE DOES NOT HAVE NFPA EXHAUST HOOD.
8 STAIR RAILING DOES NOT HAVE CODE COMPLIANT EXTENSIONS.*	21 ELEVATOR LOBBY NOT SEPARATED FROM EGRESS STAIR FIRE RATED ENCLOSURE.
9 STAIR RAILING HEIGHT / OPENINGS DO NOT COMPLY.*	22 MAXIMUM ALLOWED EGRESS TRAVEL DISTANCE DOES NOT COMPLY WITH IBC / NFPA 101
10 PARTITION @ EGRESS CORRIDOR NOT 1 HR FIRE RATED.	
11 BATHROOM / STORAGE IN STAIRWELL.	
12 STORAGE / FIXTURES IN NON-RATED EGRESS CORRIDOR.	
13 STORAGE AREA OVER 100 S.F. NOT RATED.	

NFPA LEGEND	
⊗	EXIT LIGHT
EXIT	EXIT SIGN (NOT ILLUMINATED)
ABC	ABC FIRE EXTINGUISHER w/ BRACKET
⬇	EMERGENCY LIGHT
S	SMOKE DETECTOR
⊗	EMERGENCY / EXIT LIGHT
⊗	HORN / STROBE UNIT
⊗	STROBE UNIT
P	FIRE ALARM PULL STATION
FACP	FIRE ALARM PANEL
K	KNOX BOX
⊗	"NOT AN EXIT" SIGN
⊗	EXTERIOR EMERGENCY LIGHT
⊗	HORN / STROBE - CEILING (WHITE)
(E)	EXISTING

SYMBOLS LEGEND	
—	DIAGONAL
---	EGRESS PATH w/ DISTANCE
—	POINT OF REMOTENESS
#	EGRESS LOAD
A	EXIT DISTANCE (MAX ALLOWED = 200)

FIRE SEPARATION REQUIREMENTS BETWEEN PUBLIC SAFETY AND DISPATCH BUILDINGS

TABLE 705.2
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE*

FIRE SEPARATION DISTANCE = X (feet)	TYPE OF CONSTRUCTION	OCCUPANCY GROUP #1	OCCUPANCY GROUP #2, #3, #4, #5, #6, #7	OCCUPANCY GROUP A, B, E, F, I, R, S-2, U
5 ≤ X < 10	IA Others	2	2	1
10 ≤ X < 30	IA, IB IIB, VBI Others	2	1	1
X ≥ 30	All	0	0	0

TABLE 705.8
MAXIMUM AREA OF EXTERIOR WALL OPENINGS BASED ON FIRE SEPARATION DISTANCE AND DEGREE OF OPENING PROTECTION

FIRE SEPARATION DISTANCE (feet)	DEGREE OF OPENING PROTECTION	ALLOWABLE AREA*
0 to less than 5'-0"	Unprotected, Non-sprinklered (UP, NS)	Not Permitted†
	Unprotected, Sprinklered (UP, S)	Not Permitted†
5 to less than 10'-0"	Protected (P)	Not Permitted†
	Unprotected, Sprinklered (UP, S)	15%
10 to less than 15'-0"	Protected (P)	15%
	Unprotected, Sprinklered (UP, S)	25%
15 to less than 20'-0"	Protected (P)	15%
	Unprotected, Sprinklered (UP, S)	25%
20 to less than 25'-0"	Protected (P)	15%
	Unprotected, Sprinklered (UP, S)	25%
25 to less than 30'-0"	Protected (P)	15%
	Unprotected, Sprinklered (UP, S)	25%
30 to less than 40'-0"	Protected (P)	15%
	Unprotected, Sprinklered (UP, S)	25%
40 to less than 50'-0"	Protected (P)	15%
	Unprotected, Sprinklered (UP, S)	25%
50 or greater	Protected (P)	15%
	Unprotected, Sprinklered (UP, S)	25%

CODE ANALYSIS

NFPA 101 Life Safety Code - 2015 Edition
 (*) denotes if building is fully sprinkled

Building Classification: Business (Existing) 25,560 sf
 12,220 sf - Public Safety Building
 13,340 sf - Dispatch Building
 No Sprinkler System / No Fire Alarm System
 Sprinkler System / Fire Alarm System

Hazard Classification: Ordinary Hazard
 Construction Type: Type III (000)
 Occupant Loads: Business @ 100 sf/occupant = 256 occupants

Janitor, Mech, Storage Rating: 1 hour
 Stair Rating: 1 hour
 Elevator Shaft Rating: 1 hour
 Minimum Stair width: 44" clear
 Maximum Riser height: 7"
 Minimum Tread width: 11"
 Minimum Headroom: 6'-8" at stairs; 7'-6" at occupied areas
 Maximum ht between landings: 12'-0"
 Handrail height: 34"-38" @ 42" guardrail
 Handrail top extension: 12" horiz
 Handrail bottom extension: 11" angled + 12" horiz
 Handrail diameter: 1-1/4" O.D.
 Maximum baluster open space: less than 4"

Building Uses: Business
 (*) denotes if building is fully sprinkled

Max. Allowable Travel Distance: 200' (300)
 Max. Allowable Common Path: 75' (100)
 Max. Dead End Corridor Length: 20' (50)
 Minimum Egress Corridor Width: 44"
 Minimum Number of Required Exits: 2
 Minimum Horiz Egress Enclosure rating: 1 hr (none)
 Minimum Separation of exits: 1.5 diagonal (0.33)
 Minimum Egress Door Width: 36"

Exit Lighting: Required
 Emergency Lighting: Required
 Fire Alarm System: 3 (4)
 Fire Sprinkler System: Not Required
 Portable Fire Extinguishers: Required
 Exit Devices/Panic Hardware: Required

2015 International Building Code
 (*) denotes if building is fully sprinkled

Use Group Classification: Business - Use Group B - 25,560 sf
 12,220 sf - Public Safety Building
 13,340 sf - Dispatch Building
 No Sprinkler System / No Fire Alarm System
 Sprinkler System / Fire Alarm System
 Type III - Combustible, Non-Combustible.

Construction: Unprotected
 Occupant Loads: B @ 100 sf/occupant = 256 occupants
 Janitor, Mech & Storage Rooms: 1 hour

Building Limitations
 Construction Type: III Unprotected
 Maximum Height: 55' (75)
 Maximum Stories: 3 (4)
 Maximum Area / Floor: 19,000 Area (57,000 for multiple stories)
 2 stories; less than 50'
 Actual Area/Height: 25,560 sf

Fire Resistance Ratings
 Primary Structure: None
 Load Bearing Exterior Walls: 2 Hours
 Load Bearing Interior Partitions: None
 Floor Structure: None
 Roof Structure: None
 Elevator Shafts: 1 hour (less than 3 stories)
 Fire Separation Exits (Stairs): 1 hour (less than 3 stories)
 Fire Separation of Uses: 2 hours (1 hour)
 Exit Corridors: 1 hour (none)
 Minimum Number of Exits: 2
 Maximum Dead-End Corridor Length: 20' (50)
 Maximum Travel Distance: 200' (300)
 Minimum Corridor Width: 44"
 Minimum Stair Width: 44"
 Maximum Riser Height: 7"
 Minimum Tread Depth: 11"
 Minimum Ramp Width: 44"
 Maximum Ramp Pitch: 1:12
 Handrails: Same as NFPA 101
 Minimum Ceiling Height: 7'-6"

Fire Alarm System: Required
 Fire Sprinkler System: Required (Area exceeds 19,000 gross sf)
 Not Required if 2 hour separation between Public Safety and Dispatch Buildings

Portable Fire Extinguishers: Required
 Exit Lighting: Required
 Emergency Lighting: Required

Building Live Loads
 Office: 50 psf
 Lobbies: 100 psf
 Corridors: 80 psf
 Storage: 125 psf @ light; 250 psf @ heavy

Interior Finishes
 Stairs, Ramps, Exit Passageways: A (B)
 Corridors and exit access to stairs/ramps: A (C)
 Rooms and enclosed spaces: C (C)

Maine State Plumbing Code/UPC
 Occupancy Classification: Business
 IBC Table Occupants: 256

FIXTURES	TOILETS	URINALS	LAVS	SHOWERS
Men	5	3	4	NR
Women	5	0	4	NR
TOTAL	10	3	8	0

(1) Drinking Fountain or Water Fill Station for public

MUBEC (Maine Uniform Building Energy Code) MINIMUM INSULATION VALUES
 Per 2009 IECC, Table 502.1.2, 502.2(1) and 502.3

ZONE 6A	R-VALUE	U-FACTOR	SHGC
Roof (above deck)	20.0 ci	0.048	NA
Exterior Wall	13+5.6 ci	0.054	NA
Mass Wall (above Grade)	13.3 ci	0.077	NA
Slab (24" batt)	15.0	0.052	NA
Frost Wall	7.5 ci	0.133	NA
Doors - Swinging	1.42	0.70	NA
Doors - Overhead	2.00	0.50	NA
Windows	2.9	0.35	NR
Storefront	2.2	0.45	NR

End of Analysis

GRANT HAYS ASSOCIATES
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 207.875.9000 www.granthays.com

SEAL
 LICENSED ARCHITECT
 MICHAEL F. HAYS
 No. 1724
 STATE OF MAINE
 Michael F. Hays

REVISIONS

PROJECT NAME: CITY OF SOUTH PORTLAND PUBLIC SAFETY BUILDING

30 ANTHONIE STREET PORTLAND, MAINE 04106

SHEET 180608

DATE 10 FEB 2021
 SCALE 3/16"=1'-0"
 DRAWN MFH / mgk
 JOB NO. 180608

AC-4

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NFPA 101 Life Safety Code - 2018 Edition

Building Classification: Business/Storage - 14,300 sf gross area
Business (326 sf), Storage (7,360 sf), Residential (2,331 sf), Assembly (2,109 sf)
Building Occupancy Classifications: Utility & Circulation (2,174 sf), Kitchen (110 sf)
Hazard Classification: Ordinary Hazard
Type III (000)
Construction Type: Business @ 150 sfoccc = 3
Storage @ 500sfoccc = 15
Residential @ 200sfoccc = 12
Assembly @ 15sfoccc = 141 (@7sfoccc = 302)
Kitchen @ 100sfoccc = 2
Total Occupant Load = 173 occupants (334)

Egress Criteria	Business	Storage	Residential	Assembly
Max. Allowable Travel Distance:	200'	200'	100'	200'
Max. Allowable Common Path:	75'	50'	35'	20/75'
Max. Dead End Corridor Length:	20'	50'	35'	20'
Minimum Egress Corridor Width:	44"	44"	44"	44"
Minimum Number of Required Exits:	2	2	2	2
Minimum Horiz. Egress Lockdown Rating:	1 hr	1 hr	1 hr	1 hr
Minimum Separation of Exits:	0.5 diagonal distance	Same	Same	Same
Fire Escapes as means of egress:	Allowed	Allowed	Allowed	Allowed
Minimum Egress Door Width:	36"	36"	36"	36"

Protection Systems Criteria

System	Business	Storage	Residential	Assembly
Exit Lighting:	Required	Required	Required	Required
Emergency Lighting:	Required	Required	Required	Required
Fire Alarm System:	Required	Required	Required	Required
Fire Sprinkler System:	Required	Required	Required	Required
Portable Fire Extinguishers:	Required	Required	Required	Required
Smoke Detection System:	Required	Required	Required	Required
Carbon Monoxide Alarm/Detection System:	NA	Required	Required	Required
Smoke Partitions between Bank Rooms:	NA	NA	Required	Required
Exit Device Hardware:	Required	Required	Required	Required

* * * Residential occupancy not allowed above Storage occupancy without a fire suppression system.
Mixed Use with Residential component - all alarms and detectors shall be interconnected throughout entire building.

Separation of Use Rating: 2 hours
Janitor, Mech, Stor Rating: 1 hour
Kitchen - NFPA Exhaust Hood with Suppression: Required at Range; K-type portable fire extinguisher also required
Minimum Headroom - Occupied Rooms: 7'-6"
Minimum Stair width: 44" clear
Maximum Riser height: 7"
Minimum Tread width: 11"
Minimum Headroom - Stairs: 6'-8"
Maximum ht. between landings: 12'-0"
Handrail height: 34"-38" @ 42" guardrail
Handrail top extension: 12" horiz.
Handrail bottom extension: 11" angled + 12" horiz.
Handrail diameter: 1-1/4" O.D.
Maximum baluster open space: less than 4"

Interior Finishes Class:
Exits: A or B
A, B, or C
A or B
A, B, or C
A or B
A, B, or C
A or B
A, B, or C

2015 INTERNATIONAL BUILDING CODE

Building Classification: Business/Storage - 14,300 sf gross area
Business (326 sf), Storage (7,360 sf), Residential (2,331 sf), Assembly (2,109 sf)
Building Occupancy Classifications: Utility & Circulation (2,174 sf), Kitchen (110 sf)
Hazard Classification: Ordinary Hazard
Type III B - Protected/Unprotected/Sprinkled
Business (B) @ 100 sfoccc = 4
Storage (S-2) @ 500sfoccc = 25
Residential (R-2) @ 50sfoccc = 47
Assembly (A-2/A-3) @ 15sfoccc = 141 (@7sfoccc = 302)
Utility (U) (Mechanical) @ 300sfoccc = 8
Kitchen @ 200sfoccc = 1
Total Occupant Load = 226 occupants (387)

Building Limitations: IIB - Sprinkled / Multi-Story
Construction Type: 2 @ A; 3 @ B; 4 @ R; 3 @ S
Maximum Height: 55'
Maximum Floors: 9,500 @ A; 19,000 @ B; 16,000 @ R; 26,000 @ S
Maximum Area:

Fire Resistance Ratings: IIB
Primary Structural Frame: None
Load Bearing Exterior Walls: 2 Hours
Load Bearing Interior Walls: None
Floor Structure: None
Roof Structure: None

Fire Separation of Uses: 2 Hours @ AR, A/B, R/S, R/B & S/R; 1 Hour @ A/S
Exit Corridors: 1 hour
Other Assemblies: 1 hour at Utility

Building Egress Criteria:
Minimum Number of Exits: 2
Minimum Separation of Exits: 0.5 diagonal
Maximum Dead End Corridor Length: 20'
Maximum Common Travel Path: 75'
Maximum Travel Distance: 200' @ A-2/A-3 & R-2; 200' @ B; 300' @ S-2

Building Dimensional Criteria
Minimum Headroom - Occupied Rooms: 7'-6"
Minimum Stair width: 44" clear
Maximum Riser height: 7"
Minimum Tread width: 11"
Minimum Headroom - Stairs: 6'-8"
Maximum ht. between landings: 12'-0"
Handrail height: 34"-38" @ 42" guardrail
Handrail top extension: 12" horiz.
Handrail bottom extension: 11" angled + 12" horiz.
Handrail diameter: 1-1/4" O.D.
Maximum baluster open space: less than 4"

Fire Protection Systems Criteria
Fire Alarm System: Required (mixed use)
Fire Sprinkler System: Required (mixed use & Assembly occupancy of Second Floor)
Portable Fire Extinguishers: Portable (with K-type in Kitchen)
Exit Lighting: Required
Emergency Lighting: Required
Exit (Func) Devices: Required

Building Live Load:
Assembly: 100 psf
Dining Rooms: 100 psf
Offices: 50 psf
Residential: 40 psf
Corridors: 100 psf
Storage: 125 psf @ light/250 psf @ heavy

Interior Finish Requirements (Sprinkled)
Interior Stairs & Exit Passageways: Class B
Corridors: Class B
Rooms & enclosed spaces: Class C

Assembly: Class B
Storage: Class C

2015 INTERNATIONAL BUILDING CODE

Building Classification: Business/Storage - 14,300 sf gross area
Business (326 sf), Storage (7,360 sf), Residential (2,331 sf), Assembly (2,109 sf)
Building Occupancy Classifications: Utility & Circulation (2,174 sf), Kitchen (110 sf)
Hazard Classification: Ordinary Hazard
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Business (B) @ 100 sfoccc = 4
Storage (S-2) @ 500sfoccc = 25
Residential (R-2) @ 50sfoccc = 47
Assembly (A-2/A-3) @ 15sfoccc = 141 (@7sfoccc = 302)
Utility (U) (Mechanical) @ 300sfoccc = 8
Kitchen @ 200sfoccc = 1
Total Occupant Load = 226 occupants (387)

Building Limitations: IIB - Sprinkled / Multi-Story
Construction Type: 2 @ A; 3 @ B; 4 @ R; 3 @ S
Maximum Height: 55'
Maximum Floors: 9,500 @ A; 19,000 @ B; 16,000 @ R; 26,000 @ S
Maximum Area:

Fire Resistance Ratings: IIB
Primary Structural Frame: None
Load Bearing Exterior Walls: 2 Hours
Load Bearing Interior Walls: None
Floor Structure: None
Roof Structure: None

Fire Separation of Uses: 2 Hours @ AR, A/B, R/S, R/B & S/R; 1 Hour @ A/S
Exit Corridors: 1 hour
Other Assemblies: 1 hour at Utility

Building Egress Criteria:
Minimum Number of Exits: 2
Minimum Separation of Exits: 0.5 diagonal
Maximum Dead End Corridor Length: 20'
Maximum Common Travel Path: 75'
Maximum Travel Distance: 200' @ A-2/A-3 & R-2; 200' @ B; 300' @ S-2

Building Dimensional Criteria
Minimum Headroom - Occupied Rooms: 7'-6"
Minimum Stair width: 44" clear
Maximum Riser height: 7"
Minimum Tread width: 11"
Minimum Headroom - Stairs: 6'-8"
Maximum ht. between landings: 12'-0"
Handrail height: 34"-38" @ 42" guardrail
Handrail top extension: 12" horiz.
Handrail bottom extension: 11" angled + 12" horiz.
Handrail diameter: 1-1/4" O.D.
Maximum baluster open space: less than 4"

Fire Protection Systems Criteria
Fire Alarm System: Required (mixed use)
Fire Sprinkler System: Required (mixed use & Assembly occupancy of Second Floor)
Portable Fire Extinguishers: Portable (with K-type in Kitchen)
Exit Lighting: Required
Emergency Lighting: Required
Exit (Func) Devices: Required

Building Live Load:
Assembly: 100 psf
Dining Rooms: 100 psf
Offices: 50 psf
Residential: 40 psf
Corridors: 100 psf
Storage: 125 psf @ light/250 psf @ heavy

Interior Finish Requirements (Sprinkled)
Interior Stairs & Exit Passageways: Class B
Corridors: Class B
Rooms & enclosed spaces: Class C

Assembly: Class B
Storage: Class C

Maine State Plumbing Code/UPC Minimum Fixture Requirements

Occupancy Classification: Mixed - Business/Residential/Storage/Assembly
Occupancy Area: 14,300 sf (gross)
Occupancy Load: 226; Actual: 10 per shift; 40 for Trainings/Meetings

Occupants: 5 MALE/5 FEMALE for R
20 MALE/20 FEMALE for A, B, & S

R FIXTURES	TOILETS	URINALS	LAVS	SHOWERS
Men	1	0	1	1
Women	1	0	1	1
TOTAL	2	1	2	2

A, B & S FIXTURES	TOILETS	URINALS	LAVS	SHOWERS
Men	3	0	1	0
Women	2	0	1	0
TOTAL (Use B & S-2)	5	1	2	0

TOTAL FOR BUILDING: 7 2 4 2
Drinking Fountains: 1 per 150 occupants - 1 required
Service Sink: 1 per floor - 2 required

MUBC Maine Uniform Building Energy Code MINIMUM INSULATION VALUES
Per 2009 ICC, Table 502.1.2, 502.2(1) and 502.3

ZONE GA	R-VALUE (MIN)	U-FACTOR (MIN)	SHGC	PROPOSED R	PROPOSED U
Exterior wall	18.5	0.034	NA	30.0	0.031
Roof (above deck)	20.0 c.i.	0.048	NA	40.0	0.025
Slab (24" hard)	15.0	0.052	NA	15.0	0.052
Slab (heated)	12.5 c.i.	0.064	NA	15.0	0.052
Frost Wall	7.5	0.133	NA	7.5	0.133
Doors - Solid	2.0	0.50	NA	10.0	0.100
Doors - Glazed	1.25	0.80	NR	2.9	0.350
Windows	2.9	0.35	NR	2.9	0.350
Storefront	2.2	0.45	NR	2.9	0.350

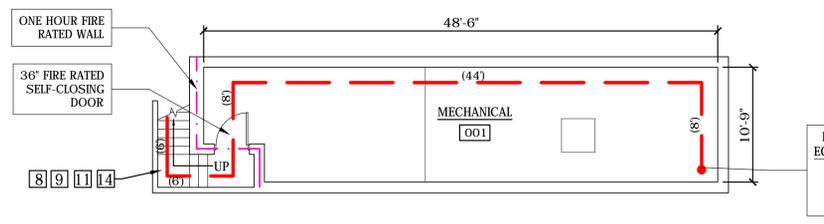
KEY PLAN

NFPA LEGEND (EXISTING)

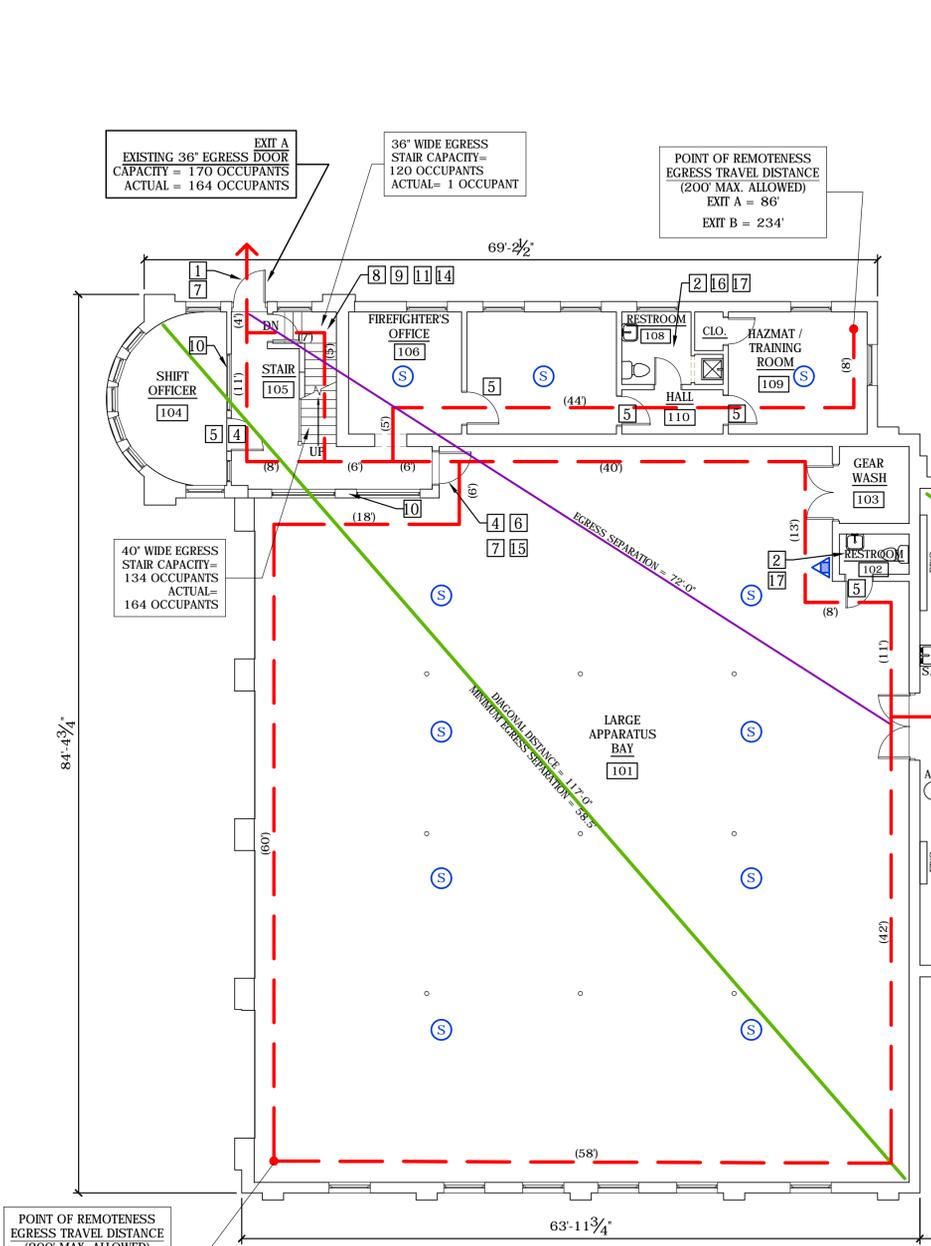
SYMBOL	DESCRIPTION
⊗	EXIT LIGHT
EXIT	EXIT SIGN (NOT ILLUMINATED)
▲	ABC FIRE EXTINGUISHER w/ BRACKET
◀▶	EMERGENCY LIGHT
⊙	SMOKE DETECTOR
⊙	CARBON MONOXIDE DETECTOR
⊗	EMERGENCY / EXIT LIGHT
⊗	HORN / STROBE UNIT
⊗	STROBE UNIT
FACT	FIRE ALARM PANEL

SYMBOLS LEGEND

- DIAGONAL DISTANCE
- - - EGRESS PATH w/ DISTANCE
- - - EGRESS SEPARATION
- - - 1 HR RATED



CENTRAL FIRE STATION BASEMENT FLOOR PLAN
SCALE: 1/8" = 1'-0"



CENTRAL FIRE STATION GROUND FLOOR PLAN
SCALE: 1/8" = 1'-0"

BUILDING KEYED NOTES LEGEND

1	REQUIRED EXIT DOES NOT COMPLY WITH ADA.	16	SHOWER NOT ADA COMPLIANT.
2	TOILET ROOM DOES NOT COMPLY WITH ADA (DIMENSIONAL CRITERIA).	17	TOILET ACCESSORY HEIGHT DOES NOT COMPLY w/ ADA.
3	SINK DOES NOT COMPLY WITH ADA (NOT WHEELCHAIR ACCESSIBLE).	18	RANGE DOES NOT HAVE NFPA EXHAUST HOOD.
4	DOOR DOES NOT COMPLY WITH ADA (NOT WHEELCHAIR ACCESSIBLE).	19	MAXIMUM ALLOWED EGRESS TRAVEL DISTANCE DOES NOT COMPLY WITH IBC / NFPA 101
5	DOOR HARDWARE NOT ADA COMPLIANT (KNOB).	20	STAIR WIDTH NOT CODE COMPLIANT.
6	DOOR ASSEMBLY NOT 1 HR FIRE RATED AT EGRESS CORRIDOR (NON-SPRINKLED).	21	STAIR DOES NOT HAVE GUARDRAIL / HANDRAIL.
7	DOOR DOES NOT HAVE ADA WHEELCHAIR MINIMUM CLEARANCE APPROACH @ HARDWARE.	22	VEHICLE MAINTENANCE BAYS & STORAGE BAYS DO NOT COMPLY WITH IBC/NFPA FOR FIRE PROTECTION (ALARMS / EXIT LIGHT / EMERGENCY LIGHTING).
8	STAIR RAILING DOES NOT HAVE CODE COMPLIANT EXTENSIONS.*		(*) PER 2015 IBC / NFPA 101
9	STAIR RAILING HEIGHT / OPENINGS DO NOT COMPLY.*		
10	PARTITION @ EGRESS CORRIDOR NOT 1 HR FIRE RATED.		
11	STAIR DOES NOT HAVE CODE COMPLIANT FIRE RATED ENCLOSURE.		
12	STORAGE / FIXTURES IN NON-RATED EGRESS COMPONENT.		
13	STORAGE AREA OVER 100 S.F. NOT RATED.		
14	STAIR RISER / TREAD DO NOT COMPLY.*		
15	DOOR NOT RATED AND DOES NOT HAVE POSITIVE LATCHING HARDWARE.		

PUBLIC SAFETY BUILDING GENERAL CODE NOTES - EXISTING CONDITIONS

NFPA NOTES

- EXISTING BUILDING DOES NOT HAVE AN NFPA SPRINKLER SYSTEM.
- EXISTING BUILDING DOES NOT HAVE A COMPLIANT NFPA ALARM/ DETECTION SYSTEM. (PARTIAL AT SECOND FLOOR)
- EXISTING BUILDING LACKS COMPLIANT EMERGENCY & EXIT LIGHTS.
- CORRIDOR DOORS / FRAMES / SIDELITES ARE NOT LABEL / RATED AND DO NOT HAVE CLOSERS AT ALL LOCATIONS.

ADA NOTES

- MAJORITY OF DOORS DO NOT HAVE ADA COMPLIANT HARDWARE (LEVERS).
- TOILET ROOMS ARE NON-COMPLIANT.
- KITCHEN SINK IS NON-COMPLIANT.
- EXITS ARE NON-COMPLIANT.
- STAIRS ARE NON-COMPLIANT.
- NO ACCESS TO SECOND FLOOR.

NFPA 101 Life Safety Code - 2018 Edition

Building Classification: Business/Storage - 14,300 sf gross area
 Building Occupancy Classifications: Business (326 sf), Storage (7,360 sf), Residential (2,331 sf), Assembly (2,109 sf)
 Utility & Circulation (2,174 sf), Kitchen (110 sf)
 Hazard Classification: Ordinary Hazard
 Type III (000)
 Construction Type: Type III-B - Protected/Unprotected/Sprinkled
 Occupant Loads: Business @ 150 sf/occ = 3
 Storage @ 500 sf/occ = 15
 Residential @ 200 sf/occ = 12
 Assembly @ 150 sf/occ = 141 (@ 75 sf/occ = 302)
 Kitchen @ 100 sf/occ = 2
 Total Occupant Load = 173 occupants (334)

Egress Criteria	Business	Storage	Residential	Assembly
Max. Allowable Travel Distance:	200'	200'	100'	200'
Max. Allowable Common Path:	75'	50'	35'	20/75'
Max. Dead End Corridor Length:	20'	50'	35'	20'
Minimum Egress Corridor Width:	44"	44"	44"	44"
Minimum Number of Required Exits:	2	2	2	2
Minimum Horiz. Egress Enclosure rating:	1 hr	1 hr	1 hr	1 hr
Minimum Separation of Exits:	0.5 diagonal distance	Same	Same	Same
Fire Escapes as means of egress:	Allowed	Allowed	Allowed	Allowed
Minimum Egress Door Width:	36"	36"	36"	36"

Protection Systems Criteria

System	Business	Storage	Residential	Assembly
Exit Lighting:	Required	Required	Required	Required
Emergency Lighting:	Required	Required	Required	Required
Fire Alarm System:	Required	Required	Required	Required
Fire Sprinkler System:	Required	Required	Required	Required
Portable Fire Extinguishers:	Required	Required	Required	Required
Smoke Detection System:	Required	Required	Required	Required
Carbon Monoxide Alarm/Detection System:	Required	Required	Required	Required
Smoke Partitions between Bank Rooms:	NA	NA	Required	NA
Exit Device Hardware:	Required	Required	Required	Required

* Residential occupancy not allowed above Storage occupancy without a fire suppression system.
 ** Mixed Use with Residential component - all alarms and detectors shall be interconnected throughout entire building.

2015 INTERNATIONAL BUILDING CODE

Building Classification: Business/Storage - 14,300 sf gross area
 Building Occupancy Classifications: Business (326 sf), Storage (7,360 sf), Residential (2,331 sf), Assembly (2,109 sf)
 Utility & Circulation (2,174 sf), Kitchen (110 sf)
 Hazard Classification: Ordinary Hazard
 Construction Type: Type III-B - Protected/Unprotected/Sprinkled
 Occupant Loads: Business (B) @ 100 sf/occ = 4
 Storage (S-2) @ 500 sf/occ = 25
 Residential (R-2) @ 50 sf/occ = 47
 Assembly (A-2/A-3) @ 150 sf/occ = 141 (@ 75 sf/occ = 302)
 Utility (U) (Mechanical) @ 300 sf/occ = 8
 Kitchen @ 200 sf/occ = 1
 Total Occupant Load = 226 occupants (387)

Building Limitations

Construction Type: III-B - Sprinkled / Multi-Story
 Maximum Height: 55'
 Maximum Floors: 2 @ A; 3 @ B; 4 @ R; 3 @ S
 Maximum Area: 9,500 @ A; 19,000 @ B; 16,000 @ R; 26,000 @ S

Fire Resistance Ratings

III-B
 Primary Structural Frame: None
 Load Bearing Exterior Walls: 2 Hours
 Load Bearing Interior Walls: None
 Floor Structure: None
 Roof Structure: None

Fire Separation of Uses: 2 Hours @ AR, A/B, R/S, R/B & S/R; 1 Hour @ A/S
Exit Corridors: 1 hour
Other Assemblies: 1 hour at Utility

Building Egress Criteria:
 Minimum Number of Exits: 2
 Minimum Separation of Exits: 0.5 diagonal
 Maximum Dead End Corridor Length: 20'
 Maximum Common Travel Path: 75'
 Maximum Travel Distance: 200' @ A-2/A-3 & R-2; 200' @ B; 300' @ S-2

Building Dimensional Criteria

Criterion	Business	Storage	Residential	Assembly
Minimum Headroom - Occupied Rooms:	7'-6"	7'-6"	7'-6"	7'-6"
Minimum Stair width:	44" clear	44" clear	44" clear	44" clear
Maximum Riser height:	7"	7"	7"	7"
Minimum Tread width:	11"	11"	11"	11"
Minimum Headroom - Stairs:	6'-8"	6'-8"	6'-8"	6'-8"
Maximum ht. between landings:	12'-0"	12'-0"	12'-0"	12'-0"
Handrail top extension:	34"-38" @ 42" guardrail			
Handrail bottom extension:	12" horz.	12" horz.	12" horz.	12" horz.
Handrail diameter:	1-1/4" O.D.	1-1/4" O.D.	1-1/4" O.D.	1-1/4" O.D.
Maximum baluster open space:	less than 4"	less than 4"	less than 4"	less than 4"

Interior Finish Class:
 Exits: A or B
 All other spaces: A, B, or C

NFPA LEGEND (EXISTING)

SYMBOL	DESCRIPTION
⊗	EXIT LIGHT
EXIT	EXIT SIGN (NOT ILLUMINATED)
⊠	ABC FIRE EXTINGUISHER w/ BRACKET
⊡	EMERGENCY LIGHT
⊙	SMOKE DETECTOR
⊕	CARBON MONOXIDE DETECTOR
⊗⊡	EMERGENCY / EXIT LIGHT
⊠⊡	HORN / STROBE UNIT
⊡⊡	STROBE UNIT
⊡⊡⊡	FIRE ALARM PANEL

SYMBOLS LEGEND

—	DIAGONAL DISTANCE
---	EGRESS PATH w/ DISTANCE
---	EGRESS SEPARATION
---	1 HR RATED

Building Live Load:
 Assembly: 100 psf
 Dining Rooms: 100 psf
 Offices: 50 psf
 Residential: 40 psf
 Corridors: 100 psf
 Storage: 125 psf @ light/250 psf @ heavy

Interior Finish Requirements (Sprinkled)

Area	Business	Assembly	Residential	Storage
Interior Stairs & Exit Passageways	Class B	Class B	Class C	Class C
Corridors	Class B	Class B	Class C	Class C
Rooms & enclosed spaces	Class C	Class C	Class C	Class C

Maine State Plumbing Code/UPC Minimum Fixture Requirements

Occupancy Classification: Mixed - Business/Residential/Storage/Assembly
 Occupancy Area: 14,300 sf (gross)
 Occupancy Load: 226; Actual & 10 per shift; 40 for Trainings/Meetings

Occupants: 5 MALE/5 FEMALE for R
 20 MALE/20 FEMALE for A, B, & S

R FIXTURES	TOILETS	URINALS	LAVS	SHOWERS
Men	1	0	1	1
Women	1	0	1	1
TOTAL	2	1	2	2

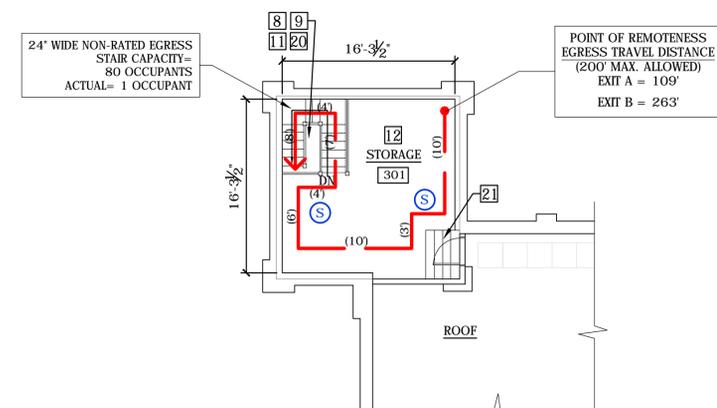
A, B & S FIXTURES	TOILETS	URINALS	LAVS	SHOWERS
Men	2	0	1	0
Women	2	0	1	0
TOTAL (Use B & S-2)	5	1	2	0

TOTAL FOR BUILDING: 7 2 2 4 2
 Drinking Fountains: 1 per 150 occupants - 1 required
 Service Sink: 1 per floor - 2 required

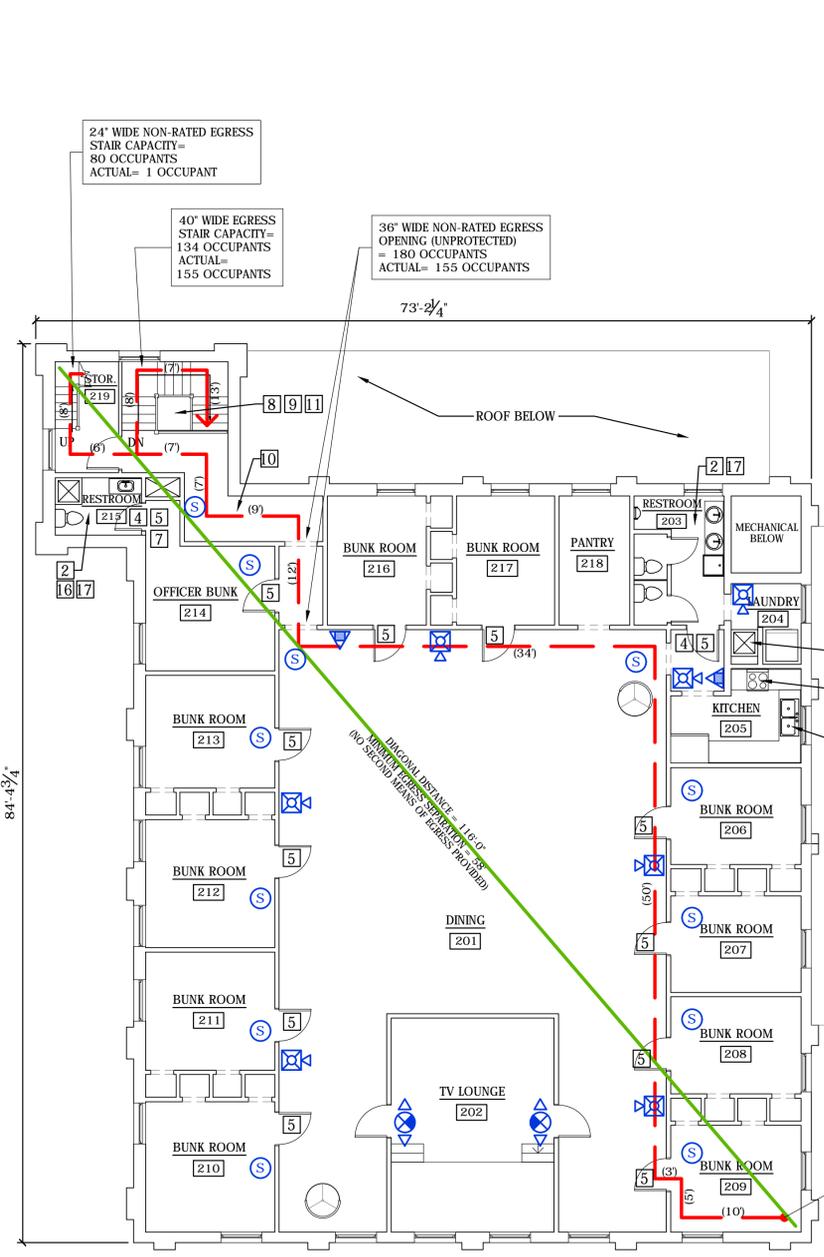
MUBEC Maine Uniform Building Energy Code MINIMUM INSULATION VALUES
 Per 2009 IBC, Table 502.1.2, 502.2.11 and 502.3

ZONE GA	R-VALUE (MIN)	U-FACTOR (MIN)	SHGC	PROPOSED R	PROPOSED U
Exterior wall	18.5	0.034	NA	30.0	0.031
Roof (above deck)	20.0 c.i.	0.048	NA	40.0	0.025
Slab (24" hard)	15.0	0.052	NA	15.0	0.052
Slab (heated)	12.5 c.i.	0.064	NA	15.0	0.052
Frost Wall	7.5	0.133	NA	7.5	0.133
Doors - Solid	2.0	0.50	NA	10.0	0.100
Doors - Glazed	1.25	0.80	NR	2.9	0.350
Windows	2.9	0.35	NR	2.9	0.350
Storefront	2.2	0.45	NR	2.9	0.350

End of Analysis



CENTRAL FIRE STATION ROOF PLAN
SCALE: 1/8" = 1'-0"



CENTRAL FIRE STATION SECOND FLOOR PLAN
SCALE: 1/8" = 1'-0"

BUILDING KEYED NOTES LEGEND

1	REQUIRED EXIT DOES NOT COMPLY WITH ADA.	16	SHOWER NOT ADA COMPLIANT.
2	TOILET ROOM DOES NOT COMPLY WITH ADA (DIMENSIONAL CRITERIA).	17	TOILET ACCESSORY HEIGHT DOES NOT COMPLY w/ ADA.
3	SINK DOES NOT COMPLY WITH ADA (NOT WHEELCHAIR ACCESSIBLE).	18	RANGE DOES NOT HAVE NFPA EXHAUST HOOD.
4	DOOR DOES NOT COMPLY WITH ADA (NOT WHEELCHAIR ACCESSIBLE).	19	MAXIMUM ALLOWED EGRESS TRAVEL DISTANCE DOES NOT COMPLY WITH IBC / NFPA 101
5	DOOR HARDWARE NOT ADA COMPLIANT (KNOB).	20	STAIR WIDTH NOT CODE COMPLIANT.
6	DOOR ASSEMBLY NOT 1 HR FIRE RATED AT EGRESS CORRIDOR (NON-SPRINKLED).	21	STAIR DOES NOT HAVE GUARDRAIL / HANDRAIL.
7	DOOR DOES NOT HAVE ADA WHEELCHAIR MINIMUM CLEARANCE APPROACH @ HARDWARE.	22	VEHICLE MAINTENANCE BAYS & STORAGE BAYS DO NOT COMPLY WITH IBC/NFPA FOR FIRE PROTECTION (ALARMS / EXIT LIGHT / EMERGENCY LIGHTING).
8	STAIR RAILING DOES NOT HAVE CODE COMPLIANT EXTENSIONS.*		(*) PER 2015 IBC / NFPA 101
9	STAIR RAILING HEIGHT / OPENINGS DO NOT COMPLY.*		
10	PARTITION @ EGRESS CORRIDOR NOT 1 HR FIRE RATED.		
11	STAIR DOES NOT HAVE CODE COMPLIANT FIRE RATED ENCLOSURE.		
12	STORAGE / FIXTURES IN NON-RATED EGRESS COMPONENT.		
13	STORAGE AREA OVER 100 S.F. NOT RATED.		
14	STAIR RISER / TREAD DO NOT COMPLY.*		
15	DOOR NOT RATED AND DOES NOT HAVE POSITIVE LATCHING HARDWARE.		

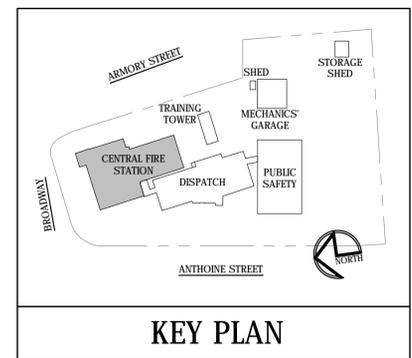
PUBLIC SAFETY BUILDING GENERAL CODE NOTES - EXISTING CONDITIONS

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- MAJORITY OF DOORS DO NOT HAVE ADA COMPLIANT HARDWARE (LEVERS).
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NFPA 101 Life Safety Code - 2018 Edition

Building Classification: Business/Storage - 14,300 sf gross area
 Building Occupancy Classifications: Business (326 sf), Storage (7,360 sf), Residential (2,331 sf), Assembly (2,109 sf)
 Utility & Circulation (2,174 sf), Kitchen (110 sf)
 Hazard Classification: Ordinary Hazard
 Construction Type: Type III (000)
 Occupant Loads: Business @ 150 sf/occ = 3
 Storage @ 500sf/occ = 15
 Residential @ 200sf/occ = 12
 Assembly @ 15sf/occ = 141 (@7sf/occ = 302)
 Kitchen @ 100sf/occ = 2
 Total Occupant Load = 173 occupants (334)

Egress Criteria	Business	Storage	Residential	Assembly
Max. Allowable Travel Distance:	200'	200'	100'	200'
Max. Allowable Common Path:	75'	50'	35'	20/75'
Max. Dead End Corridor Length:	20'	50'	35'	20'
Minimum Egress Corridor Width:	44"	44"	44"	44"
Minimum Number of Required Exits:	2	2	2	2
Minimum Horiz. Egress Lockout rating:	1 hr	1 hr	1 hr	1 hr
Minimum Separation of Exits:	0.5 diagonal distance	Same	Same	Same
Fire Escapes as means of egress:	Allowed	Allowed	Allowed	Allowed
Minimum Egress Door Width:	36"	36"	36"	36"

Protection Systems Criteria	Business	Storage	Residential	Assembly
Exit Lighting:	Required	Required	Required	Required
Emergency Lighting:	Required	Required	Required	Required
Fire Alarm System:	Required	Required	Required	Required
Fire Sprinkler System:	Required	Required	Required	Required
Portable Fire Extinguishers:	Required	Required	Required	Required
Smoke Detection System:	Required	Required	Required	Required
Carbon Monoxide Alarm/Detection System:	Required	Required	Required	Required
Smoke Partitions between Bank Rooms:	NA	NA	NA	NA
Exit Device Hardware:	Required	Required	Required	Required

* If Residential occupancy not allowed above Storage occupancy without a fire suppression system.
 Mixed Use with Residential component - all alarms and detectors shall be interconnected throughout entire building.

Separation of Use Rating: 2 hours
 Janitor, Mech, Stor Rating: 1 hour
 Kitchen - NFPA Exhaust Hood with Suppression: Required at Range; K-type portable fire extinguisher also required
 Minimum Headroom - Occupied Rooms: 7'-6"
 Minimum Stair width: 44" clear
 Maximum Riser height: 7"
 Minimum Tread width: 11"
 Minimum Headroom - Stairs: 6'-8"
 Maximum ht. between landings: 12'-0"
 Handrail height: 34"-38" @ 42" guardrail
 Handrail top extension: 12" horz.
 Handrail bottom extension: 11" angled + 12" horz.
 Handrail diameter: 1-1/4" O.D.
 Maximum baluster open space: less than 4"

Interior Finishes Class:	Business	Storage	Residential	Assembly
Exits:	A or B	A or B	A or B	A or B
All other spaces:	A, B, or C	A, B, or C	A, B, or C	A, B, or C

2015 INTERNATIONAL BUILDING CODE

Building Classification: Business/Storage - 14,300 sf gross area
 Building Occupancy Classifications: Business (326 sf), Storage (7,360 sf), Residential (2,331 sf), Assembly (2,109 sf)
 Utility & Circulation (2,174 sf), Kitchen (110 sf)
 Hazard Classification: Ordinary Hazard
 Construction Type: Type III - Protected/Unprotected/Sprinkled
 Occupant Loads: Business (B) @ 100 sf/occ = 4
 Storage (S-2) @ 500sf/occ = 25
 Residential (R-2) @ 50sf/occ = 47
 Assembly (A-2/A-3) @ 15sf/occ = 141 (@7sf/occ = 302)
 Utility (U) (Mechanical) @ 300sf/occ = 8
 Kitchen @ 200sf/occ = 1
 Total Occupant Load = 226 occupants (387)

Building Limitations: IIB - Sprinkled / Multi-Story
 Construction Type: IIB
 Maximum Height: 55'
 Maximum Floors: 2 @ A; 3 @ B; 4 @ R; 3 @ S
 Maximum Area: 9,500 @ A; 19,000 @ B; 16,000 @ R; 26,000 @ S

Fire Resistance Ratings: IIB
 Primary Structural Frame: None
 Load Bearing Exterior Walls: 2 Hours
 Load Bearing Interior Walls: None
 Floor Structure: None
 Roof Structure: None

Fire Separation of Uses: 2 Hours @ A/R, A/B, R/S, R/B & S/R; 1 Hour @ A/S
 Exit Corridors: 1 hour
 Other Assemblies: 1 hour at Utility

Building Egress Criteria: 2
 Minimum Number of Exits: 2
 Minimum Separation of Exits: 0.5 diagonal
 Maximum Dead End Corridor Length: 20'
 Maximum Common Travel Path: 75'
 Maximum Travel Distance: 200' @ A-2/A-3 & R-2; 200' @ B; 300' @ S-2

Building Dimensional Criteria: Minimum Headroom - Occupied Rooms: 7'-6"
 Minimum Stair width: 44" clear
 Maximum Riser height: 7"
 Minimum Tread width: 11"
 Minimum Headroom - Stairs: 6'-8"
 Maximum ht. between landings: 12'-0"
 Handrail height: 34"-38" @ 42" guardrail
 Handrail top extension: 12" horz.
 Handrail bottom extension: 11" angled + 12" horz.
 Handrail diameter: 1-1/4" O.D.
 Maximum baluster open space: less than 4"

Fire Protection Systems Criteria: Fire Alarm System: Required (mixed use)
 Fire Sprinkler System: Required (mixed use & Assembly occupancy of Second Floor)
 Portable Fire Extinguishers: Required (with K-type in Kitchen)
 Exit Lighting: Required
 Emergency Lighting: Required
 Exit (Func) Devices: Required

Building Live Load:	Business	Assembly	Residential	Storage
Assembly:	100 psf			
Dining Rooms:	100 psf			
Offices:	50 psf			
Residential:	40 psf			
Corridors:	100 psf			
Storage:	125 psf @ light/250 psf @ heavy			

Maine State Plumbing Code/UPC Minimum Fixture Requirements

Occupancy Classification: Mixed - Business/Residential/Storage/Assembly
 Occupancy Area: 14,300 sf (gross)
 Occupancy Load: 226; Actual & 10 per shift; 40 for Trainings/Meetings

Occupants:	5 MALE/5 FEMALE for R-20 MALE/20 FEMALE for A, B, & S			
R FIXTURES	TOILETS	URINALS	LAVS	SHOWERS
Men:	1	0	1	1
Women:	1	0	1	1
TOTAL:	2	0	2	2

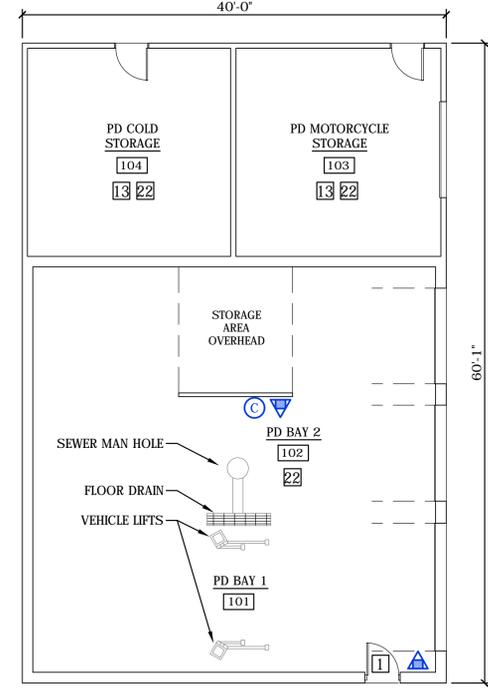
A, B & S FIXTURES	TOILETS	URINALS	LAVS	SHOWERS
Men:	3	0	1	0
Women:	3	0	1	0
TOTAL (Use B & S-2):	6	0	2	0

TOTAL FOR BUILDING: 7 2 4 2
 Drinking Fountains: 1 per 150 occupants - 1 required
 Service Sink: 1 per floor - 2 required

MUBC Maine Uniform Building Energy Code MINIMUM INSULATION VALUES
 Per 2009 ICC, Table 502.1.2, 502.2(1) and 502.3

ZONE GA	R-VALUE (MIN)	U-FACTOR (MIN)	SHGC	PROPOSED R	PROPOSED U
Exterior wall	18.5	0.034	NA	30.0	0.031
Roof (above deck)	20.0c.i.	0.048	NA	40.0	0.025
Slab (24" hard)	15.0	0.052	NA	15.0	0.052
Slab (heated)	12.5c.i.	0.064	NA	15.0	0.052
Frost Wall	7.5	0.133	NA	7.5	0.133
Doors - Solid	2.0	0.50	NA	10.0	0.100
Doors - Glazed	1.25	0.80	NR	2.9	0.350
Windows	2.9	0.35	NR	2.9	0.350
Storefront	2.2	0.45	NR	2.9	0.350

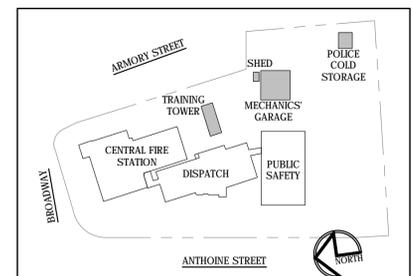
End of Analysis



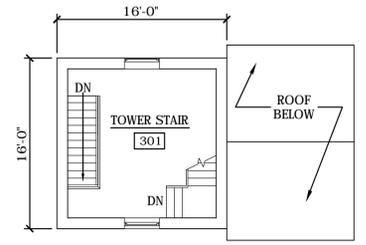
MECHANICS' GARAGE FLOOR PLAN
 SCALE: 1/8" = 1'-0"

NFPA LEGEND (EXISTING)	
SYMBOL	DESCRIPTION
⊗	EXIT LIGHT
EXIT	EXIT SIGN (NOT ILLUMINATED)
△	ABC FIRE EXTINGUISHER w/ BRACKET
◁▷	EMERGENCY LIGHT
⊙	SMOKE DETECTOR
⊕	CARBON MONOXIDE DETECTOR
⊗◁▷	EMERGENCY / EXIT LIGHT
⊗	HORN / STROBE UNIT
⊗	STROBE UNIT
FACT	FIRE ALARM PANEL

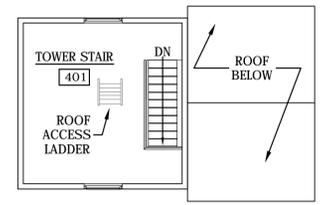
SYMBOLS LEGEND	
—	DIAGONAL DISTANCE
---	EGRESS PATH w/ DISTANCE
---	EGRESS SEPARATION
---	1 HR RATED



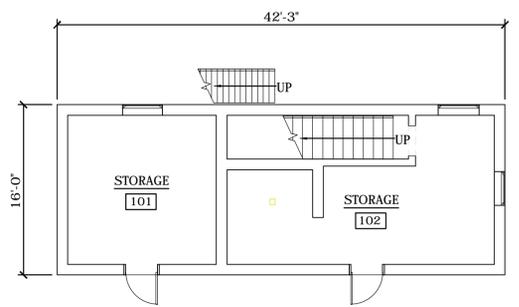
KEY PLAN



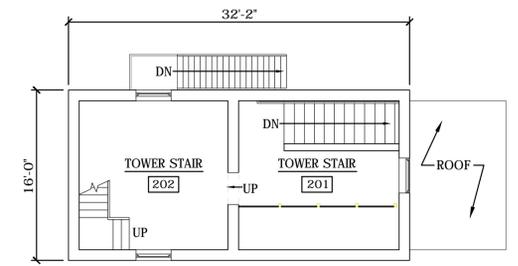
FIRE TRAINING TOWER LEVEL 2 PLAN
 SCALE: 1/8" = 1'-0"



FIRE TRAINING TOWER LEVEL 3 PLAN
 SCALE: 1/8" = 1'-0"



FIRE TRAINING TOWER GROUND LEVEL PLAN
 SCALE: 1/8" = 1'-0"

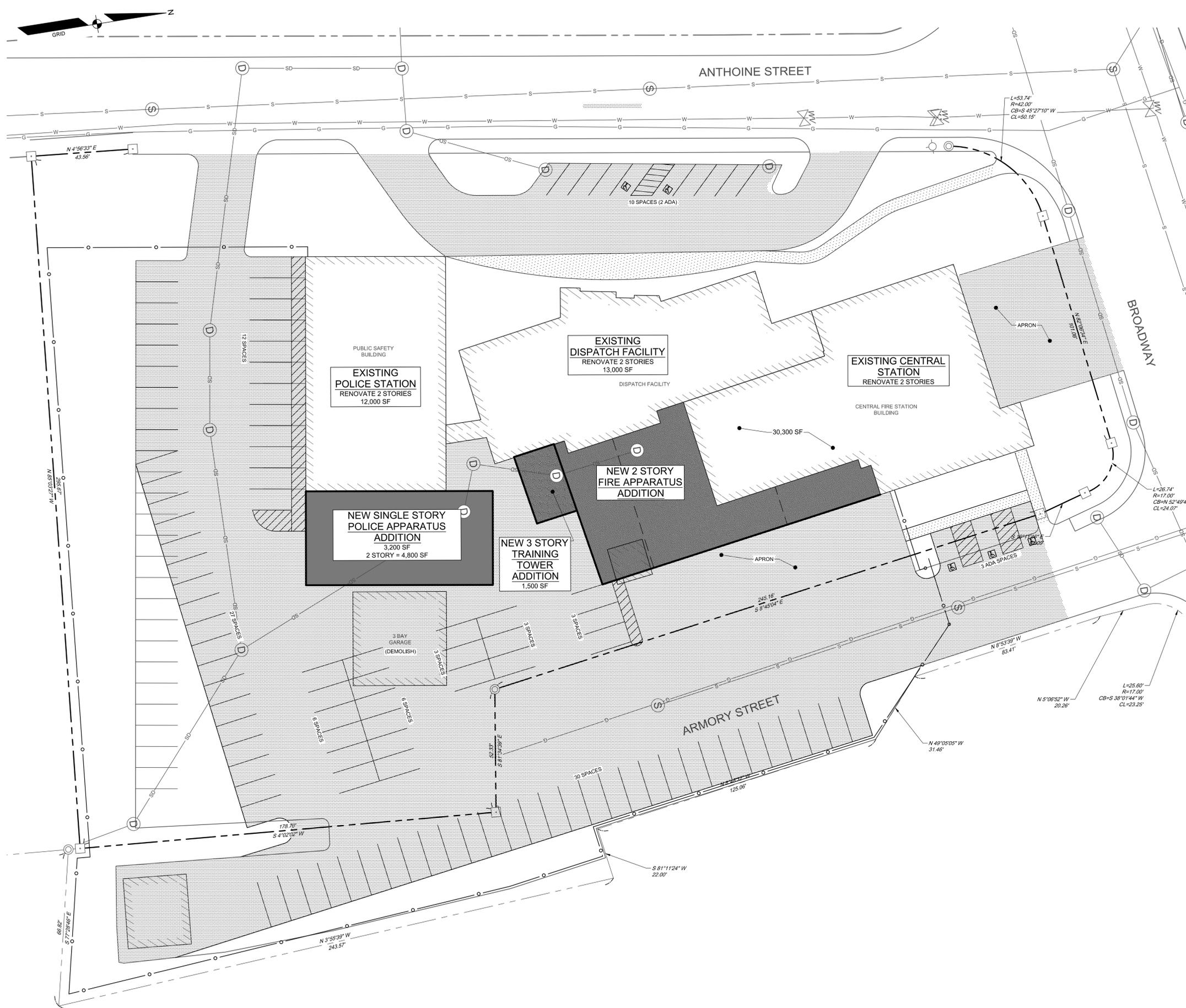


FIRE TRAINING TOWER LEVEL 1 PLAN
 SCALE: 1/8" = 1'-0"

BUILDING KEYED NOTES LEGEND			
1	REQUIRED EXIT DOES NOT COMPLY WITH ADA.	16	SHOWER NOT ADA COMPLIANT.
2	TOILET ROOM DOES NOT COMPLY WITH ADA (DIMENSIONAL CRITERIA).	17	TOILET ACCESSORY HEIGHT DOES NOT COMPLY w/ ADA.
3	SINK DOES NOT COMPLY WITH ADA (NOT WHEELCHAIR ACCESSIBLE).	18	RANGE DOES NOT HAVE NFPA EXHAUST HOOD.
4	DOOR DOES NOT COMPLY WITH ADA (NOT WHEELCHAIR ACCESSIBLE).	19	MAXIMUM ALLOWED EGRESS TRAVEL DISTANCE DOES NOT COMPLY WITH IBC / NFPA 101
5	DOOR HARDWARE NOT ADA COMPLIANT (KNOB).	20	STAIR WIDTH NOT CODE COMPLIANT.
6	DOOR ASSEMBLY NOT 1 HR FIRE RATED AT EGRESS CORRIDOR (NON-SPRINKLED).	21	STAIR DOES NOT HAVE GUARDRAIL / HANDRAIL.
7	DOOR DOES NOT HAVE ADA WHEELCHAIR MINIMUM CLEARANCE APPROACH @ HARDWARE.	22	VEHICLE MAINTENANCE BAYS & STORAGE BAYS DO NOT COMPLY WITH IBC/NFPA FOR FIRE PROTECTION (ALARMS / EXIT LIGHT / EMERGENCY LIGHTING).
8	STAIR RAILING DOES NOT HAVE CODE COMPLIANT EXTENSIONS.*		(* PER 2015 IBC / NFPA 101)
9	STAIR RAILING HEIGHT / OPENINGS DO NOT COMPLY.*		
10	PARTITION @ EGRESS CORRIDOR NOT 1 HR FIRE RATED.		
11	STAIR DOES NOT HAVE CODE COMPLIANT FIRE RATED ENCLOSURE.		
12	STORAGE / FIXTURES IN NON-RATED EGRESS COMPONENT.		
13	STORAGE AREA OVER 100 S.F. NOT RATED.		
14	STAIR RISER / TREAD DO NOT COMPLY.*		
15	DOOR NOT RATED AND DOES NOT HAVE POSITIVE LATCHING HARDWARE.		

PUBLIC SAFETY BUILDING GENERAL CODE NOTES - EXISTING CONDITIONS	
NFPA NOTES	
1.	EXISTING BUILDING DOES NOT HAVE AN NFPA SPRINKLER SYSTEM.
2.	EXISTING BUILDING DOES NOT HAVE A COMPLIANT NFPA ALARM/ DETECTION SYSTEM. (PARTIAL AT SECOND FLOOR)
3.	EXISTING BUILDING LACKS COMPLIANT EMERGENCY & EXIT LIGHTS.
4.	CORRIDOR DOORS / FRAMES / SIDELITES ARE NOT LABEL / RATED AND DO NOT HAVE CLOSERS AT ALL LOCATIONS.
ADA NOTES	
1.	MAJORITY OF DOORS DO NOT HAVE ADA COMPLIANT HARDWARE (LEVERS).
2.	TOILET ROOMS ARE NON-COMPLIANT.
3.	KITCHEN SINK IS NON-COMPLIANT.
4.	EXITS ARE NON-COMPLIANT.
5.	STAIRS ARE NON-COMPLIANT.
6.	NO ACCESS TO SECOND FLOOR.

Appendix E
Sebago Technics, Inc. Site Alternatives Plans



- DEMOLISH EXISTING REAR APPARATUS BAY ELL AT CENTRAL STATION.
- DEMOLISH EXISTING FIRE TRAINING TOWER STRUCTURE.
- DEMOLISH EXISTING PD MAINTENANCE GARAGE.
- PD FABRIC SHELTER FOR LARGE APPARATUS TO REMAIN.
- UPGRADE ALL BUILDINGS FOR ENERGY, LIFE SAFETY, BUILDING, AND ACCESSIBILITY CODE COMPLIANCE.
- INTERIOR RENOVATIONS TO CENTRAL STATION (10,900 SF), DISPATCH (13,000 SF), AND POLICE STATION (12,000 SF) ON ALL EXISTING FLOORS. RENOVATIONS INCLUDE PROGRAMMING, CODE, AND ENERGY UPGRADES.
- NEW 2-STORY 11,400 SF FIRE APPARATUS ADDITION AT CENTRAL STATION WITH ACCESS FROM ARMORY STREET. 3 LARGE APPARATUS BAYS, 1 SMALL APPARATUS BAY, DECON, TURN-OUT, GEAR REPAIR, SCBA, MAINTENANCE SHOP, HAZMAT & PPE STORAGE, STAIR/ELEVATOR, M/E, OFFICES, FITNESS, TRAINING, AND MULTI-USE STORAGE.
- NEW 3-STORY 1,500 SF TRAINING TOWER ADDITION. SHARED USE FOR FD & PD SCENARIOS.
- NEW SINGLE-STORY POLICE APPARATUS MAINTENANCE ADDITION. 2 APPARATUS MAINTENANCE BAYS, 1 EVIDENCE VEHICLE BAY, 1 BAY FOR COLD STORAGE, MOTORCYCLES & BICYCLES, MECHANIC'S OFFICE, TOILET, PARTS STORAGE AREA.
- CHALLENGES: FD APPARATUS BAY ADDITION LAYOUT NOT OPTIMAL BOTH FOR INTERIOR CONFIGURATION AND FOR APPARATUS TURNING RADIUS IN-AND-OUT OF THE SITE. ACCESS ONTO ARMORY STREET CHALLENGING, EVEN WITH ADDITIONAL TRAFFIC SIGNAL CONTROLS. BASEMENT LEVELS OF EXISTING DISPATCH AND POLICE STATION ARE BELOW FLOOD PLAIN, WHERE FLOODING IS FREQUENT. EOC SPACES ARE LOCATED IN THE DISPATCH BASEMENT, WHICH IS NOT OPTIMAL. SIGNIFICANT EXPENSE FOR AGING/OUTDATED STRUCTURES FROM A CODES AND ENERGY EFFICIENCY STANDPOINT. EXISTING CENTRAL STATION AND POLICE STATION BUILDINGS SIGNIFICANTLY OUTDATED. EXISTING POLICE STATION BUILT ON PILES, THEREFORE VERTICAL EXPANSION NOT FINANCIALLY POSSIBLE. EXISTING DISPATCH FACILITY WILL REQUIRE ROOF STRUCTURE UPGRADES DUE TO DRIFT LOADS IMPOSED BY THE NEW 2-STORY FIRE APPARATUS ADDITION. ONE CLIMATE INITIATIVE NOT ACHIEVABLE.
- PHASED CONSTRUCTION WILL REQUIRE MULTIPLE PERIODS OF DISPLACEMENT BY BOTH DEPARTMENTS, WHICH WILL BE COSTLY AND POSSIBLY COMPROMISE EFFECTIVENESS AND QUALITY OF EMERGENCY SERVICES.

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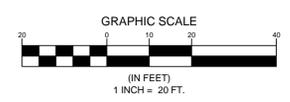
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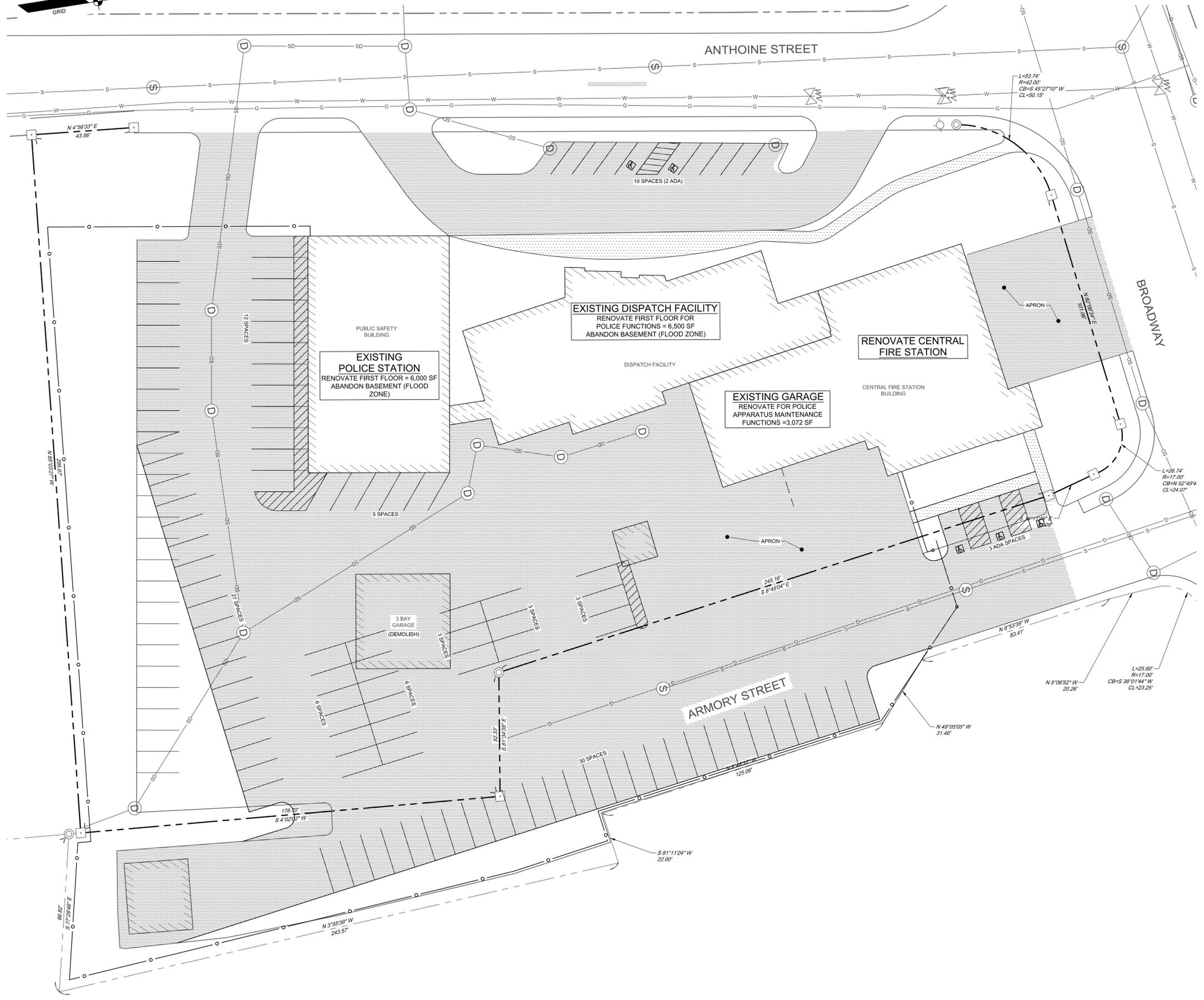
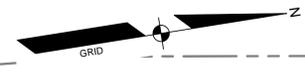
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ALTERNATIVE CONCEPT NO. 1
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CENTRAL FIRE STATION & POLICE STATION
684 BROADWAY
SOUTH PORTLAND, MAINE
FOR:
CITY OF SOUTH PORTLAND
25 COTTAGE ROAD
SOUTH PORTLAND, ME 04106

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18412-0PT1.dwg, TAB:OPTION 1



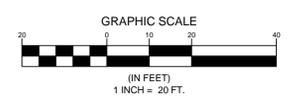
- CONCEPT 1A**
- RENOVATE AND RETAIN EXISTING BUILDINGS. BOTH FD AND PD STAY ONSITE.
 - DEMOLISH FIRE TRAINING TOWER.
 - SITE REBUILD.
 - WILL BE LOGISTICALLY DIFFICULT DUE TO BOTH FD AND PD STAYING ONSITE DURING WORK.
 - OPTIONS DOES NOT MEET SPACE NEEDS OF BOTH PD AND FD.

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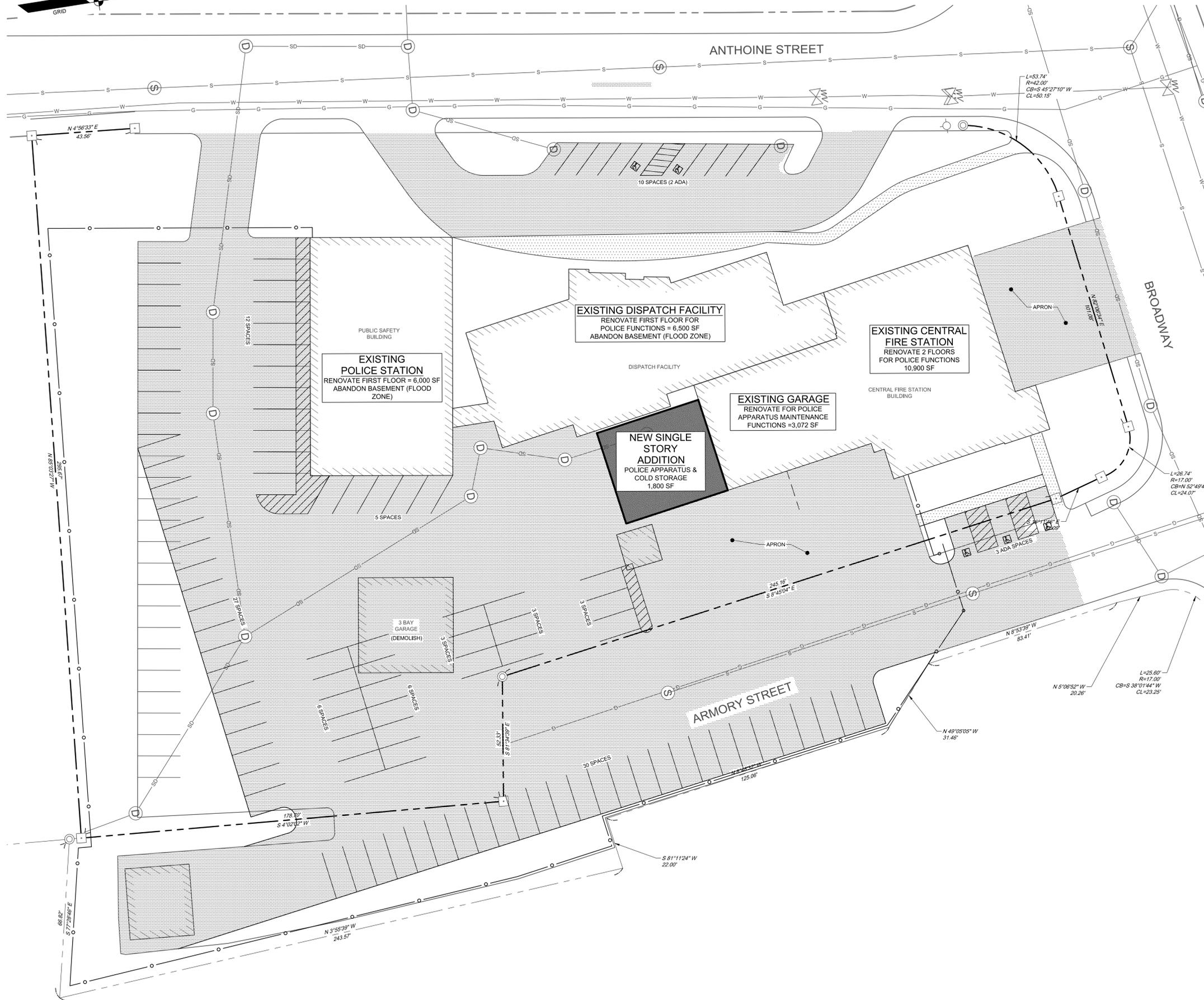
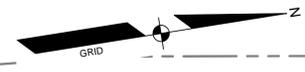
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18412-0PT1A.dwg TAB:OPTION 2



CONCEPT 2 PD = 28,275 SF FD = 0 SF

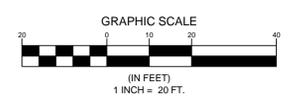
- FIRE DEPARTMENT MOVES OFF PROPERTY TO A NEW FACILITY ELSEWHERE. HIGHEST PROBABILITY IS MAHONEY SCHOOL SITE.
- DEMOLISH FIRE TRAINING TOWER AND PD MAINTENANCE GARAGE STRUCTURE.
- RE-PURPOSE PD LARGE APPARATUS STORAGE FABRIC STRUCTURE.
- ELIMINATE ANY ESSENTIAL FUNCTIONS FROM BASEMENT LEVELS OF DISPATCH AND POLICE STATION DUE TO LOCATION IN THE FLOOD ZONE. NON-ESSENTIAL STORAGE ONLY (IF ANYTHING).
- UPGRADE ALL BUILDINGS FOR ENERGY, LIFE SAFETY, BUILDING, AND ACCESSIBILITY CODE COMPLIANCE.
- INTERIOR RENOVATIONS TO EXISTING POLICE STATION. REDESIGNED FOR FIRST FLOOR USES ONLY. SPACES TO INCLUDE ADMINISTRATION FUNCTION SPACES DIRECTLY RELATED TO PATROL/COMMUNITY ACTIVITIES, SUCH AS BRIEFING ROOM, WEAPONS LOCKERS, BREAK ROOM, KITCHEN, BOOKING/HOLDING CELL(S), ETC.
- INTERIOR RENOVATIONS TO EXISTING DISPATCH FACILITY. REDESIGNED FOR FIRST FLOOR USES ONLY. SPACES TO INCLUDE ADMINISTRATION FUNCTION SPACES RELATED TO DEPARTMENT MANAGEMENT, PUBLIC INTERACTION, RESOURCES, MEETING ROOMS, AND INTERVIEWS.
- INTERIOR RENOVATIONS TO BOTH FLOORS OF CENTRAL STATION MAIN STRUCTURE (10,900 SF), REDESIGNED FOR POLICE STATION TECHNICAL SPACE FUNCTIONS, WHICH WILL INCLUDE A NEW SHOOTING RANGE, SWAT LOCKERS AND GEAR-UP ROOM, FITNESS ROOM WITH MF LOCKERS & SHOWERS, TECHNICAL STORAGE, LABS, AND RELATED OFFICES. CODE UPGRADES WILL INCLUDE 2 MEANS OF EGRESS STAIRS AND AN ELEVATOR.
- INTERIOR RENOVATIONS TO EXISTING 4-BAY GARAGE AT REAR OF CENTRAL STATION INTO POLICE APPARATUS MAINTENANCE USE. SPACES TO INCLUDE 3 MECHANICS BAYS, 1 EVIDENCE VEHICLE BAY, PARTS ROOM, MECHANIC'S OFFICE, TOILET, LARGE TOOLS AREA (TIRE BALANCER, ETC), WITH MEZZANINE ABOVE FOR ADDITIONAL PARTS STORAGE.
- NEW SINGLE-STORY ADDITION FOR PD LARGE APPARATUS AND COLD STORAGE ADDITION (MOTORCYCLES, BICYCLES, OUTDOOR EQUIPMENT, ETC.)
- CHALLENGES: FD/PPD PHYSICAL DISTANCING LOSES SOME EFFICIENCIES FOR SHARED SPACES AND DAILY INTEGRATION OPPORTUNITIES. BASEMENTS BECOME 'GHOST TOWNS' OF USELESS SPACE WITHOUT INVESTING SIGNIFICANT EXPENSE TO PREVENT FUTURE FLOODING. PD OPERATIONS VERY SPREAD OUT OVER A SIGNIFICANT AMOUNT OF SQUARE FOOTAGE. ONE CLIMATE INITIATIVE NOT ACHIEVABLE.
- PHASED CONSTRUCTION MUCH MORE EASILY MANAGED THAN CONCEPT 1.

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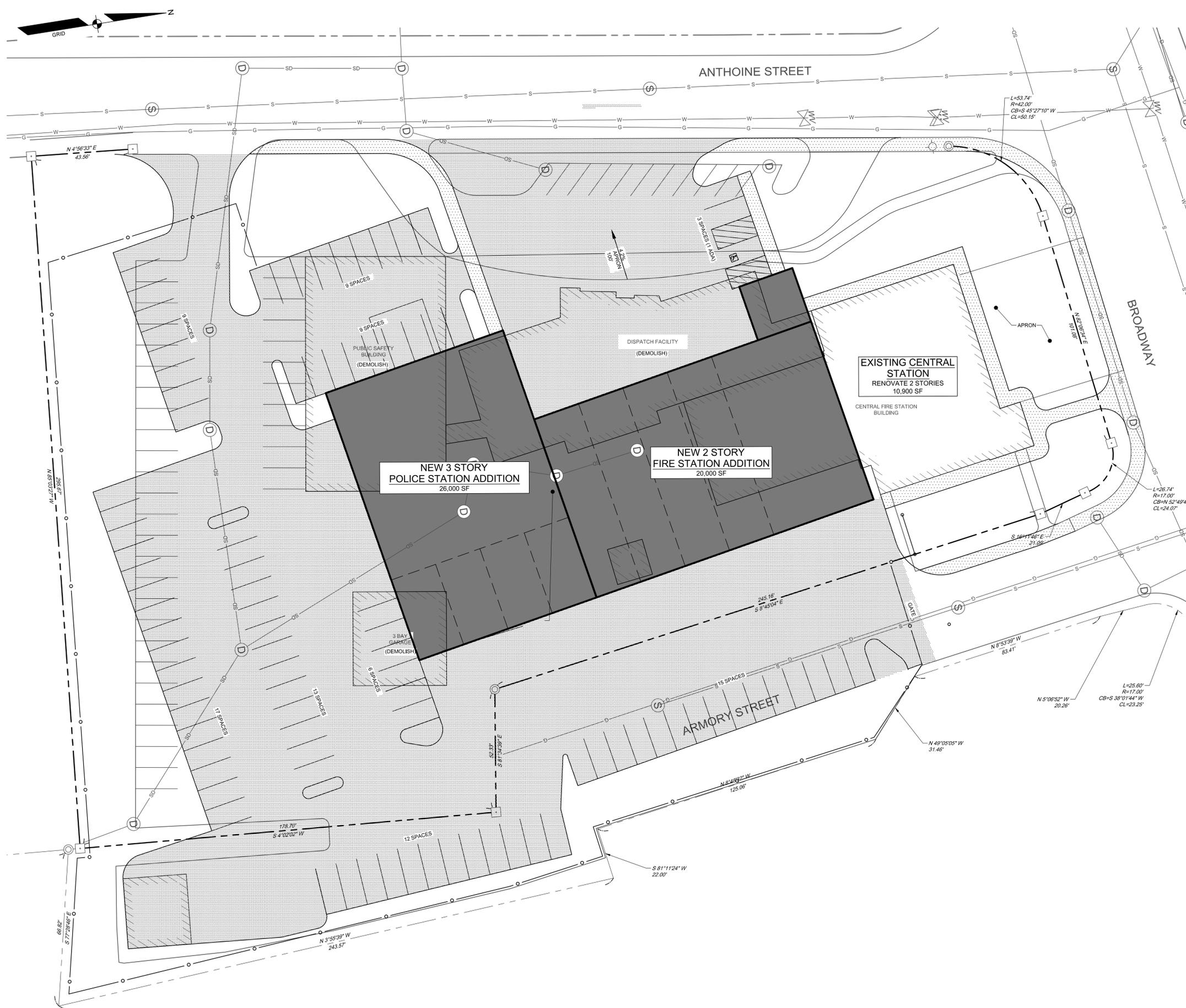
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25 COTTAGE ROAD
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- DEMOLISH EXISTING REAR APPARATUS BAY ELL AT CENTRAL STATION.
- DEMOLISH POLICE STATION.
- DEMOLISH EXISTING FIRE TRAINING TOWER STRUCTURE.
- DEMOLISH EXISTING PD MAINTENANCE GARAGE.
- PD FABRIC SHELTER FOR LARGE APPARATUS TO REMAIN.
- UPGRADE 2-STORY CENTRAL STATION BUILDING FOR ENERGY, LIFE SAFETY, BUILDING, AND ACCESSIBILITY CODE COMPLIANCE.
- INTERIOR RENOVATIONS TO BOTH FLOORS OF CENTRAL STATION MAIN STRUCTURE (10,900 SF), REDESIGNED FOR FD SMALLER APPARATUS, EMS CENTRAL SUPPLIES, AND OFFICES ON THE FIRST FLOOR. REDESIGNED FOR FD LIVING QUARTERS ON THE SECOND FLOOR - SIMILAR TO CASH CORNER.
- NEW TWO-STORY 20,000 SF FD ADDITION. FIRST FLOOR SPACES FOR LARGE AND SMALL APPARATUS, TURN-OUT, DECON, GEAR REPAIR, SCBA, MAINTENANCE SHOP, HAZMAT/PPE STORAGE, TRAINING STORAGE, GENERAL STORAGE, STAIRS, ELEVATOR, AND SECURED PUBLIC FUNCTIONS (LOBBY, CONFERENCE OFFICE). SECOND FLOOR SPACES FOR ADMINISTRATIVE AND TECHNICAL OFFICES, CONFERENCE/TRAINING ROOMS, FITNESS, ETC. AND ADDITIONAL STORAGE. TRAINING TOWER INTERNALLY LOCATED FOR USE BY FD & PD.
- NEW 3-STORY 28,800 SF PD STRUCTURE FOR ALL PD FUNCTIONS, INCLUDING IMPROVED BRIEFING, LOCKERS, SWAT, FIRING RANGE, OFFICES, APPARATUS MAINTENANCE, STORAGE, AND PUBLIC-RELATED OPERATIONS.
- CHALLENGES: LARGE FD APPARATUS ROLL-OUT ONTO ANTHOINE STREET WILL BE CHALLENGING DUE TO CURRENT ON-SITE GRADE DIFFERENTIALS. PUBLIC PARKING LOCATIONS NOT OPTIMAL. SEPARATE ENTRANCES FOR FD AND PD LACK EFFICIENCY OF SHARED FUNCTIONS AND WILL REQUIRE MULTIPLE ELEVATOR/STAIR LOCATIONS. DOES SOLVE THE FLOOD PLAN PROBLEM SINCE ALL SPACES WILL NOW BE SLAB ON GRADE AND ABOVE - NO BASEMENTS. ONE CLIMATE INITIATIVE ACHIEVABLE, ALTHOUGH INVASIVE FOR EXISTING 2-STORY CENTRAL STATION BUILDING.
- PHASING WILL REQUIRE TEMPORARILY RELOCATING BOTH PD AND FD OFFSITE DURING CONSTRUCTION. FD COULD RE-OCCUPY BEFORE PD IF MULTIPLE PHASED CONSTRUCTION IS DESIRED.

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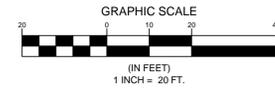
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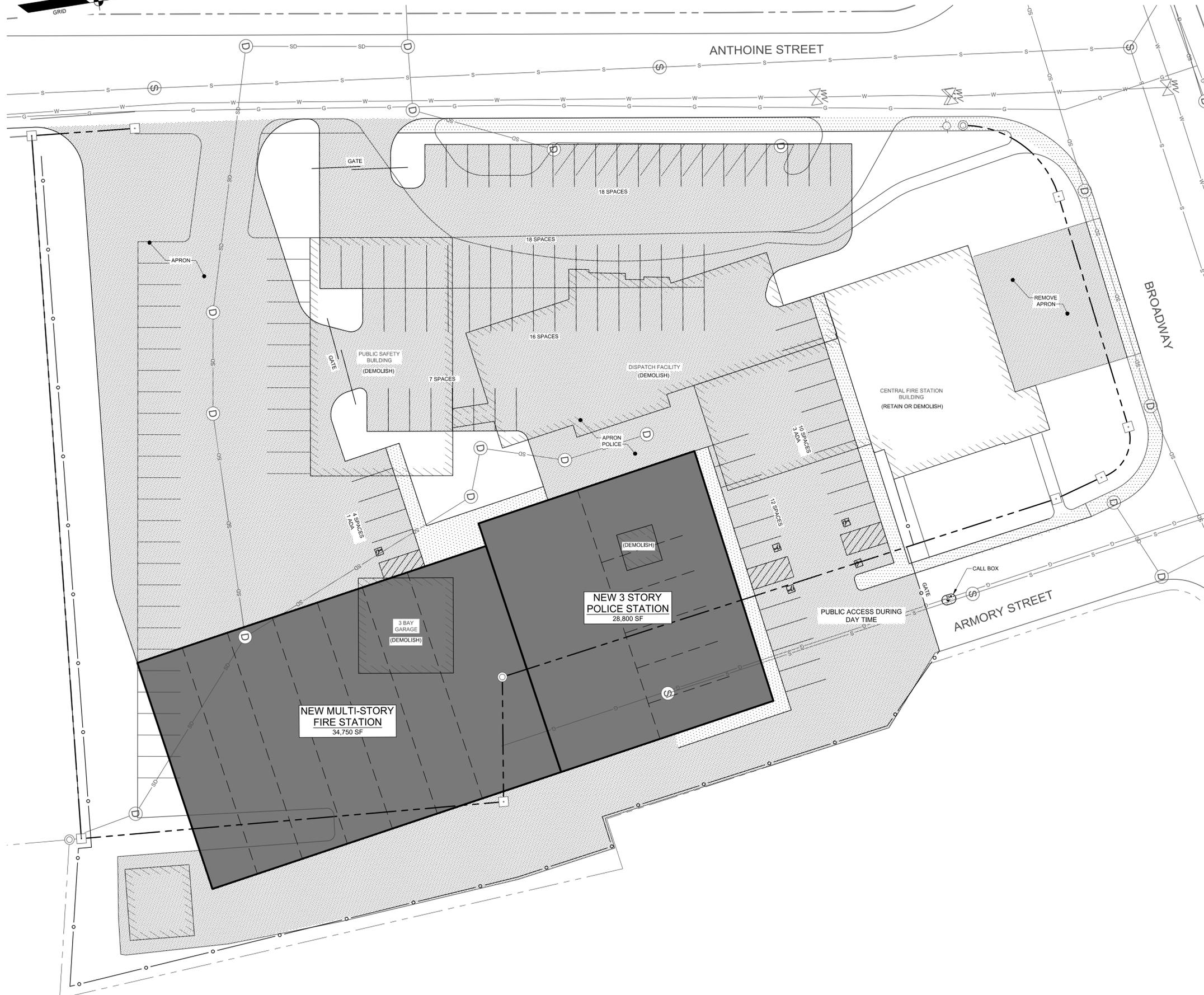
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 FOR:
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CONCEPT 4 PD = 28,800 FD = 34,750 SF

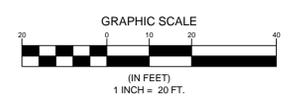
- DEMOLISH PD MAINTENANCE AND COLD STORAGE STRUCTURES, FD FIRE TRAINING TOWER STRUCTURE FOR NEW FACILITIES CONSTRUCTION.
- DEMOLISH ALL REMAINING STRUCTURES AFTER NEW FACILITIES ARE COMPLETED.
- NEW 3-STORY 28,800 SF PD STATION.
- NEW 2-STORY 31,000 SF FD STATION
- NEW 3-STORY 3,750 SF FD CONNECTOR WITH SOME PD SHARED FUNCTIONS.
- FD & PD APPARATUS DEPLOY ONTO ANTHOINE STREET.
- FD LARGE APPARATUS FURTHEST FROM BROADWAY INTERSECTION.
- PUBLIC ACCESS OPTIONS FOR EITHER ANTHOINE OR ARMORY STREETS.
- CHALLENGES: NEW CONSTRUCTION TIMEFRAME SEVERELY LIMITS CURRENT SITE'S ABILITY TO PROVIDE PARKING FOR EMPLOYEE VEHICLES, PD APPARATUS, AND MOVES PD APPARATUS MAINTENANCE OFF-SITE TEMPORARILY (PUBLIC WORKS FACILITY).
- DEMOLITION PHASE OF EXISTING STRUCTURES CAN ONLY BE COMPLETED AFTER PD & FD MOVE INTO THEIR NEW FACILITIES. LOGISTICALLY IMPOSSIBLE TO USE NEW FACILITY UNTIL ALL DEMOLITION AND SITEWORK IS COMPLETED AS EXISTING STRUCTURES BLOCK APPARATUS ACCESS TO ANTHOINE STREET. BUILDING LOCATION DOES NOT ALLOW ENOUGH SITE FOR DRIVE-THRU FIRE APPARATUS BAYS, NOR ANY ACCESS ONTO ARMORY STREET FOR ANY VEHICLE. ONE CLIMATE INITIATIVE ACHIEVABLE.
- PHASED CONSTRUCTION NOT REQUIRED FOR NEW BUILDINGS.

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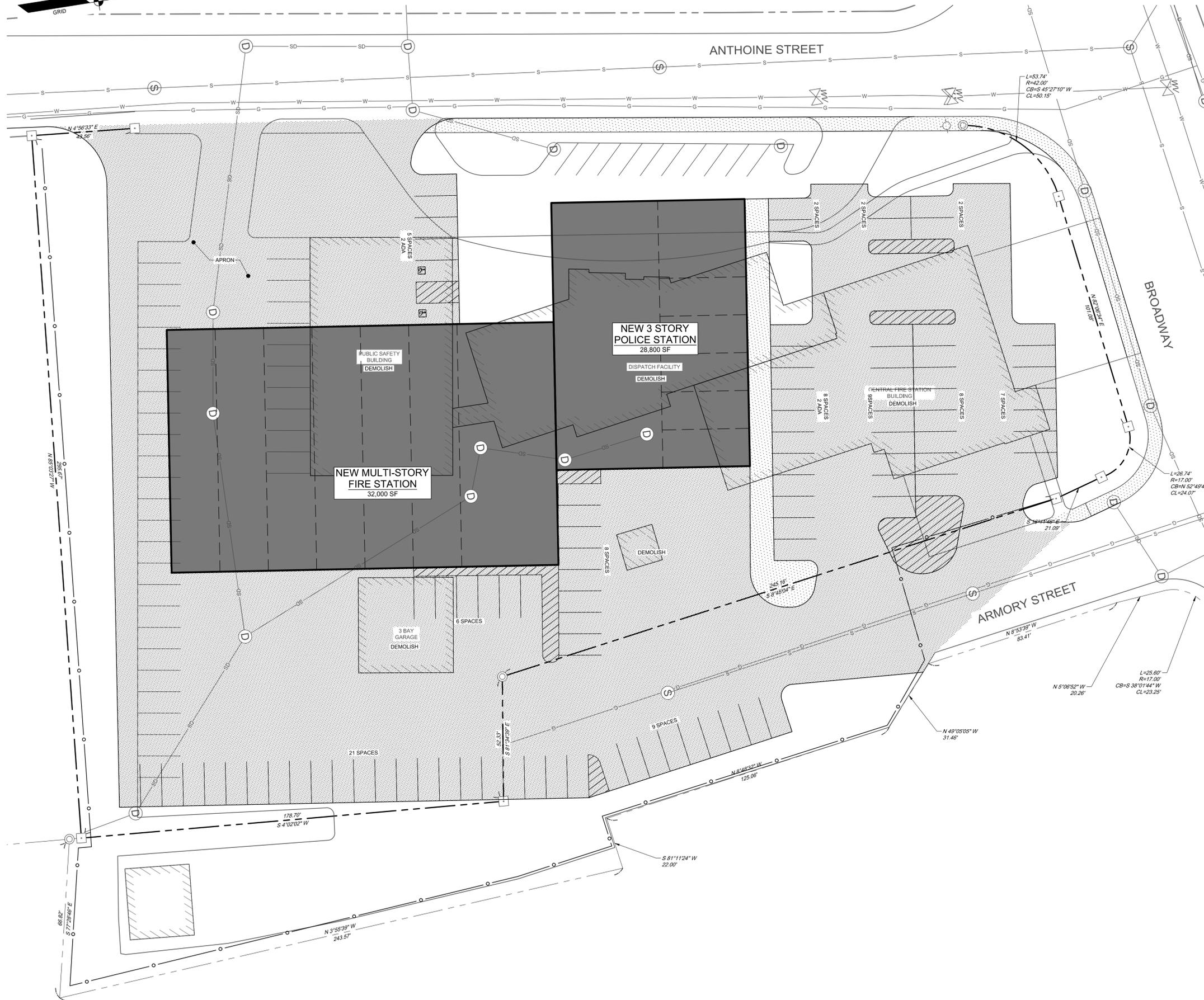
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FOR:
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25 COTTAGE ROAD
SOUTH PORTLAND, ME 04106

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CONCEPT 5 PD = 28,800 FD = 32,000 SF

- RELOCATE BOTH PD AND FD OFFSITE TEMPORARILY.
- DEMOLISH ALL STRUCTURES ON SITE. REWORK GRADES FOR BETTER APPARATUS ACCESS ONTO ANTHOINE AND ARMORY STREETS.
- NEW COMBINED PUBLIC SAFETY FACILITY COMPRISED OF A 3-STORY 28,800 SF POLICE DEPARTMENT AND 3-STORY 32,000 SF FIRE DEPARTMENT.
- ALLOWS SHARED SPACE UTILIZATION FOR BUILDING AND FUNCTIONAL EFFICIENCIES.
- ALLOWS FOR A CATEGORY IV ESSENTIAL FACILITY WITH A MODERNIZED EOC.
- SLAB-ON-GRADE CONSTRUCTION - NO SPACES IN FLOOD PLAIN.
- FD APPARATUS BAYS WOULD BE DRIVE-THRU AND ACCESS BOTH ANTHOINE STREET AND ARMORY STREET.
- BUILDING LOCATION ON PARCEL OPTIMIZES APPARATUS RAMP LENGTHS, LOCATIONS, AND GRADES.
- BUILDING LOCATION ON PARCEL OPTIMIZES QUANTITY OF EMPLOYEE PARKING AND PD APPARATUS PARKING.
- BUILDING LOCATION ON PARCEL PROVIDES FOR PUBLIC PEDESTRIAN AND VEHICULAR CIRCULATION REMOTE OF ALL FD & PD APPARATUS CIRCULATION.
- CHALLENGES: FINDING TEMPORARY LOCATIONS FOR POLICE AND FIRE DEPARTMENTS DURING 12-16 MONTH CONSTRUCTION PHASE.
- PROVIDES HIGHEST PROBABILITY FOR ACHIEVING ONE CLIMATE INITIATIVE.
- PHASED CONSTRUCTION NOT REQUIRED.



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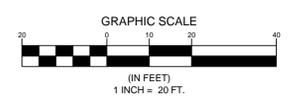
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Appendix F Site Photos



South Portland Police & Fire



Central Fire Station





Deteriorating Façade



Fire Station, Maintenance Bays, Fire & Training Tower



Armory Street Access to Rear of Fire & Police



1967 Police Building



1990 Police Dispatch Building