West Newton Armory

1137 Washington St, Newton, Massachusetts 02465

November 26, 2018

Report of Facility Condition Assessment

Project 100060875

DIVISION OF CAPITAL ASSET MANAGEMENT & MAINTENANCE

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November 26, 2018

Division of Capital Assessment Management & Maintenance
Office of Planning, Design & Construction
One Ashburton Place, 15th Floor
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Attention: Ms. Gail Rosenberg
Project Manager

Reference: Report of Facility Condition Assessment
West Newton Armory
1137 Washington Street
Newton, Massachusetts 02465
Project No. 100060875

Dear Ms. Rosenberg,

Faithful+Gould, Inc. has completed a report of Facility Condition Assessment of the West Newton Armory located at 1137 Washington Street in Newton, Massachusetts ("the Property"). This report provides a summary of the Property information known to us at the time of the study, an evaluation of the visually apparent condition of Property, and a forecast of anticipated capital expenditures required over the next ten-years.

This report was completed in general accordance with the ASTM E2018-15 Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process, and Faithful+Gould's proposal for Facility Condition Assessment services dated January 9, 2018.

Please review the attached draft report and advise us of any comments or corrections. We will issue a final report within one week of receipt of comments.

Very Truly Yours,

Edward Macdonald, BSc (Hons), MRICS
Senior Facility Assessor

Benjamin J.M. Dutton, BSc (Hons), MCIOB, MRICS
Vice President

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EXECUTIVE SUMMARY

The West Newton National Guard Armory Building consists of a two-story brick building with a basement located at 1137 Washington Street in Newton, Massachusetts. The Property contains a drill hall, offices, conference rooms, restrooms and shower facilities arranged over a floor area of approximately 26,890 gross square feet. Per the International Building Code (IBC), the structure is of construction type III-B (Unprotected, Combustible) due to the wood roof structure at the drill hall and unprotected nature of the building. The occupancy classification of the building is occupancy groups B (Business), A (Assembly) and S (Storage).

The Property was built in 1910 on a parcel of land measuring approximately 32,986 square feet (0.76-acres). The site is bound by commercial property to the west and east, private parking lot in the north and bound by Washington Street to the south. The area assumed to be within DCAMM's responsibility is outlined in red on Plan EX-1 below. Table EX-1 provides a summary of the Property.

Plan EX-1 – Aerial View of Property

Table EX-1 – Building CAMIS Data

Building	Site Name	Building Code	CAMIS Gross Square Foot	Revised Gross Square Foot	Construction Date	Renovation Date
Armory	Armory - West Newton	447MIL1040	26,890	30,122	1910	None

CAMIS Notes:

- The CAMIS data provided regarding the square footage of the building appears to be inaccurate after calculations were carried out on site as a check. The calculated square footage is shown in the above Table EX-1, which includes the gross area of the basement.

Assessment

On June 11, 2018, Mr. Seth Goldfine, RA and Mr. Robert Gacek of Faithful+Gould visited the Property to observe and document the condition of the building and site components. During our assessment, Faithful+Gould interviewed Mr. Roland Holmes (Property Manager) from the Massachusetts Army National Guard Armory. Our assessment was completed in general accordance with the ASTM E2018-15 Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process.

Approach to Facility Assessment

Due to the building's old age, there is a compelling argument that a substantial renovation is required to uplift the building from its current condition to that of an equivalent modern building and in line with current code or performance expectations, or to change its mission or purpose. Even in terms of basic armory necessities for the building to be used as office space, there should be an extensive capital expenditure.

Our approach in this report is focused on the capital needs required for the continued function of the building while proposing limited security, safety, energy and aesthetic improvements such as improving the quality of internal finishes and exterior brickwork and adding a security/access control system.

CAPITAL REQUIREMENTS

As detailed within Table EX-2, **capital expenditures over the 10-year study period total $1,221,813**. The cost tables included within Appendix B of this report and the narrative included within the following report sections provide details of these expenditures. Tables EX-2 through EX-6 below provide a summary of these expenditures. All numbers are shown in 2018-dollar values.

Table EX-2 – Summary of Total Expenditures over 10-year Study Period

Year	Expenditures
2019	$969,063
2020	$0
2021	$0
2022	$18,250
2023	$227,000
2024	$0
2025	$0
2026	$6,000
2027	$0
2028	$1,500
TOTAL	**$1,221,813**

Chart EX-1 – Summary of Total Expenditures over 10-year Study Period

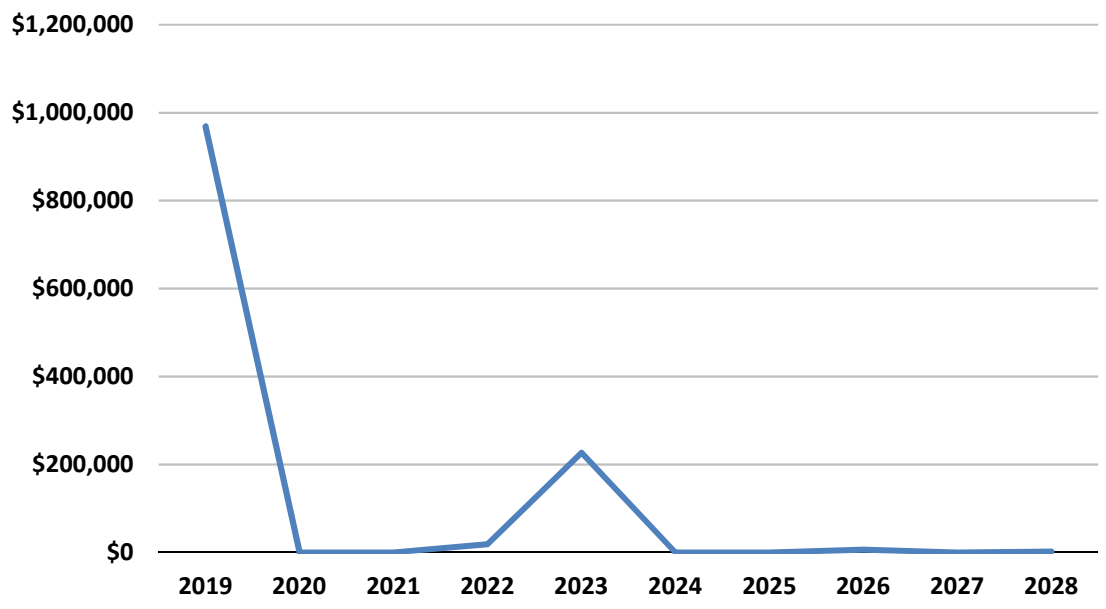


Table EX-3 – Summary of Expenditures by Building Systems over 10 Year Study Period

Classification	10-Year Capital Need
Site Systems	$37,550
Security Systems	$176,713
Structural Systems	$0
Roofing Systems	$63,700
Exterior Elements	$227,900
Mechanical	$137,500
Electrical	$53,000
Plumbing	$25,000
Fire & Life Safety	$0
Conveyance Systems	$0
Interiors	$400,000
Accessibility	$100,450
TOTAL	**$1,221,813**

Chart EX-2 – Summary of Expenditures by System

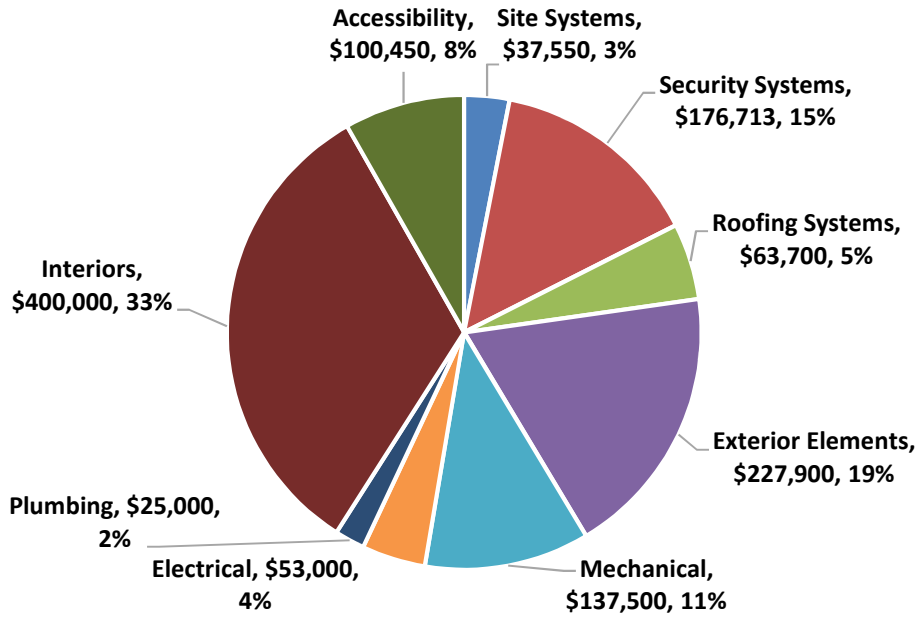


Table EX-4 – Summary of Expenditures by DCAMM Priority

Priority Category	Expenditures
Priority 1 – Currently Critical	$145,163
Priority 2 – Potentially Critical	$159,750
Priority 3 – Necessary, Not Critical	$916,900
TOTAL	**$1,221,813**

Chart EX-3 – Summary of Expenditures by DCAMM Priority

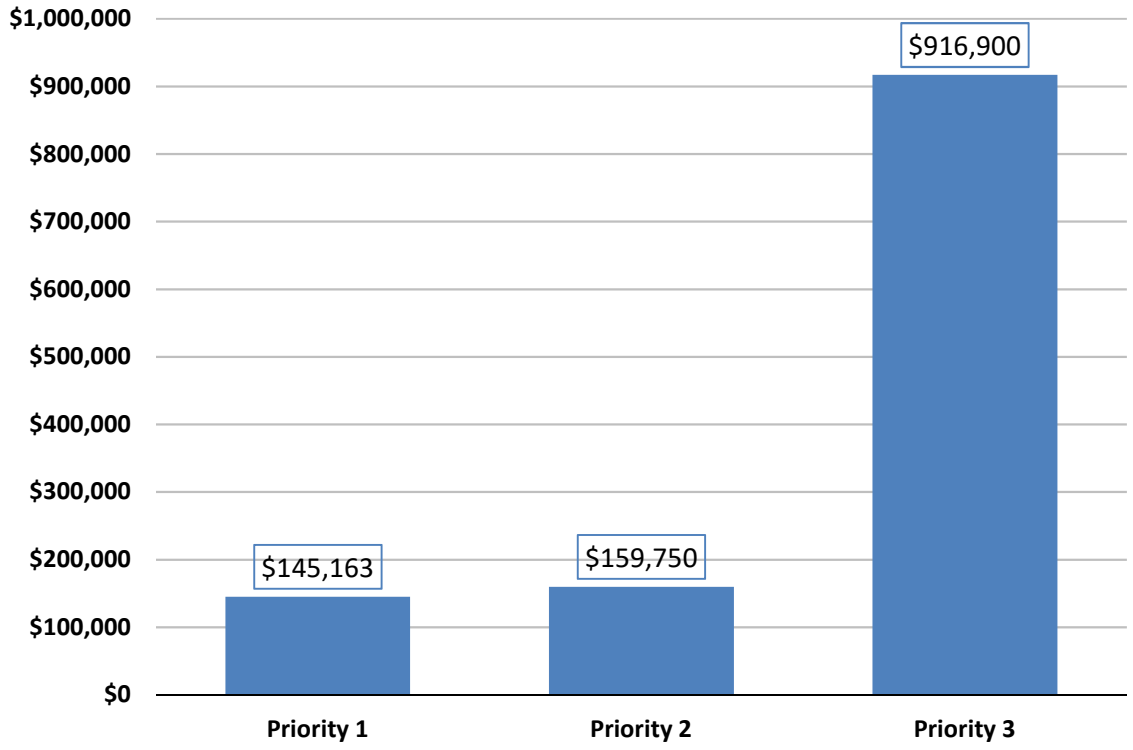


Table EX-5 – Summary of Expenditures by Category

Deficiency Category	10-Year Capital Need
Deferred Maintenance	$7,000
Capital Renewal	$1,035,500
Capital Improvement	$179,313
TOTAL	**$1,221,813**

Chart EX-4 – Summary of Expenditures by Category

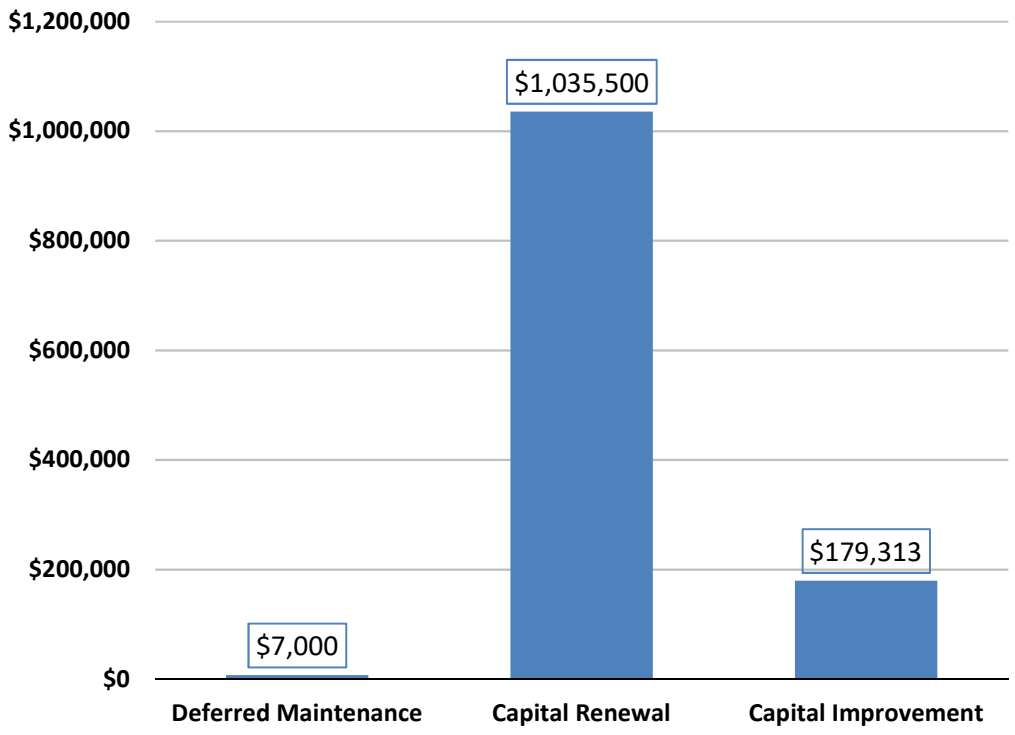
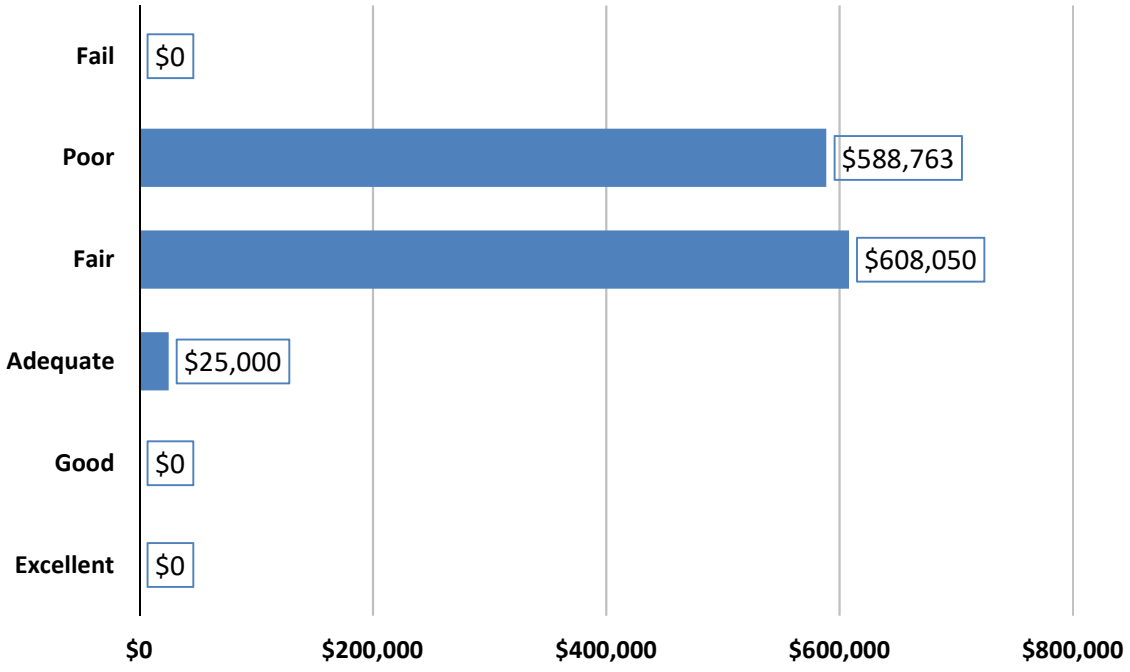


Table EX-6 – Summary of Expenditures by DCAMM Condition Rating

System Condition	10-Year Capital Need
Excellent	$0
Good	$0
Adequate	$25,000
Fair	$608,050
Poor	$588,763
Fail	$0
TOTAL	**$1,221,813**

Chart EX-5 – Summary of Expenditures by Category



Facility Condition Index (FCI)

The Facility Condition Index (FCI or FCNI) provides a relative measure for comparing one building (or group of buildings) to another. For each building, this index is a calculation, derived by dividing the total accumulated capital needs for the ten-year window covered by this report by the total Component Replacement Value (CRV). When applying the index as an evaluation tool, the lower the number, the better the facility's condition. The CRV represents the cost to replace an existing building with one of similar use type and size on the same structure. Table EX-8 below describes the ranges of FCI with respect to condition.

Table EX-8– FCI Range and Descriptions

FCI Range	Condition Description
0.00 – 0.02	Excellent condition, typically new construction
0.02 – 0.05	Good Condition, renovations occur on schedule
0.05 – 0.1	Fair Condition, in need of normal renovation
0.1 – 0.2	Below average condition, major renovation required
0.2 – 0.5	Poor condition, total renovation needed
0.5 – Above	Complete facility replacement indicated

The accumulated 10-Year capital needs and the resulting FCI for the buildings are shown in Table EX-9.

Table EX-9 – Facility Condition Index

Building	Capital Need	DCAMM Provided Current Replacement Value	FCI Score	FCI Rating
Armory – West Newton	$1,221,813	$37,982,159.40	0.03	Good Condition, renovations occur on schedule

Terminology & Limitations

This report and the attached expenditure forecast generally identify the Expected Useful Life (EUL) and the Remaining Useful Life (RUL) of observed systems and components. EUL is projected based upon industry-standard guidelines and our experience with similar systems. RUL is projected based upon our assessment of age, condition and maintenance/repair history.

The timing of the projected expenditures and their associated costs represent our opinion considering the aforementioned factors. Alternative methods of managing the existing equipment or systems may be feasible over the study period.

These alternative methods will depend upon actual management practices, financing requirements and the ability of the engineering staff to perform some of the repairs in-house. Alternative scenarios that have not been presented to Faithful+Gould have not been considered within this report.

This report has been presented based upon our on-site observations, information provided to us, discussion with building management and maintenance staff, our review of available documentation (see scope of services and document review section) and our experience with similar systems. If any information becomes available that is not consistent with the observations or conclusions expressed within this report, we request that this information be immediately forwarded to us.

The evaluation of existing structures requires that certain assumptions be made regarding existing conditions. This evaluation was based upon our visual non-destructive evaluation of accessible conditions of the Property. Furthermore, this evaluation was limited in time on-site, fee and scope, and was not based upon a comprehensive engineering evaluation. As such, our report is not intended to represent a complete review of all systems or system components or a check or validation of design professionals' computations. Therefore, Faithful+Gould's evaluation and this report do not represent, warranty or guarantee any system or system component or the future performance of any site improvement.

SCOPE OF SERVICES & DOCUMENT REVIEW

Report Objectives

The objective of this report is to produce an advanced facility condition assessment and capital planning process, utilizing all current data from a complete condition assessment of the Property, to result in a strong and well-developed plan to support strategic capital investment. In short; the objective is to assess the condition of all included buildings and site systems and develop a prioritized forecast of anticipated capital expenditures over the 10-Year period between 2019 and 2028. This will form the long-term investment plan for the buildings by developing an array of projects, architectural and mechanical/electrical/plumbing systems that can be inputted into a planning model from which sound management decisions can be made to best utilize funding resources. Specific objectives of this study are listed below.

- Identification and documentation of the present condition
- Recommendation of corrections for all deficiencies
- Provision of cost estimates for such corrections
- Forecasting of future facility renewal costs based on documented methodology, of the facilities and equipment in the building

To meet these objectives, we completed a visual evaluation of installed systems at the building (i.e. site systems, structural, roofing, exterior, mechanical, electrical, plumbing, fire protection and life safety and interiors), and produced this report of Facility Condition Assessment. This report represents a comprehensive evaluation of the building systems and major components including criteria for assessment, expected useful life, remaining useful life, year to be replaced, project priority and plan type, existing condition, estimated replacement date and estimated replacement cost standards.

Key Issues

Faithful+Gould was requested to complete a Facility Condition Assessment of the site and site improvements. The key issues to be addressed by the Facility Condition Assessment include the following:

1. Identification of the visually apparent condition, installation date, remaining useful life and deficiencies at the Property to include all systems and elements detailed in the following “Strategy Employed to Meet the Key Issues” section.
2. Recommendations and opinions of cost for capital projects over a 10-Year period from 2019 to 2028. Projects are to be categorized using two priority tools and one set of deficiency categories.
3. The replacement value of the component or system.
4. Proposed projects and timelines for when the system/component should be replaced.
5. Proposed execution strategies for the identified projects that minimizes cost and disruption.

Strategy Employed to Meet Key Issues

The strategy employed to meet the key issues detailed above (i.e. our scope of services) consisted of performing a visual assessment of the interior, exterior and site components of the subject building. The scope of services was governed by Faithful+Gould’s proposal for Facility Condition Assessment services.

The primary purpose of the Facility Condition Assessment was to identify visually apparent deficiencies in the building and site. The evaluation included site visits to observe the building and site systems, interviewing building management and maintenance personnel, and reviewing available maintenance systems, design and construction documents and plans. This Facility Condition Assessment has been conducted in general accordance with industry standards and the American Society for Testing and Materials (ASTM) Standard E 2018-15 Standard Guide for Property Condition Assessment: Baseline Property Condition Assessment Process.

We performed a visual non-destructive assessment of the interior, exterior and site components of each building, including the following major components and systems:

- **Site Systems.** We visually observed the site systems for the removal of storm water and evidence of poor drainage and/or erosion potential. We also reviewed (where applicable) the condition of pavements, site concrete, retaining walls, fencing, landscaping, site grading and storm water drainage features.

- **Structural System.** We observed the structures for visible signs of distress and have reported our findings. We also reviewed available structural drawings for information regarding the design load criteria of the existing structures and the building codes to which the structures were designed. We did not complete a seismic probable-maximum-loss (PML) evaluation of the Property.

- **Roof System.** We visually evaluated the condition of accessible roof systems, accessories and details. In addition, where applicable we discussed existing roof warranties. We also took infra-red photos of the exterior to identify areas of significant thermal loss, locations of roof leaks and wet insulation.

- **Building Exterior Elements.** We visually observed the exterior wall system, window and door systems for visible evidence of deficiencies, continuity of seals, and other types of distress and have reported our findings. We reviewed available flashing and connection details for drainage design and observed the condition and placement of expansion joints. We also took infra-red photos of the exterior to identify areas of significant thermal loss.

- **Mechanical/HVAC, Electrical, Plumbing (MEP) Systems**. We observed the age and condition of the MEP and related building systems and have commented on their condition and visible deficiencies.

- **Fire Protection and Life Safety**. We observed the age and condition of the fire protection and life safety elements and have commented on their condition and any visible deficiencies. The elements surveyed included structural fire protection, means of egress, fire suppression systems, and fire detection and alarm systems.

- **Interior Finishes.** We visually observed the interior areas of the Property and have reported their general condition.

- **Accessibility.** DCAMM engaged Steven Winter Associates, an Accessibility Consultant, to conduct a separate accessibility audit of this facility. The Accessibility Audit report focused on elements related to accessibility compliance with state and federal laws and regulations. Costs from this report have been included within our Capital Expenditure forecasts, and a copy of the report is provided in Appendix F.

The scope of services under which the Facility Condition Assessment was completed, was visual in nature and not intended to be destructive to the Property, to gain access to hidden conditions. We did not perform any destructive testing or uncover or expose any system members. We have documented the type and extent of visually apparent defects in the systems to perform the condition assessment.

The scope of services under which the Facility Condition Assessment was completed, includes only those items specifically indicated. The evaluation does not include any environmental services such as (without limitation) sampling, testing, or evaluation of asbestos, lead-based paint, lead-in-water, indoor air quality, PCB's, radon, mold, or any other potentially hazardous materials, air-borne toxins, or issues not outlined in the previous scope of services. In addition, the assessment does not include identification of underground soils, identification or quantification of underground contaminants.

SITE FEATURES

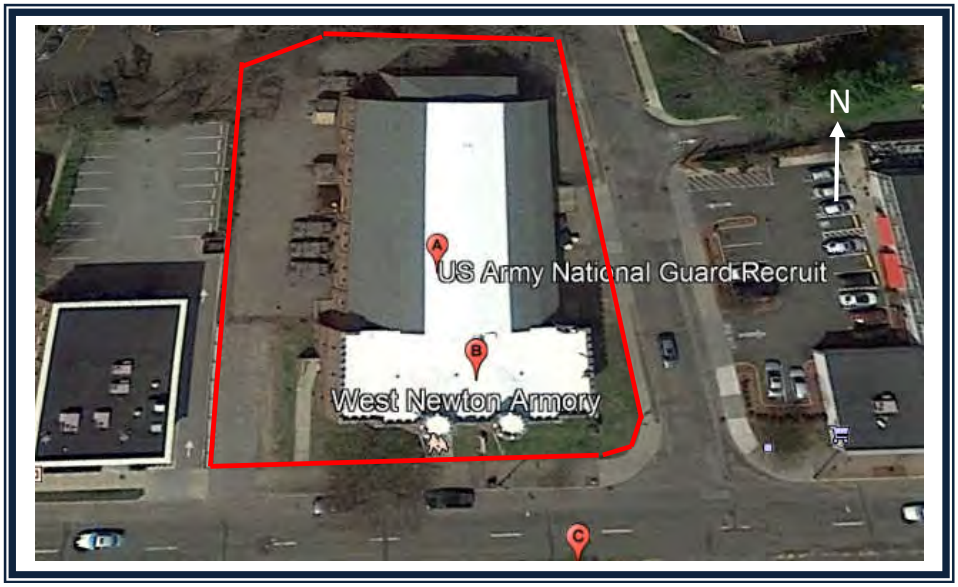
1.0 SITE SYSTEMS

Site systems at the Property are limited to an asphalt paved parking area, concrete walkways and steps, site lighting, storm water drainage and general landscaping (reference Photographs S-01 through S-07 in Appendix A).

1.1 Description

The Property is located on a site measuring approximately 32,986 square feet (0.76-acres). The building is surrounded by a bituminous paved area without clearly designated parking spaces throughout the site. The paved area is accessed from the south-west of the structure where a driveway is continued into the west of the building. Plan 1-1 provides a graphical overview of the site:

Plan 1-1 Aerial View of Property



Site Asphalt, Concrete and Steel

We were not provided with civil engineering drawings and could not confirm the exact composition of the asphalt paving; however, at areas of some deterioration, we observed the bituminous asphalt surface (wearing course), an asphaltic base course and compacted granular material (sub-base) over what we assume is a compacted sub-grade. The parking spaces are no longer clearly outlined on the pavement, with yellow painted parking space lines appearing worn.

Pedestrians can approach the main entrance of the building via typical 5’ cast-in-place (CIP) concrete walkways that lead up to concrete steps. There are a total of six steps before the main entrance is reached. There is a similar set-up in the south-west area of the site, where 5’ CIP concrete walkways leading from a public sidewalk to six concrete steps with an entry point on the west of the building.

To the east entrance of the drill hall of the armory, there are significantly larger concrete stairs with a total of twelve steps and a concrete landing area.

The west and north sides of the drill hall entrances have steel stairs which have been previously painted. The west and north stairs both have 8 steps per stair. These pair of stairs are located within the area of the site which is secured by security fencing.

The areaway located on the east showed significant deterioration with signs of concrete collapse on the structural walls. The areaway does not have railings or protection for the public.

Site Landscaping

There are grass areas that wrap around the building from the south-east to the south-west of the building. These areas begin to slope slightly closer to the public pedestrian sidewalks but generally it is level.

Site Drainage

Storm water surface run off is directed to drains to the north-east and south-west of the enclosed site. Storm water is then discharged via below grade drainage piping to the municipal systems outside of the site boundary.

1.2 Condition

Site Asphalt, Concrete and Steel

The asphalt pavement surrounding the building proved to be generally in fair condition throughout, with some areas containing more problems than others. The west side specifically, contained major cracks and the driveway itself has some areas of deterioration. The paving has not been resurfaced in a significant number of years and has received minimal maintenance work since. We noted extensive cracking and large-scale deterioration to the asphalt wearing course and base course, and heavily worn striping to road markings to the west of the site. If left unaddressed, water entry into the cracks, freeze thaw damage and continued erosion of the wearing course will occur and create additional large pot holes and sectional failure of the system. These failures will result in slip and trip hazards due to uneven paving.

The cheek wall associated with the concrete stairs at the south entrance showed signs of minor cracking. The areaway in the east with collapsed concrete is clearly in critical condition and a lack of railings for safety and protection is deemed unsafe for the public. The areaway is not located within the enclosed perimeter fencing.

We recommend completing a resurfacing (mill & overlay) package of works in the near term to address the worst pot hole issues, like we have in the west side of the site, via full depth repair of the defective sections. The driveway area leading to the gate on the west will need resurfacing due to pavement failure. The substrate will continue to deteriorate until replaced.

Generally, the concrete walkways and steps were in fair to poor condition. There was cracking located in multiple cast-in-place concrete walkways in the south and should be replaced immediately.

Site Landscaping

The landscaped areas of the site are generally in fair condition and adequately maintained. We do not foresee any capital expenditures being required to maintain the condition of the landscaped areas during the study period.

Site Drainage

Stormwater management at the site appeared to be generally effective. The asphalt parking lot is positively drained towards the surface drains or the landscaped areas as there was no visible evidence of significant ponding onsite. Both drains situated in the north-east and south-west were covered by vegetation from trees above, so clearing this would make the system more effective as there was minor ponding around the drains. We do not expect any capital expenditure to be spent on this area during the study period.

1.3 Projected Capital Expenditures

Capital expenditures required over the 10-Year study period are provided below:

Recommendation	Priority Category	Deficiency Category	Year	Expenditures
Remove Overgrown Vegetation at Site Perimeter and Chain Link Fence	1 - Currently Critical and/or Code Violations	Deferred Maintenance	2019	$5,500
Replace Cementitious Concrete Walkway at Building Front, Including Demolition	2 - Potentially Critical	Capital Renewal	2022	$6,250
Resurface (Mill & Overlay) Asphalt Pavements	3 - Necessary, Not Yet Critical	Capital Renewal	2023	$25,800

2.0 SITE SECURITY

Site Security systems at the Armory includes boundary fencing and access gates, site lighting, and building security systems (reference Photographs SEC-01 through SEC-02 in Appendix A). Plan 2-1 below shows an overview of security observations.

2.1 Description

Plan 2-1 Security Observations

Security Element	Site Conditions	Upgrade Recommended?
Perimeter Fencing	6-foot High fence with three-strand barbed wire	Yes
Vehicular Access	Manually operated chain-link gate	Yes
Pedestrian Access	Manually operated chain-link gate	Yes
Access Controls	Key only	Potential Upgrade
Site Lighting	Mercury Vapor Light Fixtures (building mounted)	Yes
C.C.T.V. Coverage	None	Potential Upgrade
Building Security System	Security grilles exterior windows	No
Building Envelope (Window and Door Condition)	Covered in “Building Elements” section	Yes

2.2 Condition

Perimeter Fencing

The site perimeter fencing is in fair condition. At the east and west of the site, the fencing is aged and in a generally deteriorated state. The metal posts and chain-link fence were corroded and starting to separate, the barbed wire strands were generally in fair condition, but the framing appeared to be bent in the east. The fencing in the north showed signs of aging but was in fair condition. Based upon the condition of the fencing and gates at the property, we recommend completing repairs in areas where the chain-link fence had separated from the metal posts. Security can be increased with repairs to the east metal framing of the barbed wire strands.

Vehicular and Pedestrian Access

The site access gates are in fair condition, being manually operated and secured with heavy chain-link locks.

Access Controls

The Armory does not have any access controls and operates on a key only system. Only authorized personnel have access to these sets of keys. Recently, armories have been subject to security improvements with the installation of keypad access controls. We recommend introducing this security system to the West Newton Armory.

Site Lighting

Site lighting was noted to be in poor condition. The Mercury Vapor lighting system is dated and many of the light fixtures were not operational, as reported by Property Manager. The lighting offered very limited visibility of areas surrounding the building. There were no pole mounted light fixtures surrounding the site to assist in seeing the perimeter fencing. We recommend that additional lighting is installed to illuminate the paved areas surrounding the building. The building mounted Mercury Vapor has reached the end of its useful life and therefore should be completely replaced with LED light fixtures during the study period.

C.C.T.V. Coverage

The security system is reliant upon human behavior to secure the facility and manual security procedures. The facility is lightly occupied during weekdays and due to size, this can present a risk to the site. We were able to freely access the site without challenge and operate most of the main entrance/exits.

We recommend that a centralized security and access control system is installed that includes closed circuit TV coverage of the perimeter, entrance doors into the building, and access control to the entrances and emergency egress doors.

Building Security System

Security grilles appear to be in fair condition with minor damage being noted in some areas of rust.

2.3 Projected Capital Expenditures

Capital expenditures required over the 10-Year study period are provided below:

Recommendation	Priority Category	Deficiency Category	Year	Expenditures
Provide New Security System Including, Visitor Notification Bell, and CCTV Coverage	1 - Currently Critical and/or Code Violations	Capital Improvement	2019	$33,613
Replace Chain Link Fence Throughout Facility	3 - Necessary, Not Yet Critical	Capital Renewal	2023	$87,500
Replace Chain Link Access Gates	3 - Necessary, Not Yet Critical	Capital Renewal	2023	$50,000
Replace Existing Building Mounted Exterior Light Fixtures with LED Fixtures, Add Additional Fixtures	1 - Currently Critical and/or Code Violations	Capital Renewal	2019	$5,600

BUILDING ELEMENTS

3.0 STRUCTURAL SYSTEMS

Structural drawings for the building were not available for review but based on our observations, the main building consists of a wood frame structure with wood framed walls, wood deck floors and wood roof rafter framing system. The drill hall consists of engineered steel trusses and wood purlins. The walls are brick masonry load bearing walls with the floor consisting of wood joists and wood flooring. The basement of the building has concrete slab on grade and CMU walls running to the floor above. (reference Photographs ST-01 through ST-04 in Appendix A).

3.1 Description

Foundations

Based on the construction type, we expect the foundations to consist of reinforced concrete foundation walls on concrete spread footings.

Superstructure

The superstructure of the drill hall is made up of 16” thick brick masonry load bearing walls and the structural open web steel arched truss roof supporting 6”x12” wooden purlin beams, with tongue and groove wood roof decking. The floor consists of wood decking on 2x12 wood floor joists.

The main building’s superstructure is built up of wood stud framing backup to brick veneer.

Lowest Floor Level

The basement floor of the building consists of cast-in-place concrete slab on grade that we assume contains embedded steel reinforcement. The slab was exposed so it was visible throughout the entire basement level.

Interior Walls and Ceilings

The interior walls at the basement level were typically a mix of CMU and brick walls that extend from slab to framing above. The ceilings were plastered throughout majority of the basement level with some areas being exposed. The interior walls of the main building are made up of wooden stud partitions throughout.

Exterior Walls

The exterior walls consisted of brick veneer laid in a stretcher bond tied to the stud wall on the main building. In terms of the drill hall, the brick veneer laid in a stretcher bond is multi-wythe 16” thick masonry load bearing walls.

Roof Structure

The roof structure at the drill hall is a sloped gambrel configuration that consists of 6”x12” wood purlins supported by open web steel arched trusses with tongue and groove wood roof decking. The roof structure of the flat main building roof consists of 2x12 rafters with a wood deck.

3.2 Condition

Faithful+Gould observed the exposed structural systems throughout the building. Structural systems appeared to be in good condition throughout with no obvious signs of significant deflection, cracking or other major defects.

The load bearing walls that support the roof trusses within the drill hall did not show any structural defects. The walls appeared to be in good condition.

3.3 Projected Capital Expenditures

No capital expenditures are anticipated for the roof structure at this time.

4.0 ROOFING COMPONENTS

The building has three main roof areas; the low-slope roof at the south side of the building and the two gable roof systems over the drill hall. Two sections and the roof are covered with a Thermoplastic Polyolefin (TPO) membrane that is adhered to an insulation board and mechanically fixed to the roof wood deck. The sloped roof areas at the wings of the drill hall consists of asphalt shingles that are fixed to a wood deck. Other roof components consist of the crenelated roof parapet at the south east and west of the building, copper gutters and downspouts (reference Photographs R-01 and R-07 in Appendix A).

4.1 Description

The building is covered by a combination of low-slope and sloped roofs covered with a TPO membrane and asphalt shingles. The TPO covers an area of approximately 7,891 square feet. The asphalt shingles cover an area of approximately 5500 square feet. The exact buildup of the TPO roof sections is not known, however, we assume it comprises of the TPO membrane adhered to an exterior grade sheathing that is mechanically fixed to the roof deck through a layer of rigid insulation. Plan 4-1 below provides an overview of the roof layout and Table 4-1 summarizes the construction of the roof.

Plan 4-1 Roof Plan

The base flashings at the parapets and perimeter of the roof consist of an extension of the membrane, with the membrane terminating under a copper counter flashing, sealed with elastomeric caulking.

Stormwater is generally managed by the roofs being graded to a series of drainage inlets leading to internal piping, connected to the municipal stormwater management system.

Table 4-1 Summary of Roof Construction

Roof Component	TPO	Asphalt Shingle
Installation Date(s)	2010	Unknown
Roof Area (total/approx.)	7,500 sq. ft	9,100 sq. ft
Application/Membrane	Thermoplastic Polyolefin (TPO	Fiberglass-Asphalt Shingles
Manufacturer/Model	Unknown	TPO - Unknown
Deck Type	Wood	Wood
Insulation	Rigid Insulation (R-Value Unknown)	Unknown
Cover Board	Unknown	Unknown
Drainage	Low slope – Internal roof drains	Gutters and Downspouts
Base Flashings	Extension of Field Membrane with Copper Counter Flashing	Not Applicable
Cap Flashings	Copper Sheeting, where applicable	Not Applicable
Perimeter Enclosure	Crenelated Brick Parapet with Granite Coping Stones Above Main Building at east, west and south elevations.	Sidewall intersection with brick masonry at high ends, gutters at low ends
Warranty (Contractor)	No information disclosed	No information disclosed
Warranty (Manufacturer)	No information disclosed	No information disclosed

4.2 Condition

The roofing system was generally in fair condition with limited roof penetrations for mechanical equipment or other installations. We walked the roof fields and noted the following defects:

- *Asphalt Roof Shingles aged and in need of replacement.* In various locations, it was noted that the asphalt shingles had been missing from areas of the roof. This could in turn begin to cause leaks and should be addressed immediately.

TPO roofing systems typically have an estimated useful life (EUL) of around 15-20 years depending on the initial quality of the membrane specified and subsequent installation. Considering that the

roof is believed to be around 8-years old, has received limited wear from foot-traffic and there were no significant defects noted. We expect the roof to remain serviceable for another 12 years.

The storm water system was in fair condition. We recommend that the debris guards at the rain leaders are regularly inspected and cleaned to prevent debris and detritus material from blocking the storm water drainage system.

4.3 Projected Capital Expenditures

Capital expenditures required over the 10-Year study period are provided below:

Recommendation	Priority Category	Deficiency Category	Year	Expenditures
Replace Existing Fiberglass/ Asphalt Shingle Roof, Associated Flashings, and Trim	3 - Necessary, Not Yet Critical	Capital Renewal	2023	$63,700

5.0 BUILDING EXTERIORS

The exterior wall systems are limited to brick cladding, wooden frame windows, wood and metal pedestrian doors and metal roll up doors. (reference Photographs EXT-01 through EXT-09 in Appendix A).

5.1 Description

Exterior Wall System

The exterior wall systems at the drill hall consist of brick cladding laid in a stretcher bond and tied to a multi-wythe brick. The exterior wall system for the main building also consists of brick cladding in a stretcher bond but is tied to wood sheathing on a stud wall. No building control joints or expansion joints were observed at the exterior elevations. Based on the observed conditions and the age of the structure, the wall is not expected to be insulated.

Windows and Doors

Windows are single-glazed, double hung wood framed with standard sash locks, ropes and weights. Window operating restrictors are not provided. The doors on the exterior of the building are predominantly galvanized steel. Most are double doors, with one single door located on the west elevation of the main building. A sectional aluminum overhead door at the north of the building provides access into the storage area within the extension under the drill hall.

5.2 Condition

Exterior Wall Systems

The exterior brick at the building was generally in fair condition. Cracking was a problem mainly on the south elevation of the building, with stepped cracking evident on the crenelated brickwork perimeter. Brickwork on main building elevations showed signs of surface damage, with spalling being specifically noted on the south elevation.

The drill hall's exterior brickwork in the north and east was in fair condition. It showed signs of aging but didn't represent the same level of damage as seen in the south elevation of the building. The west elevation of the drill hall was in fair condition with minor cracking located in some areas of brickwork.

The cause of the cracking could not be conclusively determined, however, the lack of building control joints in the masonry cladding may be a contributing factor in a building of this period. The elevations as currently constructed have no means of accommodating any movement of the masonry. Therefore, any structural stress due to thermal or other movement is transferred to the weakest points of the building such as the corners and openings in the façade.

We recommend that building control joints are added to the two main elevations to help accommodate future movement and reduce the extent of future cracking to the masonry. The number and location of the control joints should be determined by a structural engineer.

In addition to the cracking, mortar failure was observed at various locations on each elevation of the building. We recommend the deteriorated mortar to be removed and the areas are tuck pointed to maintain the integrity of the building envelope.

Windows and Doors

The windows at the building are original and are now nearing 109 years in service. Overall, the windows are in very poor condition. The following conditions were observed;

- The window units are ill fitting and allow substantial air leakage.
- The window hardware is inoperable in locations and do not have restrictors.

Given the above conditions, we recommend for the replacement of the window systems at the building to increase security and occupant comfort while reducing energy loss. This will however come at a substantial cost and provide a limited benefit considering the partial and irregular use of the building.

The pedestrian doors at the building are primarily steel doors. The doors are in fair condition, with functionality proving to be ok but the finish appearing worn.

The sectional metal overhead door at the north of the building is in fair condition. We recommend that damaged door panels and wood trim be replaced. Subject to regular maintenance, we do not anticipate replacement of the door to be necessary due to any life cycle related issues.

5.3 Projected Capital Expenditures

Capital expenditures required over the 10-Year study period are provided below:

Recommendation	Priority Category	Deficiency Category	Year	Expenditures
Replace Spalled Brick	3 - Necessary, Not Yet Critical	Capital Renewal	2019	$25,000
Repair Sections of Cracked Brick Wall, Repoint Mortar Joints in Approximately 10% of Walls Area, and Cut Control Joints	3 - Necessary, Not Yet Critical	Capital Renewal	2019	$125,000
Replace Existing Exterior Windows Throughout Facility	3 - Necessary, Not Yet Critical	Capital Renewal	2019	$70,400
Replace Existing Exterior Doors Throughout Facility	3 - Necessary, Not Yet Critical	Capital Renewal	2026	$6,000
Repair Existing Overhead Door and Trim at Northeast Corner	3 - Necessary, Not Yet Critical	Deferred Maintenance	2028	$1,500

BUILDING SYSTEMS

6.0 MECHANICAL SYSTEMS

The following information was obtained through our visual observations of the building systems. The mechanical systems consist of air-handling units with reheat coils, roof mounted exhaust fans, ductwork and thermostats (reference Photographs M-01 through M-05 in Appendix A).

6.1 Heating Systems (No Cooling)

Description

Steam heating system is provided by two gas-fired boilers manufactured by H.B. Smith. The unit has an output rating of 1330 MBH and the age of the system is unknown but relatively new.

Heating is distributed to the first and second floor areas by steam radiators installed at the perimeter of the offices on the outside walls. The drill hall has four suspended steam cabinets.

Condition

The boiler providing the steam heating system appeared to be new and in good condition. Based on the age of the unit, we do not anticipate renewal of the unit being required during the study period provided that regular planned preventative maintenance is completed.

The cast iron radiators at the office areas are reportedly in serviceable condition. Some staining was observed at valves around the building, though this appeared historic. We recommend that the systems are subject to a planned preventative maintenance program that includes testing and replacement of components prior to the winter heating season.

Existing Steam Heating units serving the drill hall modulate outside air and have reheat coils for distribution in the drill hall. These are older units which reportedly do not operate properly and have likely reached the end of their useful life.

Projected Capital Expenditures

Capital expenditures required over the 10-Year study period are provided below:

Recommendation	Priority Category	Deficiency Category	Year	Expenditures
Upgrade Existing Steam Cabinet Heaters in the Drill Hall with Suspended Air Handling Units	2 - Potentially Critical	Capital Renewal	2019	$120,000

6.2 Air Distribution, Ventilation and Exhaust Systems

Description

Air distribution in the drill hall was by roof mounted ventilation system units that are no longer operational as they had been previously capped off.

Exhaust systems are provided for the male and female restrooms on the first and second floors respectively, but the exhaust fans have been reported to be not operational.

Condition

The ventilation for the entire building is not operational. We can expect some capital expenditure to be used on rejuvenating the ventilation system if the building is expected to be of use in the future.

Within the shower rooms, bathrooms and locker rooms, the lack of ventilation was noticeable in the air-quality. Although no mold was observed, inadequate ventilation may create the perfect environment for it to accumulate. In addition, the humidity levels can affect the painted wall finishes causing flaking of paint. We recommend replacing the exhaust fans to provide adequate ventilation.

Projected Capital Expenditures

Capital expenditures required over the 10-Year study period are provided below:

Recommendation	Priority Category	Deficiency Category	Year	Expenditures
Replace Existing Exhaust Fans for Toilets and Kitchen	2 - Potentially Critical	Capital Renewal	2019	$7,500
Replace Exhaust Fans for Drill Hall, Locker Room and Office Areas	2 - Potentially Critical	Capital Renewal	2019	$10,000

6.3 Temperature Control Systems

Description

There was reportedly only one thermostat system to manage the temperature of the entire main building.

Condition

Additional zoning throughout the building would only make sense in conjunction with a complete system replacement.

Projected Capital Expenditures

No capital expenditures are anticipated for comprehensive upgrading of temperature control systems beyond work integral with exhaust and air handling replacement noted above.

7.0 ELECTRICAL SYSTEMS

The following information was obtained through our visual observations of the building systems and discussions with facilities staff. The electrical systems include the incoming electrical service, service switchgear and electrical distribution equipment, lighting systems and communications systems. Detailed drawings of the electrical system were not available during the site visit (reference Photographs E-01 through E-05 in Appendix A).

7.1 Electrical Service and Distribution Equipment

Description

The building is provided with an electrical feed from a pole mounted transformer located on the adjacent site. Electricity is supplied by NStar Electric with the electrical meter and main switch/ disconnect located within the mechanical room in the basement of the building. Cabling then runs from the metering point to the main electrical distribution board which is a 200-amp Panelboard manufactured by Murray. Service characteristics are 120/240-volts, 1-phase, 3-wire.

A main 200-amp breaker, also manufactured by Murray, is installed between the meter and the main panel. Local distribution boards are provided throughout the building to control lighting and other line voltage items. Wiring appears to be copper conductors in a mix of thermoplastic insulation, MC cables and rigid metal conduit. No emergency power systems are provided apart from self-contained emergency lighting and exit signs.

Condition

Electrical equipment is in fair to poor condition and is largely original to the construction of the building. The age of the main breaker is unknown, but there are signs of aging and it has not been subject to preventative maintenance or testing in recent years. The main panel is also original and there is no indication of significant maintenance of the panels. Due to the aging of the main panel, we recommend upgrading the system within the study period. One new panel has been installed that supports the boilers and boiler controls, which is in very good condition.

No emergency power is provided to the building. The installation of an emergency generator would provide additional flexibility for the future use of the building.

We have carried the option to install a transfer switch, emergency panel, and provisions for connecting to a portable generator outside the building in our capital expenditure forecast to support the operations of the Armory in the emergency situations.

Projected Capital Expenditures

Capital expenditures required over the 10-Year study period are provided below:

Recommendation	Priority Category	Deficiency Category	Year	Expenditures
Upgrade Existing Electrical Service from 200 AMP to 400 AMP	2 - Potentially Critical	Capital Improvement	2019	$16,000
Upgrade Existing Electrical Panels Throughout Building	3 - Necessary, Not Yet Critical	Capital Improvement	2022	$12,000
Install Emergency Panel with Manual Transfer Switch for Exterior Portable Emergency Generator	3 - Necessary, Not Yet Critical	Capital Improvement	2019	$25,000

7.2 Lighting Systems

Description

Generally, interior lighting consists of a variety of florescent T8 lamps in 2’ x 4’ acrylic lay in light fixtures and 4’ or 8’ surface mounted fluorescent strip light fixtures. Fixtures are all switch operated throughout the building. At the drill hall area, the lighting consists of Halogen lamps suspended from the roof structure.

Battery powered emergency egress lighting and illuminated exit signage is installed at the fire exit doors.

Condition

Fixtures are fully operational and in fair condition. The lighting systems should remain serviceable throughout the study period, however, some of the fluorescent light fixture strips have been left exposed and could be protected by introducing diffusers.

Projected Capital Expenditures

No capital expenditure is anticipated at this time.

7.3 Data and Communication Systems

Description

Telephone and communications cables enter the building at the basement level on the east into the mechanical room. Incoming service cables and equipment racks are located on the south side of the 1st floor.

Condition

The communications infrastructure is not operational and data racks have been left abandoned.

Projected Capital Expenditures

No capital expenditures are anticipated during the study period.

8.0 PLUMBING SYSTEMS

The following information was obtained through our visual observations of the building systems, review of available documentation and discussions with facilities staff. The plumbing systems include the domestic cold and hot water systems, sanitary waste and storm water system (reference Photographs P-01 through P-03 in Appendix A).

8.1 Domestic Water Systems

Description

Domestic Cold Water

Domestic cold water is supplied via a main municipal supply that enters the mechanical room at the north of the building via a 2.5" water. A water meter is located inside the mechanical room.

Water distribution to urinals, water closets, domestic hot water heaters, showers etc. rely on a service pressure generated by the mains system. Domestic water distribution piping is copper.

Domestic Hot Water

Domestic hot water (DWH) is generated by a Ruud gas fired domestic hot water heater located in the mechanical room. The hot water is distributed from the water heaters to the common restrooms, shower rooms and custodial closets throughout the building via hot water piping. There is no hot water recirculation system.

Plumbing Fixtures

The building contains male and female restrooms and shower rooms. Plumbing fixtures consist of floor-mounted vitreous china water closets with manual flush valves, wall mounted vitreous china urinals, wall mounted vitreous china service sinks and vitreous china lavatories with manual faucets.

Condition

The domestic water service appeared to be in fair condition and the water heater was recently installed in 2016. There was no evidence of significant leaks or other areas of deterioration noted or reported to us. We do not anticipate replacement of the domestic water heater to be necessary during the study period.

Some of the existing plumbing fixtures are likely original to the building, others as much as 20 years old. The age of the existing plumbing fixtures and the ADA requirement for a new accessible unisex toilet/ shower room indicate fixture replacement is warranted. We recommend the replacement of plumbing fixtures in the near term of the study period. We also recommend a restroom renovation project for ADA compliance in the near term which is listed in the Accessibility section of the Capital Expenditure Forecast (Appendix B).

Projected Capital Expenditures

Capital expenditures required over the 10-Year study period are provided below:

Recommendation	Priority Category	Deficiency Category	Year	Expenditures
Replace Plumbing Fixtures Throughout Building	3 - Necessary, Not Yet Critical	Capital Renewal	2019	$25,000

8.2 Sanitary Waste and Storm Drainage Systems

Description

Sanitary Waste Systems

Floor drains and plumbing fixtures sanitary waste discharge to the below grade municipal sewer lines.

Stormwater Systems

Storm drainage from the flat roof is connected to rain leaders which are routed through the building and connect to the site storm water management system and discharge to the municipal systems.

Condition

The sanitary and storm water systems appeared to be in good condition, although recommended replacement of plumbing fixtures may uncover existing problems with the sanitary system piping.

Projected Capital Expenditures

No capital expenditures are anticipated for the storm and sanitary systems at this time.

9.0 FIRE AND LIFE SAFETY SYSTEMS

The following information was obtained through our visual observations of the building systems; construction drawings or building maintenance personnel were not available for reference. Fire and life safety elements observed included fire extinguishers and battery powered emergency egress lighting (reference Photographs FLS-01 through FLS-02 in Appendix A).

9.1 Code References

The Property was constructed 1910. Per the International Building Code (IBC) the building is of construction type III-B (Unprotected, Combustible) due to the wood roof structure at the drill hall and unprotected nature of the building. The occupancy classification of the building is occupancy groups B (Business), A (Assembly) and S (Storage).

9.2 Structural Fire Protection

Additional structural fire protection is not required based on the building characteristics, construction type and occupancy use groups.

9.3 Means of Egress

Description

Means of egress is via exterior doors along the front (south), rear (northwest) and flanks (east and west) elevations. The doors on the north-west and west wing of the drill hall open onto steel steps and down to grade level asphalt. The remainder of the doors open onto concrete steps that also lead down to grade level asphalt or concrete paths. There is one direct exit located within the maintenance room that's leads through an areaway up to grade level. Emergency lights and exit signs mark the paths of egress and designated emergency exits.

Condition

The paths of egress appeared to be generally compliant with the fire code in effect at the time of construction. Egress capacity appeared sufficient to meet expected occupant loads based on occupancy use. Egress lights were operational when put to a test.

One of the egress routes at the east elevation was obstructed by waste stored at the base of the stairs. These materials should be removed immediately to prevent blockages. The stored materials also represent a fire hazard. There is also a road traffic sign located at the bottom of these stairs which acts as a bridge over the stored waste, which is deemed a safety hazard. These are considered a building management issue and should be addressed immediately.

Projected Capital Expenditures

No projected Capital Expenditures are anticipated at this time.

9.4 Fire Suppression Systems

Description

No structured or permanent fire suppression systems are installed. Hand held fire extinguishers are also provided at the hallways and near fire exits.

Condition

The installation of a fire suppression system would provide greater flexibility over the usage of the space and would protect the building from total loss, in the event of a fire. We have not carried the option to install a full fire suppression system through the building.

The fire extinguishers in the building are reportedly serviced under contract. Maintenance of the extinguishers is considered an ongoing building management item.

Projected Capital Expenditures

No capital expenditures are anticipated for the fire suppression system at this time.

9.5 Fire Detection and Alarm Systems

Description

The building is protected by a fully addressable fire alarm control system. The smoke alarm system is operational throughout the entire building. A laser beam fire protection system has been adapted in the drill hall for detection of smoke because there is a lot more open space to be covered.

Condition

The comprehensive smoke detection system used within this building is believed to be compliant with current rules and regulations.

Projected Capital Expenditures

No capital expenditures are anticipated for the fire alarm system at this time, except as noted under ADA recommendations.

BUILDING INTERIORS & FINISHES

10.0 INTERIOR FINISHES

The building interiors consists of the main entrance, drill hall, male and female latrines, classrooms, office areas and various utility/storage rooms (reference Photographs INT-01 through INT-09 in Appendix A).

10.1 Description

Main Entrance

The main entrance to the building is located at front (south) elevation. People enter the building via double steel framed leaf insulated metal hollow core doors opening onto a hallway containing the main stairs and the entrance to the drill hall. The hallway is finished with sheet wood panels and wainscot walls and 12x12 Vinyl Composition Tile flooring. The ceiling is 2x2 Acoustic Ceiling Tile.

Drill Hall

The drill hall is finished with painted brick walls and a 1x3 maple strip wood deck on subflooring secured to wood structure below. The ceiling is open to the underside of the wood roof deck.

Restrooms and Latrines

The building is provided with a male and female restroom, and shower room. The only male latrine is found on the second floor, whilst the female latrine is found on the ground floor. The one shower room that is located within the building is located in the male latrine. Finishes within these areas consist of ceramic mosaic tile to the floors, a combination of 4x8 ceramic tile and painted plaster walls, 2x4 acoustical ceiling tile.

Classrooms and Office Areas

The classrooms and office/administration areas have wood doors in a painted frame. The office/ administration areas are typically finished with either 2’x4’ or 2’x2’ Acoustical Ceiling Tiles. Walls are typically painted gypsum stud walls throughout. The floor finishes are typically 1x3 maple strip wood flooring throughout the 2nd floor with a wood base, and 12x12 VCT on the 1st floor.

Storage

The storage areas are located in the basement of the building. The floor finish consisted of painted slab-on-grade and the walls are a mix of painted brick and CMU walls. The ceiling finish applied is plaster that was secured to the wood deck above.

10.2 Condition

The finishes throughout the building are generally in fair and stable condition, though aged. There is an argument for a comprehensive building finish renewal program, however, this is not considered to be pragmatic based on the current occupancy and utilization of the building. We therefore recommend finish renewal where it will improve the aesthetic appearance of the building, improve occupant comfort or remove potential health and safety risks.

It should be noted that there is a high probability of asbestos containing materials, lead and other deleterious materials being present throughout the facility. Records of historic hazardous materials were not made available for review. We recommend a comprehensive hazardous material assessment be made prior to any works being completed. The cost of hazardous material abatement cannot be confirmed until survey works have been completed.

Floors

The maple strip wood decking finish in the classroom area on the 2nd floor particularly stood out as being aged and in need of refurbishment. We recommend that this area specifically be considered for a finish renewal program to revive the aesthetics of the interior design.

Ceilings

The suspended ceiling systems throughout the building did not show signs of aging and appeared to be in fair condition between the 1st and 2nd floors. The use of capital expenditure is not necessary throughout the building for ceiling finishes.

Restrooms

The male and female latrines/restrooms are in fair condition; however, the fixtures fittings and finishes are all aged and non-compliant with accessibility requirements for either gender. Considering the age and condition of the latrines and their non-compliance, we recommend a comprehensive renovation of the male and female restrooms to provide accessible, energy and water efficient facilities in the near term.

10.3 Kitchen Compliance

During our evaluation we compared the as-built elements in the kitchen with a health department checklist. The checklist was not applicable within this building because the kitchen is no longer in use.

10.4 Projected Capital Expenditures

Capital expenditures required over the 10-Year study period are provided below:

Recommendation	Priority Category	Deficiency Category	Year	Expenditures
Refurbish of Interior Finishes at Main Building, Including GWB Walls, Acoustical Suspended Ceilings, and Floor Finishing	3 - Necessary, Not Yet Critical	Capital Renewal	2019	$400,000

ACCESSIBILITY COMPLIANCE

11.0 ACCESSIBILITY

DCAMM engaged Steven Winter Associates, an Accessibility Consultant, to conduct a separate accessibility audit of this facility. The Accessibility Audit report focused on elements related to accessibility compliance with state and federal laws and regulations. Costs from this report have been included within our Capital Expenditure Forecast in Appendix B, and a copy of the Accessibility Audit report is provided in Appendix F. Details regarding the below accessibility projects are referenced in Appendix F.

11.1 Projected Capital Expenditures

Capital expenditures required over the 10-year study period are provided below:

Recommendation	Priority Category	Deficiency Category	Year	Expenditure
ADA Recommendation 1: Provide One Van Designated Parking Space	1 - Currently Critical and/or Code Violations	Capital Renewal	2019	$250
ADA Recommendation 2: Improve Approach from Sidewalk to Front Entrance	1 - Currently Critical and/or Code Violations	Capital Improvement	2019	$33,750
ADA Recommendation 3b: Install Vertical Wheelchair Lift to the Stage	1 - Currently Critical and/or Code Violations	Capital Improvement	2019	$20,000
ADA Recommendation 3c: Install Cane-Detectable Railing Underneath Stair to Second Floor	1 - Currently Critical and/or Code Violations	Capital Improvement	2019	$1,200
ADA Recommendations 3 & 4: Modify Floors at Lobby and Assembly Hall Entry for Proper Slope	1 - Currently Critical and/or Code Violations	Capital Renewal	2019	$5,000
ADA Recommendations 3, 4 & 5: Improvements to Door Hardware and Thresholds	1 - Currently Critical and/or Code Violations	Capital Renewal	2019	$2,500
ADA Recommendation 6: Install one Bi-Level Drinking Fountain Inside Assembly Hall	1 - Currently Critical and/or Code Violations	Capital Improvement	2019	$3,125
ADA Recommendation 7: Provide One Accessible Toilet/ Shower Room on the First Floor	1 - Currently Critical and/or Code Violations	Capital Improvement	2019	$25,000

Recommendation	Priority Category	Deficiency Category	Year	Expenditure
ADA Recommendation 8: Install ADA-Compliant Signs Throughout First Floor	1 - Currently Critical and/or Code Violations	Capital Improvement	2019	$625
ADA Recommendation 9: Install Audible and Visual Fire Alarm Devices Throughout All Public Use Areas	1 - Currently Critical and/or Code Violations	Capital Improvement	2019	$9,000

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Appendix A
Photographs & Floor Plans

Photograph No. S-01

Parking lot and egress stair west side of building

Photograph No. S-02

Landscaping and parking at southeast corner

Photograph No. S-03

East side of building with and chain-link fencing

Photograph No. S-04

Egress stair at southeast corner of building

Photograph No. S-05

Damaged cheek wall and concrete landing at main south entrance

Photograph No. S-06

Concrete walkway at main south entrance

Photograph No. S-07

Damaged concrete walkway at southwest corner

Photograph No. SEC-01

Chain-Link Fencing

Photograph No. SEC-02

Chain-link fence at rear of building

Photograph No. ST-01

Long span arched steel trusses and intermediate wood purlins supporting drill hall roof.

Photograph No. ST-02

Typical 2x12 wood floor joists, strapping, metal lath and plaster ceiling system

Photograph No. ST-03

Similar 2x12 wood framing structure at Drill Hall floor

Photograph No. ST-04

Second-floor ceiling framing with W section steel beam supporting exterior brick turret at main south entrance

Photograph No. R-01

Southeast view of TPO roof and parapets at main building

Photograph No. R-02

Southwest view of TPO roof and parapets at main building

Photograph No. R-03

Masonry at south turret feature with decorative copper cladding

Photograph No. R-04

Existing brick chimney with newer discharge flue for boilers, drill hall shingle and TPO roof beyond

Photograph No. R-05

Typical TPO boot flashing

Photograph No. R-06

Typical internal roof drain with cover

Photograph No. R-07

Typical TPO base flashing and copper counter-flashing

Photograph No. EXT-01

Building south entrance

Photograph No. EXT-02

Partial east elevation with overhead electric service

Photograph No. EXT-03

Partial west elevation with shingle roof and step flashings

Photograph No. EXT-04

North side crenelated parapet with step cracking in brick

Photograph No. EXT-05

Stepped brick at the south turret with brick cracking, evidence of previous mortar repairs

Photograph No. EXT-06

Banding at south elevation with spalled brick

Photograph No. EXT-07

Spalled brick at south elevation

Photograph No. EXT-08

Damaged door panels and head trim

Photograph No. EXT-09

West elevation egress door and stair, original double hung wood sash

Photograph No. M-01

NEW gas fired H.B Smith steam boiler

Photograph No. M-02

New Smith Boilers

Photograph No. M-03

New insulated steam piping for space heating system

Photograph No. M-04

New condensate pump controller

Photograph No. M-05

New condensate receiver for steam heating system

Photograph No. E-01

Nstar electric meter

Photograph No. E-02

Main 200 A electrical panelboard

Photograph No. E-03

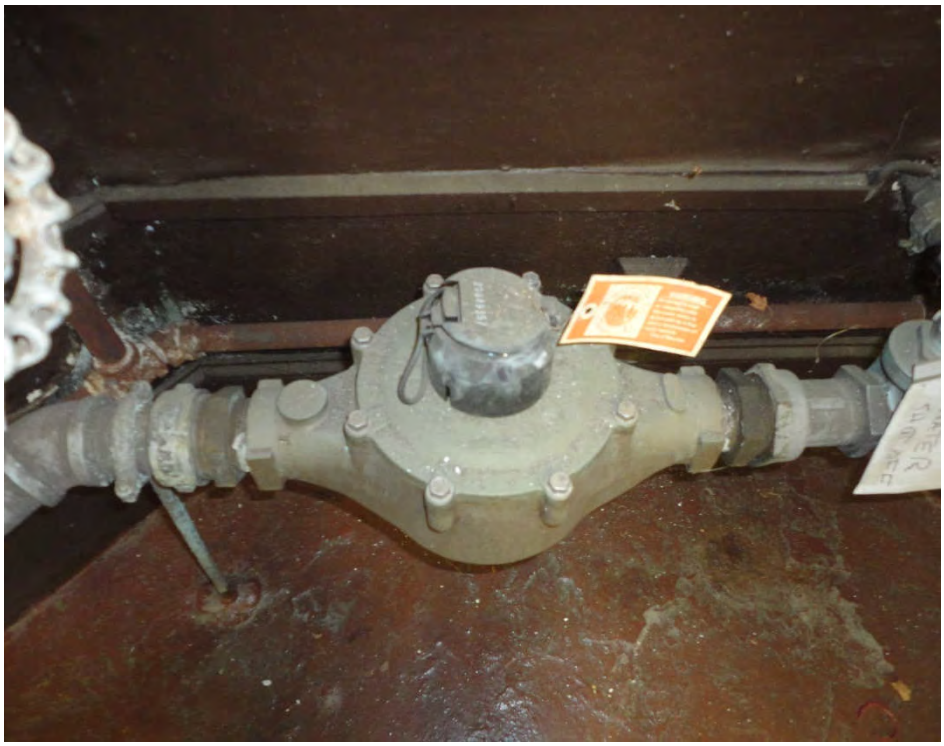
Upgraded Square D load center in basement

Photograph No. E-04

Main telephone-data service and server rack

Photograph No. E-05

Tel-data cable and tray



Photograph No. P-01

Incoming 2.5-inch water service and meter

Photograph No. P-02

RUUD domestic hot water heater (2016 installation)

Photograph No. P-03

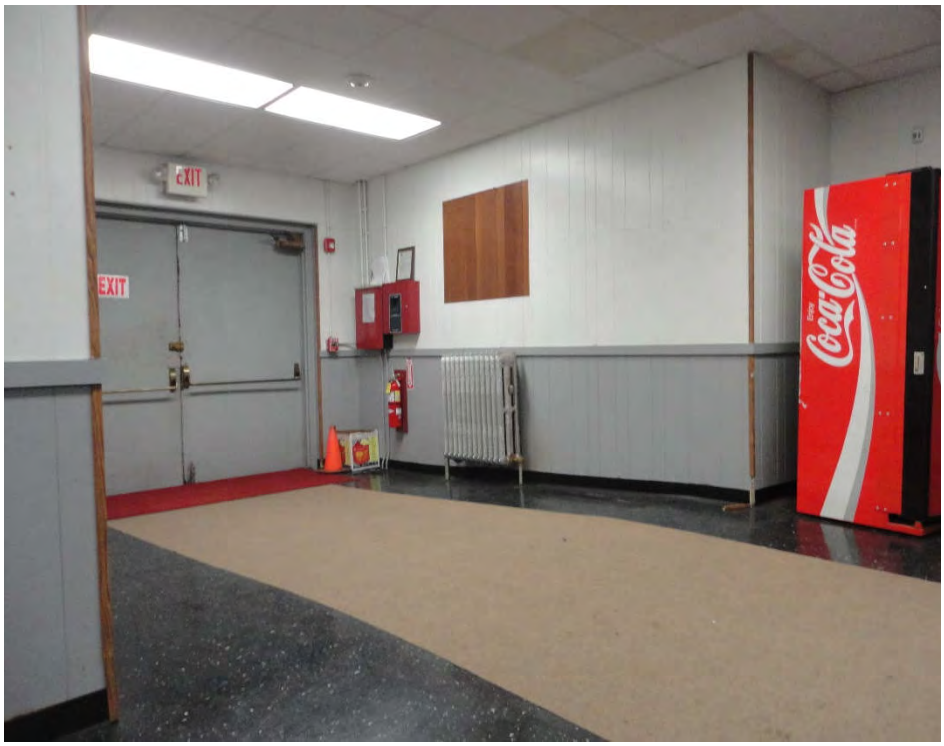
Representative plumbing fixtures largely original to the building

Photograph No. FLS-01

Main fire alarm and annunciator panel, horn/ strobe and fire alarm pull station at front door

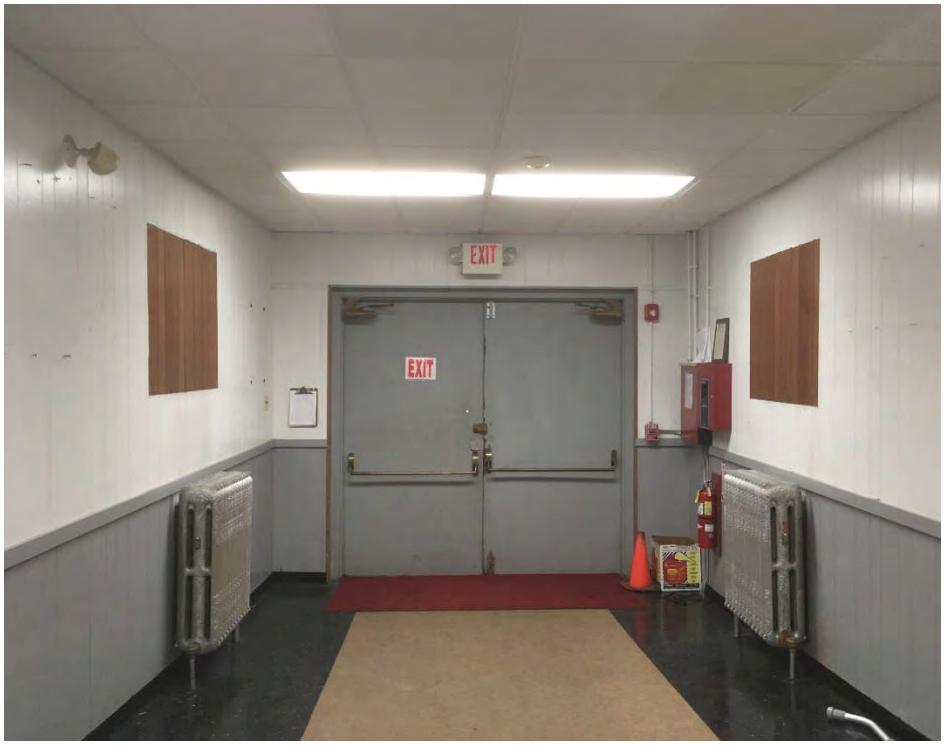
Photograph No. FLS-02

Fully addressable annunciator panel



Photograph No. INT-01

First-floor lobby area



Photograph No. INT-02

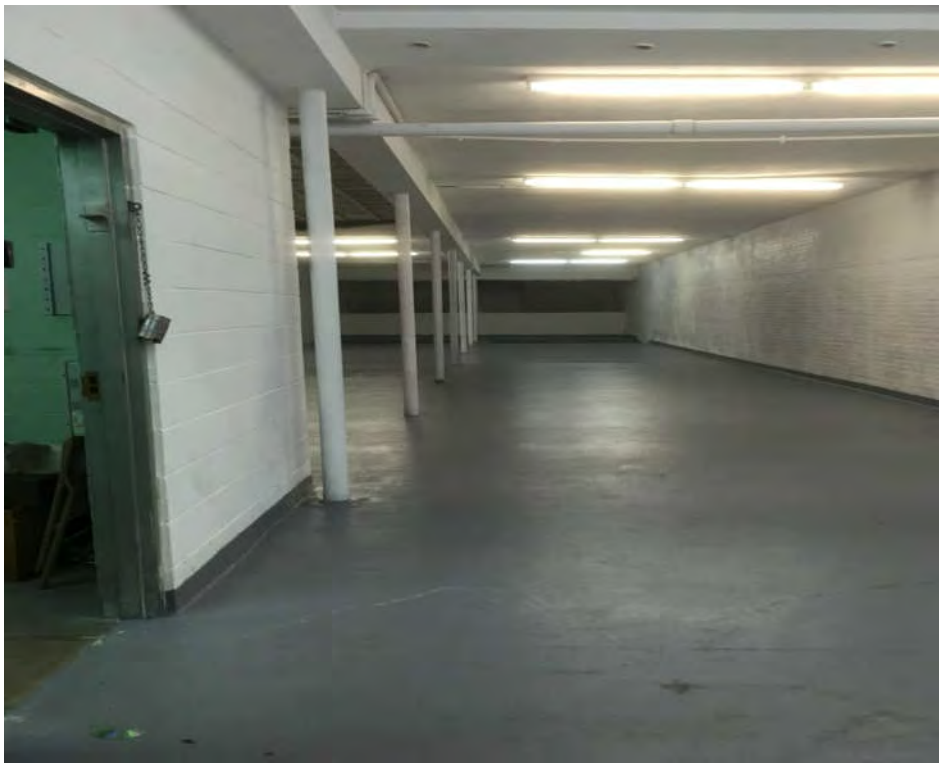
First-floor lobby with representative original steam radiators

Photograph No. INT-03

Second-floor corridor

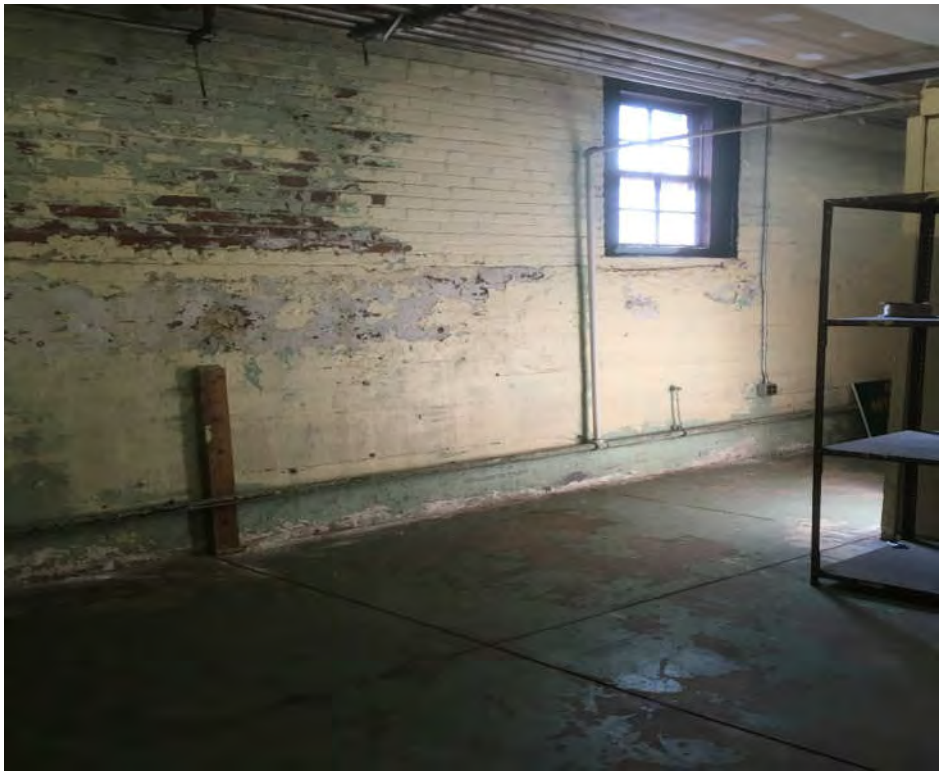
Photograph No. INT-04

Representative illuminated exit signs and emergency lighting heads; horn/strobe and fire alarm pull station beyond



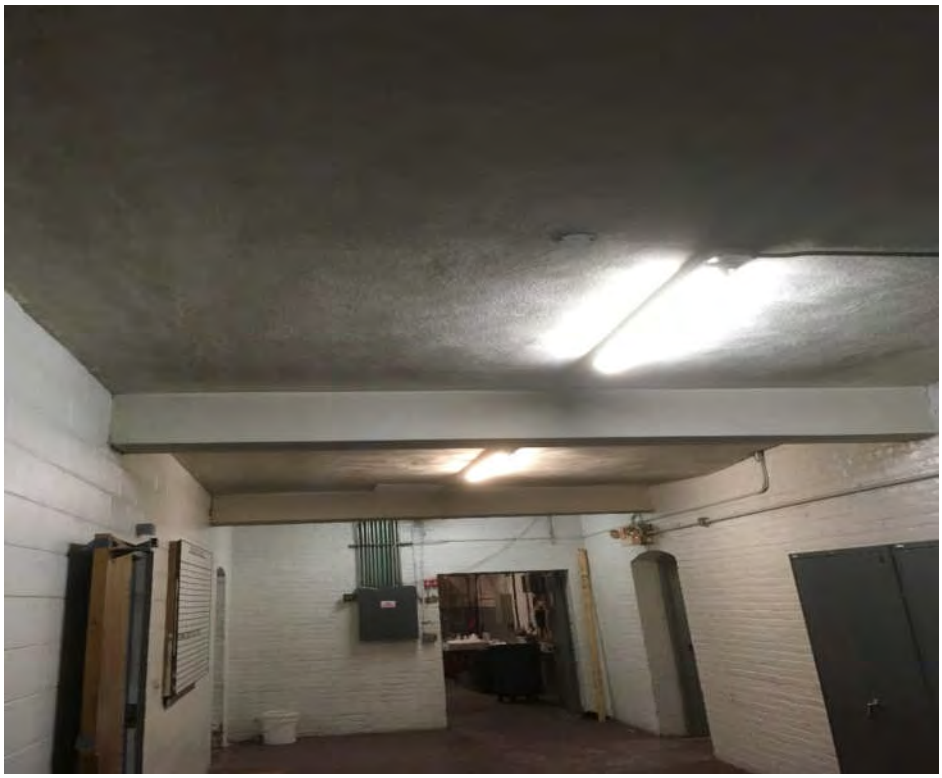
Photograph No. INT-05

Basement with CMU and interior partitions



Photograph No. INT-06

Exterior brick and concrete foundation walls



Photograph No. INT-07

Basement interior partitions of brick and CMU

Photograph No. INT-08

Storage bay accessible by overhead door at northeast corner of drill hall building

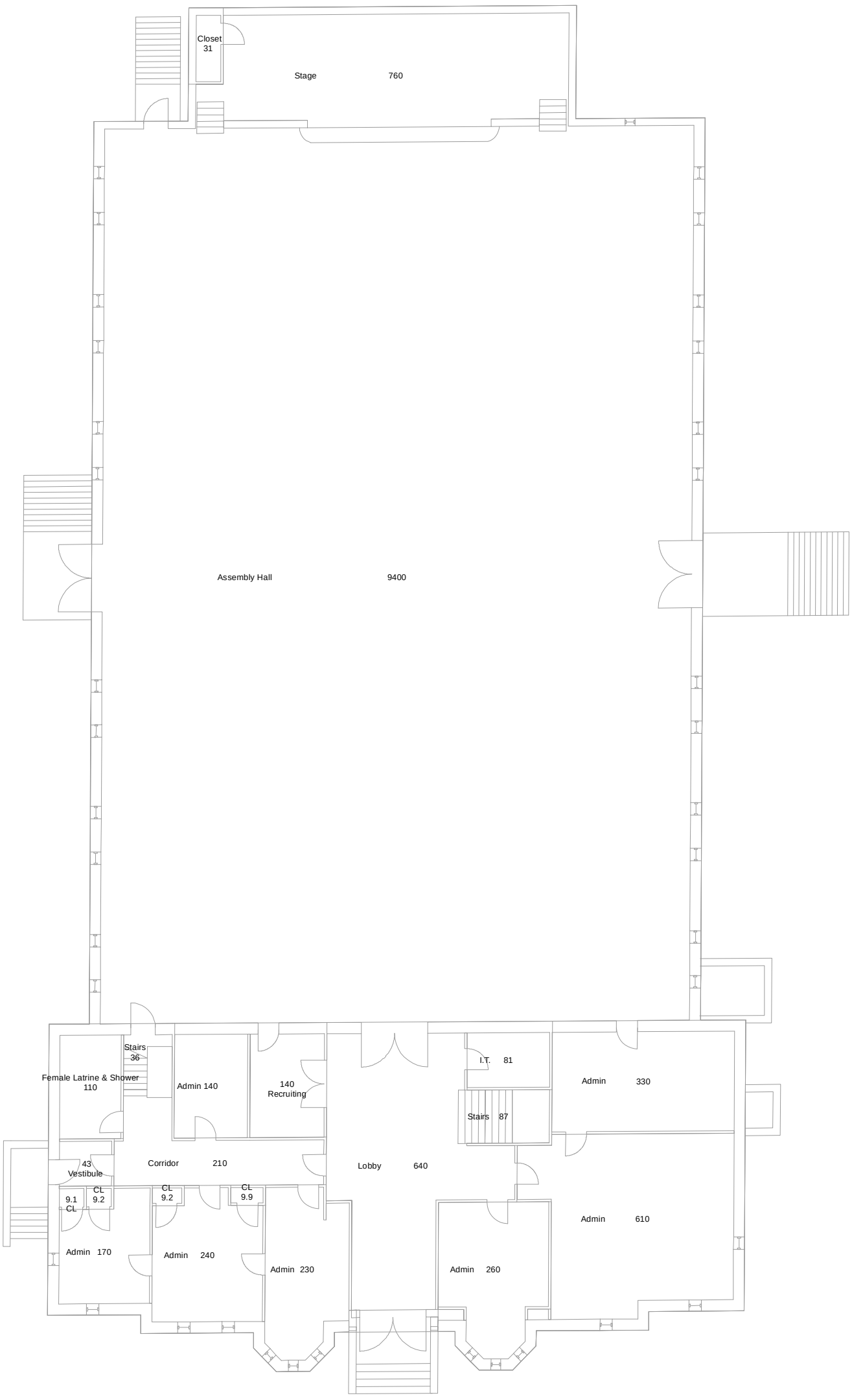
Photograph No. INT-09

Painted concrete basement slab on grade

WEST NEWTON - 25C10

First Floor Plan

MASSACHUSETTS ARMY NATIONAL GUARD
JOINT FORCE HEADQUARTERS, HANSCOM AFB
CONSTRUCTION AND FACILITIES MANAGEMENT OFFICE



0 1 2 4 6 8 10
Meters

0 5 10 20 30 40 50
Feet

Reference Scale: 1:200

All room measurements in square feet

N

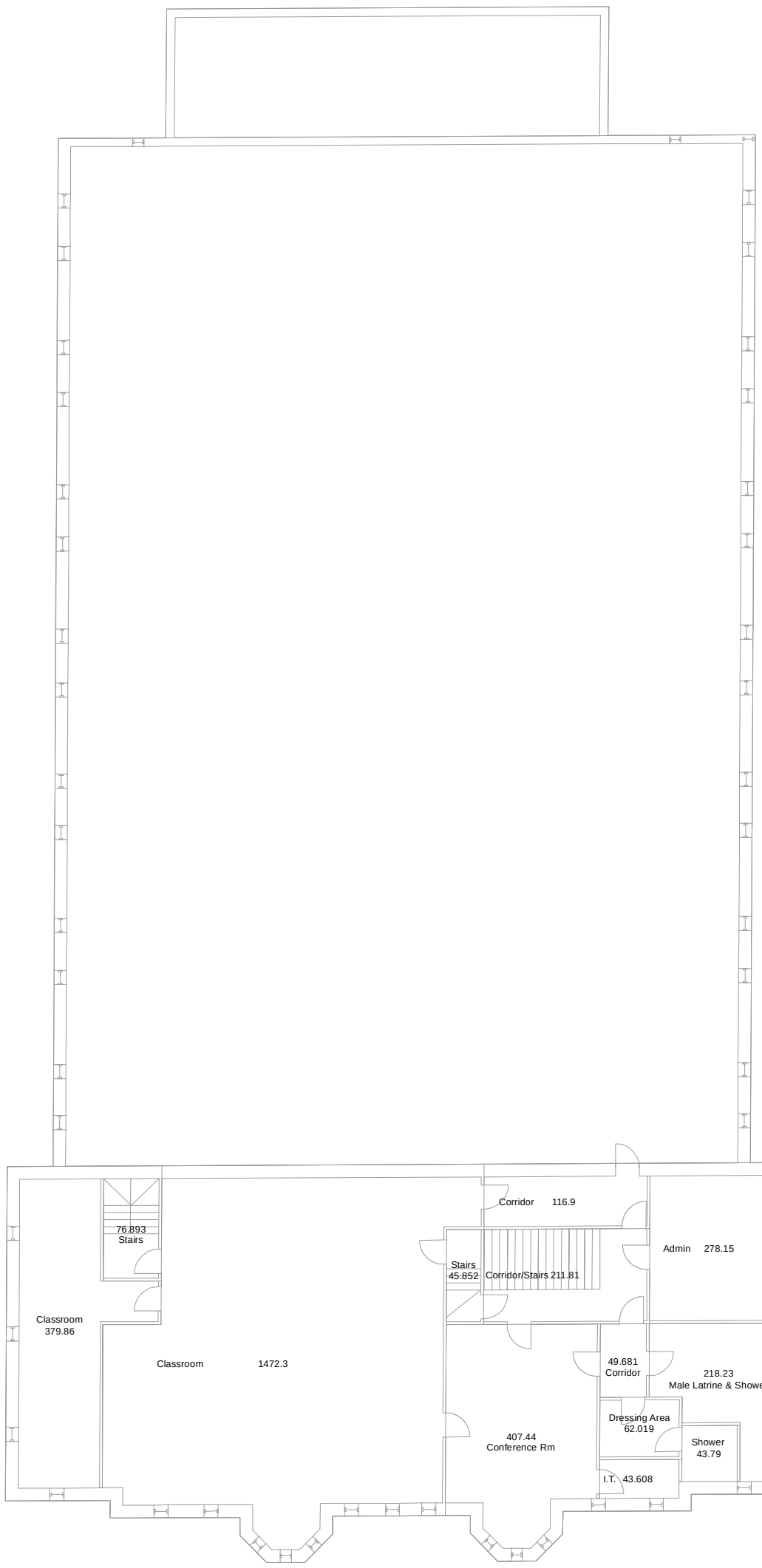
Drawn by William A. Cooney
Facilities GIS Manager
MAARNG-CFMO
Commonwealth of Massachusetts
Military Division

Last Update: 11/8/2017 9:13:57 AM

WEST NEWTON - 25C10

Second Floor Plan

MASSACHUSETTS ARMY NATIONAL GUARD
JOINT FORCE HEADQUARTERS, HANSCOM AFB
CONSTRUCTION AND FACILITIES MANAGEMENT OFFICE



0 1 2 4 6 8 10
Meters

0 5 10 20 30 40 50
Feet

Reference Scale: 1:200

All room measurements in square feet

N

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Facilities GIS Manager
MAARNG-CFMO
Commonwealth of Massachusetts
Military Division

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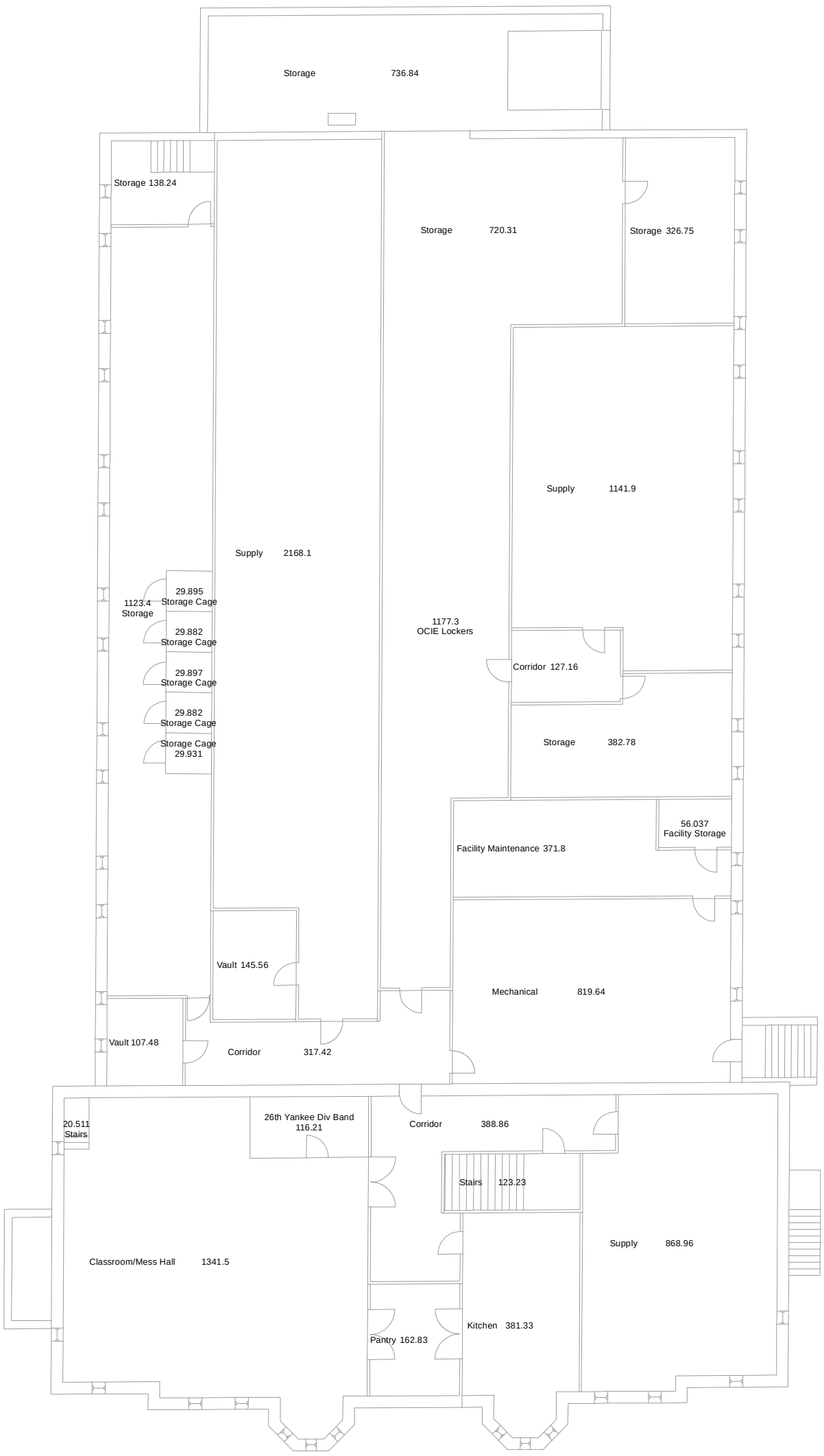
WEST NEWTON - 25C10

Basement Floor Plan

MASSACHUSETTS ARMY NATIONAL GUARD
JOINT FORCE HEADQUARTERS, HANSCOM AFB
CONSTRUCTION AND FACILITIES MANAGEMENT OFFICE



0 1 2 4 6 8 10
Meters

0 5 10 20 30 40 50
Feet

Reference Scale: 1:200

All room measurements in square feet

N

Drawn by William A. Cooney
Facilities GIS Manager
MAARNG-CFMO
Commonwealth of Massachusetts
Military Division

Last Update: 11/8/2017 9:13:28 AM

Appendix B

10 Year Capital Expenditure Forecast

Ten Year Capital Expenditure Forecast

West Newton Armory
1137 Washington St.
Newton, Massachusetts 02165

SNC·LAVALIN

FAITHFUL GOULD
Member of the SNC·Lavalin Group

Component No.	CapEx Recommendation	Priority Category	Deficiency Category	Estimated Useful Life or Replacement Cycle (Yrs.)	Remaining Useful Life (Yrs.)	Cost Multiplier	Quantity	Unit of Measurement	Unit Cost	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Required
									Year	1	2	3	4	5	6	7	8	9	10	
Site Systems																				
Required																				
1	Remove Overgrown Vegetation at Site Perimeter and Chain Link Fence	1 - Currently Critical and/or Code Violations	Deferred Maintenance	10	1	1.00	275	LF	$20.00	$5,500										$5,500
2	Replace Cementitious Concrete Walkway at Building Front, Including Demolition	2 - Potentially Critical	Capital Renewal	30	4	1.00	250	SF	$25.00				$6,250							$6,250
3	Resurface (Mill & Overlay) Asphalt Pavements	3 - Necessary, Not Yet Critical	Capital Renewal	20	5	1.00	1,720	SY	$15.00					$25,800						$25,800
Security Systems																				
Required																				
1	Provide New Security System Including, Visitor Notification Bell, and CCTV Coverage	1 - Currently Critical and/or Code Violations	Capital Improvement	20	1	1.00	26,890	SF	$1.25	$33,613										$33,613
2	Replace Chain Link Fence Throughout Facility	3 - Necessary, Not Yet Critical	Capital Renewal	20	5	1.00	500	LF	$175.00					$87,500						$87,500
3	Replace Chain Link Access Gates	3 - Necessary, Not Yet Critical	Capital Renewal	20	5	1.00	2	EA	$25,000.00					$50,000						$50,000
4	Replace Existing Building Mounted Exterior Light Fixtures with LED Fixtures, Add Additional Fixtures	1 - Currently Critical and/or Code Violations	Capital Renewal	30	1	1.00	8	EA	$700.00	$5,600										$5,600
Structural Systems																				
Required																				
1	No Anticipated Capital Expenditures																			$0
Roofing Systems																				
Required																				
1	Replace Existing Fiberglass/ Asphalt Shingle Roof, Associated Flashings, and Trim	3 - Necessary, Not Yet Critical	Capital Renewal	20	5	1.00	91	Squares	$700.00					$63,700						$63,700
Exterior Elements																				
Required																				
1	Replace Spalled Brick	3 - Necessary, Not Yet Critical	Capital Renewal	50	1	1.00	250	SF	$100.00	$25,000										$25,000
2	Repair Sections of Cracked Brick Wall, Repoint Mortar Joints in Approximately 10% of Walls Area, and Cut Control Joints	3 - Necessary, Not Yet Critical	Capital Renewal	50	1	1.00	1,250	SF	$100.00	$125,000										$125,000
3	Replace Existing Exterior Windows Throughout Facility	3 - Necessary, Not Yet Critical	Capital Renewal	50	1	1.00	88	EA	$800.00	$70,400										$70,400
4	Replace Existing Exterior Doors Throughout Facility	3 - Necessary, Not Yet Critical	Capital Renewal	30	8	1.00	8	EA	$750.00								$6,000			$6,000
5	Repair Existing Overhead Door and Trim at Northeast Corner	3 - Necessary, Not Yet Critical	Deferred Maintenance	30	10	1.00	1	EA	$1,500.00										$1,500	$1,500

Ten Year Capital Expenditure Forecast

West Newton Armory
1137 Washington St.
Newton, Massachusetts 02165

SNC·LAVALIN

FAITHFUL GOULD
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Component No.	CapEx Recommendation	Priority Category	Deficiency Category	Estimated Useful Life or Replacement Cycle (Yrs.)	Remaining Useful Life (Yrs.)	Cost Multiplier	Quantity	Unit of Measurement	Unit Cost	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Required
									Year	1	2	3	4	5	6	7	8	9	10	
Mechanical																				
Required																				
1	Upgrade Existing Steam Cabinet Heaters in the Drill Hall with Suspended Air Handling Units	2 - Potentially Critical	Capital Renewal	25	1	1.00	2	EA	$60,000.00	$120,000										$120,000
2	Replace Existing Exhaust Fans for Toilets and Kitchen	2 - Potentially Critical	Capital Renewal	25	1	1.00	3	EA	$2,500.00	$7,500										$7,500
3	Replace Exhaust Fans for Drill Hall, Locker Room and Office Areas	2 - Potentially Critical	Capital Renewal	25	1	1.00	4	EA	$2,500.00	$10,000										$10,000
Electrical																				
Required																				
1	Upgrade Existing Electrical Service from 200 AMP to 400 AMP	2 - Potentially Critical	Capital Improvement	30	1	1.00	400	AMP	$40.00	$16,000										$16,000
2	Upgrade Existing Electrical Panels Throughout Building	3 - Necessary, Not Yet Critical	Capital Improvement	30	4	1.00	4	EA	$3,000.00				$12,000							$12,000
3	Install Emergency Panel with Manual Transfer Switch for Exterior Portable Emergency Generator	3 - Necessary, Not Yet Critical	Capital Improvement	30	1	1.00	1	EA	$25,000.00	$25,000										$25,000
Plumbing																				
Required																				
1	Replace Plumbing Fixtures Throughout Building	3 - Necessary, Not Yet Critical	Capital Renewal	30	1	1.00	1	LS	$25,000.00	$25,000										$25,000
Fire & Life Safety																				
Required																				
1	No Anticipated Capital Expenditures																			$0
Conveyance Systems																				
Required																				
1	Not Applicable																			$0
Interiors																				
Required																				
1	Refurbish of Interior Finishes at Main Building, Including GWB Walls, Acoustical Suspended Ceilings, and Floor Finishing	3 - Necessary, Not Yet Critical	Capital Renewal	25	1	1.00	10,000	SF	$40.00	$400,000										$400,000

Ten Year Capital Expenditure Forecast

West Newton Armory
1137 Washington St.
Newton, Massachusetts 02165

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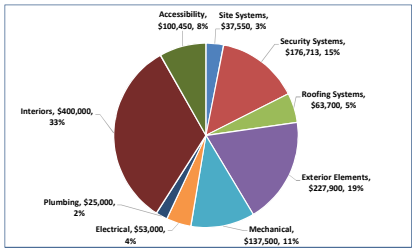
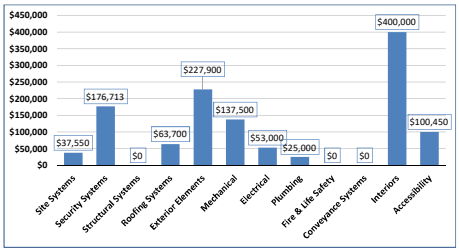
Component No.	CapEx Recommendation	Priority Category	Deficiency Category	Estimated Useful Life or Replacement Cycle (Yrs.)	Remaining Useful Life (Yrs.)	Cost Multiplier	Quantity	Unit of Measurement	Unit Cost	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Required
									Year	1	2	3	4	5	6	7	8	9	10	
Accessibility																				
Required																				
1	ADA Recommendation 1: Provide One Van Designated Parking Space	1 - Currently Critical and/or Code Violations	Capital Renewal	5	1	1.00	1	EA	$250.00	$250										$250
2	ADA Recommendation 2: Improve Approach from Sidewalk to Front Entrance	1 - Currently Critical and/or Code Violations	Capital Improvement	30	1	1.00	45	LF	$750.00	$33,750										$33,750
3	ADA Recommendation 3b: Install Vertical Wheelchair Lift to the Stage	1 - Currently Critical and/or Code Violations	Capital Improvement	30	1	1.00	1	EA	$20,000.00	$20,000										$20,000
4	ADA Recommendation 3c: Install Cane-Detectable Railing Underneath Stair to Second Floor	1 - Currently Critical and/or Code Violations	Capital Improvement	30	1	1.00	10	LF	$120.00	$1,200										$1,200
5	ADA Recommendations 3 & 4: Modify Floors at Lobby and Assembly Hall Entry for Proper Slope	1 - Currently Critical and/or Code Violations	Capital Renewal	50	1	1.00	2	LS	$2,500.00	$5,000										$5,000
6	ADA Recommendations 3, 4 & 5: Improvements to Door Hardware and Thresholds	1 - Currently Critical and/or Code Violations	Capital Renewal	30	1	1.00	1	LS	$2,500.00	$2,500										$2,500
7	ADA Recommendation 6: Install one Bi-Level Drinking Fountain Inside Assembly Hall	1 - Currently Critical and/or Code Violations	Capital Improvement	30	1	1.00	1	EA	$3,125.00	$3,125										$3,125
8	ADA Recommendation 7: Provide One Accessible Toilet/ Shower Room on the First Floor	1 - Currently Critical and/or Code Violations	Capital Improvement	30	1	1.00	1	LS	$25,000.00	$25,000										$25,000
9	ADA Recommendation 8: Install ADA-Compliant Signs Throughout First Floor	1 - Currently Critical and/or Code Violations	Capital Improvement	30	1	1.00	25	EA	$25.00	$625										$625
10	ADA Recommendation 9: Install Audible and Visual Fire Alarm Devices Throughout All Public Use Areas	1 - Currently Critical and/or Code Violations	Capital Improvement	20	1	1.00	30	EA	$300.00	$9,000										$9,000
Notes:								Required Cost (2018 Dollars)		$969,063	$0	$0	$18,250	$227,000	$0	$0	$6,000	$0	$1,500	$1,221,813

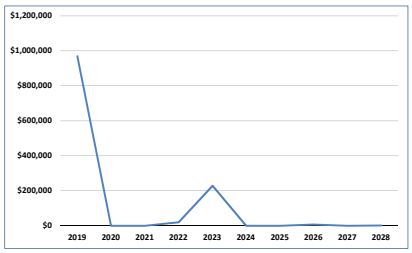
Facility Condition Index Calculations										
Asset	Asset Code	Total Expenditure	Gross Area (SF)	% of Site	Common $ Dist.	Total Capital Need	CRV Rate ($ / SF)		CRV Value	FCI Score
Common Asset		$0	-	-	-	-	-		-	-
West Newton Armory	447MIL1040	$1,221,813	30122	100%	$0	$1,221,813	$1,261	$	37,982,159	0.03
		$0	0	0%	$0	$0	$0	$	-	0.00
		$0	0	0%	$0	$0	$0	$	-	0.00
		$0	0	0%	$0	$0	$0	$	-	0.00
		$0	0	0%	$0	$0	$0	$	-	0.00
		$0	0	0%	$0	$0	$0	$	-	0.00
		$0	0	0%	$0	$0	$0	$	-	0.00
		$0	0	0%	$0	$0	$0	$	-	0.00
		$0	0	0%	$0	$0	$0	$	-	0.00
		$0	0	0%	$0	$0	$0	$	-	0.00

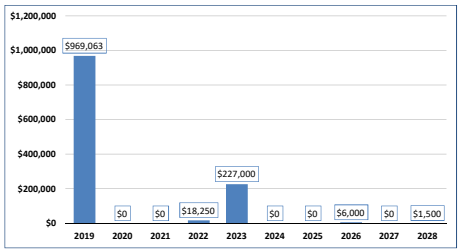
Building Systems	Projected Expenditures
Site Systems	$37,550
Security Systems	$176,713
Structural Systems	$0
Roofing Systems	$63,700
Exterior Elements	$227,900
Mechanical	$137,500
Electrical	$53,000
Plumbing	$25,000
Fire & Life Safety	$0
Conveyance Systems	$0
Interiors	$400,000
Accessibility	$100,450
Total	**$1,221,813**



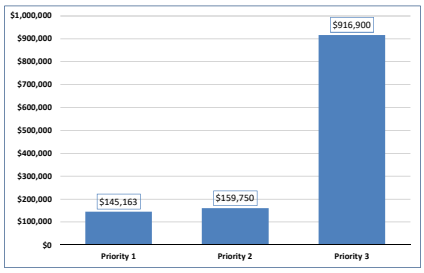


Project Year	Total Yearly Expenditures
2019	$969,063
2020	$0
2021	$0
2022	$18,250
2023	$227,000
2024	$0
2025	$0
2026	$6,000
2027	$0
2028	$1,500
Total	**$1,221,813**

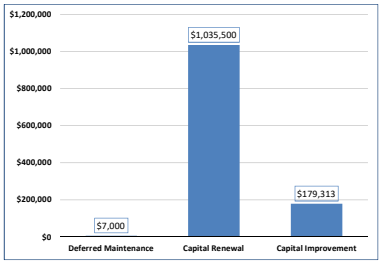




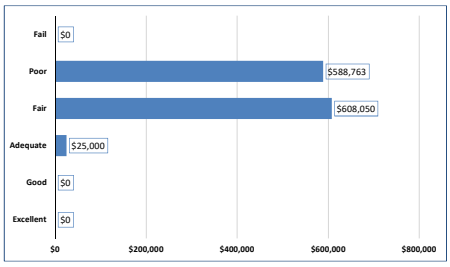
Priority	Total Expenditures
Priority 1	$145,163
Priority 2	$159,750
Priority 3	$916,900
Total	**$1,221,813**

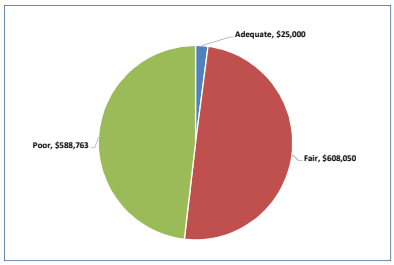


Deficiency	Total Expenditures
Deferred Maintenance	$7,000
Capital Renewal	$1,035,500
Capital Improvement	$179,313
Total	**$1,221,813**



Condition	Total Expenditures
Excellent	$0
Good	$0
Adequate	$25,000
Fair	$608,050
Poor	$588,763
Fail	$0
Total	**$1,221,813**





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Member of the SNC-Lavalin Group

Appendix C
CAMIS Input Sheet

Project ID	Building Code	Site Code	Building Name	Uniformat Code	Project Description / Deficiency Title	Deficiency Description	CAMIS Number	System Condition	DCAMM Priority	Project Cost / Deficiency Cost	Investment Criteria	Project Category	Package	ADA Program Access / Min Compliance	Project Type	Campus Name	Project Input Year
	447MIL1040	MIL36	West Newton Armory	G1010.30	Vegetation Removal	Remove Overgrown Vegetation at Site Perimeter and Chain Link Fence		Poor	1 - Currently Critical and/or Code Violations	$ 5,500	Safety / Code	Repair / Maintenance	Safety / Code		Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	G2030.10	Concrete Walk Repairs	Replace Cementitious Concrete Walkway at Building Front, Including Demolition		Fair	2 - Potentially Critical	$ 6,250	Asset Preservation	Repair / Maintenance	Infrastructure		Capital Project	West Newton Armory	2022
	447MIL1040	MIL36	West Newton Armory	G2020.10	Bituminous Pavement Resurfacing	Resurface (Mill & Overlay) Asphalt Pavements		Fair	3 - Necessary, Not Yet Critical	$ 25,800	Asset Preservation	Repair / Maintenance	Infrastructure		Capital Project	West Newton Armory	2023
	447MIL1040	MIL36	West Newton Armory	D7010	Security System Installation	Provide New Security System Including, Visitor Notification Bell, and CCTV Coverage		Poor	1 - Currently Critical and/or Code Violations	$ 33,613	Safety / Code	Infrastructure	Safety / Code		Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	G2060.20	Chain Link Fence Replacement	Replace Chain Link Fence Throughout Facility		Fair	3 - Necessary, Not Yet Critical	$ 87,500	Safety / Code	Modernization	Infrastructure		Capital Project	West Newton Armory	2023
	447MIL1040	MIL36	West Newton Armory	G2060.20	Chain Link Gate Replacement	Replace Chain Link Access Gates		Fair	3 - Necessary, Not Yet Critical	$ 50,000	Safety / Code	Modernization	Infrastructure		Capital Project	West Newton Armory	2023
	447MIL1040	MIL36	West Newton Armory	G4050	Site Lighting Replacement	Replace Existing Building Mounted Exterior Light Fixtures with LED Fixtures, Add Additional Fixtures		Poor	1 - Currently Critical and/or Code Violations	$ 5,600	Safety / Code	Infrastructure	Infrastructure		Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	B3010.10	Shingle Roof Replacement	Replace Existing Fiberglass/ Asphalt Shingle Roof, Associated Flashings, and Trim		Poor	3 - Necessary, Not Yet Critical	$ 63,700	Asset Preservation	Modernization	Building Envelope		Capital Project	West Newton Armory	2023
	447MIL1040	MIL36	West Newton Armory	B2010.10	Brick Replacement	Replace Spalled Brick		Adequate	3 - Necessary, Not Yet Critical	$ 25,000	Asset Preservation	Repair / Maintenance	Building Envelope		Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	B2010.10	Masonry Repairs	Repair Sections of Cracked Brick Wall, Repoint Mortar Joints in Approximately 10% of Walls Area, and Cut Control Joints		Poor	3 - Necessary, Not Yet Critical	$ 125,000	Asset Preservation	Repair / Maintenance	Building Envelope		Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	B2020.10	Window Replacement	Replace Existing Exterior Windows Throughout Facility		Poor	3 - Necessary, Not Yet Critical	$ 70,400	Asset Preservation	Modernization	Building Envelope		Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	B2050.10	Exterior Door Replacement	Replace Existing Exterior Doors Throughout Facility		Poor	3 - Necessary, Not Yet Critical	$ 6,000	Asset Preservation	Modernization	Building Envelope		Capital Project	West Newton Armory	2026
	447MIL1040	MIL36	West Newton Armory	B2050.20	Overhead Door Repair	Repair Existing Overhead Door and Trim at Northeast Corner		Fair	3 - Necessary, Not Yet Critical	$ 1,500	Asset Preservation	Repair / Maintenance	Building Envelope		Capital Project	West Newton Armory	2028
	447MIL1040	MIL36	West Newton Armory	D3020	AHU Replacement	Upgrade Existing Steam Cabinet Heaters in the Drill Hall with Suspended Air Handling Units		Poor	2 - Potentially Critical	$ 120,000	Reliability	Infrastructure	Building Systems		Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	D3060.30	Exhaust Fan Replacement	Replace Existing Exhaust Fans for Toilets and Kitchen		Poor	2 - Potentially Critical	$ 7,500	Reliability	Infrastructure	Building Systems		Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	D3060.30	Exhaust Fan Replacement	Replace Exhaust Fans for Drill Hall, Locker Room and Office Areas		Poor	2 - Potentially Critical	$ 10,000	Reliability	Infrastructure	Building Systems		Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	D5020.10	Electric Service Replacement	Upgrade Existing Electrical Service from 200 AMP to 400 AMP		Poor	2 - Potentially Critical	$ 16,000	Program Improvement	Modernization	Building Systems		Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	D5020.30	Electric Panel Replacement	Upgrade Existing Electrical Panels Throughout Building		Fair	3 - Necessary, Not Yet Critical	$ 12,000	Reliability	Modernization	Building Systems		Capital Project	West Newton Armory	2022
	447MIL1040	MIL36	West Newton Armory	D5010.70	Wiring for Emergency Generator	Install Emergency Panel with Manual Transfer Switch for Exterior Portable Emergency Generator		Poor	3 - Necessary, Not Yet Critical	$ 25,000	Reliability	Infrastructure	Building Systems		Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	D2010.60	Plumbing Fixture Replacement	Replace Plumbing Fixtures Throughout Building		Fair	3 - Necessary, Not Yet Critical	$ 25,000	Reliability	Modernization	Building Systems		Capital Project	West Newton Armory	2019

Project ID	Building Code	Site Code	Building Name	Uniformat Code	Project Description / Deficiency Title	Deficiency Description	CAMIS Number	System Condition	DCAMM Priority	Project Cost / Deficiency Cost	Investment Criteria	Project Category	Package	ADA Program Access / Min Compliance	Project Type	Campus Name	Project Input Year
	447MIL1040	MIL36	West Newton Armory	C20	Interior Finish Upgrades	Refurbish of Interior Finishes at Main Building, Including GWB Walls, Acoustical Suspended Ceilings, and Floor Finishing		Fair	3 - Necessary, Not Yet Critical	$ 400,000	Program Improvement	Modernization	Space Improvement		Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	C2010.90	Provide Accessible Parking Stall	ADA Recommendation 1: Provide One Van Designated Parking Space		Poor	1 - Currently Critical and/or Code Violations	$ 250	Safety / Code	Modernization	Safety / Code	ADA Minimum Compliance	Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	G2030.30	ADA Compliant Ramp Construction	ADA Recommendation 2: Improve Approach from Sidewalk to Front Entrance		Poor	1 - Currently Critical and/or Code Violations	$ 33,750	Safety / Code	Infrastructure	Safety / Code	ADA Minimum Access	Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	D1010	Wheelchair Lift Installation	ADA Recommendation 3b: Install Vertical Wheelchair Lift to the Stage		Poor	1 - Currently Critical and/or Code Violations	$ 20,000	Safety / Code	Modernization	Safety / Code	ADA Minimum Access	Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	C1090.10	Cane-Detectable Railing Installation	ADA Recommendation 3c: Install Cane-Detectable Railing Underneath Stair to Second Floor		Poor	1 - Currently Critical and/or Code Violations	$ 1,200	Safety / Code	Modernization	Safety / Code	ADA Minimum Compliance	Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	C1060.10	ADA Floor Level Modifications	ADA Recommendations 3 & 4: Modify Floors at Lobby and Assembly Hall Entry for Proper Slope		Poor	1 - Currently Critical and/or Code Violations	$ 5,000	Safety / Code	Modernization	Safety / Code	ADA Minimum Access	Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	C1030	Interior Door Upgrades	ADA Recommendations 3, 4 & 5: Improvements to Door Hardware and Thresholds		Poor	1 - Currently Critical and/or Code Violations	$ 2,500	Safety / Code	Modernization	Safety / Code	ADA Minimum Access	Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	F1050.20	Drinking Fountain Installation	ADA Recommendation 6: Install one Bi-Level Drinking Fountain Inside Assembly Hall		Poor	1 - Currently Critical and/or Code Violations	$ 3,125	Safety / Code	Modernization	Safety / Code	ADA Minimum Compliance	Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	C1090.40	Restroom Renovation	ADA Recommendation 7: Provide One Accessible Toilet/ Shower Room on the First Floor		Poor	1 - Currently Critical and/or Code Violations	$ 25,000	Safety / Code	Modernization	Safety / Code	ADA Minimum Compliance	Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	C2010.90	Installation of ADA Compliant Signage	ADA Recommendation 8: Install ADA-Compliant Signs Throughout First Floor		Poor	1 - Currently Critical and/or Code Violations	$ 625	Safety / Code	Modernization	Safety / Code	ADA Minimum Compliance	Capital Project	West Newton Armory	2019
	447MIL1040	MIL36	West Newton Armory	D7050.10	Upgrades to Fire Alarm Signal Devices	ADA Recommendation 9: Install Audible and Visual Fire Alarm Devices Throughout All Public Use Areas		Poor	1 - Currently Critical and/or Code Violations	$ 9,000	Safety / Code	Modernization	Safety / Code	ADA Minimum Compliance	Capital Project	West Newton Armory	2019

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Appendix D
Kitchen Inspection Form

Health Inspection Checklist

Date: _____

Food Storage: Kitchen Inactive

- ◯ Food is kept at least 6” off the ground.
- ◯ Food is stored in a clean, dry location that is not exposed to contamination.
- ◯ Containers are labeled with the food name and delivery date.
- ◯ Chemicals and food are separated.
- ◯ Food is stored using the FIFO (First In, First Out) method.

Freezer and Refrigerator Maintenance: Kitchen Inactive

- ◯ Thermometer is easily visible and displays the correct temperature.
- ◯ Refrigeration temperature is within food safe range.
- ◯ Food is stored using the FIFO method.
- ◯ Food is stored at least 6” off the ground in walk-in refrigerators.
- ◯ Refrigerators and freezers are clean.
- ◯ All food items are correctly labeled and dated.

Food Preparation: Kitchen Inactive

- ◯ Food is protected from cross-contamination.
- ◯ Staff uses gloves, clean hands, or utensils when handling food.
- ◯ Tasting utensils are not used more than once before being cleaned.
- ◯ Frozen food is thawed properly in a refrigerator or under running water.
- ◯ Food is heated to the correct temperature to remove all bacteria before being placed in the hot holding area.

Sanitation: Kitchen Inactive

- ◯ Washing station is organized into three sections for washing, rinsing, and sanitizing.
- ◯ Utensils are covered to protect them from dust and contaminants when stored.
- ◯ Small equipment and utensils are cleaned between uses.
- ◯ The sanitizer is mixed to the correct concentration.
- ◯ Equipment is clean to sight and touch.
- ◯ Food preparation area, shelving, and cabinets are all clean to sight and touch.
- ◯ Water temperature is heated to the correct temperature for sanitizing.
- ◯ Utensils are allowed to air dry after washing.

Refuse and Garbage Disposal: Kitchen Inactive

- ◯ Garbage and refuse is properly disposed of.
- ◯ Garbage and recycling bins are emptied when full.
- ◯ Garbage bins are cleaned regularly to prevent pests.
- ◯ Outside receptacles have lids or covers.
- ◯ The area around the dumpster is clean and free of pests.
- ◯ The lid of the dumpster is shut.

Employee Hygiene: Kitchen Inactive

- ◯ Employees wear hairnets, and male employees cover facial hair.
- ◯ Jewelry is limited to simple earrings, plain rings, and watches.
- ◯ Cuts and bandages are covered when handling food.
- ◯ Employees wash their hands regularly using proper hand-washing techniques.
- ◯ Eating and smoking are limited to designated areas away from food prep areas.
- ◯ Employees wash their hands after sneezing, coughing, blowing their nose, or using the restroom.
- ◯ Employees wash their hands after working with raw food, handling money, or switching between stations.
- ◯ Employees wear clean clothes and proper, closed-toed shoes.

Notes:

_____

_____

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Appendix E
Glossary

GLOSSARY OF TERMS

Facility Condition Index (FCI)
An industry standard created to measure the relative condition of assets. The total value, or subset, of requirements divided by the current replacement value for the asset produces the FCI. Generally speaking, the higher the FCI is, the poorer the condition of the facility. The set of the requirements used to calculate FCI depends upon the method of FCI calculation that is used. FCI for the site is configured by an administrator.

FCI Range	Condition Description
0.00 – 0.02	Excellent condition, typically new construction
0.02 – 0.05	Good Condition, renovations occur on schedule
0.05 – 0.1	Fair Condition, in need of normal renovation
0.1 – 0.2	Below average condition, major renovation required
0.2 – 0.5	Poor condition, total renovation needed
0.5 – Above	Complete facility replacement indicated

Replacement Value
The amount of funds required to replace a specific asset in like kind. It is the result of multiplying the cost per square foot from the appropriate asset template by the number of square feet (gross area).

Estimates Useful Life or Replacement Cycle (EUL)
The average amount of time in years that an item, component or system is estimated to function without material repair when installed new and assuming routine maintenance is practiced. This is also referred to be the component's expected useful life (EUL).

Remaining Useful Life (RUL)
A subjective estimate based upon observations, or average estimates of similar items, components, or systems, or a combination thereof, of the number of remaining years that an item, component, or system is estimated to be able to function in accordance with its intended purpose before warranting replacement. Such period of time is affected by the initial quality of an item, component, or system, the quality of the initial installation, the quality and amount of preventive maintenance exercised, climatic conditions, extent of use, etc.

Cost Multiplier
A number assigned to an action signifying the complexity and/or resources required to fix a requirement. The requirement factor is multiplied against the line items for the total action cost.

Line Item
A discrete cost in an action. It includes the class, the code, the description, the number of units, the unit of measurement, a unit cost, and a total cost that includes the Overhead and Profit for the given trade.

WORK ELEMENT CATEGORIZATIONS

Work Element Deficiency Category

Each identified project was assigned one of the three deficiency categories as discussed below:

- **Deferred Maintenance:** Deferred Maintenance is maintenance or repair work on existing facilities and infrastructure that is past due and is already detrimentally affecting the building or facility in question in one of a variety of ways varying from the deterioration of a Heritage Asset to the outright inability to use a building or some portion thereof as intended and needed. In other words, a portion of the building or facility - a system or component - has already failed. Although, there can be situations where one could not have reasonably projected such a failure, in the vast majority of cases, there are warning signs that a failure will occur in the future or, there are industry standards and on-site measurements that can be made to project in advance such a failure. While the impact of addressing some failures after the fact may not be great, in other situations, such failures must be avoided at all cost.

  Accomplishing a Deferred Maintenance project will return a system or component to an acceptable condition, but not necessarily its original condition. It will prevent physical depreciation or loss in the value of a building, minimize or correct wear, and ensure the maximum reliability and current useful life or the facility or component. Deferred Maintenance does not include preventative maintenance or replacement of minor constituent parts of a facility while performing routine maintenance.

- **Capital Renewal:** Accomplishing a Capital Renewal project prevents a situation from deteriorating to where a Deferred Maintenance situation exists. Accomplishing a Capital Renewal project can be essential for some building systems and components if a subsequent failure of that system or component would have a major, detrimental impact on the functioning of the activities supported by that building. Capital Renewal projects generally correct unacceptable conditions caused by building systems or components approaching the end of their useful life. In some instances, the system or component in question may continue to function as originally intended right up to the point of failure; in other instances, there may be an observable and progressive erosion or deterioration. The former situation can be the most problematic and require more careful monitoring as occurs through the periodic updating of condition assessment.

  A Capital Renewal project may return the building system or component to its original, like new condition, or it may prolong the life of the system or component for an extensive period of time. Either way, after the accomplishment of a Capital Renewal project, the system or component in question will function as originally intended. Capital Renewal projects may be performed by overhaul, reconstruction or replacement of constituent parts or materials which are damaged or deteriorated to the point where they cannot be maintained. Capital Renewal does not include additions, expansions, alterations, or modifications required solely for a change in purpose or mission; these would be a classified as Capital Improvements. However, when such elements are only a minor portion of the overall project scope, such projects can be considered to be Capital Renewal projects.

- **Capital Improvement:** Capital Improvements include the addition, expansion, extension, alteration, conversion, or replacement (complete reconstruction due to damage or major repair) of a facility. Work accomplished that improves, enhances or modernizes a building or facility is a Capital Improvement. Additionally, where the use of a building or facility, or portion thereof changes, this is a Capital Improvement. For example, bringing a building into compliance with current codes, such as the addition of a handicapped accessible curb ramp, or work which improves a building's performance, such as installing a new air conditioning unit where none previously existed, is classified as a Capital Improvement. A Capital Improvement project may incorporate incidental Deferred Maintenance or Capital Renewal work.

WORK ELEMENT CATEGORIZATIONS

Work Element Priority Grouping

Each identified project was assigned a priority. Priorities were assigned based upon the impact to the MAARNG's mission and the potential for failure. There are a total of three priorities discussed below:

- **Priority 1** – Currently Critical: These are needs and/or projects which significantly impact the mission of the MAARNG and require immediate action to return a facility to normal operation, stop accelerated deterioration, or correct a cited safety hazard, especially those conditions which potentially impact an entire site or pose a significant risk to health and safety.

  Examples of such conditions would be: Overall facility impact: A chilled water system is in imminent danger of failing. Failure would make all buildings at a particular site non-functional. Health and Safety Impact: Previously undiscovered dry rot has compromised structural beams. The building cannot be safely used without immediate repair.

- **Priority 2** – Potentially Critical: These needs and/or projects will become critical within a year if not corrected expeditiously. Situations in this category include intermittent interruptions, rapid deterioration, and potential safety hazards. The significance of these conditions to the mission of the MAARNG should be a factor.

- **Priority 3** – Necessary, Not Yet Critical. These needs and/or projects include conditions requiring reasonably prompt attention to preclude predictable deterioration or potential downtime and the associated damage or higher costs if deferred further. Conditions which do not significantly impact the mission of the MAARNG should be placed in this category.

Work Element System Condition

Each identified project was assigned a condition. Conditions were assigned based upon the level of maintenance/attention required for each system/asset compared to their replacement value. There are a total of six conditions discussed below:

- **Excellent** – Minimal routine maintenance is required at a cost of less than 2% of replacement value.

- **Good** – Routine maintenance is required at a cost of less than 5% of replacement value.

- **Adequate** – Some corrective and preventative maintenance is required at a cost of less than 10% of replacement value.

- **Fair** – Extensive corrective maintenance and repair is required at a cost of less than 25% of replacement value.

- **Poor** – Constant attention is required. Renovate or overhaul at a cost of less than 60% of replacement value.

- **Fail** – Replacement is required because repair cost is greater than 60% of replacement value.

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Appendix F

Steven Winter Associates – Accessibility Compliance Report

Accessibility Compliance:

1) **Provide one accessible, van-designated parking space on the West side of the Armory:**

   COST ESTIMATE NOTE: the parking space must include:
   - *Striping, including one 8-foot wide access aisle*
   - *One parking sign*
   - *New asphalt paving*

2) **Improve approach from the sidewalk to the front entrance:**
   a. Reconfigure the front steps with an exterior stair and ramp between the sidewalk and the font entrance to be flush with the interior floor.
   b. Replace door threshold at the front entrance.

   COST ESTIMATE NOTE – ramp:
   - *Length: 40 feet plus 5-foot landings*
   - *Width: 5 feet*
   - *Ramp must include railings on both sides, top landing must be flush with interior floor, and edge of landing must be at least 18 inches from latch side of door*

3) **Make improvements inside the Assembly Hall:**
   a. Remove the door threshold and reconfigure the double, entry doors to the Assembly Hall so that a level landing is provided on both sides of the doors.
   b. Install a vertical wheelchair lift to the stage.
   c. Install cane-detectable railing underneath the stairs to the second floor.

4) **Make improvements within the lobby:**
   a. Modify the lobby to provide a floor with compliant slopes.
   b. Replace door threshold of the door to the corridor.
   c. Replace the butt hinges of the door to the corridor with offset hinges.

5) **Make improvements within the corridor leading to Women's Toilet Room and Offices:**
   a. Replace the door hardware of the door to the corridor.
   b. Replace door threshold of the door to the corridor.

6) **Install one accessible, bi-level drinking fountain inside the Assembly Hall.**

7) Provide one accessible toilet/shower room on the first floor:

COST ESTIMATE NOTE: new Unisex toilet/shower must include:

- *Shared plumbing wall with Women's toilet/shower room*
- *One accessible shower stall, one accessible sink and one accessible toilet*

8) Install ADA-compliant signs in public areas throughout the first floor.

COST ESTIMATE NOTE: include 25 signs.

9) Install audible and visual fire alarm devices throughout all public use areas.

ACCESSIBILITY AUDITS OF MAARNG FACILITIES

DCAMM PROJECT #: MIL1802 HS1

FACILITY: WEST NEWTON ARMORY
LOCATION: 1137 WASHINGTON ST., WEST NEWTON, MA 02165

AUDIT DATE: JUNE 5TH, 2018 REPORT DATE: JULY 2ND, 2018

AUDIT CONDUCTED & REPORT PREPARED BY: STEVEN WINTER ASSOCIATES, INC.

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GLOSSARY OF TERMS

1991 Standards	1991 Americans with Disabilities Act Accessibility Guidelines
2010 Standards	2010 Americans with Disabilities Act Standards for Accessible Design
521 CMR	Section 521 of the Code of Massachusetts Regulations (Massachusetts Architectural Access Board's Rules and Regulations)
ADA	Americans with Disabilities Act
AFF	Above the Finished Floor
ISA	International Symbol of Accessibility
DCAMM	Division of Capital Asset Management and Maintenance
Facility	West Newton Armory
GSF	Gross Square Footage
SF	Square Feet
MAAB	Massachusetts Architectural Access Board
N/A	Not Applicable or Not Available
NP	Not Provided
SWA	Steven Winter Associates, Inc.
Symbol (")	Inches
Symbol (#)	Number
Symbol (%)	Percent

INTRODUCTION

A partial accessibility audit was conducted by the staff of Steven Winter Associates, Inc. on June 5th, 2018 to identify the accessibility barriers that exists at the West Newton Armory. This audit is in part to inform a Facilities Condition Assessment for the Massachusetts National Guard. It can also be used to identify where accessibility improvements may be required when improvements are made to the facilities.

FACILITY INFORMATION

Name of building and/or site: The facility is located on a 36,400 SF flat pavement covered lot that pitches away from the building. The building covers 14,759 SF with 13,354 SF of organizational parking pavement. The property is surrounded by residential and commercial lots. The structure is made up of brick masonry pier and panel bearing wall construction, which supports heavy timber beam and joist wood flooring. The building encloses 33,455 SF including a full basement, assembly hall and a two-story administrative wing.

Address: 1137 Washington St., West Newton, MA 02165

Building code: 447MIL1040

# of buildings: 1 # of floors: 3

GSF: 26,890 Date of construction: 1912

2018 CAMIS Value: $37,982,159.4

# of parking spaces: 4 Historic: Yes -MACRIS NWT.3885

Access to transit stop: Yes (Bus 553, 554)

Programs and services: Assembly Hall, Classroom, Cafeteria, Kitchen, Recruiting, Offices

APPLICABLE ACCESSIBILITY REQUIREMENTS

AMERICANS WITH DISABILITIES ACT: TITLE II

The Commonwealth and its agencies have had an obligation since 1992 to promote the full participation of people with disabilities in all its programs, services, and activities offered to members of the public. Where program modifications are not sufficient to ensure non-discrimination – such as relocating programs on inaccessible levels to the accessible first floor – physical barriers that limit access to programs, services, and activities need to be removed.

In addition, all areas or elements of the facility accessed by the public which have been constructed or altered after January 26, 1992 and prior to March 15, 2012, and which do not comply with UFAS or the 1991 Standards, excluding the elevator exemption in Sections 4.1.3(5) and 4.1.6(1)(k), must be remediated to comply with the 2010 Standards. All areas or elements of the facility accessed by the public which have been constructed or altered after March 15, 2012, and which do not comply with the 2010 Standards, must be remediated to comply with the 2010 Standards.

Title II also requires that alterations made to a primary function area must provide an accessible path of travel to the area. The accessible path of travel must extend from the altered primary function area to site arrival points, including public sidewalks and parking and passenger loading zones provided on the site. The path of travel also includes access to toilet rooms, drinking fountains, and telephones, where provided to serve the primary function area.

Renovations and modifications recommended in this report must comply with the 2010 Standards as well as 521 CMR. Where these standards differ, the most stringent accessibility requirement that provides the highest level of accessibility must be used.

MASSACHUSETTS ARCHITECTURAL ACCESS BOARD, 521 CMR

According to Section 3.3.1(a) of 521 CMR, if work on this facility is less than $100,000 then only the work being performed is required to be accessible in compliance with 521 CMR. If work on this facility exceeds $100,000, or $500,000 when all the work is categorized as exempt under 3.3.1(b), then in addition to the work being performed, following elements must also comply with 521 CMR:

- an accessible entrance to the building;
- an accessible toilet room (men's and women's, or Unisex toilet room);
- an accessible drinking fountain (if provided); and
- an accessible telephone (if provided).

This report identifies several non-compliant accessibility elements in the Summary of Findings section, below. Where non-compliant elements are identified in multi-story buildings which do not have an elevator, or an otherwise accessible route to upper and/or lower floors, only findings on the first floor need to be made fully compliant to meet the requirements of Section 3.3.1.

According to 521 CMR, Section 3.3.2, if work on this facility exceeds 30% of the CAMIS Value of the facility, the entire building must be compliant with 521 CMR, including the provision of an accessible route to upper and lower floors, if areas open to the public are located on those floors.

INSPECTION SCOPE AND PROCESS

The scope of work for the accessibility audit conducted by Steven Winter Associates, Inc. included an assessment of compliance with the design and construction requirements of Title II of the Americans with Disabilities Act and Section 521 of the Code of Massachusetts Regulations. SWA assessed all spaces identified in the zoned plans found in Appendix B. The zoned plans, which were determined from information provided by DCAMM and augmented through responses by facility personal, indicate all areas of the facility where programs and services are offered, or could be offered, to the public.

Firstly, SWA assessed the areas and elements of the facility indicated in the zoned plans for compliance with the scoping and technical criteria contained in the 2010 Standards. Where SWA determined that the facility was constructed on or after March 15, 2012, SWA recorded a finding and recommended remediation when it identified an area or element that was non-compliant with the 2010 Standards. Otherwise, where SWA found an area or element of the facility to be non-compliant with the 2010 Standards, SWA further assessed the area or element for compliance with the scoping and technical criteria contained in the 1991 Standards. Where SWA found that the area or element was non-compliant with both the 1991 and 2010 Standards, it documented a finding and suggested remediation to bring the feature into compliance with the 2010 Standards.

Secondly, SWA assessed the areas and elements of the facility indicated in the zoned plans for compliance with the scoping and technical criteria contained in 521 CMR. Where SWA found an area or element which did not meet the scoping or technical requirements set forth in 521 CMR, it identified a finding in the report. The finding is non-compliant with 521 CMR where the area or element has been newly constructed or has underwent alterations. In addition, the finding is also non-compliant with 521 CMR where the threshold for substantial alterations is exceeded at the facility under Sections 3.3.1 or 3.3.2 of 521 CMR, as noted under the Applicable Accessibility Requirements, above.

Where SWA identified that an area or element of the facility had major accessible issues which rendered the area or element inaccessible, such as a step at an entrance, or a toilet room which was too small or lacked any accessible features, SWA simply recorded that an accessible area or element was not provided and included a general summary in the finding as to why the element was not accessible.

SUMMARY OF FINDINGS

Access to Nearby Transit Stops
There is a transit stop located nearby the facility at the corner of Armory and Washington Streets. The transit stops serves routes for bus routes 553 and 554. The route from the bus stop to the front building entrance is not accessible. The public sidewalk contains excessive cross slopes.

Accessible Parking
There is a total of 4 parking spaces provided within a small parking lot which is located at the east side of the building. Accessible parking spaces are not provided within the parking lot. In addition, an accessible route is not provided from the parking lot to the front building entrance due to the excessive cross slopes along the public sidewalk.

Building Entrance
The facility contains one public entrance at the front of the building. The entrance is not accessible. Access requires navigating multiple steps; also, the exterior entry door has an inaccessible threshold and is elevated above the exterior landing.

Elevator/Lift
An elevator or lift is not provided connecting the first and second floors of the facility.

Toilet and Bathing rooms
There is one women's men's multiuser toilet/bathing room provided on the first floor and one men's multiuser toilet/bathing/changing room provided on the second floor of facility. None of the multiuser toilet rooms or bathing rooms are designed to be accessible.

Drinking Fountains
The drinking fountains provided on the first floor of the facility are not accessible.

APPENDIX A: DETAILED ACCESSIBILITY AUDIT REPORT

The detailed accessibility audit report is made up of a spreadsheet which lists locations, findings, recommended remediation, photo references, and associated law/code citations. The detailed accessibility audit report is accompanied by an associated zoned plan, which is included in Appendix B. Each zoned plan details the areas of the site or floor which were assessed.

For each floor zoned plan, the blue border and blue text boxes indicate the area surveyed. Green, orange, and red borders and text boxes identify spaces within each area surveyed. Green borders and text boxes identify the corridors; orange borders and text boxes indicate the rooms and spaces (such as recruitment offices and mess halls), except for toilet and bathing rooms, which are identified by the red borders and text boxes. Spaces within a blue border which are not tagged with a green, orange, or red border and text box were not assessed. For each site zoned plan, the green borders and text boxes identify all areas of the site which was surveyed. Portions of the site which are not tagged with a green border or text box were not assessed.

The colored heading and section numbers found in the report correlate with the colors on the zoned plans found in Appendix B.

Color Keys:

Blue: Area surveyed.

Green: Site or corridor surveyed.

Orange: Facilities within the area surveyed; such as the, entrances, assembly halls, offices, classrooms, etc.

Red: Restrooms or bathrooms surveyed.

Area/Element: The area/element describes the area or element which was audited.

Findings: Findings listed in the detailed inspection report identify architectural barriers that are structural or communicative in nature and which are inaccessible and usable by persons with disabilities and do not comply with the scoping and technical requirements in the 2010 Standards and/or 521 CMR.

Dimensions: Dimensions list the measurement(s) recorded by SWA or notes where accessibility is not provided (NP).

Photos: Photos provides reference to photo(s) of the area or element surveyed. The photos are organized in numbered folders and subfolders. The numbering of the folders, subfolders, and photos correspond to numbered headings/subheadings found in the detailed accessibility audit report and to the numbers found on the zoned plans in Appendix B.

All photos taken during the audit will be shared with the Facility Condition Assessment team, including the Massachusetts National Guard. Photos will be archived by DCAMM and will be available upon request.

Recommended Remediation: The recommended remediation includes the general remediation recommended by SWA required to bring the facility into compliance with the applicable accessibility requirements.

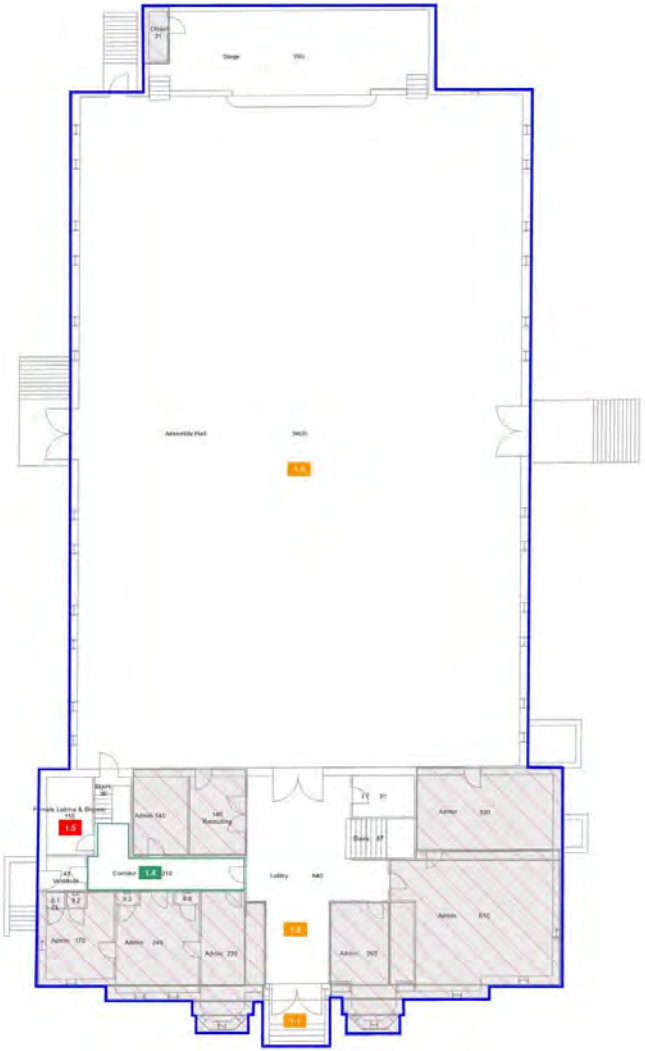
References: References are provided to applicable sections of the 2010 Standards and 521 CMR.

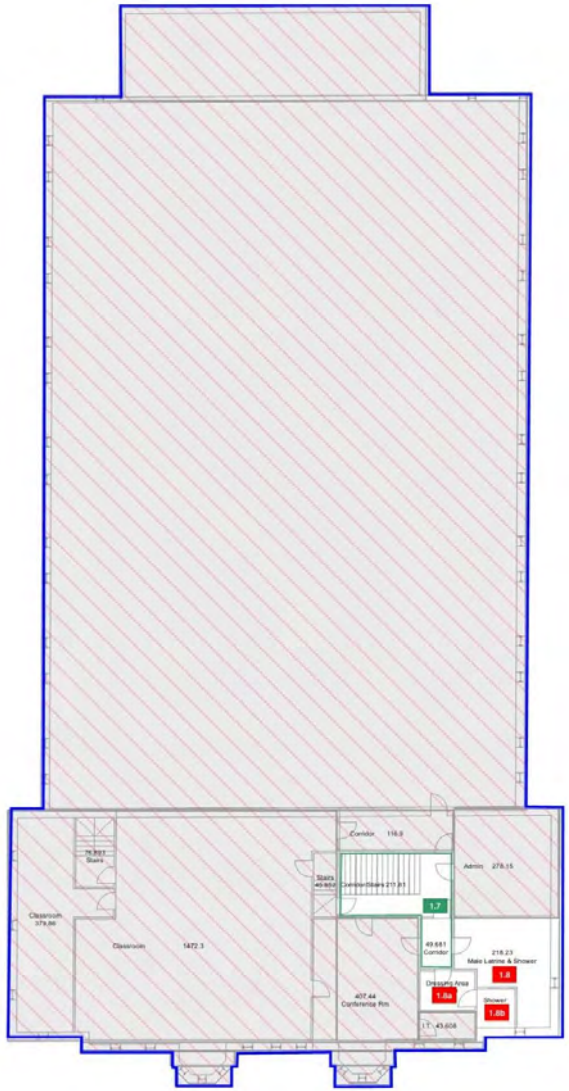
#	Area / Element	Finding	Dim.	Photo	Recommended Remediation	2010 Standards	521 CMR
	1 - West Newton Armory - First Floor						
1	Visual fire alarm notification devices	Visual fire alarm notification devices (strobes) are not provided throughout all the public use spaces within the building.	NP	No photo	Update the fire alarm system to provide fire alarm notification devices throughout all public areas of the building.	215.2	40.1
2	Egress	Accessible means of egress are not provided. The exit discharge at all exit doors are not accessible.	NP	WEST_1.3_28	Remediate the main building entrance under 1.1 below, and remediate additional exits as required by 521 CMR.	N/A	20.11
3	Stairs	The stairs do not fully comply with the accessible stair criteria, including handrails, risers, and nosings.	NP	WEST_1.3_08 WEST_1.3_39 WEST_1.3_55	Remediate stairs to comply with 521 CMR.	N/A	27.00
	1.1 - Main Entrance						
4	Exterior double door	An accessible entrance is not provided. The door has a noncompliant threshold and a step on the exterior side of the door, resulting in an overall level change of 9¾". The route also requires navigating multiple steps with an overall level change of 35".	NP	WEST_1.1_02	Reconfigure the stair and door landing so that the door landing is flush with the top of the interior floor; install a platform lift to provide an access to the door landing. Also, replace the door threshold.	206.5, 404.2.4.3, 404.2.5	26.6.2, 26.6.4, 26.10
	1.2 - Lobby						
5	Route	An accessible route is not provided. The route contains slopes greater than 5% and it is not designed as a ramp. There is no bottom landing.	7.9%, 7.6%	WEST_1.2_18	Reconfigure to reduce the running slope to 5% maximum. Install an automatic opener on the exterior entry door.	206.2.4, 403.3	20.9, 24.00
6	Fire pull	The top of the operable part is greater than 48" AFF.	50"	WEST_1.2_13	Lower the fire pull.	205, 308	39.3
7	Light switch	The top of the operable part is greater than 48" AFF.	60⅜"	WEST_1.2_16	Lower the light switch.	205, 308	39.3
8	Drinking fountain (not operable)	The free-standing drinking fountain is not accessible.	NP	WEST_1.2_12	Remove the fountain.	602.4; 204, 307.2	36.3, 36.4; 20.6
9	Rug	The rug is not affixed; or, otherwise secured to the floor.	NP	WEST_1.2_10	Replace the rug with one which have compliant edge trim and a firm backing that grips to the floor to minimize buckling.	302.1	25.4

#	Area / Element	Finding	Dim.	Photo	Recommended Remediation	2010 Standards	521 CMR
	1.3 - Assembly Hall						
10	Door	The threshold height is greater than ¼" AFF with a non-compliant bevel.	½"	WEST_1.3_12	Replace with a compliant threshold.	206.2.4, 404.2.5	26.10.1
11	Fire extinguishers (X3)	The bottom of the object is located at greater than 27" AFF and the object protrudes greater than 4" into the circulation path.	8¼"	WEST_1.3_22	Lower the fire extinguisher.	204, 307.2	20.6
12	Drinking fountain	An accessible drinking fountain is not provided. The bottom of the object is located at greater than 27" AFF and the object protrudes greater than 4" into the circulation path.	12"	WEST_1.3_15	Replace with a compliant hi-lo fountain with a cane detectable apron beneath the hi fountain.	602.4; 204, 307.2	36.3, 36.4; 20.6
13	Shut off valves (X4)	The headroom is less than 80" AFF. The bottom of the object is located at greater than 27" AFF and the object protrudes greater than 4" into the circulation path.	73"; 9½"	WEST_1.3_20	Provide a cane detectable barrier below.	204, 307.2	20.6
14	Stage	An accessible route is not provided.	NP	WEST_1.3_44	Install a platform lift.	206.2.6, 403.4	14.6
15	Stairs	The headroom is less than 80" AFF.	NP	WEST_1.3_65	Provide a cane detectable barrier below.	204, 307.2	20.6
	1.4 - Corridor						
16	Door	Accessible door hardware is not provided. Operation of the door hardware requires grasping and twisting, which is not permitted.	NP	WEST_1.4_02	Replace with accessible door hardware.	206.5, 404.2.7	26.11
17	Threshold	The threshold height is greater than ¼" AFF with a non-compliant bevel.	½"	WEST_1.4_01	Replace with a compliant threshold.	206.2.4, 404.2.5	26.10
	1.5 - Women's Toilet / Shower						
18	Shower	An accessible toilet / shower room is not provided.	NP	WEST_1.5_17	Provide a single unisex toilet, bathing, and changing room on the first floor.	213, 603	31.00

#	Area / Element	Finding	Dim.	Photo	Recommended Remediation	2010 Standards	521 CMR
	2 - West Newton Armory - Second Floor						
	2.7 - Corridor						
19	Route	An accessible route is not provided to the second floor.	NP	WEST_2.7_01	Provide a single unisex toilet/ shower/ changing room on the first floor.	206.2.4	20.1
	2.8 - Men's Toilet / Shower						
20	Restroom	An accessible restroom is not provided.	NP	WEST_2.8_09	Provide a single unisex toilet, bathing, and changing room on the first floor.	213, 603	31.00
	2.8a - Dressing Area						
21	Changing room	An accessible changing room is not provided.	NP	WEST_2.8a_03	Provide a single unisex toilet, bathing, and changing room on the first floor.	221, 803	33.00
	2.8b - Shower						
22	Shower	An accessible shower is not provided.	NP	WEST_2.8b_03	Provide a single unisex toilet, bathing, and changing room on the first floor.	213, 603	31.00
	3 - West Newton Armory - Site						
	3.1 - Route from Public Sidewalk to Front Building Entrance						
23	Walk connecting the public sidewalk to the front building entrance	An accessible route is not provided. The walk contains running slopes greater than 5% and noncompliant gaps and level changes. The route also requires navigating the front steps.	7.4%, 5.4%	WEST_3.1_04	Replace with a compliant walk. Coordinate with remediation in 1.1 and 3.3	206.2.1 403	22.3.1
	3.2 - Parking Lot						
24	Accessible parking	Accessible parking spaces are not provided.	NP	WEST_3.2_13	Provide the required number of accessible parking spaces.	208, 502	23.00
	3.3 - Route from Accessible Parking Spaces and Bus Stop to the Front Building Entrance						
25	Public sidewalk	An accessible route is not provided from the accessible parking spaces and bus stop to the front building entrance. The public sidewalk contains cross slopes greater than 2%.	5%, 4.9%	WEST_3.3_63	Remove and replace the public sidewalk.	206.2.1 403	22.3.1

APPENDIX B: ZONED PLANS




Corridor 116.0
Stairs
Corridor/Stairs 217.91
Admin 278.15
1.7
Classroom
379.00
Classroom
1472.3
49.681
Corridor
218.23
Male Latrine & Shower
1.8
Dressing Area
1.8a
407.44
Conference Rm
Shower
1.8b
LT - 43.608

Armory St
West Newton
3.2
3.1
3.3
Bus 210, 211, 212, 217, 245
scale = 100'

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Member of the SNC-Lavalin Group

Appendix G
Resiliency Report

WEST NEWTON ARMORY

HAZARD IDENTIFICATION FORM

ARMORY LOCATION		COUNTY
1137 Washington Street, West Newton		Middlesex
PRIMARY CLIMATE DRIVER	HAZARD INDICATOR	
Sea Level Rise and Storm Surge	Is any portion of the site in a FEMA Special Flood Hazard Area (SFHA)? (100-year flood plain)	No
	FEMA Zone	X
	Current FEMA SFHA Zone Base Flood Elevation	N/A
Precipitation	NOAA Annual Average	43.8 in
	24 Hour Design Storm/10-Year interval	5.12 in
Extreme Temperature	2018 Days – 90° or Above	30
	2018 Days – 0° or Below	4

Data Sources

- "Primary Climate Driver" and "Hazard Indicator" categories were identified by the Massachusetts Division of Capitol Asset Management & Maintenance on November 8, 2018
- Sea Level Rise and Storm Surge:
  - FEMA Special Flood Hazard Area, FEMA Flood Mapping Service Center; downloaded on 3/15/2019
  - Data supplemented with MassGIS FEMA Floodplain data; downloaded on 4/14/2019
- Precipitation:
  - Annual Averages, NOAA National Climate Data Center – Annual Normal 1981-2010, downloaded on 4/14/2019
  - 24-Hour Design Storm, NOAA Atlas 14-point precipitation frequency estimates (Atlas 14, Volume 10, Version 3); downloaded on 3/15/2019
- Extreme Temperatures:
  - 2018 Temperatures, NOAA Climate Data Center – Annual Climatology Report; downloaded on 3/15/2019