BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

REQUEST FOR PROPOSALS

Item Description: DESIGN SERVICES FOR HVAC AND ELECTRICAL UPGRADES AT TWO FIRE STATIONS AT Branch Ave, and North Main St., Providence, RI

Procurement/MinuteTraq #: 48720

Date to be opened: 4/21/2025

Issuing Department: Department of Public Property

QUESTIONS

- Please direct questions related to the bidding process, how to fill out forms, and how to submit a bid (Pages 1-8) to the Purchasing Department.
  - Email: purchasing@providenceri.gov
    - Please use the subject line "**Solicitation Question**"
- Please direct questions relative to the Minority and Women's Business Enterprise Program and the corresponding forms (Pages 9-13) to the MBE/WBE Outreach Director for the City of Providence, Grace Diaz
  - Email: gdiaz@providenceri.gov
    - Please use subject line "**MBE WBE Forms**"
- Please direct questions relative to the specifications outlined (beginning on page 14) to the issuing department's subject matter expert:
  - Name: Dan Kittridge
  - Title: Capital Improvements Project Manager
  - Email Address: dkittridge@providenceri.gov

Pre-bid Conference

There will be a Mandatory Pre-Bid Conference

The pre-bid conference will be held at on April 8, 2025 at 10:00 AM at North Main St Fire Station, 151 North Main St, Providence, RI.

Deadline for questions submissions:

Questions may be submitted until 4/15/25

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

INSTRUCTIONS FOR SUBMISSION

Please Note – this RFP for Architectural Services contains special instructions for two separate proposal packages:
1) Technical Proposal for Qualification and 2) Professional Cost Proposal

1) Technical Proposals for Qualification may be submitted up to **2:15 P.M.** on the above meeting date (April 21, 2025) at the **Department of the City Clerk. Room 311, City Hall. 25 Dorrance Street, Providence.** At 2:15 P.M. all Technical Proposals for Qualification will be publicly opened and read at the Board of Contract Meeting in Conference Room 305, on the 3rd floor of City Hall.

- Bidders must submit **2 copies** of their bid in sealed envelopes or packages labeled with the captioned **Item Description** and the **City Department to which the solicitation and bid are related and must include the company name and address on the envelope as well**. (On page 1).
- If required by the Department, please keep the original bid bond and check in only one of the envelopes.
- Communications to the Board of Contract and Supply that are not competitive sealed bids (i.e. product information/samples) should have "**NOT A BID**" written on the envelope or wrapper.
- Only use form versions and templates included in this solicitation. If you have an old version of a form do not recycle it for use in this bid.
- This Technical Proposal for Qualification must contain no cost information.
- The bid envelope and information relative to the bid must be addressed to:

Board of Contract and Supply
Department of the City Clerk – City Hall, Room 311
25 Dorrance Street
Providence, RI 02903

2) Professional Cost Proposals may be submitted up to **2:15 P.M.** on the above meeting date at the **Department of Purchasing. Room 408, City Hall. 25 Dorrance Street, Providence.** All Professional Cost Proposals from firms meeting the minimum Technical evaluation score threshold will be publicly opened and read on April 21, 2025 at the Board of Contract Meeting in Conference Room 305, on the 3rd floor of City Hall.

- Bidders must submit **2 copies** of their Professional Cost Proposals in sealed envelopes or packages labeled "Professional Fee – Design Services, City Hall Building Enclosure Condition Assessment and Restoration" and the **City Department to which the solicitation and bid are related and must include the company name and address on the envelope as well**. (On page 1).
- The Professional Cost Proposal envelope and information relative to the bid must be addressed to:

Department of Purchasing
Providence City Hall, Room 408
25 Dorrance Street
Providence, RI 02903

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

****PLEASE NOTE**: This bid may include details regarding information that you will need to provide (such as proof of licenses) to the issuing department before the formalization of an award.**

***This information is NOT requested to be provided in your initial bid by design*.**

All bids submitted to the City Clerk become public record. Failure to follow instructions could result in information considered private being posted to the city's Open Meetings Portal and made available as a public record. The City has made a conscious effort to avoid the posting of sensitive information on the City's Open Meetings Portal, by requesting that such sensitive information be submitted to the issuing department only at their request.

FAILURE TO FOLLOW THESE SUBMISSION INSTRUCTIONS WILL RESULT IN DISQUALIFICATION OF THE PROPOSING FIRM.

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

BID PACKAGE CHECKLIST

Digital forms are available in the City of Providence Purchasing Department Office or online at **http://www.providenceri.gov/purchasing/how-to-submit-a-bid/**

The bid package **MUST** include the following, in this order:

- Bid Form 1: Bidder's Blank as the cover page/ 1st page (*see page **6** of this document*)
- Bid Form 2: Certification of Bidder as 2nd page (*see page **7** of this document*)
- Bid Form 3: Certificate Regarding Public Records (*see page **8** of this document)*
- Bid Form 4: Affidavit of City Vendor (*see pages **9 and 10** of this document*)
- Forms from the Minority and Women Business Enterprise Program: Based on Bidder Category. S*ee forms and instructions enclosed (pages **11-12**) or on: https://www.providenceri.gov/purchasing/minority-women-owned-business-mbewbe-procurement-program/*

***Please note: MBE/WBE forms must be completed for EVERY bid submitted and must be inclusive of ALL required signatures. Forms without all required signatures will be considered incomplete.**

- Bidder's Proposal/Packet: Formal response to the specifications outlined in this RFP, including pricing information and details related to the good(s) or service(s) being provided. Please be mindful of formatting responses as requested to ensure clarity.
- Financial Assurance, *if requested* (a*s indicated on page 5 of this document under "Bid Terms")*

All of the above listed documents are REQUIRED. (With the exception of financial assurances, which are only required if specified on page 5.)

******Failure to meet specified deadlines, follow specific submission instructions, or enclose all required documents with all applicable signatures will result in disqualification, or in an inability to appropriately evaluate bids.***

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

NOTICE TO VENDORS

1. The Board of Contract and Supply will make the award to the lowest qualified and responsible bidder.
2. In determining the lowest responsible bidder, cash discounts based on preferable payment terms will not be considered.
3. Where prices are the same, the Board of Contract and Supply reserves the right to award to one bidder, or to split the award.
4. No proposal will be accepted if the bid is made in collusion with any other bidder.
5. Bids may be submitted on an "equal in quality" basis. The City reserves the right to decide equality. Bidders must indicate brand or the make being offered and submit detailed specifications if other than brand requested.
6. A bidder who is an out-of-state corporation shall qualify or register to transact business in this State, in accordance with the Rhode Island Business Corporation Act, RIGL Sec. 7-1.2-1401, et seq.
7. The Board of Contract and Supply reserves the right to reject any and all bids.
8. Competing bids may be viewed in person at the Department of the City Clerk, City Hall, Providence, immediately upon the conclusion of the formal Board of Contract and Supply meeting during which the bids were unsealed/opened. Bids may also be accessed electronically on the internet via the City's Open Meetings Portal.
9. As the City of Providence is exempt from the payment of Federal Excise Taxes and Rhode Island Sales Tax, prices quoted are not to include these taxes.
10. In case of error in the extension of prices quoted, the unit price will govern.
11. The contractor will **NOT** be permitted to: a) assign or underlet the contract, or b) assign either legally or equitably any monies or any claim thereto without the previous written consent of the City Purchasing Director.
12. Delivery dates must be shown in the bid. If no delivery date is specified, it will be assumed that an immediate delivery from stock will be made.
13. A certificate of insurance will normally be required of a successful vendor.
14. For many contracts involving construction, alteration and/or repair work, State law provisions concerning payment of prevailing wage rates apply (RIGL Sec. 37-13-1 et seq.)
15. No goods should be delivered, or work started without a Purchase Order.
16. **Submit 2 copies of the bid to the City Clerk, unless the specification section of this document indicates otherwise.**
17. Bidder must certify that it does not unlawfully discriminate on the basis of race, color, national origin, gender, gender identity or expression, sexual orientation and/or religion in its business and hiring practices and that all of its employees are lawfully employed under all applicable federal, state and local laws, rules and regulations. (See Bid Form 2.)

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

BID TERMS

1. Financial assurances may be required in order to be a successful bidder for Commodity or Construction and Service contracts. If either of the first two checkboxes below is checked, the specified assurance **must accompany** a bid, or the bid will not be considered by the Board of Contract and Supply. The third checkbox indicates the lowest responsible bidder will be contacted and required to post a bond to be awarded the contract.

   a) ☐ A certified check for **$**_____ must be deposited with the City Clerk as a guarantee that the Contract will be signed and delivered by the bidder.

   b) ☐ A bid bond in the amount of _____ per centum (%) of the proposed total price, must be deposited with the City Clerk as a guarantee that the contract will be signed and delivered by the bidder; and the amount of such bid bond shall be retained for the use of the City as liquidated damages in case of default. Any person signing a bid bond as an attorney-in-fact shall include with the bid bond an original, or a photocopy or facsimile of an original, power of attorney.

   c) ☒ A performance and payment bond with a satisfactory surety company will be posted by the bidder in a sum equal to one hundred per centum (100%) of the awarded contract.

   d) ☐ No financial assurance is necessary for this item.

2. Awards will be made within **ninety (90) days of bid opening**. All bid prices will be considered firm, unless qualified otherwise. Requests for price increases will not be honored.
3. Failure to deliver within the time quoted or failure to meet specifications may result in default in accordance with the general specifications. It is agreed that deliveries and/or completion are subject to strikes, lockouts, accidents, and Acts of God.

The following entry applies only for COMMODITY BID TERMS:

4. Payment for partial delivery will not be allowed except when provided for in blanket or term contracts.

The following entries apply only for CONSTRUCTION AND SERVICE BID TERMS:

5. Only one shipping charge will be applied in the event of partial deliveries for blanket or term contracts.
6. Prior to commencing performance under the contract, the successful bidder shall attest to compliance with the provisions of the Rhode Island Worker's Compensation Act, RIGL 28-29-1, et seq. If exempt from compliance, the successful bidder shall submit a sworn Affidavit by a corporate officer to that effect, which shall accompany the signed contract.
7. Prior to commencing performance under the contract, the successful bidder shall, submit a certificate of insurance, in a form and in an amount satisfactory to the City.

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

BID FORM 1: Bidders Blank

1. Bids must meet the attached specifications. Any exceptions or modifications must be noted and fully explained.
2. Bidder's responses must be in ink or typewritten, and all blanks on the bid form should be completed.
3. The price or prices proposed should be stated both in **WRITING** and in **FIGURES**, and any proposal not so stated may be rejected. **Contracts exceeding twelve months must specify annual costs for each year.**
4. Bids **SHOULD BE TOTALED** so that the final cost is clearly stated (unless submitting a unit price bid), however **each item should be priced individually**. Do not group items. Awards may be made on the basis of ***total*** bid or by ***individual items***.
5. All bids **MUST BE SIGNED IN INK.**

Name of Bidder (Firm or Individual): _____

Contact Name: _____

Business Address: _____

Business Phone #: _____

Contact Email Address: _____

Agrees to bid on (Write the "Item Description" here): _____

If the bidder's company is based in a state *other than Rhode Island*, list name and contact information for a local agent for service of process that ***is located within Rhode Island*** _____

Delivery Date (if applicable): _____

Name of Surety Company (if applicable): _____

Total Amount in Writing*: **N/A – TECHNICAL PROPOSAL FOR QUALIFICATION ONLY**

Total Amount in Figures*: **N/A – TECHNICAL PROPOSAL FOR QUALIFICATION ONLY**

If you are submitting a unit price bid, please insert "Unit Price Bid"

Use additional pages if necessary for additional bidding details.

_____
Signature of Representation

_____
Title

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

BID FORM 2: Certification of Bidder
(Non-Discrimination/Hiring)

Upon behalf of_____ (Firm or Individual Bidding),

I,_____(Name of Person Making Certification),

being its_____(Title or "Self"), hereby certify that:

1. Bidder does not unlawfully discriminate on the basis of race, color, national origin, gender, sexual orientation and/or religion in its business and hiring practices.
2. All of Bidder's employees have been hired in compliance with all applicable federal, state and local laws, rules and regulations.

I affirm by signing below that I am duly authorized on behalf of Bidder, on this_____day of_____20____.

_____
Signature of Representation

_____
Printed Name

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

BID FORM 3: Certificate Regarding Public Records

Upon behalf of_____ (Firm or Individual Bidding),

I,_____(Name of Person Making Certification),

being its_____(Title or "Self"), hereby certify an

understanding that:

1. All bids submitted in response to Requests for Proposals (RFP's) and Requests for Qualification (RFQ's), documents contained within, and the details outlined on those documents become public record upon receipt by the City Clerk's office and opening at the corresponding Board of Contract and Supply (BOCS) meeting.
2. The Purchasing Department and the issuing department for this RFP/RFQ have made a conscious effort to request that sensitive/personal information be submitted directly to the issuing department and only at request if verification of specific details is critical the evaluation of a vendor's bid.
3. The requested supplemental information may be crucial to evaluating bids. Failure to provide such details may result in disqualification, or an inability to appropriately evaluate bids.
4. If sensitive information that has not been requested is enclosed or if a bidder opts to enclose the defined supplemental information prior to the issuing department's request in the bidding packet submitted to the City Clerk, the City of Providence has no obligation to redact those details and bears no liability associated with the information becoming public record.
5. The City of Providence observes a public and transparent bidding process. Information required in the bidding packet may not be submitted directly to the issuing department at the discretion of the bidder in order to protect other information, such as pricing terms, from becoming public. Bidders who make such an attempt will be disqualified.

I affirm by signing below that I am duly authorized on behalf of Bidder, on

this_____day of_____20____.

_____

Signature of Representation

_____

Printed Name

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

BID FORM 4: Affidavit of City Vendor

Per our Code of Ordinances Sec. 21.-28.1 (e), this form applies to a) the business, b) any political action committee whose name includes the name of the business, c) all persons holding ten (10) percent or greater equity interest or five thousand dollars ($5,000.00) or greater cash value interest in the business at any time during the reporting period, d) all executive officers of the business entity, e) any spouse or dependent child of any individual identified in a) though d) above.

Executive officers who are not residents of the state of Rhode Island are exempted from this requirement.

Per R.I.G.L. § 36-14-2, "Business" means a sole proprietorship, partnership, firm, corporation, holding company, joint stock company, receivership, trust, or any other entity recognized in law through which business for profit or not for profit is conducted.

Name of the person making this affidavit: _____

Position in the "Business" _____

Name of Entity _____

Address: _____

Phone number: _____

The number of persons or entities in your entity that are required to report under Sec. 21.-28.1 (e): _____

Read the following paragraph and answer one of the options:

Within the 12 month period preceding the date of this bid submission with the City of Providence, or with respect to the contracts that are not in writing within the 12 month period preceding the date of notification that the contract has reached the $100,000 threshold, have you made campaign contributions within a calendar year to (please list all persons or entities required under Sec. 21.-28.1 (e)).

a. Members of the Providence City Council? ☐ Yes ☐ No
   - If Yes, please complete the following:
     Recipient(s) of the Contribution:
     Contribution Date(s): Contribution Amount(s):

b. Candidates for election or reelection to the Providence City Council? ☐ Yes ☐ No
   - If Yes, please complete the following:
     Recipient(s) of the Contribution:
     Contribution Date(s): Contribution Amount(s):

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

c. The Mayor of Providence? ☐ Yes ☐ No
- If Yes, please complete the following:
  Recipient(s) of the Contribution:
  Contribution Date(s): Contribution Amount(s):

d. Candidates for election or reelection to the office of Mayor of Providence? ☐ Yes ☐ No
- If Yes, please complete the following:
  Recipient(s) of the Contribution:
  Contribution Date(s): Contribution Amount(s):

_____
Signed under the pains and penalties of perjury.

_____
Position

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

BID FORM 5: Professional Fee

NOTE: This form must be included in the separate "Professional Cost Proposal" and not included in the "Technical Proposal for Qualification"

1. Bids must meet the attached specifications. Any exceptions or modifications must be noted and fully explained.
2. Bidder's responses must be in ink or typewritten, and all blanks on the bid form should be completed.
3. The price or prices proposed should be stated both in **WRITING** and in **FIGURES**, and any proposal not so stated may be rejected. **Contracts exceeding twelve months must specify annual costs for each year.**
4. Bids **SHOULD BE TOTALED** so that the final cost is clearly stated (unless submitting a unit price bid), however **each item should be priced individually**. Do not group items. Awards may be made on the basis of ***total*** bid or by ***individual items***.
5. All bids **MUST BE SIGNED IN INK.**

Name of Bidder (Firm or Individual): _____

Contact Name: _____

Business Address: _____

Business Phone #: _____

Contact Email Address: _____

Agrees to bid on (Write the "Item Description" here): _____

Total Amount in Writing*: _____

Total Amount in Figures*: _____

BASE BID PRICE

The Bidder submits this bid proposal to perform all the work as defined in the attached specifications and exhibits (including but not limited to the costs of all defined services prescribed or otherwise required to complete the work, the total allowance defined herein as "Allowances", all required insurance, licensing, labor, travel, administration, office expenses, required equipment, and all Addenda).

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

MBE/WBE Participation Plan NOTE: MBE/WBE forms must be included in the separate "Professional Cost Proposal" and not included in the "Technical Proposal for Qualification"

Please complete separate forms for each MBE/WBE subcontractor/supplier to be utilized on the solicitation.

Bidder's Name:	
Bidder's Address:	
Point of Contact:	
Telephone:	
Email:	
Procurement #:	
Project Name:	
Which one of the following describes your business' status in terms of Minority and/or Woman Owned Business Enterprise certification with the State of Rhode Island? (Check all that apply).	☐MBE ☐WBE ☐Neither MBE nor WBE

This form is intended to capture commitments between the prime contractor/vendor and MBE/WBE subcontractors and suppliers, including a description of the work to be performed and the percentage of the work as submitted to the prime contractor/vendor. Please note that all MBE/WBE subcontractors/suppliers must be certified by the Office of Diversity, Equity and Opportunity at the time of bid. The MBE/WBE Directory can be found here. Please visit, the City's MBE/WBE page for details of the program (e.g. instructions and requirements).

- **Nonprofit organizations are not required to complete the rest of this form.**
- **Construction projects unable to identify subcontractors prior to bid submission (e.g. Design Build) are required to provide updates to the MBE/WBE Outreach Office**

Name of Subcontractor/Supplier:					
Type of RI Certification:	☐MBE ☐WBE ☐Neither				
Address:					
Point of Contact:					
Telephone:					
Email:					
Detailed Description of Work to Be Performed by Subcontractor or Materials to be Supplied by Supplier Per the Scope of Work provided in the RFP					
Total Contract Value ($):		Subcontract Value ($):		Participation Rate (%):	
Anticipated Date of Performance:					

I certify under penalty of perjury that the forgoing statements are true and correct.

Prime Contractor/Vendor Signature	**Title**	**Date**
Subcontractor/Supplier Signature	**Title**	**Date**

***If you did not meet the 20% MBE/WBE combined participation goal, submit a Waiver Request Form.**

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

MBE/WBE Waiver Request Form

Fill out this form only if you did not meet the 20% MBE/WBE participation goal.
State-certified MBE or WBE Prime Bidders are NOT REQUIRED to fill out this form.

Submit this form to the City of Providence MBE/WBE Outreach Director, Grace Diaz, at gdiaz@providenceri.gov, for review **prior to bid submission.** This waiver applies only to the current bid which you are submitting to the City of Providence and does not apply to other bids your company may submit in the future. **In case a waiver is needed, City Department Directors should not** recommend a bidder for an award if this form is not included, absent or is not signed by the city of Providence MBE/WBE director**.**

Prime Bidder: _____ Contact Email and Phone_____
Company Name, Address: _____ Trade _____
Project /Item Description (as seen on RFP):
_____
_____

To receive a waiver, you must list the certified MBE and/or WBE companies you contacted, the name of the primary individual with whom you interacted, and the reason the MBE/WBE company could not participate on this project.

MBE/WBE Company Name	Individual's Name	Company Name	Why did you choose not to work with this company?

I acknowledge the City of Providence's goal of a combined MBE/WBE participation is 20% of the total bid value. I am requesting a waiver of _____ % MBE/WBE (20% minus the value of **Box F** on the Subcontractor Disclosure Form). If an opportunity is identified to subcontract any task associated with the fulfillment of this contract, a good faith effort will be made to select MBE/WBE certified businesses as partners.

_____	_____	_____
Signature of Prime Contractor / or Duly Authorized Representative	Printed Name	Date Signed
_____	_____	_____
Signature of City of Providence MBE/WBE Outreach Director / or Duly Authorized Representative	Printed Name of City of Providence MBE/WBE Outreach Director	Date Signed

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

BID PACKAGE SPECIFICATIONS

Overview

The City of Providence is beginning a multi-year effort to address major issues that have developed over the last several decades across the City's network of fire stations to bring the buildings up to date. One of the primary deficiencies of the City's fire stations is their lack of modern heating, ventilation, and cooling. The City is seeking to replace each station's out-of-date heating and cooling systems with a modern, efficient all-electric heat pump based system that will provide both heating and cooling without the need for fossil fuels. Additionally, the stations need a new active ventilation system on the lower level to enable high levels of air exchange from the apparatus bays and turnout gear storage rooms to remove diesel fumes and off-gassing from turnout gear from the building. This is a two step request please provide a technical & cost proposal.

Scope of Work

The City of Providence is seeking architectural design services from qualified firms to design new HVAC systems for two fire stations. The City recently completed a full systemwide building needs assessment for our fire stations, and have identified the Branch Ave and North Main St stations as being in the most urgent need of repairs. Therefore the City is beginning to address the worst areas of concern at these two stations.

In parallel with this effort, the City has a separate project to replace the roofs and gutters at each building to eliminate serious problems of water intrusion. Eliminating the water intrusion will allow us to begin addressing the many other systems in need of repair without worrying about new equipment, fixtures, or finishes being damaged by water.

Lack of a proper ventilation system is exposing the staff at our fire stations to potentially dangerous fumes since the only active exhaust in these areas are manually activated wall fans. Additionally, the building relies on window air conditioners for cooling, which is inefficient, provides insufficient coverage and has resulted in longstanding issues with the windows. Replacing the window units and the station's gas boiler and replacing them with high efficiency all-electric heat pumps will both meet the needs of the City's goals of reducing carbon emissions and cutting long term maintenance and fuel costs.

In order to support the new HVAC systems, the stations' electrical systems will need to be upgraded for the higher loads. The existing electrical panels are in serious need of replacement due to age anyway, making this a good time to address both systems at once. The City is seeking a design for the necessary electrical service upgrades for the new HVAC equipment as part of this work. In parallel, the City has been working with an electrical engineer (Andre Gill) to add three-phase power to North Main St Station to support transfer of the Department's air supply equipment to that station. The hired architects will need to coordinate the electrical upgrades needed for the new HVAC system with the existing work being done to upgrade the building's electrical infrastructure to bring in three-phase power. Most current draft plans are included for bidder information.

The City is seeking the following architectural services at the two fire stations:

- Sizing, design, and equipment selection for a new ventilation system in the lower levels to remove any diesel fumes which escape the building's existing Plymovent system and to remove carcinogenic off-gassing from staff turnout gear.
- Sizing, design, and equipment selection for a new heat pump based heating and cooling system for the building to replace the existing hydronic boiler and window AC units.
- Design and equipment selection for new circuit panels and electrical equipment to replace the building's existing, obsolete circuit panels and provide sufficient electrical capacity for the new electric HVAC system. This work must be coordinated with the existing project to add three-phase power to the building to prevent duplication of effort.
- Development of a drawing set with all drawings (demo, architectural, MEP) needed for installation of the new HVAC system and associated electrical equipment.
- Development of project specifications
- Support answering questions from potential contractors during the bidding phase
- Construction administration services for the duration of construction, providing support reviewing submittals, assisting in resolving contractor RFIs, reviewing proposed change orders, participating in bi-weekly status meetings, and performing regular site visits to observe the work

The City has budgeted $2 million for this work.

Attachments

Attached are A) the building condition assessments for these two fire stations and B) existing plans for electrical work to add three-phase power to the North Main St station.

Bidding Schedule

4/8/25 – Pre-bid Conference
4/21/25 – Bids due
4/23/25 – 5/2/25 – Bidder Interviews
5/5/25 – Cost proposals opened and scored
5/19/25 - Award

Evaluation Criteria

Responses will be evaluated in two (2) parts for a maximum score of one hundred (100) points. Part One is defined as the Technical Proposal for Qualification and is worth eighty (80) points maximum. Part Two is defined as the Professional Cost Proposal and is worth twenty (20) points maximum. See pages 2-3 of this RFP for bid package submission instructions.

Part One – Technical Proposal for Qualification (80 points maximum)
Technical proposals will be evaluated based on the following criteria:

1. Experience of the Firm and Project Principals (40 points maximum)

a. Provide the name of each company and company structure comprising the Design Team, including Sub-Consultants and any proposed MBE and WBE firms. Identify the indicated role of each participant included.
b. Provide an organizational chart identifying companies responsible for major functions to be performed in designing and constructing the Project. Identify key personnel by name and affiliation, and display the functional structure of the organization.
c. Provide a description of each Design Team member's experience and qualifications on Projects of similar size and scope.
d. Provide separate resumes for all key management staff of the Design Team.
e. Describe the current design backlog of each Design Team member and the capacity to perform the scope of work on this Project.

2. Project Approach (30 points maximum)
    a. Provide a detailed and organized narrative explanation summarizing the respondent's understanding of the Project and outlining the Design Team's proposed approach.
    b. Identify key issues, constraints, challenges, and opportunities facing the Project.
3. References (10 points maximum)
    a. Provide a minimum of three references of previous owners or clients with whom the key personnel have worked within the past five (5) years on similar projects. List the name, position, company or agency, current phone and email address for each reference.

Firms determined to be responsive in their bids and meeting all bid requirements will be invited for in-person interviews at Providence City Hall in the two weeks following the opening of proposals.

Technical evaluations will be scored prior to opening of the Cost Proposals, and firms must score a minimum threshold of sixty-five (65) points in order for their Cost Proposals to be opened. Firms scoring less than threshold sixty-five (65) points will be disqualified from the solicitation.

Part Two – Professional Cost Proposal (20 points maximum)
The project fees presented shall include all costs to provide complete and full services anticipated and defined in this RFP including additional Team Members that may not be defined herein that the Design Team feels is required to be part of the team to successfully accomplish the project.

The proposal with the lowest opened Anticipated Total Design Fee (item D on the Cost Proposal Bid Form, page 13 of this RFP) shall receive the full 20 points. The other opened Professional Cost Proposals shall be allocated points according to the following formula:

Awarded Points for Cost Proposal = ((Lowest Anticipated Total Design Fee) x 20) / (Firm's Anticipated Total Design Fee)

For example, if the lowest Anticipated Total Design Fee is $200,000.00, the awarded points for a proposal with an Anticipated Total Design Fee of $300,000.00 would be: (200,000 x 20) / (300,000) = **13.3**.

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

Questions regarding this bid package shall be submitted via e-mail to **Chevell Burgess** at cburgess@providenceri.gov and **Dan Kittridge**, Capital Improvement Project Manager at dkittridge@providenceri.gov, no later than five (5) working days before the bid opening date.

Dan Kittridge is the project contact and can be reached at 401-473-8418.

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

SUPPLEMENTAL INFORMATION

If the issuing department for this RFP determines that your firm's bid is best suited to accommodate their need, you will be asked to provide proof of the following prior to formalizing an award.

An inability to provide the outlined items at the request of the department may lead to the disqualification of your bid.

This information is <u>NOT</u> requested to be provided in your initial bid that you will submit to the City Clerk's office by the "date to be opened" noted on page 1. This list only serves as a list of items that your firm should be ready to provide on request.

<u>All bids submitted to the City Clerk become public record</u>. Failure to follow instructions could result in information considered private being posted to the city's Open Meetings Portal and made available as a public record.

You must be able to provide:

- Business Tax ID will be requested after an award is approved by the Board of Contract and Supply.
- Proof of Insurance.
- Certificate of Good Standing with the Rhode Island Secretary of State.

BOARD OF CONTRACT AND SUPPLY
CITY OF PROVIDENCE, RHODE ISLAND

CITY OF PROVIDENCE STANDARD TERMS & CONDITIONS

1. The terms "you" and "your" contained herein refer to the person or entity that is a party to the agreement with the City of Providence ("the City") and to such person's or entity's employees, officers, and agents.
2. The Request For Proposals ("RFP") and these Standard Terms and Conditions together constitute the entire agreement of the parties ("the Agreement") with regard to any and all matters. By your submission of a bid proposal or response to the City's RFP, you accept these Standard Terms & Conditions and agree that they supersede any conflicting provisions provided by bid or in any terms and conditions contained or linked within a bid and/or response. Changes in the terms and conditions of the Agreement, or the scope of work thereunder, may only be made by a writing signed by the parties.
3. You are an independent contractor and in no way does this Agreement render you an employee or agent of the City or entitle you to fringe benefits, workers' compensation, pension obligations, retirement or any other employment benefits. The City shall not deduct federal or state income taxes, social security or Medicare withholdings, or any other taxes required to be deducted by an employer, and this is your responsibility to yourself and your employees and agents.
4. You shall not assign your rights and obligations under this Agreement without the prior written consent of the City. Any assignment without prior written consent of the City shall be voidable at the election of the City. The City retains the right to refuse any and all assignments in the City's sole and absolute discretion.
5. Invoices submitted to the City shall be payable sixty (60) days from the time of receipt by the City. Invoices shall include support documentation necessary to evidence completion of the work being invoiced. The City may request any other reasonable documentation in support of an invoice. The time for payment shall not commence, and invoices shall not be processed for payment, until you provide reasonably sufficient support documentation. In no circumstances shall the City be obligated to pay or shall you be entitled to receive interest on any overdue invoice or payment. In no circumstances shall the City be obligated to pay any costs associated with your collection of an outstanding invoice.
6. For contracts involving construction, alteration, and/or repair work, the provisions of applicable state labor law concerning payment of prevailing wage rates (R.I. Gen. Laws §§ 37-13-1 et seq., as amended) and the City's First Source Ordinance (Providence Code of Ordinances §§ 21-91 et seq., as amended) apply.
7. With regard to any issues, claims, or controversies that may arise under this Agreement, the City shall not be required to submit to dispute resolution or mandatory/binding arbitration. Nothing prevents the parties from mutually agreeing to settle any disputes using mediation or non-binding arbitration.
8. To the fullest extent permitted by law, you shall indemnify, defend, and hold harmless the City, its employees, officers, agents, and assigns from and against any and all claims, damages, losses, allegations, demands, actions, causes of action, suits, obligations, fines, penalties, judgments, liabilities, costs and expenses, including but not limited to attorneys' fees, of any nature whatsoever arising out of, in connection with, or resulting from the performance of the work provided in the Agreement.
9. You shall maintain throughout the term of this Agreement the insurance coverage that is required by the RFP or, if none is required in the RFP, insurance coverage that is considered in your industry to be commercially reasonable, and you agree to name the City as an additional insured on your general liability policy and on any umbrella policy you carry.
10. The City shall not subject itself to any contractual limitations on liability. The City shall have the time permitted within the applicable statute of limitations, and no less, to bring or assert any and all causes of action, suits, claims or demands the City may have arising out of, in connection with, or resulting from the performance of the work provided in the Agreement, and in no event does the City agree to limit your liability to the price of the Agreement or any other monetary limit.
11. The City may terminate this Agreement upon five (5) days' written notice to you if you fail to observe any of the terms and conditions of this Agreement, or if the City believes your ability to perform the

terms and conditions of this Agreement has been materially impaired in any way, including but in no way limited to loss of insurance coverage, lapsing of a surety bond, if required, declaration of bankruptcy, or appointment of a receiver. In the event of termination by the City, you shall be entitled to just and equitable compensation for any satisfactory work completed and expenses incurred up to the date of termination.

12. Written notice hereunder shall be deemed to have been duly served if delivered in person to the individual or member of the firm or entity or to an officer of the entity for whom it was intended, or if delivered at or sent by registered or certified mail to the last business address known by the party providing notice.
13. In no event shall the Agreement automatically renew or be extended without a writing signed by the parties.
14. You agree that products produced or resulting from the performance of the Agreement are the sole property of the City and may not be used by you without the express written permission of the City.
15. For any Agreement involving the sharing or exchange of data involving potentially confidential and/or personal information, you shall comply with any and all state and/or federal laws or regulations applicable to confidential and/or personal information you receive from the City, including but not limited to the Rhode Island Identity Theft Protection Act, R.I. Gen. Laws § 11-49.3-1, during the term of the Agreement. You shall implement and maintain appropriate physical, technical, and administrative security measures for the protection of, and to prevent access to, use, or disclosure of, confidential and/or personal information. In the event of a breach of such information, you shall notify the City of such breach immediately, but in no event later than twenty-four (24) hours after discovery of such breach.
16. The Agreement is governed by the laws of the State of Rhode Island. You expressly submit yourself to and agree that any and all actions arising out of, in connection with, or resulting from the performance of the Agreement or relationship between the parties shall occur solely in the venue and jurisdiction of the State of Rhode Island or the federal court located in Rhode Island.
17. The failure of the City to require performance of any provision shall not affect the City's right to require performance at any time thereafter, nor shall a waiver of any breach or default of this Agreement constitute a waiver of any subsequent breach or default or a waiver of the provision itself.
18. If any term or provision of this Agreement, or the application thereof to any person or circumstance shall, in any extent, be invalid or unenforceable, the remainder of this Agreement shall not be affected thereby, and each term and provision shall be valid and enforceable to the fullest extent permitted by law.

SYMBOLS

GENERAL SYMBOLS:

DASHED SYMBOL INDICATES EXISTING FIXTURE, DEVICE, OUTLET OR EQUIPMENT TO REMAIN.

SOLID SYMBOL INDICATES NEW FIXTURE, DEVICE, OUTLET.

DASHED SYMBOL WITH HATCH INDICATES FIXTURE, DEVICE, OUTLET OR EQUIPMENT TO BE DEMOLISHED.

1 — KEY NOTE REFERENCE

3 — DETAIL NUMBER DESIGNATION.

E1 — SHEET DETAIL REFERENCED ON.

3/E39 — DETAIL OR SECTION REFERENCES IN NOTES.

+48" — INDICATES MOUNTING HEIGHT ABOVE FINISHED FLOOR.

RACEWAY SYSTEMS

A-1 — HOMERUN TO PANELBOARD "A" - CIRCUITS 1. FEEDER OR CIRCUIT NUMBERS AS NOTED. UNLESS OTHERWISE INDICATED, 2#12 AWG (CU) & #12G. LARGE LINE THROUGH ARROW REPRESENTS GROUNDED CONDUCTOR (NEUTRAL), SMALL LINE THROUGH ARROW REPRESENTS PHASE CONDUCTOR, DOT REPRESENTS EQUIPMENT GROUNDING CONDUCTOR. IF TWO LARGE LINES ARE SHOWN, THERE ARE TWO (2) PHASE CONDUCTORS AND TWO NUMBERS WILL BE GIVEN (A-1,3).

A-1,3,5 1/2"C,3#8,#10G — HOMERUN TO PANELBOARD "A" - CIRCUITS 1 & 3 & 5. FEEDER OR CIRCUIT NUMBERS AS NOTED. CONDUIT AND CONDUCTORS PROVIDED AS INDICATED (1/2" CONDUIT, 3 - #8AWG CURRENT CARRYING CONDUCTORS #10AWG EQUIPMENT GROUNDING CONDUCTOR)

OUTLETS AND RECEPTACLES

SUBSCRIPT ADJACENT TO OUTLET INDICATES:
"GFCI" = GROUND FAULT CIRCUIT INTERRUPTER, PERSONAL PROTECTION.
"+XX" = DIMENSIONED HEIGHT.

FLUSH / SURFACE — DUPLEX CONVENIENCE RECEPTACLE 20A, 125V. WALL MOUNTED DEVICE AT 18" AFF UON.

QUAD CONVENIENCE RECEPTACLE 20A, 125V. WALL MOUNTED DEVICE AT 18" AFF UON.

6-30R — SPECIAL RECEPTACLE OUTLET WITH NEMA CONFIGURATION NUMBER AS NOTED, AT +18" AFF UON.

SIMPLEX RECEPTACLE 20A, 125V. WALL MOUNTED DEVICE AT 18" AFF UON.

DUPLEX FLOOR CONVENIENCE RECEPTACLE 20A, 125V.

LIGHTING

MANUAL ON BUTTON. MOUNTED AT +48"UON. LOWERCASE LETTER INDICATES ZONE WHEN APPLIED. WHEN MULTIPLE LETTER SHOWN, MULTIPLE SWITCHES CONTAINED FOR EACH ZONE.

$VS WALL MOUNTED VACANCY SENSOR WITH MANUAL ON BUTTON. OS WOULD INDICATE OCCUPANCY SENSOR. MOUNTED AT 48". UON.

$D WALL MOUNTED DIMMER WITH MANUAL ON BUTTON. MOUNTED AT 48". UON.

f / PANEL - # B / g / PANEL - # A — LIGHT FIXTURE. UPPER CASE LETTER INDICATES FIXTURE TYPE, LOWER CASE LETTER INDICATES LIGHTING ZONE (WHEN APPLIED), PANEL # INDICATES SOURCE CIRCUIT

CEILING MOUNTED LED EXIT SIGN WITH GREEN LETTERING AND NICKEL CADMIUM BATTERY BACK UP, SHADED SIDE INDICATE LIT SIDE, ARROW INDICATES DIRECTION WHEN PRESENT

WALL MOUNTED LED EXIT SIGN, SAME ATTRIBUTES AS ABOVE CEILING MOUNTED EXIT SIGN.

DS — DUAL TECHNOLOGY (INFRARED AND ULTRASONIC) VACANCY/OCCUPANCY SENSOR CEILING MOUNTED

PC — PHOTOCELL

SYMBOLS (CONTINUED)

MISCELLANEOUS

$ — DISCONNECT SWITCH WHEN ON POWER PLANS, MOUNTED AT +48"UON.

J — JUNCTION OR OUTLET BOX. CEILING OR WALL MOUNTED AS INDICATED. LOCATE ABOVE ACCESSIBLE CEILINGS UON.

FLUSH — PANELBOARD.

F — FUSED SAFETY DISCONNECT SWITCH

NON-FUSED SAFETY DISCONNECT SWITCH

$M — MOTOR STARTER SWITCH.

T — TRANSFORMER

EQUIPMENT, TYPICALLY EQUIPMENT WITH A MOTOR.

SINGLE LINE DIAGRAM:

SPLICE/TERMINAL

GROUNDING ELECTRODE

G — GROUND BUS OR TERMINALS

42,000 — SHORT CIRCUIT CURRENT, AMPS

COLD WATER PIPE

GROUND ROD

DISCONNECT AND OVERCURRENT DEVICES			
CIRCUIT BREAKER		SAFETY SWITCHES	
NUMBERS OF POLES	3	NUMBERS OF POLES	3
TRIP (AMPERES)	*	FUSE SIZE (AMPS)	*
FRAME (AMPERES)	100	RATING (AMPERES)	100
I.C. (1000 AMPS)	10	FUSE CLASS (UL)	RK5

* "NA" INDICATES NON-AUTOMATIC C/B
* "NF" INDICATES NON-FUSED SWITCH
* "50" INDICATES TRIP OR FUSE SIZE
* "**" INDICATES FUSE SIZE PER MANUFACTURER'S RECOMMENDATION

GENERAL NOTES:

1. THE FOLLOWING GENERAL NOTES APPLY TO ELECTRICAL DRAWINGS.
2. INSTALLATION OF ELECTRICAL MATERIAL SHALL CONFORM WITH LOCAL REGULATIONS AND THE 2020 NATIONAL ELECTRICAL CODE (NEC) AND OTHER GOVERNING CODES AND ORDINANCES.
3. ELECTRICAL EQUIPMENT SHALL BE NRTL LABELED.
4. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES AT THE SITE.
5. CONDUIT SIZES ARE BASED ON COPPER CONDUCTORS WITH THHN/THWN-2 INSULATION UNLESS OTHERWISE NOTED. CONDUCTORS SHALL BE COPPER. CONDUCTOR INSULATION SHALL BE THHN/THWN-2 UNLESS OTHERWISE NOTED.
6. MINIMUM CONDUIT SIZE SHALL BE 1/2", UNLESS OTHERWISE NOTED.
7. CONDUIT OR MC CABLE IS PERMITTED INSIDE THE STRUCTURE UNLESS OTHERWISE NOTED. CONDUIT IS REQUIRED FOR THE EXTERIOR AND EXPOSED INTERIOR.
8. CONDUIT RUNS SHOWN ARE DIAGRAMMATIC ONLY. INSTALL CONDUITS TO SUIT FIELD CONDITIONS.
9. PROVIDE PROPERLY SIZED LUGS AT CIRCUIT BREAKER PANELS, FOR THE CONDUCTORS SHOWN TO CONNECT TO THESE LUGS.
10. INSTALL EXTERIOR MOUNTED ELECTRICAL EQUIPMENT IN WEATHERPROOF, NEMA 3R ENCLOSURES.
11. SEPARATE INSULATED EQUIPMENT GROUNDING CONDUCTOR, SIZED PER NEC TABLE 250.122, SHALL BE PROVIDED, INSTALLED IN THE SAME CONDUIT AS THE CIRCUIT CONDUCTORS, FOR FEEDER AND BRANCH CIRCUITS.
12. THE CONTRACTOR SHALL SUPPLY POWER TO AND MAKE CONNECTION TO MOTORS AND EQUIPMENT REQUIRING ELECTRICAL, INCLUDING FRACTIONAL HORSEPOWER MOTORS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW THE MECHANICAL AND PLUMBING DRAWINGS FOR DUCTS, LINES AND EQUIPMENT.
13. COMPLY WITH NFPA 70E.

ABBREVIATIONS:

A OR AMP	–	AMPERE
ACT	–	ABOVE COUNTER TOP
AF	–	AMP FUSE (FOR FUSED SWITCHES)
AF	–	AMP FRAME (FOR CIRCUIT BREAKERS)
AFCI	–	ARC-FLASH CIRCUIT INTERRUPTER
AIC	–	AMPS INTERRUPTING CAPACITY
AS	–	AMP SWITCH
AT	–	AMP TRIP
BCG	–	BARE COPPER GROUND
C	–	CONDUIT
CB, C/B	–	CIRCUIT BREAKER
CEC	–	CALIFORNIA ELECTRIC CODE
CT	–	CIRCUIT
CONT	–	CONTINUED
CWP	–	COLD WATER PIPE
DIA	–	DIAMETER
DISC	–	POWER DISCONNECT
DIST	–	DISTRIBUTION
EQUIP	–	EQUIPMENT
FF	–	FINISHED FLOOR
FT	–	FOOT, FEET
G, GND	–	GROUND
GFI, GFCI	–	GROUND FAULT CIRCUIT INTERRUPTER
HP	–	HORSE POWER
KAIC	–	THOUSAND AMPERE INTERRUPT CURRENT
KCMIL	–	THOUSAND CIRCULAR MILS
KVA	–	KILA-VOLT-AMP (POWER)
KW	–	KILOWATT(S)
MFGR	–	MANUFACTURER
NEC	–	NATIONAL ELECTRICAL CODE
NTS	–	NOT TO SCALE
PH, ø	–	PHASE
PVC	–	POLYVINYL CHLORIDE
RMC	–	RIGID METAL CONDUIT
REF	–	REFERENCE
REQD	–	REQUIRED
TVSS	–	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	–	TYPICAL
UON	–	UNLESS OTHERWISE NOTED
3W	–	THREE WIRE
V	–	VOLT
WH	–	WATER HEATER
WP	–	WEATHERPROOF

PROJECT INFORMATION

1. PROJECT UPGRADES THE OLD ELECTRICAL DISTRIBUTION FROM THE SERVICE TO THE DISTRIBUTIONS PANELS. MOST DISTRIBUTION PANELS MUST BE REPLACED FROM SINGLE PHASE TO THREE PHASE PANELS. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT THERE ARE NO THREE PHASE LOADS ON THESE PANELS.
2. THE EXISTING GENERATOR AND ATS ARE TO REMAIN.
3. CONTRACTOR IS RESPONSIBLE TO REVIEW THE EXISTING SINGLE-LINE DIAGRAM AND NOTIFY THE ELECTRICAL ENGINEER OF ANY DISCREPANCIES.
4. CONTRACTOR IS ALSO TO TRACE EXISTING CIRCUITS TO PROVIDE UPDATED PANEL SCHEDULES.

Revision:	Date:

CONSULTANTS

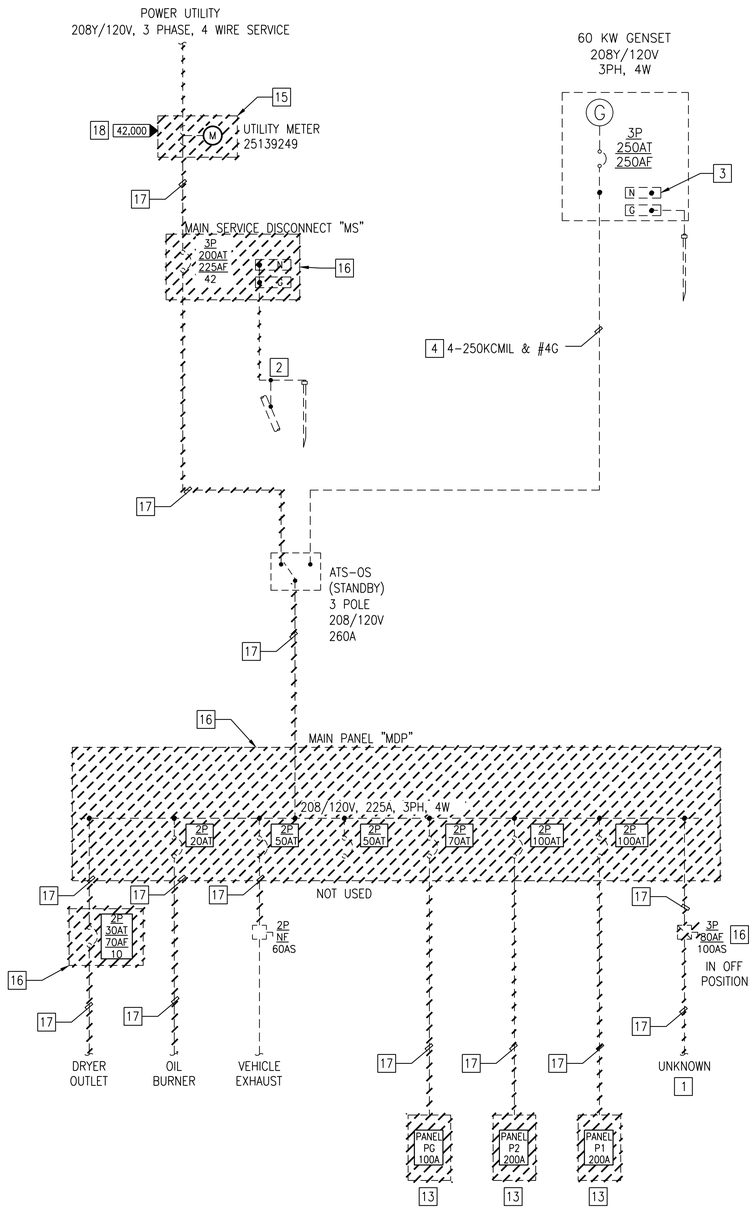
MEP ENGINEER:
Andre Gill Engineering, LLC
40 Overlea Road
North Smithfield, RI 02896
T: 401.441.3414
W: www.andregillengineering.com

CIVIL ENGINER:
Crossman Engineering
100 Jefferson Blvd. Suite 200
Warwick, RI 02888
T: 401.738.5660
W: www.crossmaneng.com

STAMP

NOT FOR CONSTRUCTION

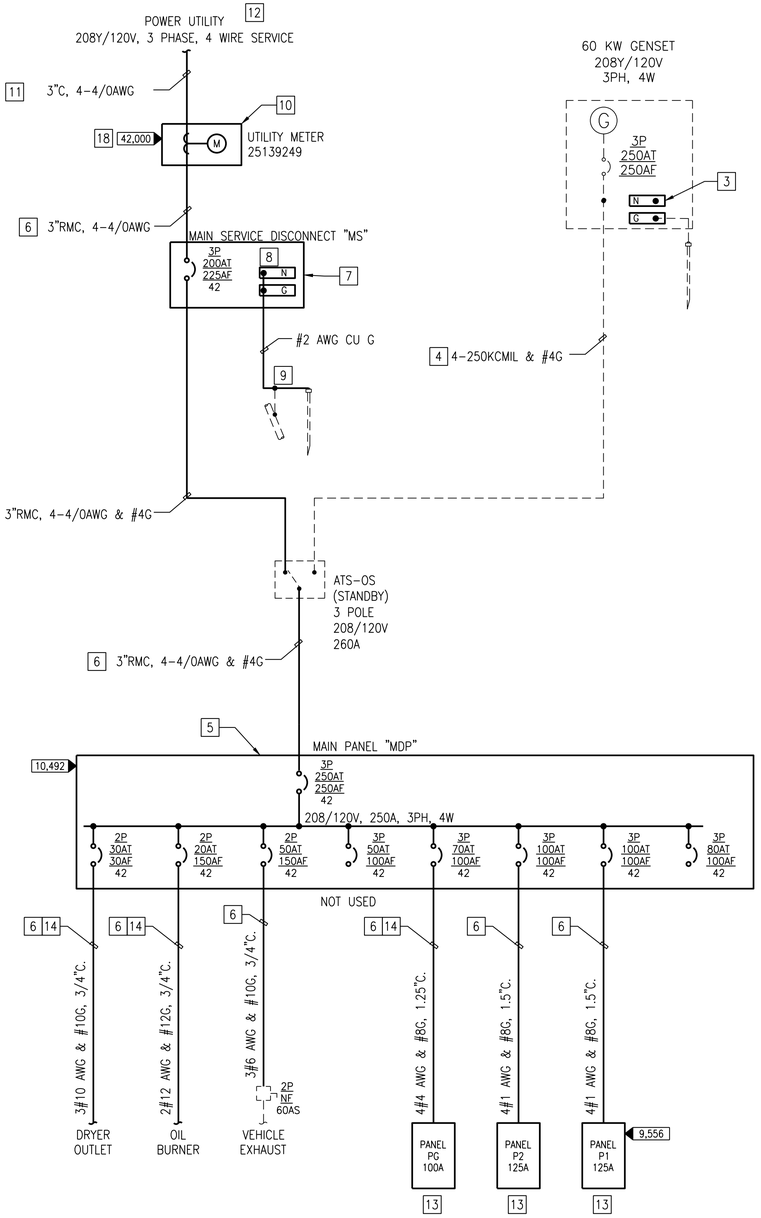
Project Title: North Main Fire Station Electrical Upgrade	Project Number: ----
Location: 151 North Main St. Providence, RI	Drawing Scale
Drawing Title: ELECTRICAL GENERAL NOTES, SYMBOLS, ABBREVIATIONS	Drawing Number: E001
Issue Date: 10JAN25 / Approved By: MTO / Drawn By: AGE	Checked By: MTO



EXISTING ELECTRICAL SINGLE-LINE DIAGRAM

SCALE: NTS

1



ELECTRICAL SINGLE-LINE DIAGRAM (NEW WORK)

SCALE: NTS

2

GENERAL SHEET NOTES

1. CONTRACTOR IS RESPONSIBLE FOR VERIFYING EXISTING SINGLE-LINE SHOWN IS CORRECT OR NOTIFYING ENGINEER OF ANY DISCREPANCIES PRIOR TO START OF WORK.

KEYNOTES

1 CONFIRM THAT THERE IS NO EXISTING LOAD ON THIS CIRCUIT WHICH IS TO BE UTILIZED PRIOR TO DEMOLITION. NOTIFY ENGINEER IF THERE IS AN EXISTING LOAD TO REMAIN AND BE UTILIZED.

2 MAINTAIN GROUNDING ELECTRODES FOR RE-USE. REFER TO NEW WORK ON THIS SHEET FOR CONNECTION.

3 ENSURE GROUNDED CONDUCTOR (NEUTRAL) AND GROUND ARE NOT BONDED. GENERATOR IS NON-SEPARATELY DERIVED SYSTEM. NOTIFY ENGINEER IF OTHERWISE.

4 CONFIRM CONDUCTORS ARE AS INDICATED OR LARGER. NOTIFY ENGINEER IF OTHERWISE.

5 PROVIDE PANEL AS INDICATED AND PER PANEL SCHEDULE ON E201. REFER TO E101 FOR PANEL LOCATION.

6 PROVIDE CONDUCTORS AND CONDUIT AS INDICATED.

7 PROVIDE SERVICE DISCONNECT SWITCH. EQUIPMENT SHALL BE SERVICE ENTRANCE RATED. LABEL AS "SERVICE DISCONNECTING MEANS". REFER TO E101 FOR SWITCH LOCATION.

8 PROVIDE #2 AWG CU OR LARGER CONDUCTOR FOR MAIN BONDING OR OTHER ACCEPTABLE MEANS FOR MAIN BONDING JUMPER TO COMPLY WITH NEC 250.28.

9 PROVIDE CONNECTION TO ALL PRESENT GROUNDING ELECTRODES DESCRIBED IN CEC 250.52. PROVIDE GROUND ROD ELECTRODE(S) PER NEC 250.52(A)(5). CONNECTION TO GROUND ROD MAY BE #6 AWG CU PER NEC 250.66(A).

10 PROVIDE METER ENCLOSURE PER RHODE ISLAND ENERGY STANDARDS. COORDINATE METER INSTALLATION OR EXISTING METER RELOCATION WITH RHODE ISLAND ENERGY. COORDINATE NEW METER LOCATION WITH RHODE ISLAND ENERGY.

11 COORDINATE WITH RHODE ISLAND. PROVIDE UNDERGROUND SERVICE ENTRANCE PER NEC 230.50 AND RHODE ISLAND ENERGY ESB 750 IN PARTICULARLY FIGURE 4.5.4.2-1. PROVIDE CONDUIT AND CONDUCTORS AS INDICATED. SERVICE CONDUIT MAY BE RE-UTILIZED IF PERMITTED BY RHODE ISLAND ENERGY. EXPOSED CONDUIT MUST BE RMC.

12 COORDINATE NEW SERVICE WITH RHODE ISLAND ENERGY.

13 REPLACE EXISTING PANEL WITH NEW PANEL AS INDICATED AND PER PANEL SCHEDULE ON E201. REFER TO E101 OR E102 FOR PANEL LOCATIONS.

14 EXISTING CONDUIT MAY BE RE-USED IF IN GOOD CONDITION AND IF CONDUIT SIZE IS AS INDICATED OR LARGER.

15 COORDINATE WITH RHODE ISLAND ENERGY FOR REMOVAL OR RELOCATION OF METER TO NEW METER ENCLOSURE. DEMOLISH METER ENCLOSURE AFTER RHODE ISLAND ENERGY REMOVES/RELOCATES METER.

16 DEMOLISH EQUIPMENT AFTER NEW MDP IS ENERGIZED PER NEW WORK ON THIS SHEET.

17 DEMOLISH CONDUCTOR. DEMOLISH CONDUIT UNLESS CONDUIT IS TO BE REUSED PER KEYNOTE 14.

18 CONFIRM WITH RHODE ISLAND ENERGY THAT AVAILABLE SHORT CIRCUIT VALUE AT SERVICE DOES NOT EXCEED 42KAIC. NOTIFY ENGINEER IF OTHERWISE.

Revision:	Date:

CONSULTANTS

MEP ENGINEER:
Andre Gill Engineering, LLC
40 Overlea Road
North Smithfield, RI 02896
T: 401.441.3414
W: www.andregillengineering.com

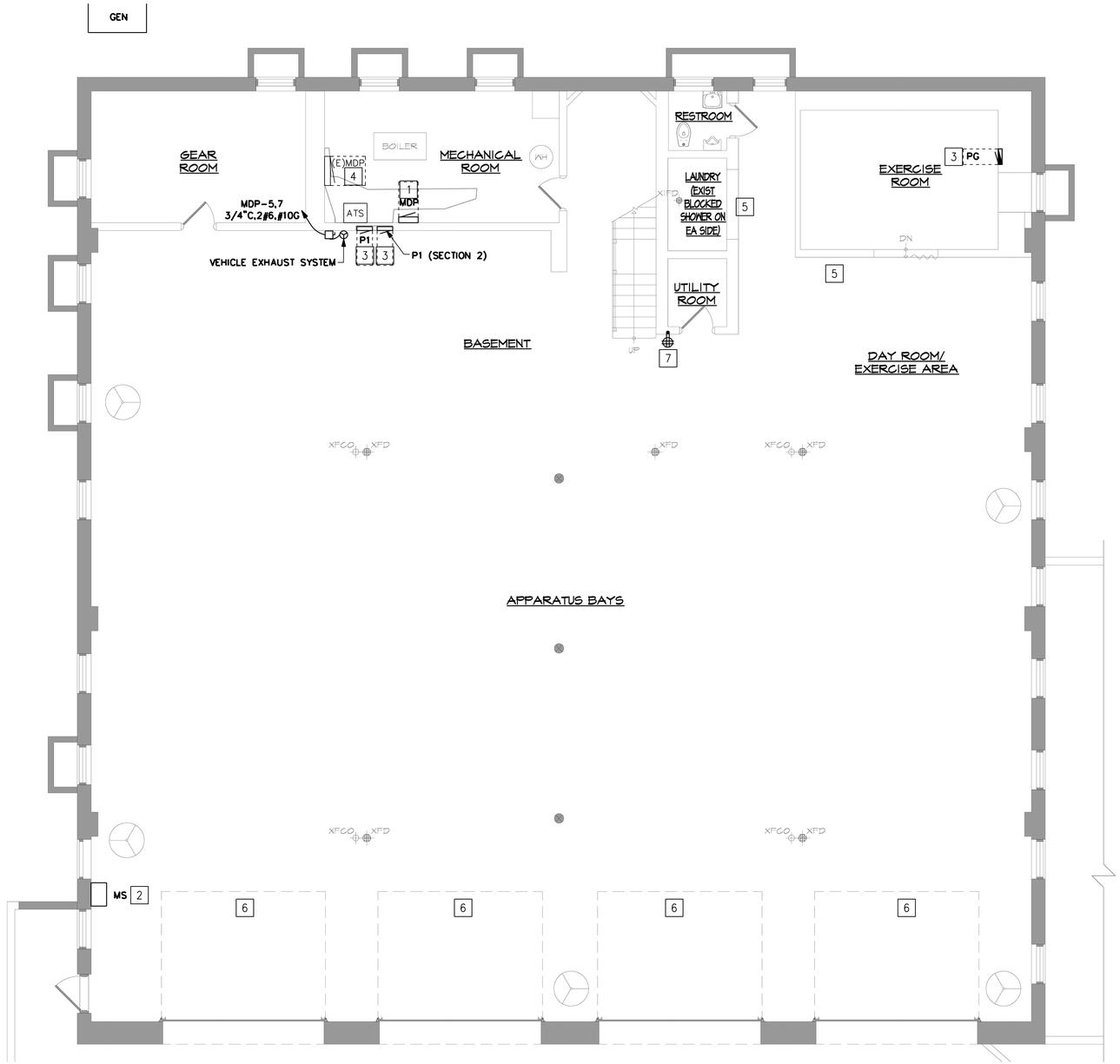
CIVIL ENGINER:
Crossman Engineering
100 Jefferson Blvd. Suite 200
Warwick, RI 02888
T: 401.738.5660
W: www.crossmaneng.com

STAMP

NOT FOR CONSTRUCTION

Project Title: North Main Fire Station Electrical Upgrade	**Project Number** ----
Location: 151 North Main St. Providence, RI	**Drawing Scale**
Drawing Title: ELECTRICAL SINGLE-LINE DIAGRAM	**Drawing Number** E002
Issue Date: 10JAN25	**Approved By:** MTO / **Drawn By:** AGE / **Checked By:** MTO

2/22/2025 5:13:40 PM



ELECTRICAL POWER PLAN - FIRST FLOOR

SCALE: 3/16" = 1'-0"

PLAN NORTH

0 4' 8' 12'

SCALE: 3/16"=1'-0"

KEYNOTES

1. PROVIDE PANEL PER E002 AND PANEL SCHEDULE ON E201. PROVIDE ARC-FLASH WARNING ON PANEL PER NEC 110.21(B). PROVIDE CLEARANCE PER NEC 110.26.
2. PROVIDE NEW METER ENCLOSURE AND SERVICE DISCONNECT MS ABOVE EXISTING SERVICE DISCONNECT AND METER PER E002. PROVIDE ARC-FLASH WARNING ON PANEL PER NEC 110.21(B). PROVIDE CLEARANCE PER NEC 110.26. COORDINATE EXISTING METER REMOVAL/RELOCATION WITH RHODE ISLAND ENERGY. AFTER NEW SERVICE IS SUPPLIED BY RHODE ISLAND ENERGY, DEMOLISH OLD SERVICE DISCONNECT AND METER ENCLOSURE.
3. REPLACE EXISTING PANEL WITH NEW PANEL THROUGH DEMOLITION OF OLD PANEL AND PROVIDING NEW PANEL PER E002 AND E201. PROVIDE METAL OR MATCHING TILE WALL TO ENCLOSE OPENING THAT MAY REMAIN AROUND PANEL AFTER PANEL INSTALLATION. PROVIDE ARC-FLASH WARNING ON PANEL PER NEC 110.21(B). PROVIDE CLEARANCE PER NEC 110.26.
4. DEMOLISH PANEL AFTER OTHER PANELS HAVE BEEN ENERGIZED.
5. PROVIDE GFCI RECEPTACLES TO REPLACE 120V RECEPTACLES IN LAUNDRY AREA. ENSURE 208V RECEPTACLES ARE SUPPLIED BY GFCI CIRCUIT BREAKERS IN LAUNDRY AREA.
6. REPLACE RECEPTACLES IN APPARATUS BAYS WITH GFCI RECEPTACLES.
7. REPLACE RECEPTACLE WITH GFCI RECEPTACLE.

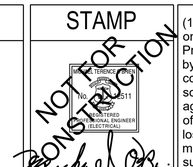
Revision:	Date:

CONSULTANTS

MEP ENGINEER:
Andre Gill Engineering, LLC
40 Overlea Road
North Smithfield, RI 02896
T: 401.441.3414
W: www.andregillengineering.com

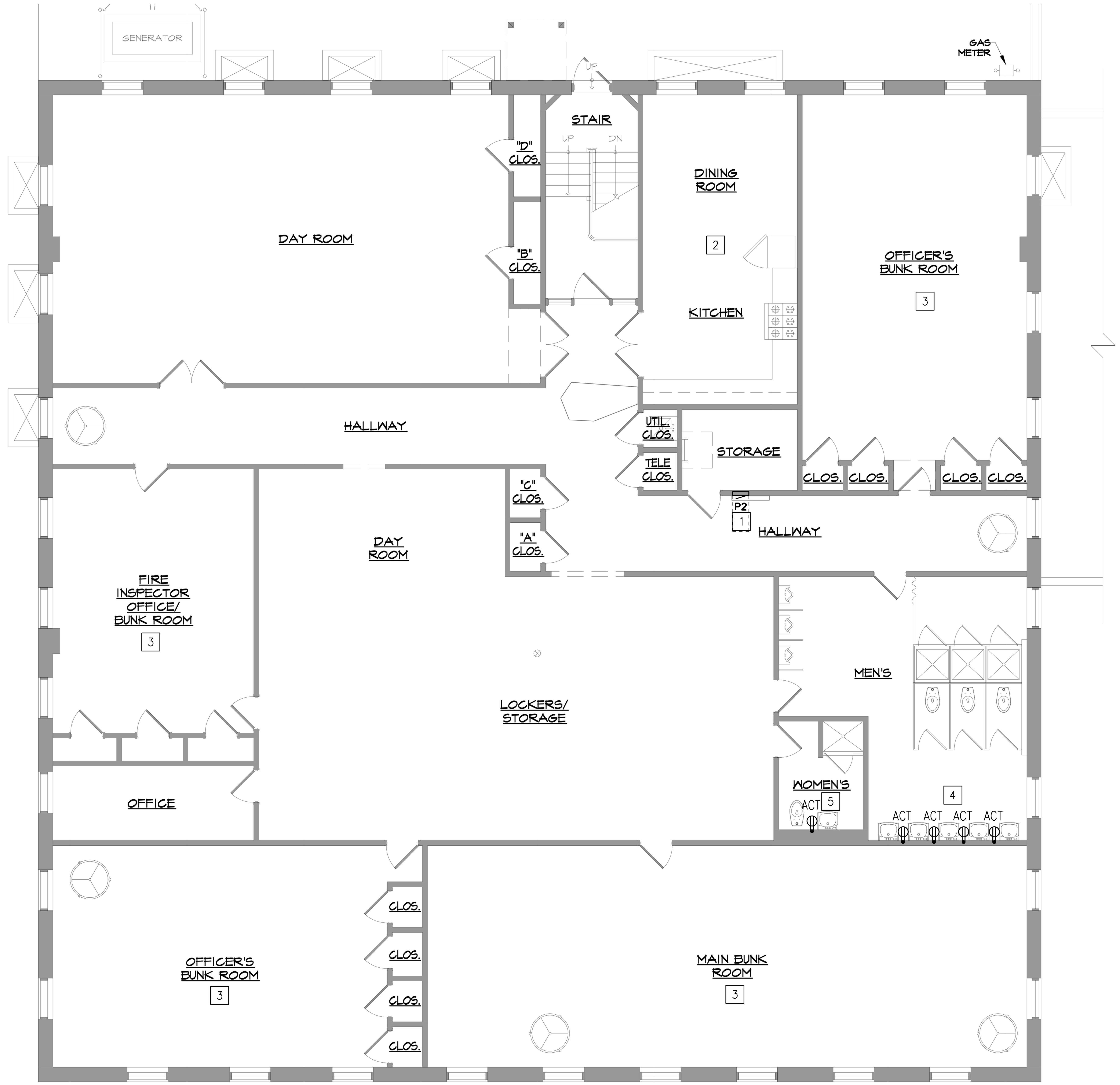
CIVIL ENGINER:
Crossman Engineering
100 Jefferson Blvd. Suite 200
Warwick, RI 02888
T: 401.738.5660
W: www.crossmaneng.com

STAMP



Project Title: North Main Fire Station Electrical Upgrade			**Project Number** ----
Location: 151 North Main St. Providence, RI			**Drawing Scale**
Drawing Title: ELECTRICAL POWER PLAN - FIRST FLOOR			**Drawing Number** E101
Issue Date: 10JAN25	**Approved By:** MTO	**Drawn By:** AGE	**Checked By:** MTO

2/22/2025 5:13:42 PM



ELECTRICAL POWER PLAN - SECOND FLOOR

SCALE: 3/16" = 1'-0"

PLAN NORTH

0 4' 8' 12'

SCALE: 3/16"=1'-0"

KEYNOTES

1. REPLACE EXISTING PANEL WITH NEW PANEL THROUGH DEMOLITION OF OLD PANEL AND PROVIDING NEW PANEL PER E002 AND E201. PROVIDE METAL OR MATCHING SHEETROCK WALL TO ENCLOSE OPENING THAT MAY REMAIN AROUND PANEL AFTER PANEL INSTALLATION. PROVIDE ARC-FLASH WARNING ON PANEL PER NEC 110.21(B). PROVIDE CLEARANCE PER NEC 110.26.
2. PROVIDE GFCI RECEPTACLES TO REPLACE 120V RECEPTACLES IN KITCHEN. ENSURE 208V RECEPTACLES ARE SUPPLIED BY GFCI CIRCUIT BREAKERS IN KITCHEN.
3. ENSURE OUTLETS IN SLEEPING QUARTERS ARE PROTECTED BY AFCI CIRCUIT BREAKERS.
4. PROVIDE GFCI RECEPTACLES TO REPLACE 120V RECEPTACLES IN BATHROOM.
5. REPLACE FACEPLATE FOR RECEPACLE/SWITCH. ENSURE RECEPTACLE IS GFCI PROTECTED.

Revision:	Date:

CONSULTANTS

MEP ENGINEER:
Andre Gill Engineering, LLC
40 Overlea Road
North Smithfield, RI 02896
T: 401.441.3414
W: www.andregillengineering.com

CIVIL ENGINER:
Crossman Engineering
100 Jefferson Blvd. Suite 200
Warwick, RI 02888
T: 401.738.5660
W: www.crossmaneng.com

STAMP

NOT FOR CONSTRUCTION

Project Title:	Project Number
North Main Fire Station Electrical Upgrade	----
Location: 151 North Main St. Providence, RI	**Drawing Scale**
Drawing Title: ELECTRICAL POWER PLAN - SECOND FLOOR	**Drawing Number** E102

Issue Date:	Approved By:	Drawn By:	Checked By:
10JAN25	MTO	AGE	MTO

2/22/2025 5:13:48 PM

2/22/2025 5:13:52 PM

P1 [1]

ROOM		**VOLTS** 208Y/120V 3P 4W		**AIC** 10,000	
MOUNTING FLUSH		**BUS AMPS** 125		**MAIN BKR** MLO	
FED FROM MDP		**NEUTRAL** 100%		**LUGS** FEEDTHRU	
NOTE					

CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C
1	15/1	UNKNOWN	0			2	15/1	UNKNOWN	0		
3	15/1	UNKNOWN		0		4	15/1	UNKNOWN		0	
5	15/1	UNKNOWN			0	6	15/1	UNKNOWN			0
7	15/1	UNKNOWN	0			8	15/1	UNKNOWN	0		
9	15/1	UNKNOWN		0		10	15/1	UNKNOWN		0	
11	15/1	UNKNOWN			0	12	15/1	UNKNOWN			0
13	15/1	UNKNOWN	0			14	15/1	UNKNOWN	0		
15	15/1	UNKNOWN		0		16	15/1	UNKNOWN		0	
17	15/1	UNKNOWN			0	18	15/1	UNKNOWN			0
19	15/1	UNKNOWN	0			20	20/1	SPARE	0		
21	15/1	UNKNOWN		0		22	15/1	UNKNOWN		0	
23	15/1	UNKNOWN			0	24	15/1	UNKNOWN			0
25	15/1	UNKNOWN	0			26	15/1	UNKNOWN	0		
27	15/1	UNKNOWN		0		28	15/1	UNKNOWN		0	
29	15/1	UNKNOWN			0	30	15/1	UNKNOWN			0
31	15/1	UNKNOWN	0			32	15/1	UNKNOWN	0		
33	15/1	UNKNOWN		0		34	15/1	UNKNOWN		0	
35	15/1	UNKNOWN			0	36	15/1	UNKNOWN			0
37	15/1	UNKNOWN	0			38	15/1	UNKNOWN	0		
39	15/1	UNKNOWN		0		40	15/1	UNKNOWN		0	
41	20/1	SPARE			0	42	20/1	SPACE			0
		LUG LOAD: PANEL P1 (SECTION 2)	0	0	0			TOTAL CONNECTED KVA BY PHASE	0	0	0

CONN KVA CALC KVA — CALC KVA

TOTAL LOAD 0
BALANCED 3-PHASE LOAD 0 A

P1 (SECTION 2) [1]

ROOM		**VOLTS** 208Y/120V 3P 4W		**AIC** 10,000	
MOUNTING FLUSH		**BUS AMPS** 125		**MAIN BKR** MLO	
FED FROM P1		**NEUTRAL** 100%		**LUGS** STANDARD	
NOTE					

CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C
43	15/1	UNKNOWN	0			44	15/1	UNKNOWN	0		
45	15/1	UNKNOWN		0		46	15/1	UNKNOWN		0	
47	15/1	UNKNOWN			0	48	15/1	UNKNOWN			0
49	15/1	UNKNOWN	0			50	15/1	UNKNOWN	0		
51	15/1	UNKNOWN		0		52	15/1	UNKNOWN		0	
53	15/1	UNKNOWN			0	54	15/1	UNKNOWN			0
55	15/1	UNKNOWN	0			56	15/1	UNKNOWN	0		
57	15/1	UNKNOWN		0		58	15/1	UNKNOWN		0	
59	20/1	SPACE			0	60	20/1	SPACE			0
61	20/1	SPACE	0			62	20/1	SPACE	0		
63	20/1	SPACE		0		64	20/1	SPACE		0	
65	20/1	SPACE			0	66	20/1	SPACE			0
								TOTAL CONNECTED KVA BY PHASE	0	0	0

CONN KVA CALC KVA — CALC KVA

TOTAL LOAD 0
BALANCED 3-PHASE LOAD 0 A

P2 [1] [2]

ROOM		**VOLTS** 208Y/120V 3P 4W		**AIC** 10,000	
MOUNTING FLUSH		**BUS AMPS** 125		**MAIN BKR** MLO	
FED FROM MDP		**NEUTRAL** 100%		**LUGS** STANDARD	
NOTE					

CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C
1	15/1	UNKNOWN	0			2	15/1	UNKNOWN	0		
3	15/1	UNKNOWN		0		4	15/1	UNKNOWN		0	
5	15/1	UNKNOWN			0	6	15/1	UNKNOWN			0
7	15/1	UNKNOWN	0			8	15/1	UNKNOWN	0		
9	15/1	UNKNOWN		0		10	15/1	UNKNOWN		0	
11	15/1	UNKNOWN			0	12	15/1	UNKNOWN			0
13	15/1	UNKNOWN	0			14	15/1	UNKNOWN	0		
15	15/1	UNKNOWN		0		16	15/1	UNKNOWN		0	
17	15/1	UNKNOWN			0	18	15/1	UNKNOWN			0
19	15/1	UNKNOWN	0			20	15/1	UNKNOWN	0		
21	15/1	UNKNOWN		0		22	15/1	UNKNOWN		0	
23	15/1	UNKNOWN			0	24	15/1	UNKNOWN			0
25	15/1	UNKNOWN	0			26	15/1	UNKNOWN	0		
27	15/1	UNKNOWN		0		28	15/1	UNKNOWN		0	
29	15/1	UNKNOWN			0	30	15/1	UNKNOWN			0
31	15/1	UNKNOWN	0			32	15/1	UNKNOWN	0		
33	15/1	UNKNOWN		0		34	15/1	UNKNOWN		0	
35	15/1	UNKNOWN			0	36	15/1	UNKNOWN			0
37	15/1	UNKNOWN	0			38	15/1	UNKNOWN	0		
39	15/1	UNKNOWN		0		40	15/1	UNKNOWN		0	
41	20/1	SPARE			0	42	20/1	SPARE			0
								TOTAL CONNECTED KVA BY PHASE	0	0	0

CONN KVA CALC KVA — CALC KVA

TOTAL LOAD 0
BALANCED 3-PHASE LOAD 0 A

PG [1]

ROOM		**VOLTS** 208Y/120V 3P 4W		**AIC** 10,000	
MOUNTING FLUSH		**BUS AMPS** 100		**MAIN BKR** MLO	
FED FROM MDP		**NEUTRAL** 100%		**LUGS** STANDARD	
NOTE					

CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C
1	20/1	(E) LIGHTS	0			2	20/2	(E) DAY ROOM AC	0		
3	20/1	(E) RECEPTACLES		0		4	|			0	
5	20/1	(E) ENG 7			0	6	20/1	(E) AC KITCHEN OUTLET			0
[3] 7	30/2	(E) DRYER	0			8	20/1	(E) TREADMILL RECEPTACLE	0		
9	|			0		10	30/2	(E) EXTRACTOR		0	
11	20/1	(E) OFFICERS AC			0	12	|				0
13	20/1	SPARE	0			14	20/1	SPARE	0		
15	20/1	SPARE		0		16	20/1	SPARE		0	
17	20/1	SPARE			0	18	20/1	SPARE			0
19	20/1	SPACE	0			20	20/1	SPACE	0		
21	20/1	SPACE		0		22	20/1	SPACE		0	
23	20/1	SPACE			0	24	20/1	SPACE			0
								TOTAL CONNECTED KVA BY PHASE	0	0	0

CONN KVA CALC KVA — CALC KVA

TOTAL LOAD 0
BALANCED 3-PHASE LOAD 0 A

MDP

ROOM		**VOLTS** 208Y/120V 3P 4W		**AIC** 22,000	
MOUNTING FLUSH		**BUS AMPS** 225		**MAIN BKR** MLO	
FED FROM ATS		**NEUTRAL** 100%		**LUGS** STANDARD	
NOTE					

CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C
1	20/2	(E) OIL BURNER	0			2	20/1	(E) DRYER RECEPTACLE	0		[3]
3	|			0		4	20/1	SPARE		0	
5	50/2	(E) VEHICLE EXHAUST			0	6	20/1	SPARE			0
7	|		0			8	20/1	SPARE	0		
9	50/2	SPARE		0		10	20/1	SPARE		0	
11	|				0	12	20/1	SPARE			0
13	20/1	SPACE	0			14	20/1	SPACE	0		
15	20/1	SPACE		0		16	20/1	SPACE		0	
17	20/1	SPACE			0	18	20/1	SPACE			0
19	100/3	PANEL PG	0			20	20/1	SPACE	0		
21	|			0		22	20/1	SPACE		0	
23	|				0	24	20/1	SPACE			0
25	125/3	PANEL P1	0			26	125/3	PANEL P2	0		
27	|			0		28	|			0	
29	|				0	30	|				0
								TOTAL CONNECTED KVA BY PHASE	0	0	0

CONN KVA CALC KVA — CALC KVA

TOTAL LOAD 0
BALANCED 3-PHASE LOAD 0 A

PANEL SCHEDULES (1)
SCALE: NTS

GENERAL SHEET NOTES

1. LOADS ON PANELS ARE EXISTING TO REMAIN. THERE ARE NO NEW LOADS ON PANELS.
2. CONTRACTOR MUST TRACE BRANCH CIRCUITS, PROVIDE UPDATED PANEL SCHEDULES IN PANELS, AND LABEL OUTLETS WITH PANEL AND CIRCUIT NUMBER.

KEYNOTES

[1] DISCONNECT EXISTING CIRCUITS FROM EXISTING PANEL PRIOR TO REPLACEMENT. MAINTAIN EXISTING CIRCUITS TO BE TERMINATED IN NEW PANEL. TERMINATE EXISTING CIRCUITS IN NEW PANEL. PROVIDE ADDITIONAL WIRE AND CONDUIT AS NEEDED TO TERMINATE IN NEW PANEL.

[2] PROVIDE AFCI CIRCUIT BREAKERS FOR CIRCUITS WHICH SUPPLY OUTLETS IN THE SLEEPING QUARTERS.

[3] PROVIDE A GFCI CIRCUIT BREAKER.

Revision:	Date:

CONSULTANTS

MEP ENGINEER:
Andre Gill Engineering, LLC
40 Overlea Road
North Smithfield, RI 02896
T: 401.441.3414
W: www.andregillengineering.com

CIVIL ENGINER:
Crossman Engineering
100 Jefferson Blvd. Suite 200
Warwick, RI 02888
T: 401.738.5660
W: www.crossmaneng.com

STAMP
NOT FOR CONSTRUCTION

Project Title: North Main Fire Station Electrical Upgrade	**Project Number** ----
Location: 151 North Main St. Providence, RI	**Drawing Scale**
Drawing Title: PANEL SCHEDULES	**Drawing Number** E201
Issue Date: 10JAN25 / **Approved By:** MTO / **Drawn By:** AGE	**Checked By:** MTO

04 Branch Avenue Fire Station

10 Branch Avenue, Providence, RI 02904

04 Branch Avenue Fire Station - Architectural

Overall Condition: Fair to poor

Description:
This two-story fire station features a partial basement and has an approximate area of 16,133 square feet. The partial basement houses essential utilities like the water heater and boiler, along with a garage for vehicle parking. On the first floor, you'll find four apparatus bays, several storage spaces, an exercise area, and a multi-user men's restroom. The second floor includes crew facilities such as bunk rooms, offices, a kitchen, a day room, restrooms, and access to the rooftop patio.

Summary:
The most urgent concerns at this location include the poor condition of the flat roofs, flat roof guard rail, gutter and downspouts and the entry soffit.

High Priority:	Medium Priority:	Low Priority:
▪ Entry Soffit ▪ Gutter and Downspouts ▪ Flat Roofs ▪ Flat Roof Guard Rail	▪ Peeling Paint ▪ Bubbling Substrate ▪ Window Replacement ▪ Interior Leaks ▪ ADA Restroom	▪ Overhead Door Seals ▪ Entry Door ▪ Equipment Failures ▪ Privacy Fence

Building Code Review:

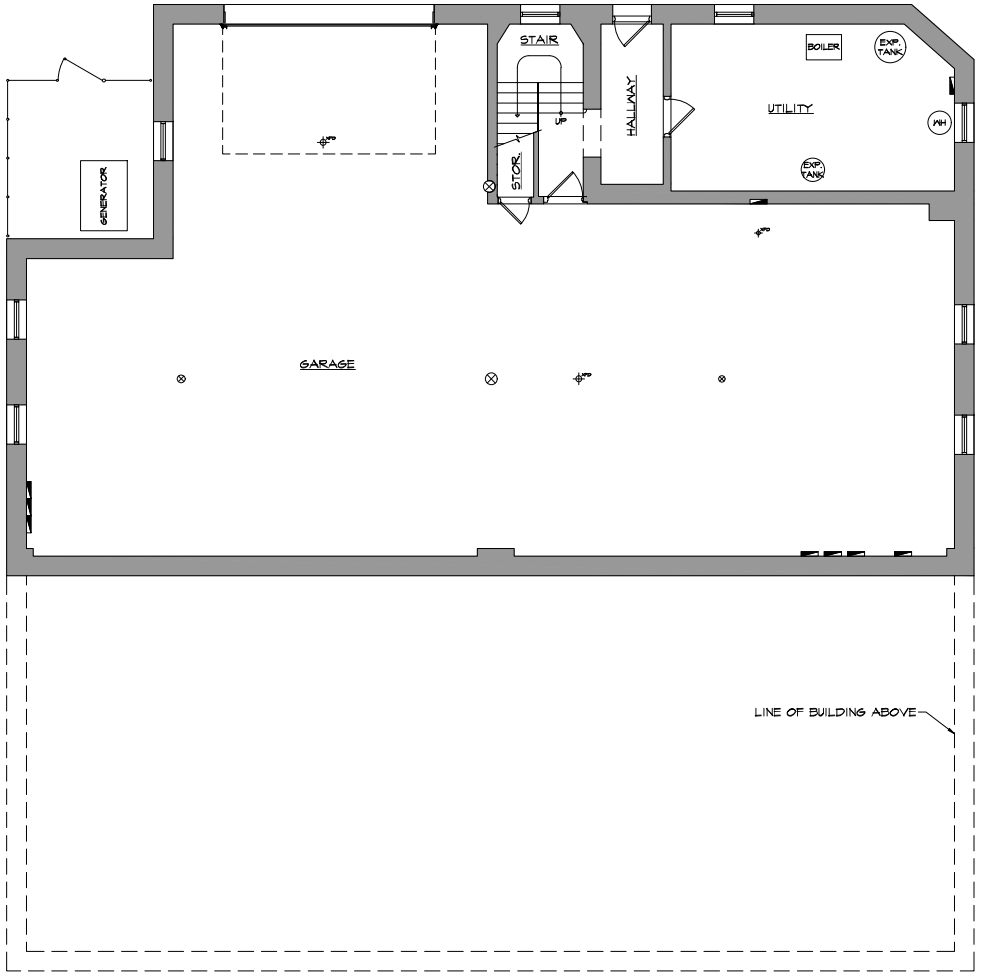
# of Stories above grade: 2 Building Area: Approx 16,133 sf Sprinkler System: None

Construction Type: Assumed type 3B; Primarily masonry wall construction with steel/ concrete floor construction and a wood frame pitched roof.

Occupancy Classification: Mixed Use; Business [B], Residential [R-2] & Storage [S-2]

Occupancy Load:

Basement:		
Storage [S-2] (Storage) =	3,376 sf / 300 Gross =	12 Occupants
Total Basement =		**12 Occupants**
First Floor:		
Storage [S-2] (App. Bay) =	5,870 sf / 200 Gross =	30 Occupants
Storage [S-2] (Storage) =	591 sf / 300 Gross =	2 Occupants
Total First Floor =		**32 Occupants**
Second Floor:		
Business [B] =	4,785 sf / 150 Gross =	32 Occupants
Residential [R-2] =	1,138 sf / 200 Gross =	6 Occupants
Total Second Floor =		**38 Occupants**
Total Building Occupant Load =		**82 Occupants**



EXISTING BUILDING DATA

EXISTING BASEMENT AREA:	3,376± SF
EXISTING FIRST FLOOR AREA:	6,625± SF
EXISTING SECOND FLOOR AREA:	6,132± SF
TOTAL BUILDING AREA:	16,133± SF

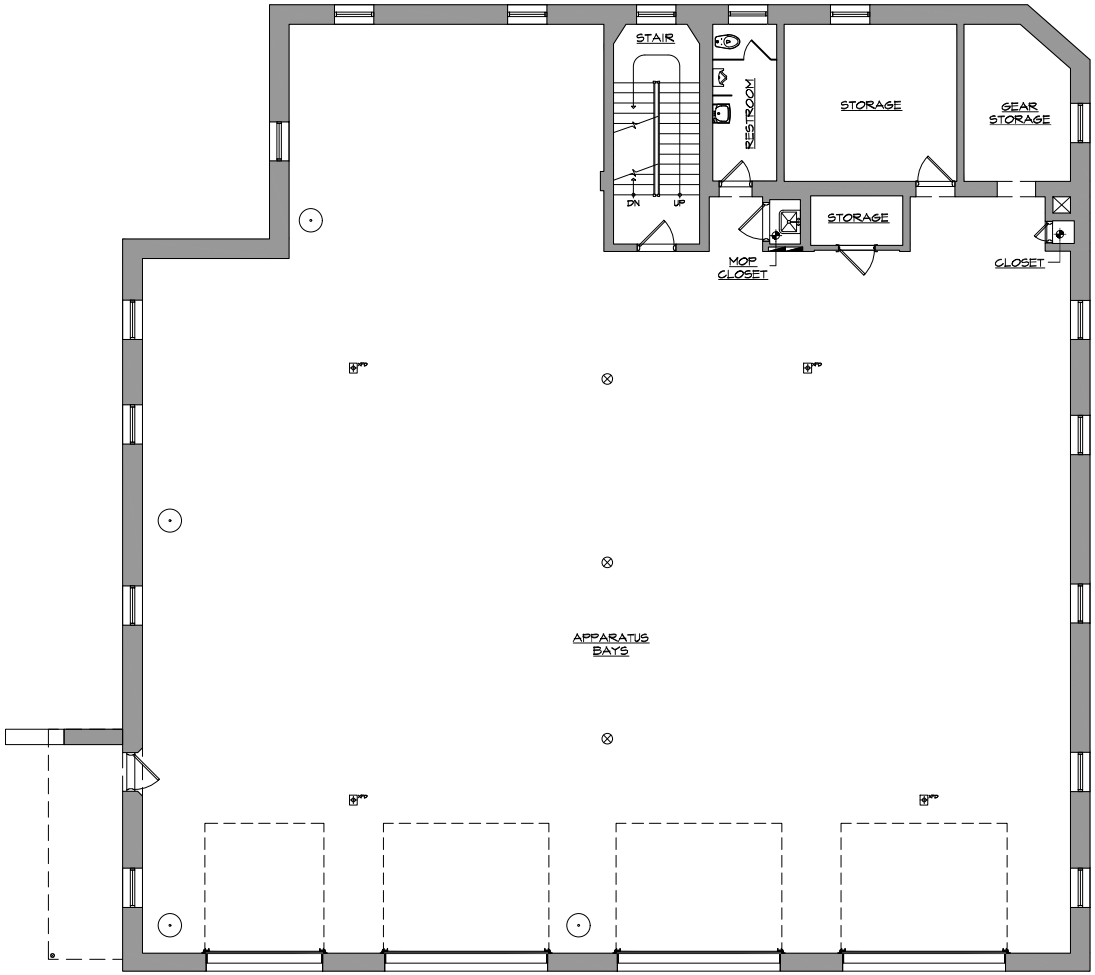
AHARONIAN & ASSOCIATES, INC. ARCHITECTS

EXISTING BASEMENT FLOOR PLAN

SCALE: 3/32"=1'-0"

N

10 BRANCH AVENUE
PROVIDENCE, RHODE ISLAND
SEPTEMBER 12, 2024



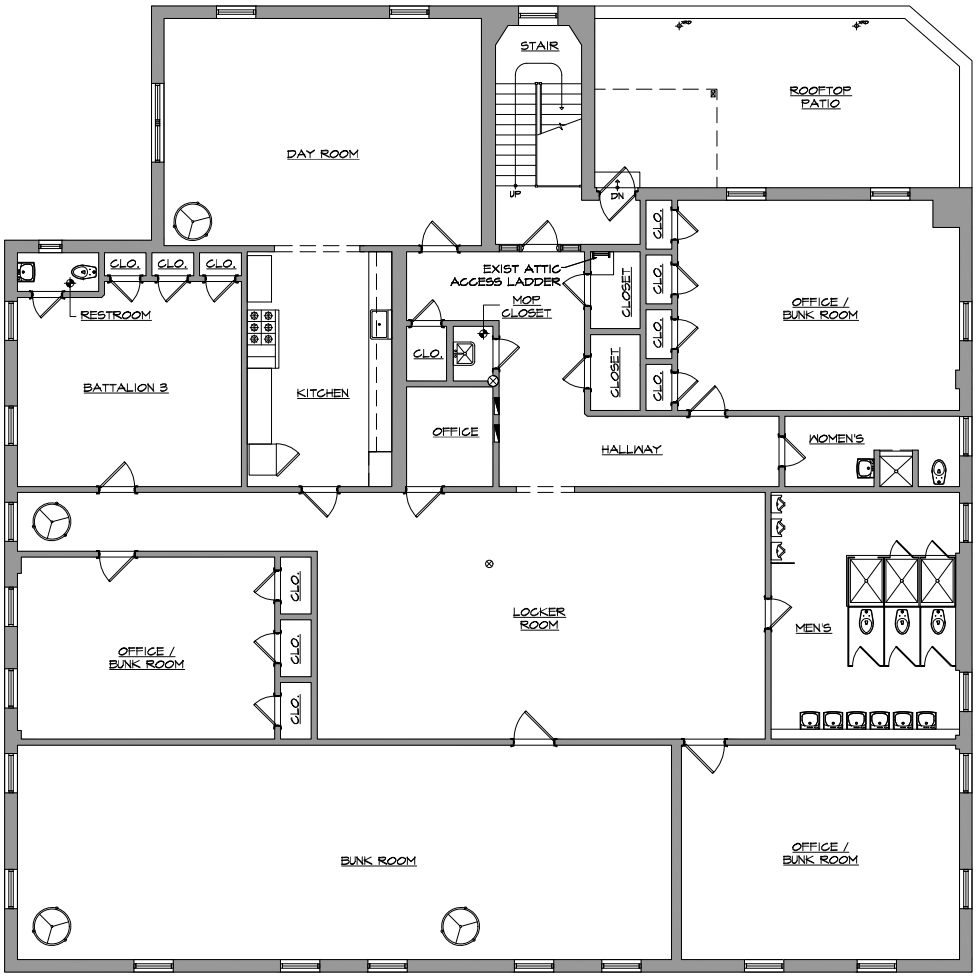
AHARONIAN & ASSOCIATES, INC. ARCHITECTS

EXISTING FIRST FLOOR PLAN

SCALE: 3/32"=1'-0"

N

10 BRANCH AVENUE
PROVIDENCE, RHODE ISLAND
SEPTEMBER 12, 2024



AHARONIAN & ASSOCIATES, INC. ARCHITECTS

EXISTING SECOND FLOOR PLAN

SCALE: 3/32"=1'-0"

N

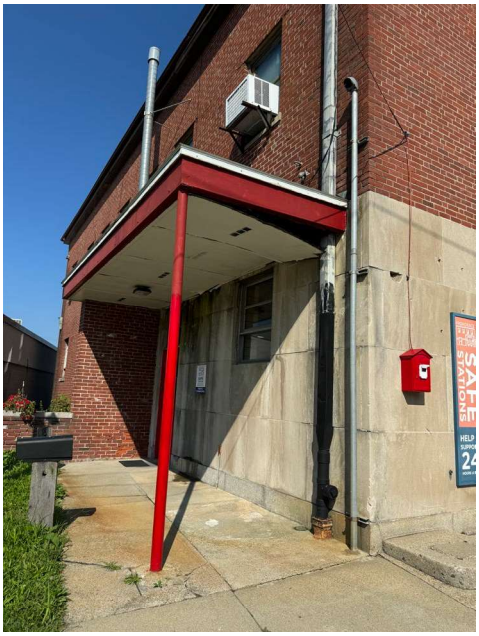
10 BRANCH AVENUE
PROVIDENCE, RHODE ISLAND
SEPTEMBER 12, 2024

High Priority Items

Architectural:

Entry Soffit – *Emergency Response Performance & Life Safety*

- Issue: The entry soffit is deteriorating in several areas and appears to be leaking. Reference Structural Report for additional information.
- Recommendation: Investigate the canopy for the source of water infiltration. Repair as necessary. Replace the entire soffit with a vented vinyl system. Approximately 118 SF.



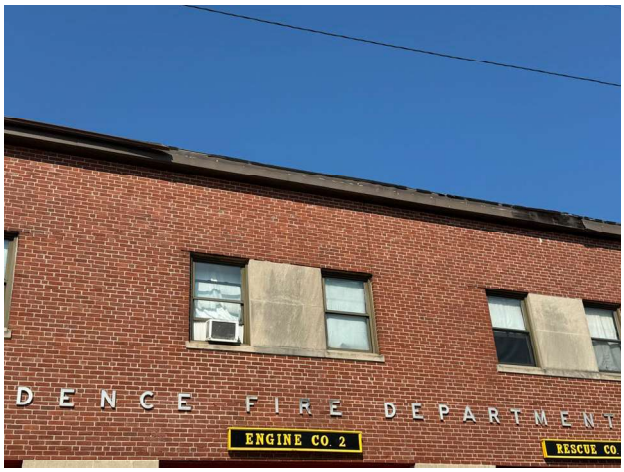
High Priority Items

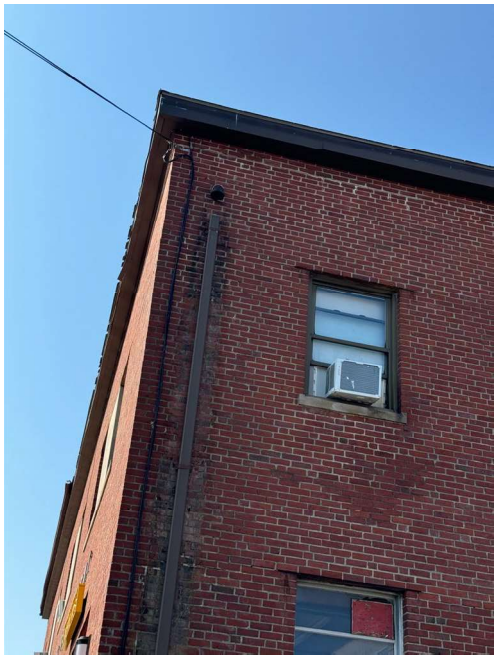
Architectural Continued:

Gutter and Downspouts – *Quality of Life*

- Issue: Gutters and downspouts throughout the building not working properly to deter water away from the structure. Flashing is in need of replacement. This is causing water intrusion in various locations and deterioration of the exterior façade.

- Recommendation: Remove and replace gutters and downspouts in its entirety throughout the building. Slope gutters appropriately and provide additional downspout locations for proper drainage. Provide flashing from the roof into gutters. Approximately 335 LF gutter and 8 downspouts.





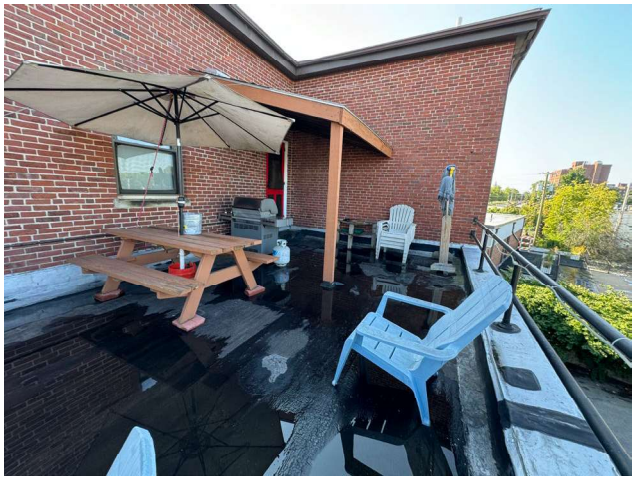
High Priority Items

Architectural Continued:

Flat Roofs – *Life Safety*

- Issue: Rooftop patio flat roof and roof drains are leaking into the living and working areas below. This is causing severe damage to the roof, ceiling, wall, and floor structure below.

- Recommendation: Replace the rooftop patio flat roofs, including roof drains. Several roof joists would need replacement due to water infiltration. Replace the membrane roof systems including all damaged plywood, insulation, and structure, approximately 446 SF.



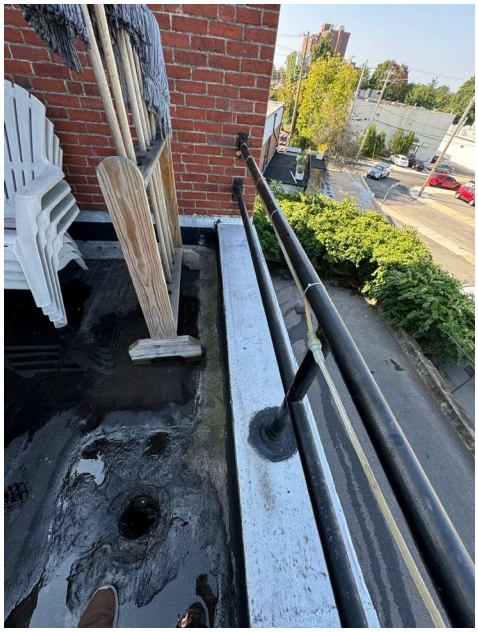
High Priority Items

Architectural Continued:

Flat Roof Guard Rail – *Life Safety*

- Issue: Rooftop patio guard rail does not meet current safety and building code regulations. This is a safety concern due to the height from grade.

- Recommendation: Replace the rooftop patio railing with a code-compliant guard rail; top rail to be a min 42" tall with cross rails per code to eliminate the risk of falling off the roof. Secure new guard rail to existing structure.
  Guard rail is approximately 45 LF.



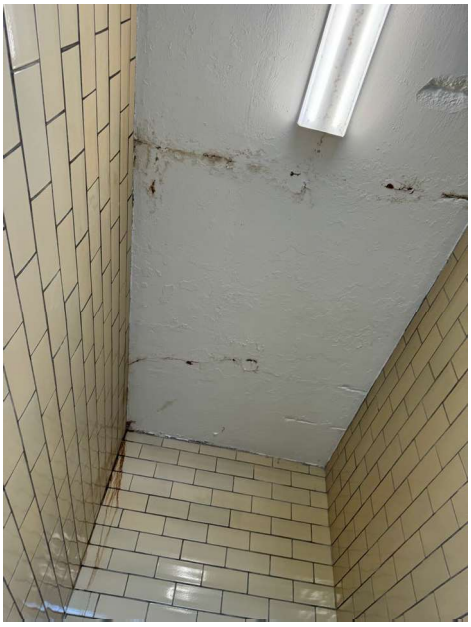
Medium Priority Items

Architectural:

Peeling Paint – *Quality of Life*

- Issue: Several areas in the basement walls, bunk room walls & ceiling and office walls have peeling paint, likely due to moisture intrusion.

- Recommendation: Scrape peeling paint from all surfaces, clean, and prep areas for new finish application. Provide new appropriate paint coating for high-humidity areas.



Medium Priority Items

Architectural Continued:

Bubbling Substrate – *Quality of Life*

- Issue: Several window jambs in the bunk rooms and office have the substrate and wall finish bubbling, some areas appear to contain mold.

- Recommendation: Remove and replace existing substrate and re-finish window jambs. Approximately 15 locations.

Medium Priority Items

Architectural Continued:

Window Replacement – *Quality of Life & Life Safety*

- Issue: Several windows in the basement, garage, office, day room and bunk room are cracked, not operable or have broken seals. Basement windows have no lock which increases risk of break-ins.

- Recommendation: Replace broken windows at a minimum – Recommend full replacement. Approximately 15 windows are damaged, 51 windows total.

Medium Priority Items

Architectural Continued:

Interior Leaks – *Qaulity of Life*

- Issue: Several areas throughout the building, such as the lower garage, office, bunk room, hallways and bathroom have active leaks.

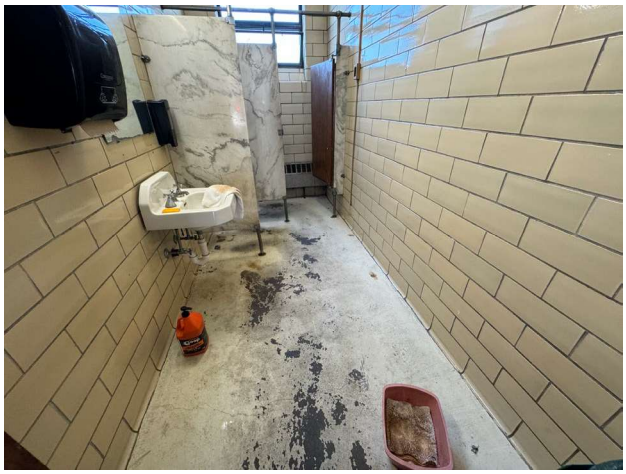
- Recommendation: Once leaks are addressed, remove water-damaged sections such as joists, any damaged plywood, insulation, and substrate, and patch area to match existing.

Medium Priority Items

Architectural Continued:

ADA Restroom – *Life Safety*

- Issue: First-floor restroom is not ADA accessible.
- Recommendation: Renovate first floor restroom and surrounding area to be ADA accessible. This will involve new partitions and re-working of plumbing fixtures. Restroom can be designed as a unisex, single-user bathroom for public use, and could also serve as a de-contamination room off the apparatus bay by adding a shower.

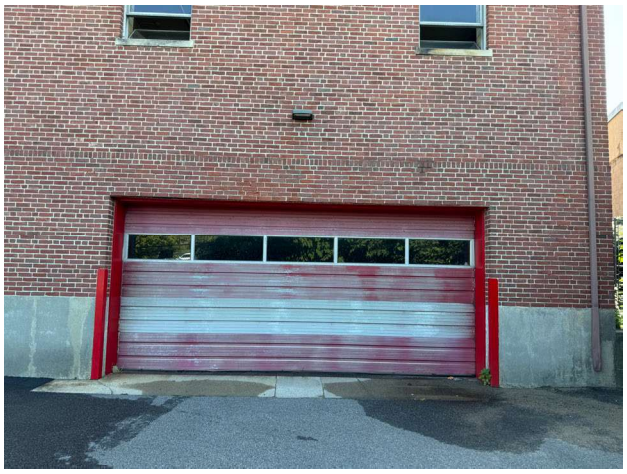


Low Priority Items

Architectural:

Overhead Door Seals – *Quality of Life*

- Issue: Several seals at all overhead doors are nonexistent or heavily worn along the perimeter causing gaps for rodent intrusion.
- Recommendation: Replace door seals and weatherstripping at all overhead doors. (Quantity : 5)



Entry Door – *Emergency Response Performance & Life Safety*

- Issue: Entry door is difficult to open and doesn't close or lock securely.
- Recommendation: Remove and replace the existing entry door, frame, and hardware. Key as required to match the rest of the building.

Low Priority Items

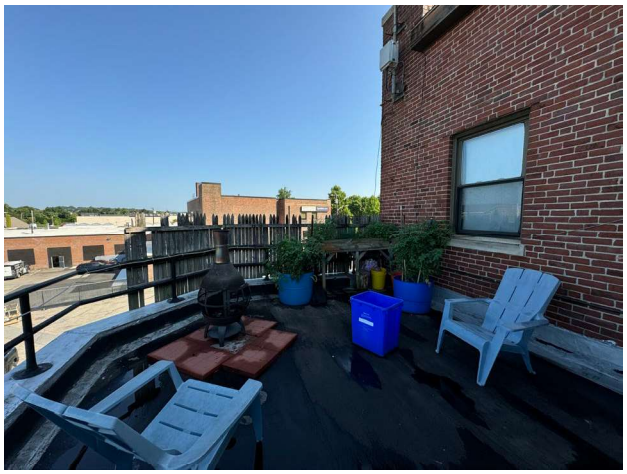
Architectural Continued:

Equipment Failures – *Quality of Life & Emergency Response Performance*

- Issue: The Extractor is out of service and often needs repair.
- Recommendation: Repair the extractor unit to proper working order. Replace if unable to repair. Installation and mounting shall be remediated in accordance with the manufacturer's recommendation.

Privacy Fence – *Quality of Life & Life Safety*

- Issue: Rooftop wood privacy fence is deteriorating.
- Recommendation: Remove and replace the existing fence with a new 5' high vinyl fence. Approximately 15 LF.



04. Branch Avenue Fire Station - Structural

Overall Condition: The building structure is generally in fair condition.

Description: The two-story building faces east, refer to Attachment D, photos D1 to D4. The building is framed with concrete slabs, concrete-encased steel beams, girders, and steel posts. The building has a wood-framed hip roof that was installed over the original low-slope roof. The exterior walls of the building consist of solid brick with a limestone veneer at the east side. The building is supported by a concrete foundation.

Summary of Items with High Priority Repair Recommendations

The conditions at this fire station that have a High Priority repair recommendation are summarized below. Please note, the detailed observations and repair recommendations for all structural items are listed in the Observations and Repair Recommendations section.

- Patch or replace the broken and shifted bricks at the exterior of the building. Repoint the brick as needed.
- Replace the 6 foot 6 inch by 19 foot ceiling at the south canopy. Address any leaks in the canopy roof that may contribute to the decay of the ceiling.
- Patch the areas of spalled limestone at the exterior of the building.
- Replace the window and windowsill at the first-floor, north-facing window. Replace the lintel with a galvanized steel lintel.
- Patch the shrinkage cracks in the foundation at the utility room to prevent water infiltration.
- Replace the patio roofing and replace the flashing as required around the perimeter of the patio roof to prevent continued water infiltration through the roof. Repair any loose concrete at the ceiling of the men's room and the gear storage room.
- Repair or replace the roofing and flashing as required that have allowed rainwater to infiltrate the roof at the northwest corner of the roof.

Observations and Repair Recommendations

The following are the exterior/interior observations and recommended repairs:

HIGH PRIORITY

1. *Observation* – The exterior brick wythe was damaged at several locations on the building. The brick above the overhead door designated as Ladder Co. 7 was broken due to impact, refer to photos D5 and D6. At the northeast corner of the building, many bricks were cracked and shifted as a result of brick expansion due to the absence of expansion joints

in the walls, refer to photos D7 and D8. At the northeast and southeast corners of the building, the top three courses of brick had shifted outward due to differential expansion of the bricks near the roofline, refer to photos D9 and D10. Mortar was missing in various mortar joints on all four sides of the building. The broken and loose bricks create an unsafe condition.

Recommendation – Patch or replace the damaged bricks. Repoint the brick as needed.

2. *Observation* – The canopy at the southeast corner of the building was in poor condition, refer to photos D11 and D12. The plywood ceiling panels at the south canopy were decayed and partially detached. The partially detached ceiling creates an unsafe condition. See Architectural Report for additional information.

   Recommendation – Replace the 6 foot 6 inch by 19 foot ceiling at the canopy. Address any leaks in the canopy roof that may contribute to the decay of the ceiling.

3. *Observation* – The limestone veneer at the east wall was spalled at several locations due to rusting of the embedded steel anchors, refer to photos D13 to D16. Several of the areas of spalled limestone had been patched in the past. The loose pieces of limestone create an unsafe condition.

   Recommendation – Patch the areas of spalled limestone.

4. *Observation* – A portion of the limestone windowsill was missing at the first-floor window at the north wall of the apparatus room, refer to photos D17 and D18. The missing sill allowed rainwater to infiltrate the wall assembly. Efflorescence around the perimeter of the window indicates inadequate flashing around the window. Continued water infiltration will result in structural damage.

   Recommendation – Replace the window, windowsill, and flashing. Replace the lintel with a galvanized steel lintel.

5. *Observation* – The concrete foundation had several shrinkage cracks. The shrinkage crack at the northwest 45-degree corner of the building allows rainwater to infiltrate to the utility room, refer to photos D19 and D20. Continued water infiltration will lead to problems in the utility room.

   Recommendation – Patch the shrinkage cracks in the concrete foundation at the utility room.

6. *Observation* – Water infiltration through the patio roof caused the concrete-encased steel framing/steel rebar to rust, which created stains and cracked concrete on the ceilings in the bathroom and the gear storage room, refer to photos D21 to D24. Continued water infiltration through the patio roof will result in additional damage to the concrete ceiling.

Recommendation – Replace the patio roofing and replace the flashing as required around the perimeter of the patio roof to prevent continued water infiltration. Remove any loose concrete around the rusted steel components. Patch the ceilings as needed.

7. *Observation* – Water infiltration through the high roof has caused water damage to the northwest office/bunk room, refer to photos D25 and D26. Continued water infiltration through the high roof will result in structural damage.

   Recommendation – Repair or replace the roofing conditions that have allowed rainwater to infiltrate the roof at the northwest corner of the roof.

MEDIUM PRIORITY

8. *Observation* – The steel lintels above the windows and exterior doors throughout the building were generally in a rusted condition, refer to photos D27 to D30. The rusting and expansion of several of the steel lintels caused the nearby bricks to crack and/or shift. The steel lintel at the overhead door at the west side of the building had significant rust and expansion.

   Recommendation – Replace the lintels with galvanized steel lintels at the time the windows on the building are replaced.

9. *Observation* – The retaining wall at the northeast corner of the building consisted of granite stones on a concrete base, refer to photos D31 to D34. The wall was 15 feet long and a maximum of 3 feet high. The wall was in poor condition. The granite stones were cracked and loose, and the concrete base was spalled.

   Recommendation – Patch the concrete base of the northeast retaining wall. Reattach the granite stones to the concrete base.

10. *Observation* – The retaining wall at the south side of the building consisted of brick with a granite cap. The wall was 10 feet long and 16 inches thick. The wall was in poor condition, refer to photos D35 to D38. Many bricks were loose or missing.

    Recommendation – Repair or replace the south retaining wall.

LOW PRIORITY

11. *Observation* – The concrete slab in the apparatus bays had shrinkage cracks, refer to photos D39 and D40. If the shrinkage cracks are not patched, the concrete at the edges of the cracks will be vulnerable to breakage from wear and tear.

    Recommendation – Patch the cracks in the concrete slab in the apparatus bays.

Attachment D – Branch Avenue Fire Station

	Photo 1 East (front) view of the building.
	Photo 2 North view of the building.

Attachment D – Branch Avenue Fire Station

	Photo 3 West (front) view of the building.
	Photo 4 South view of the building.

Attachment D – Branch Avenue Fire Station

	Photo 5 The brick above the overhead door designated as Ladder Co. 7 was broken.
	Photo 6 The brick above the overhead door designated as Ladder Co. 7 was broken.

Attachment D – Branch Avenue Fire Station

	Photo 7 At the northeast corner of the building, many bricks were cracked and shifted.
	Photo 8 At the northeast corner of the building, many bricks were cracked and shifted.

Attachment D – Branch Avenue Fire Station

	Photo 9 At the northeast corner of the building, the top three courses of brick had shifted outward.
	Photo 10 At the southeast corner of the building, the top three courses of brick had shifted outward.

Attachment D – Branch Avenue Fire Station

	Photo 11 The plywood ceiling panels at the canopy were decayed and partially detached.
	Photo 12 The plywood ceiling panels at the canopy were decayed and partially detached.

Attachment D – Branch Avenue Fire Station

	Photo 13 The limestone veneer was spalled at the embedded steel anchors at several locations.
	Photo 14 The limestone veneer was spalled at the embedded steel anchor.

Attachment D – Branch Avenue Fire Station

	Photo 15 The limestone veneer was spalled at the embedded steel anchor.
	Photo 16 The limestone veneer was spalled at the embedded steel anchor.

Attachment D – Branch Avenue Fire Station

	Photo 17 The north window had a partially missing window sill. Note the efflorescence around the window.
	Photo 18 The north window had a partially missing window sill. Note the efflorescence around the window.

Attachment D – Branch Avenue Fire Station

Photo 19

The northwest corner of the foundation was cracked at the utility room.

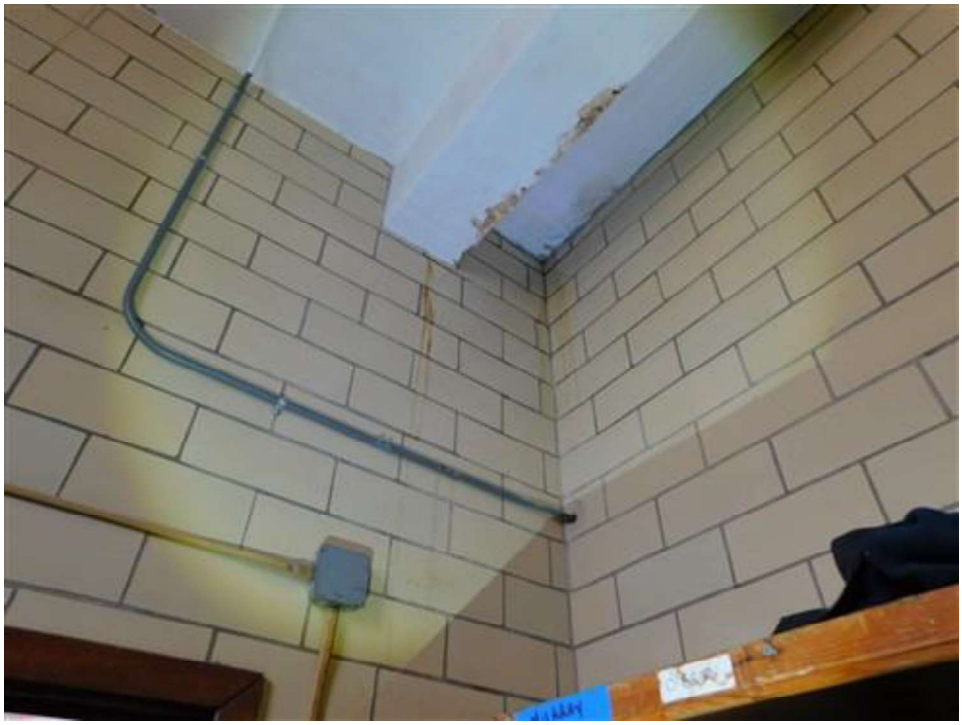
Photo 20

The northwest corner of the foundation was cracked at the utility room.

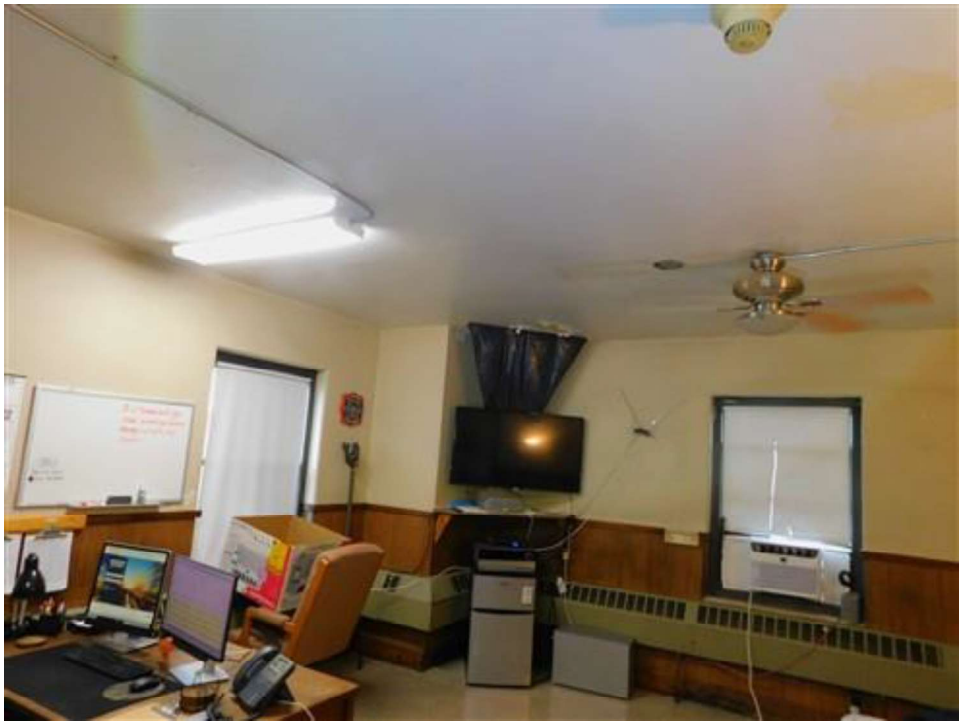
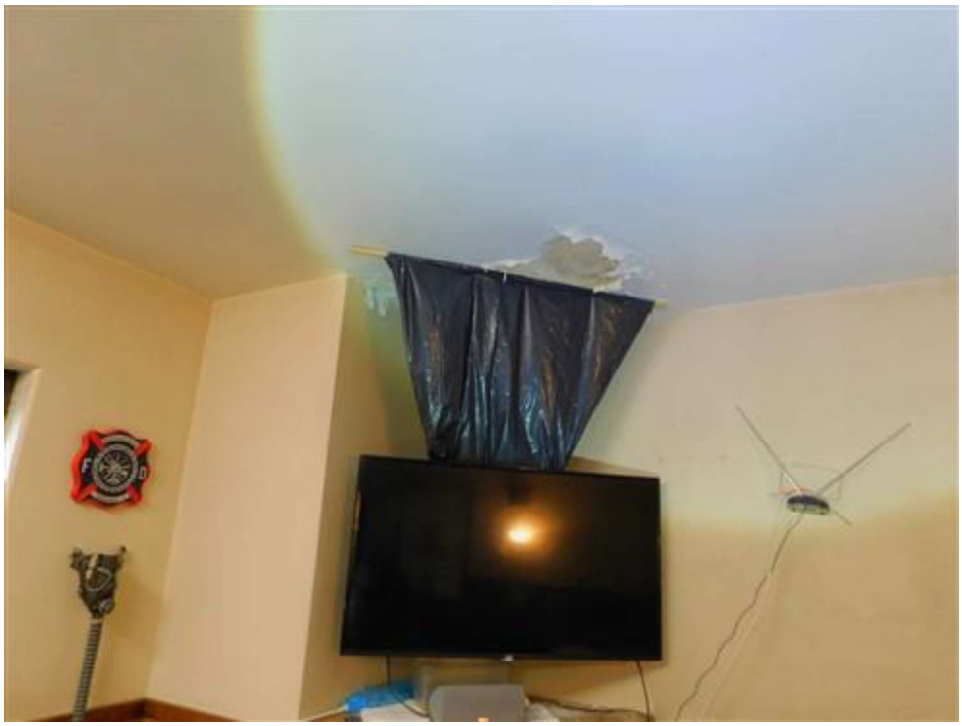
Attachment D – Branch Avenue Fire Station

	Photo 21 The steel rebar in the bathroom ceiling was rusted. The concrete was cracking at the rusted rebar.
	Photo 22 The steel rebar in the bathroom ceiling was rusted. The concrete was cracking at the rusted rebar.

Attachment D – Branch Avenue Fire Station

	Photo 23 Rust-colored water stains on the gear room ceiling and wall.
	Photo 24 The roofing on the patio above the bathroom and gear room was in poor condition.

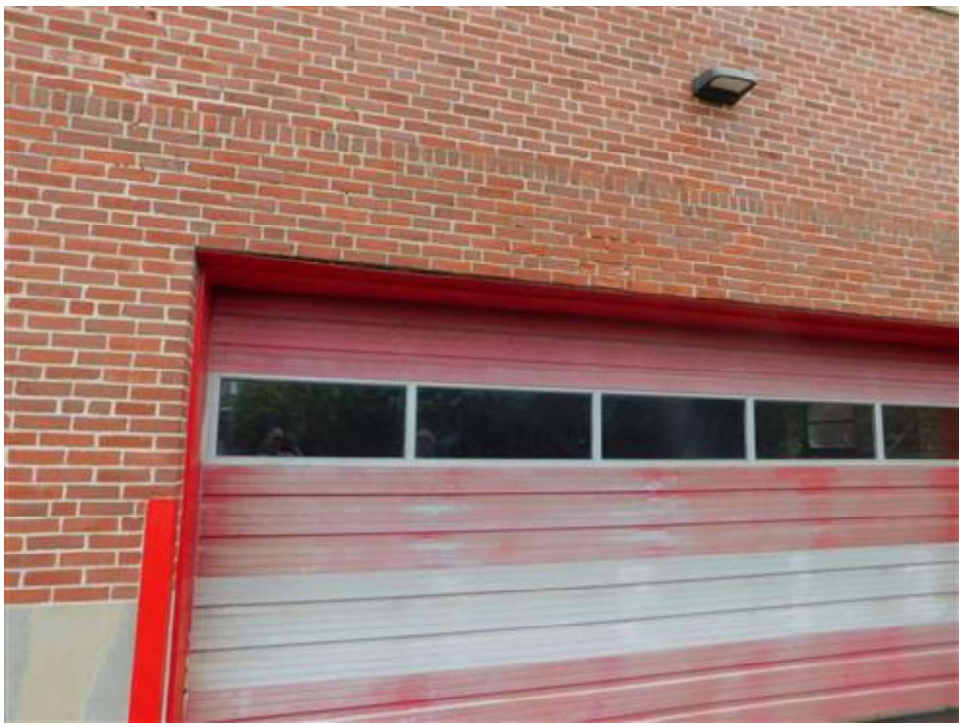
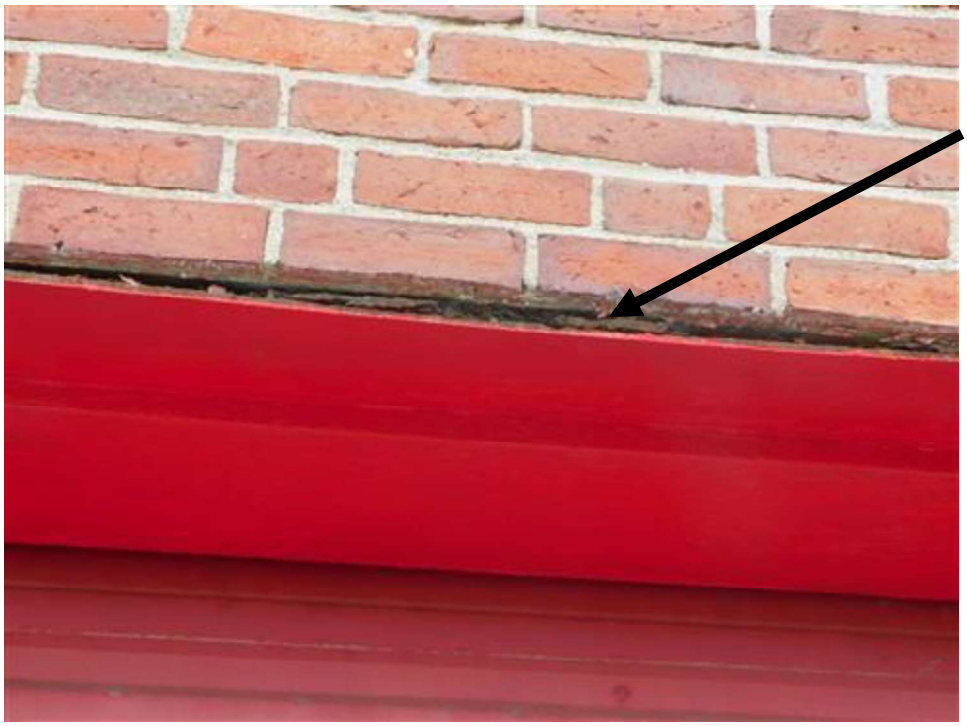
Attachment D – Branch Avenue Fire Station

	Photo 25 Water infiltration has occurred at the northwest corner of the northwest office/bunk room.
	Photo 26 Water infiltration has occurred at the northwest corner of the northwest office/bunk room.

Attachment D – Branch Avenue Fire Station

	Photo 27 Rusted lintel at the south side of the building caused the nearby bricks to shift upward.
	Photo 28 Rusted lintel at the south side of the building caused the nearby bricks to shift upward, as indicated by the gaps in the mortar joints.

Attachment D – Branch Avenue Fire Station

	Photo 29 Rusted lintel at the west overhead door.
	Photo 30 Rusted lintel at the west overhead door.

Attachment D – Branch Avenue Fire Station

	Photo 31 Northeast retaining wall. The granite stones at the top of the wall were cracked and shifted.
	Photo 32 Northeast retaining wall. The granite stones at the top of the wall were cracked and shifted.

Attachment D – Branch Avenue Fire Station

	Photo 33 Northeast retaining wall. The granite stones at the top of the wall were cracked and shifted.
	Photo 34 Northeast retaining wall. The concrete base was spalled.

Attachment D – Branch Avenue Fire Station

	Photo 35 South retaining wall. Many bricks were loose or missing.
	Photo 36 South retaining wall. Many bricks were loose or missing.

Attachment D – Branch Avenue Fire Station

	Photo 37 South retaining wall. Many bricks were loose or missing.
	Photo 38 South retaining wall. Many bricks were loose or missing.

Attachment D – Branch Avenue Fire Station

	Photo 39 Shrinkage cracks in the concrete slab in the apparatus bays.
	Photo 40 Shrinkage cracks in the concrete slab in the apparatus bays. Some cracks had been patched in the past.

MEP & FP ENGINEERING DESIGN ASSESSMENTS

AGE 2433 23DEC24

ABSTRACT BRANCH AVE

This study concludes with a prioritized action plan for addressing each identified code violation, recommending both immediate and long-term solutions. This information will be used to develop budgetary estimates and timelines for remediation and are provided to support informed decision-making by facility stakeholders and ensure regulatory compliance while enhancing overall building safety and functionality.

André Gill, PE

Andre Gill Engineering, LLC

TABLE OF CONTENTS

Assessment MEP & FP Engineering Project Summary

1. EXECUTIVE SUMMARY

1.1. The criteria for this section of the facilities assessment, specifically focuses on Mechanical, Electrical, Plumbing, Fire Protection and Fire Alarm Systems, include compliance with current Building Codes for the State of Rhode Island RISBC-1. This entails adherence to current Fire, and existing buildings, and fire life safety codes. Moreover, it involves aligning with industry best practices for Fire Design, facilities, encompassing standards such as ASHRAE, ventilation for acceptable Indoor Air Quality (IAQ), ADA, security, and emergency preparedness.

1.2. Description of Priorities – High (Immediate Need), Medium (Required and should be completed as soon as is practical), Low (Suggested for consideration as good engineering practice).

1.3. Report Qualifications

- The conclusions, recommendations and opinions of cost presented in this report are based on a review of available drawings, personal and telephone interviews of persons knowledgeable about the facility, our field observations, and our experience on similar projects.
- No materials testing of building components was performed, and no calculations were performed to determine the adequacy of the facility's original design. It was not the intent of this survey to perform an exhaustive study to locate every existing defect. Observations were made by trained professionals but there may be defects at the facility, which were not readily accessible, not visible, or otherwise inadvertently overlooked. Problems not evident at the time of this survey may develop over time. The opinions of costs are listed in current (uninflated) dollars. The actual costs may vary depending on the quality of contractors used, the quality of materials selected, the extent of work performed at one time, the season of the year in which the work is performed if the items are purchased individually or under master purchase contracts and other items. If any cost items listed are considered critical in making decisions about this facility, we recommend that contractor or supplier quotations be obtained for those items before making final decisions about this property.

2. PRIORITY MATRIX CRITERIA

Priority selection criteria

- High (Immediate Need)
- Medium (Required and should be completed as soon as is practical)
- Low (Suggested for consideration as good engineering practice)

3. OVERALL MEP & FP RECOMMENDATIONS FOR ESTIMATE

3.1. MECHANICAL

HIGH PRIORITY ITEMS:

- Improve HVAC and Air Quality:
  - Replace HVAC System:
  - Add Ventilation and Filtration:
  - Diesel Exhaust Capturing Systems:
  - Insulate and Seal:
  - Evaluate Electrification:
- Ventilation Requirements for Occupied Spaces:
- Bathroom Ventilation Compliance:
- Overall Ventilation System Improvements:

3.2. ELECTRICAL

HIGH PRIORITY ITEMS:

- Replace most of the electrical distribution system including: Service Disconnect, Panels, including AFCI circuit breakers, GFCI requiring protection and feeders.
- Provide GFCI receptacles in required areas
- Provide junction box for exposed splice ensuring wiring is either in conduit or junction box.
- Ensure required equipment local disconnect switch.
- Provide GFCI receptacles in required areas

MEDIUM PRIORITY ITEMS:

- Test original circuit wiring or simply replace all circuit wiring.
- Test existing GFCI receptacles and receptacle protected from GFCI receptacles. Replace those receptacles that fail.
- Replace existing fluorescent lighting and lighting controls.

LOW PRIORITY ITEMS:

- Demolish abandoned raceway.
- Provide receptacles as needed to power existing devices

3.3. PLUMBING

HIGH PRIORITY ITEMS:

- Investigate and Repair Corroded pipes
- Health issues:
    - Remove ice machine from apparatus bay
    - Remove all lead pipe and/or asbestos if any
    - Provide eye wash and shower in apparatus bay
    - Decontamination room with the following
        - Hot and cold water
        - Scrubbing tables
        - Soak tank(s)
        - Large stainless steels sinks
        - Floor drain to sanitary sewage
        - Hose cleaning machine
- Water Closet Replacement:

MEDIUM PRIORITY ITEMS:

- Install Thermostatic Mixing Valve:
- Provide Plumbing Accessories
- Replace outdated drainage pipe and inadequate venting:
- Water Conservation:

LOW PRIORITY ITEMS:

- Water Closet Replacement
- Plumbing Fixture Replacement with low flow
- Provide Temperature Control Measures for fixtures
- Replace Sump pump
- Replace Deteriorating valves
- Roof Drains

3.4. FIRE PROTECTION

HIGH PRIORITY ITEMS:

- Replace Fire Alarm System: Rec 1-1
- Install new Fire Station Alerting System: Rec 1-2

MEDIUM PRIORITY ITEMS:

- Install new Fire Sprinkler System: Rec 1-3

LOW PRIORITY ITEMS:

- **Replace single station CO alarms with hardwired CO alarms with battery backup**: **Rec 1-4**

4. GENERAL DESCRIPTION

4.1. The criteria for this section of the facilities assessment, specifically focuses on Mechanical, Electrical, and Plumbing (MEP) and Fire Protection (FP), include compliance with current Building Codes for the State of Rhode Island RISBC-1. This entails adherence to current Fire, Energy, Mechanical, Electrical, Plumbing, and existing buildings, and fire life safety codes. Moreover, it involves aligning with industry best practices for offices and governmental type facilities, encompassing standards such as ASHRAE, ventilation for acceptable Indoor Air Quality (IAQ), ADA, security, and emergency preparedness.

4.2. Upgrade building systems required for meeting current RISBC-1 IAW IBC 2018.

4.2.1. Restrooms require complete renovations to comply with ADA. Plumbing fixtures including water closets, urinals, and lavatory require replacement in addition to ADA compliance and drinking fixtures IAW RISBC-3

4.2.2. HVAC systems including heating, air conditioning and ventilation systems reaching end of useable life require repair and/or replacement in addition to controls and monitoring by CPS central BMS IAW RISBC-4

4.2.3. Electrical systems throughout the site are inadequate and outdated. Repair and/or replacement is required IAW RISBC-5

4.3. Upgrade building systems required to meet current fire code RISBC- 1, Fire Safety Code section 1 through 6 (450-RICR-00-00-1), RI Fire Code (450-RICR-00-00-7), RI Life Safety Code (450-RICR-00-00-8) (NFPA 1, 101 2018), Rehabilitation Building and Fire Code for Existing Buildings and Structures (450-RICR-00-00-9), Rhode Island Fire Alarm Code (450-RICR-00-00-10) (National Fire Alarm & Signaling Code, (NFPA 72), 2019 Edition

4.4. Upgrade building system require to meet current energy code RISBC-8 IAW ICC 2018

4.5. Upgrade building systems required to meet current ASHRAE environmental, ventilation, and energy standards (ASHRAE Standards 55, 62.1, and 90.1)

4.6. Upgrade building systems required to meet current ADA code 2010.

4.7. Repair/ Replace building systems that are near or at the end of their serviceable life.

5. MECHANICAL FEASIBILITY STUDY

Mechanical HVAC System Description of Existing Conditions:

- **System Type and Layout**
  - The fire station's heating and exhaust systems are structured around a hydronic steam boiler setup, various exhaust fans and a Plymovent exhaust system for diesel fume management.
  - This setup primarily provides heating through steam and forced hot air but lacks a broader ventilation approach, relying instead on spot exhaust fans (bathrooms, kitchen, apparatus bay) and the Plymovent system for localized exhaust control equipment.
- **Heating System**:
  - **Hydronic Hot Water Boiler**: The facility uses a Lochinvar FTXL Boiler, supplying heat through radiators and unit heaters.
  - **Hot Water Radiators**: These are installed in sleeping areas, offices, bathrooms, and hallways for primary heating
  - **Apparatus Bay Heating**: The apparatus bay has unit heaters, with additional heat from a forced hot air system
- **Ventilation and Exhaust**:
  - **Mechanical Ventilation**: The facility lacks a centralized mechanical ventilation system.
  - **Spot Exhaust Fans**: Spot shutter exhaust fans provide ventilation in parts of the apparatus bay
  - **Plymovent Diesel Fume Exhaust**: This system in the apparatus bay offers targeted exhaust management for diesel fumes, using a ducted setup connected to individual exhaust fans.
  - **Kitchen Cooking Appliances**: Requirements for exhaust may not to appropriate for the size of kitchen equipment.

- **Heating and Cooling Equipment**
  - Lochinvar hot water boiler, Model FTX725N, Serial no 1645103882669, Type Gas, Gas pressure IN W.C. 4.0" MIN 14" MAX. Input MAX 725,000 BTUH MIN 103,500 BTUH, Output 613,000 BTHU
  - Various window AC units throughout the facility
- **Ventilation and Air Quality Systems**
  - Exhaust fans are located throughout the facility. Details on ventilation systems, especially for the apparatus bay (e.g., direct exhaust capture systems, make-up air units).

- No filtration systems exist of any type to improve indoor air quality.
- No controls exist to control the building pressure.

- **Zoning and Controls**
  - The building is not zoned nor controlled in an efficient manner with a minimal number of thermostatic controls.
- **Energy Efficiency Measures**
  - No energy efficiency measures exist in the facility.
- **Special Features and Requirements**
  - Lack of dehumidification is apparent in various areas noticeable by dark spots and odors. The bathrooms, janitors' closets, apparatus bays, boiler room are locations that require attention.
  - It cannot be determined which equipment is on backup power from an HVAC systems perspective to maintain functionality during power outages e.g., Plymovent system.
- **Compliance and Safety**
  - The garage area is not supplied with any mechanical exhaust and not in compliance with 404.1 Enclosed parking garage exhaust requirements.
  - Compliance with NFPA 1500 and other applicable Code shall be coordinated with Architect.

Existing Mechanical Systems Conditions Observations:

The absence of a centralized ventilation system or adequate controls has resulted in poor indoor air quality (IAQ) within the firehouse, raising serious health and safety concerns for staff. Employees have reported issues such as stuffiness, excessive humidity, unpleasant odors, headaches, and fatigue, all of which point to inadequate ventilation and environmental controls.

Cooling within the facility is provided solely by window unit air conditioners. These units are inefficient and fail to maintain consistent cooling across large areas, making them particularly unsuitable for critical spaces like offices and sleeping quarters. Additionally, their lack of proper filtration and dehumidification capabilities exacerbates existing IAQ challenges, further diminishing the overall comfort and safety of the environment.

Ventilation through wall-mounted exhaust fans is another area of concern. These fans, which are manually operated, appear to be undersized and ineffective at maintaining adequate airflow throughout the facility. While the kitchen is equipped with a dedicated exhaust fan, it is likely not interlocked with the cooking equipment, presenting a potential safety hazard and failing to comply with best practices for kitchen ventilation.

In the bathrooms, ventilation rates seem to meet standard requirements, with airflow likely set at 50 cubic feet per minute (cfm) or 70 cfm per fixture and 20 cfm or 50 cfm per showerhead, depending on whether the system operates

The janitors' closets represent a notable deficiency in the ventilation system. These spaces rely solely on louvered doors for air circulation, with no forced mechanical exhaust in place. This setup is inadequate for proper ventilation and poses a risk of contaminant buildup, further compromising the air quality in the facility.

Recommendations for Mechanical Systems:

HIGH PRIORITY ITEMS:

Improve HVAC and Air Quality:

- **Replace HVAC System**:
  - The HVAC system is outdated and inefficient.
  - The station should be ventilated to prevent infiltration of fuel vapors and exhaust fumes from the apparatus bay and garage areas into administrative and personnel living spaces. Plymovent system provides specific source exhaust, but does not prevent garage fumes from entering areas above.
  - New system would have night setback to improve energy efficiency.
  - Provide Carbon Monoxide and Nitrogen Oxide alarms
  - Installing modern, zoned systems with programmable thermostats for precise control in different areas.
  - For high-usage areas like apparatus bays and sleeping quarters, adding individual climate controls can improve comfort.
  - Low-speed, high-volume large fans, provide excellent circulation and assist HVAC systems to provide comfort to apparatus bay.
  - Install kitchen hood and make-up air system
- **Add Ventilation and Filtration**:
  - Install a direct exhaust capture system in the apparatus bay to control vehicle emissions, and upgrade to high-efficiency filters (e.g., MERV-13 or higher) with additional air quality options like UV-C lights. These improve indoor air quality and reduce airborne contaminants.
- **Diesel Exhaust Capturing Systems**
  - Plymovent systems should be supplemented with other exhaust systems to filter the air from off-gassing of contaminated firefighting equipment and PPE.
  - Installation of sensors can detect a wide range of unhealthy gases, including carbon monoxide, nitrogen oxide, and other gases. When quantities reach an unsafe level fresh air intake and exhaust fans are automatically activated to exchange the volume of air in the building with fresh air.
- **Insulate and Seal**:
  - Insulate walls, attics, and apparatus bays if not already done, and add weatherproofing to windows and doors. This improves energy efficiency, reducing heating and cooling costs over time.
- **Electrification**:
  - Consider the installation of VRF type systems as they are easy to retrofit facilities.

Ventilation Requirements for Occupied Spaces:

- Addition of 100% outside air ERV and ductwork infrastructure provide excess dehumidified and neutral temperature air to the building to improve indoor air quality.
  - The supply of dehumidified, neutral-temperature air to space enhances the ventilation rates to enhances air circulation and reduces pollutant concentrations including air borne particles, molds, and odors. Continuous, fresh, filtered air that maintains comfortable humidity levels, effectively controlling indoor contaminants.
  - The ERV aids energy efficiency and reduces the load that would be gained by the heating existing heating system. This would allow for the continued use of the current boiler system.

- A smart control system to prevent the building from going excessively out of temperature ranges. While still maintaining operational flexibility to adjust airflow based on occupancy or specific room requirements, maximizing ventilation when needed and conserving energy when possible.
- New exhaust fans that are monitored to ensure operational efficiency.
- The newly installed mechanical ventilation systems will comply with Section 403 of the International Mechanical Code.
- Altered, reconfigured, or extended existing mechanically ventilated spaces should provide at least 5 cfm per person of outdoor air and not less than 15 cfm of ventilation air per person.

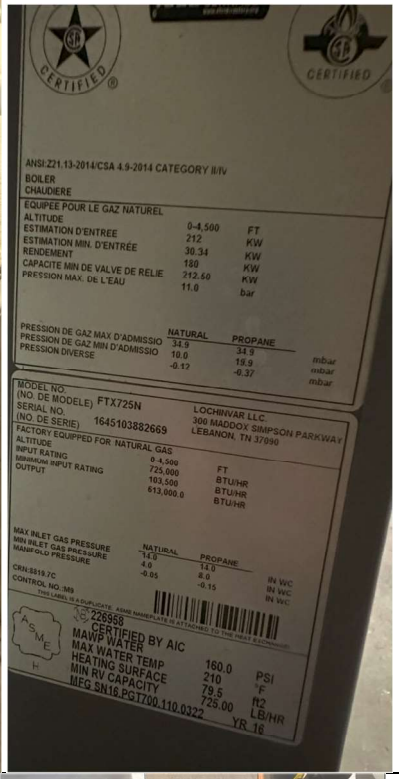
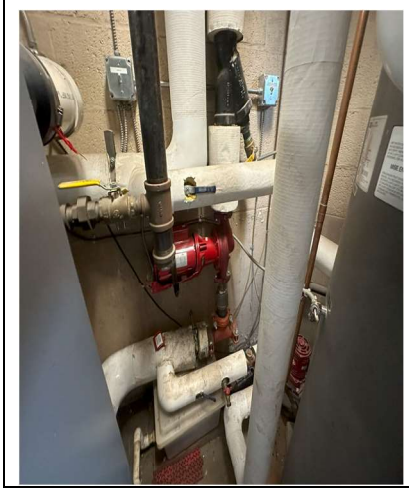
Bathroom Ventilation Compliance:

- Ensure that all bathrooms meet the exhaust rates specified in RISBC Mechanical, removing warm moist air at either 50 cfm or 70 cfm per fixture and 20 cfm or 50 cfm per shower head.
- Consider lower rates for continuous operation and higher rates for intermittent operation.

Overall Ventilation System Improvements:

- Address ventilation concerns bringing the building into compliance with RISBC-4 requirements, either through architectural changes, mechanical changes, or a combination of both.

MECHANICAL REFERENCE PHOTOS:

 	PHOTO 1: HOT WATER BOILER
 	PHOTO 2: DISTRIBUTION PUMP


State of Rhode Island and Providence Plantations
DEPARTMENT OF LABOR AND TRAINING
DIVISION OF WORKFORCE REGULATION AND SAFETY
OCCUPATIONAL SAFETY UNIT
CERTIFICATE OF BOILER INSPECTION
This Certificate Expires on 03/05/2022
Cert. No.
OBJECT LOCATION
City Of Providence
10 Branch Ave
Providence, RI 02904-2714
boiler room
10 Branch Ave
Providence, RI 02904-2714
INSPECTOR
Jose Taveras, Chief Boiler and Pressure Vessel Inspector
NOTIFY THIS DEPARTMENT OR YOUR INSURANCE COMPANY AT ONCE OF ANY DEFECT
POST UNDER GLASS IN A CONSPICUOUS PLACE – GL-28-25

PHOTO 3:
CERTIFICATE OF BOILER INSPECTION

PHOTO 4:
HEATING HOT WATER DISTRIBUTION

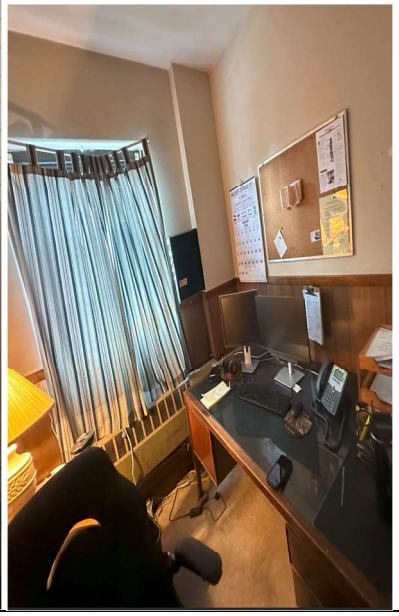


PHOTO 5:
WINDOW AC UNIT AND BASEBOARD HEAT

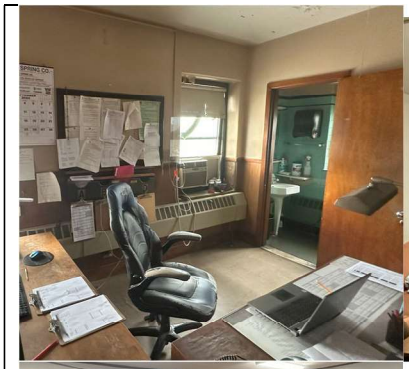
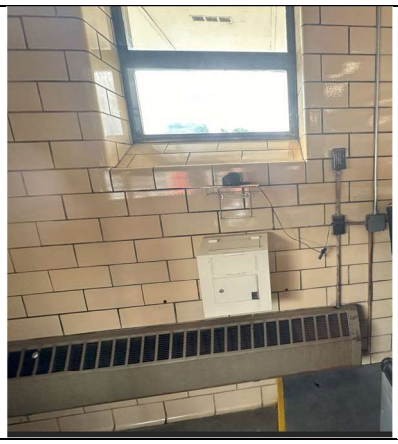
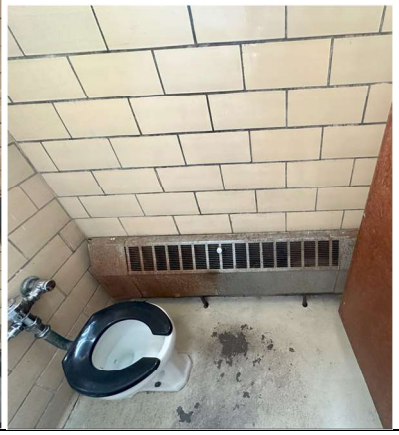
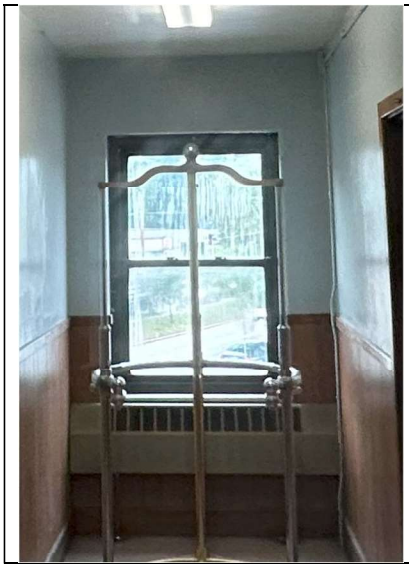


PHOTO 6:
BASEBOARD HEAT IN APPARATUS BAY



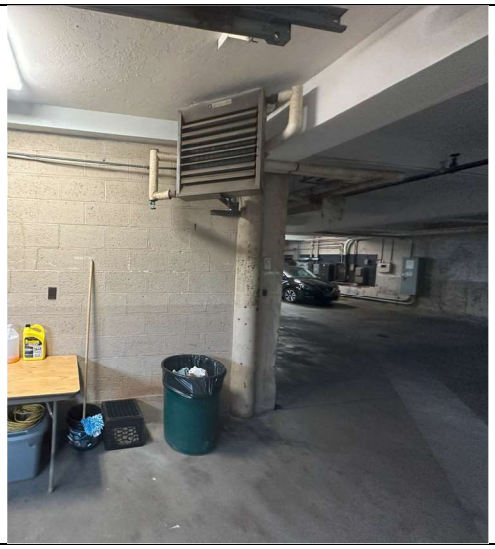
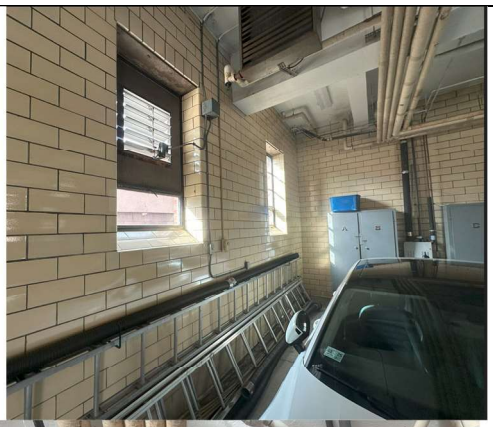
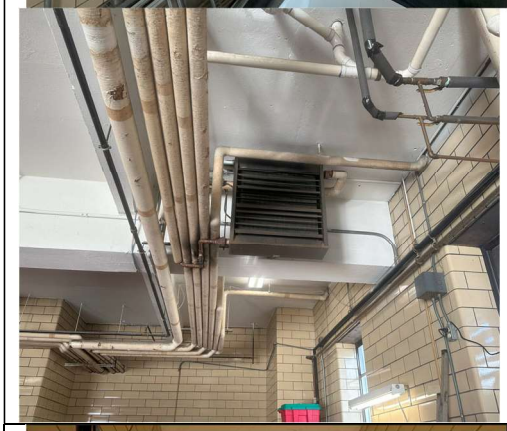
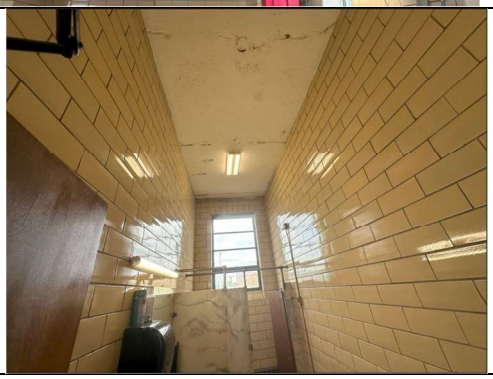
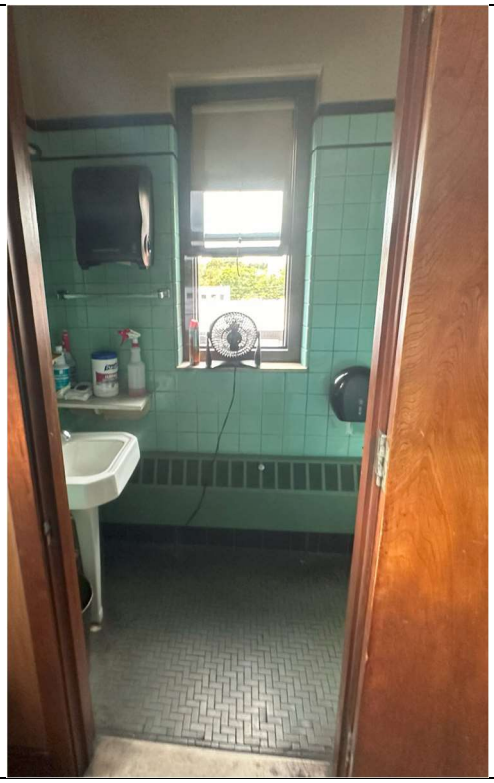


PHOTO 7:
UNIT HEATER IN GARAGE

PHOTO 8:
UNIT HEATERS AND FAN IN APPARATUS BAY

	PHOTO 9: UNIT HEATERS APPARATUS BAY
 	PHOTO 10: EXHAUST FANS AND UNIT HEATERS IN APPARATUS BAY
	PHOTO 11: RADIATOR AND AC IN BATHROOM

	PHOTO 12: EXHAUST FAN AND BASEBOARD HEAT IN BATHROOM

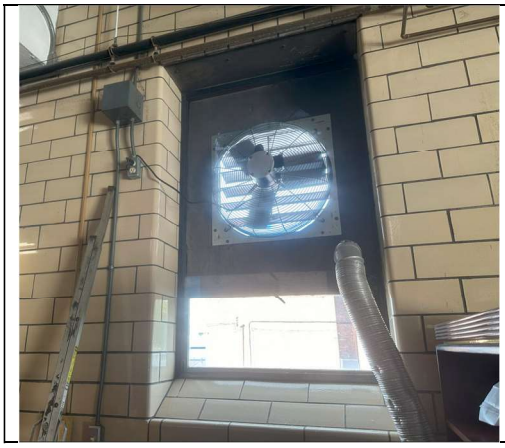
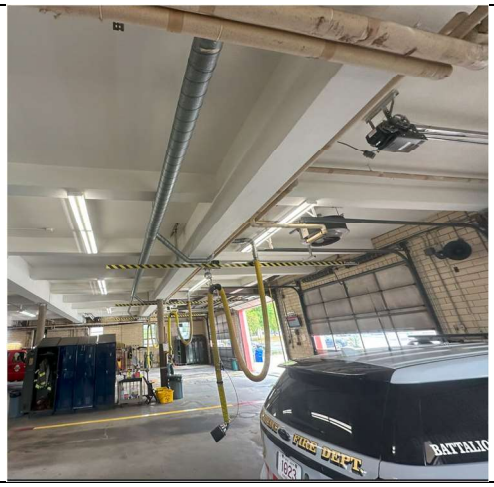
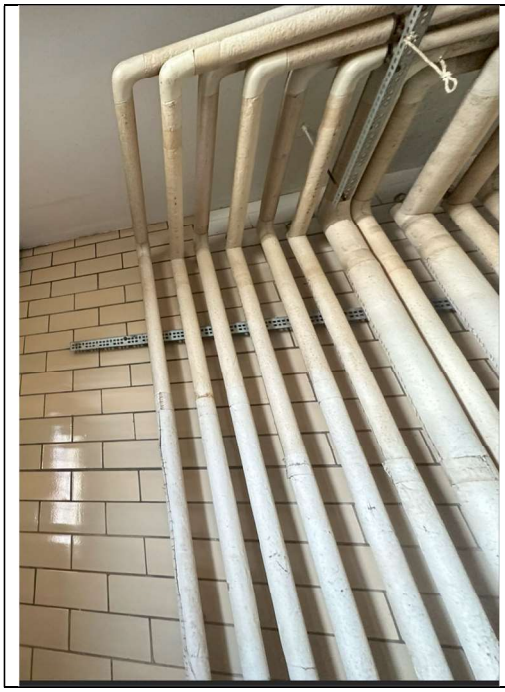
	PHOTO 13: LACK OF EXHAUST OR VENTILATION IN BATHROOM

	PHOTO 14: KITCHEN EXHAUST FAN AND RADIATOR HEAT

	PHOTO 16: PLYMOVENT AND FAN

	PHOTO 17: PLYMOVENT

	PHOTO 18: HVAC HOT WATER PIPING

6. ELECTRICAL FEASIBILITY STUDY

Electrical System Description of Existing Conditions:

The Branch Avenue fire station's electrical distribution is a 120/240V, single phase, three wire system. The building is supplied from utility pole near the Northeast corner of the building. A riser on the pole routes conductors via an underground service to service equipment located in the basement. The service disconnect is a Westinghouse De-Ion circuit breaker located on the east wall of the basement. The meter is located to the right of the service disconnect. The service disconnect appears to supply the ATS located further south on the east wall by routing though the adjacent Westinghouse panel. Only opening the panel and exposing the wiring would confirm the cable routing and this should be performed by a licensed electrician. The ATS is an Asco and is also supplied by an exterior generator upon loss of normal utility power. Therefore, the whole building is provided with backup power by a generator if the service disconnect does directly supply the ATS as believed. The ATS appears to supply power to the Westinghouse panel which is next to the service disconnect. The generator and ATS appears to have been added at a later time, and this would explain the routing of the feeder wiring to the ATS through the Westinghouse panel. The Westinghouse panel supplies the feeders which power the other panels located in the facility. The other panels are old Westinghouse panels except for one (1) Square D panel. These panels supply power to the mechanical equipment, lighting, and receptacles throughout the building.

Existing Electrical Systems Conditions Observations

The ATS appears to be installed within the last fifteen years and appears to be in good condition.

The Westinghouse panels and service disconnect are likely from the original construction and are over 40 years old. Westinghouse was acquired by Eaton many years ago and their panels appear obsolete due to being nearly 40 years old. Schneider Electric states the expected life of circuit breakers is 30 years. The Consumer Product Safety Commission (CPSC) estimates a circuit breaker's life expectancy at 30 to 40 years. Though circuit breakers may last longer, especially in good environments and with maintenance; the Westinghouse panelboards in the facility are past life expectancy. Though the Square D panel does appear much better; the panel is estimated at approximately 20 years old and is approaching life expectancy. The panels are in poor condition.

The Square D panel located in the kitchen does not have adequate clearance since the stove is located beneath it. Therefore, the panel is in violation NEC 110.26.

The panels did not contain AFCI circuit breakers. On new installations, AFCI protection is required for sleeping quarters in fire stations per NEC 210.12(D). Though the existing installation predates this requirement and is grandfathered, AFCI protection would add greater protection to the inhabitants if installed.

The conductor of the wire often lasts for 100 years. The insulation often fails before the conductor. Insulation may start to fail after 50 years. A proper investigation of the wire was not in the parameters of this investigation. However, cracking insulations was observed in other facilities from the same era.

An exposed splice was identified which supplies a bay door opener. This is a violation of wiring requirement in NEC Chapter 3. Also, there appeared to be no local disconnect for the fans in the bay. This would be a violation of NEC 430.102.

Abandoned raceway was observed in the first floor bathroom

There appeared to be a lack of GFCI protection. In areas such as the laundry where the washing machine and dryers are located, the washing machines and dryers did not appear to be GFCI protected. GFCI receptacles may protect other receptacles on the circuit if wired correctly. However, there appears to be an absence of GFCI receptacles in required areas. The laundry should have a dedicated circuit and did not contain a GFCI receptacle. Therefore, the installation does not meet code. Per NEC 210.8(B), GFCI protection is required for all the facility receptacles in the bathrooms, kitchen, food preparation areas, rooftops, outdoors, near sinks, damp or wet areas, locker rooms associated with showering, garages, service bays, basements, and laundry areas. There appeared to be a lack of GFCI receptacles in the apparatus bays. This would include the overhead receptacles and near the bay door. In addition to the locations stated, the following equipment require GFCI protection per NEC 210.8: automotive vacuum machines, water coolers, vending machines, high pressure spray washing machines, tire inflation machines, sump pumps, dishwashers, wall mounted ovens, counter mounted cooking equipment, clothes dryers, and microwave ovens. Clothes dryer may require 240V receptacles. This is often accomplished using a GFCI circuit breaker. No GFCI circuit breakers were identified.

There appeared to be a lack of receptacles. Use of extension cords and power strips was observed throughout the facility. This creates safety hazards including for tripping and is likely a violation OSHA 1910.305 in certain cases. This also increases the likelihood of a circuit breaker tripping due to over amperage or melting the conductor if the circuit breaker fails. The kitchen also needed power strips above the counter due to a lack of receptacles. A dwelling unit would typically have a receptacle within 2’ of any point on the counter wall per NEC 210.50(C).

Many areas in the building utilize fluorescent lighting. The lamps are typically 2’, 4’, or 8’. Modern LED replacement fixtures would operate likely between 1/3 and 2/3 the wattage and not contain mercury as the existing fluorescent lamps do. LED fixtures have a significantly greater lifespan too. The return on investment of LED fixtures replacing T12 fixtures would likely be 1-3 years based on similar projects. Additionally, the lighting in the sleeping areas appear to utilize cool blue light which have a higher temperature Kelvin (~4000k) when compared to warm light (~2700K). Recommended temperature for sleeping rooms should not exceed 3000k for personal comfort, rest, and circadian rhythm.

There did not appear to be any occupancy/vacancy sensors to shut off the light fixtures in closet or bathrooms. These are requirement in the RI energy code for new installations. However, these controls would help reduce energy usage.

Recommendations for Electrical Systems:

HIGH PRIORITY ITEMS:

- Replace most of the electrical distribution system including:
  - The service disconnect,
  - Panels which would include AFCI circuit breakers for sleep quarter circuits and GFCI for dryers and other 240V receptacles requiring GFCI protection
  - Feeders.
- Provide junction box for exposed splice for bay door. Ensure wiring for bay door is either in conduit or junction box. Ensure unit heater has local disconnect switch.
- Provide local disconnects for fans.
- Provide GFCI receptacles in required areas including apparatus bays and laundry areas.

MEDIUM PRIORITY ITEMS:

- Test original circuit wiring or simply replace all circuit wiring.

- Test existing GFCI receptacles and receptacle protected from GFCI receptacles. Replace those receptacles that fail
- Replace existing fluorescent lighting and lighting controls. Provide 2700k lighting in sleeping areas.

LOW PRIORITY ITEMS:

- Demolish abandoned raceway.
- Provide receptacles as needed to power existing devices; allow greater flexibility in the future; eliminate extension cords; and reduce power strips.

ELECTRICAL REFERENCE PHOTOS:

	PHOTO 1: SERVICE EQUIPMENT AND WESTINGHOUSE PANEL IN BASEMENT
	PHOTO 2: ATS IN BASEMENT

	PHOTO 3: TYPICAL WESTINGHOUSE PANEL
	PHOTO 4: SQUARE D PANEL ABOVE STOVE

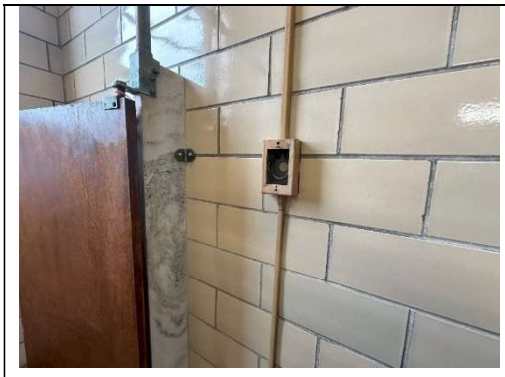
	PHOTO 5: ABANDONED RACEWAY IN CONDUIT

	PHOTO 6: COOL BLUE LIGHT FIXTURES IN SLEEPING ROOM

7. PLUMBING FEASIBILITY STUDY

Plumbing System Description of Existing Conditions:

- **Water Supply and Distribution**
    - The main water supply is a mix of copper, PEX and stainless tubing. As the majority of piping is hidden behind wall some piping is assumed to be original to building
    - Water pressure levels cannot be confirmed but are assumed to be relatively high and there are no complaints and appear to be normal.
    - Information on potable and non-potable water lines, especially for hose washing and cleaning facilities, is not clearly defined.
- **Hot Water System**
    - Indirect Hot Water Storage by Lochinvar system is approximately 8 years old and appears to be in good working condition supplying adequate heat.
    - Previous Rheem model 51EC. Input 1.1 GPH 152,000 BTU/HR, Serial no. 13031015T, Recovery GPH 161 @ 90F RISE. 50 GAL is obsolete and has been replaced.
    - Hot water distribution network and recovery rate do not appear to meet recirculation requirements to minimize wasted energy. The hot water is also required to meet high demand, for decontamination showers.
- **Decontamination Facilities**
    - Details on decontamination showers and wash stations, including flow rate, capacity, and temperature control cannot be confirmed as adequate. The decontamination rooms do not appear to be in use as they are occupied by other equipment
    - **UNKNOWN REQUIREMENTS ON EYEWASH. QUESTION FOR ARCHITECT**
- **Drainage and Wastewater Systems**
    - Floor drains in apparatus bays are not all in working order and have been flagged by personnel. Floor drains in the decontamination area appear to be used by equipment in the decontamination area see PHOTO 6.
    - Locations, if any, cannot be determined if there are interceptors located in the plumbing system (e.g., oil and grease interceptors) **(MAINTENANCE RECORDS HAVE BEEN REQUESTED.)**
    - Backflow prevention devices are installed in multiple locations to protect potable water from cross-contamination.
- **Sanitary Sewer and Wastewater Treatment**
    - Existing piping systems

- Connection to municipal sewer or on-site wastewater treatment system cannot be determined and is assumed to be adequate can be assumed to be adequate.
- **MAINTENANCE RECORDS HAVE BEEN REQUESTED.**

- **Fixture Types and Locations**
  - Existing plumbing fixtures appear)
  - All new fixtures appear to be selected for water conservation (e.g., low-flow toilets, automatic faucets).
- **Compliance and Safety**
  - Compliance with applicable plumbing codes, backflow prevention, and any necessary cross-connection controls.
  - Describe any anti-scald devices and other safety measures in place for hot water systems.

Existing Plumbing System Conditions Observations:
Several issues with plumbing fixtures and piping throughout the facility require immediate attention to ensure compliance with current water conservation codes and to address operational deficiencies. Numerous fixtures are not functioning properly, and corroded pipes are evident across the facility. This corrosion is causing leaks, such as in the Men's restroom toilet area on the first floor, which demands urgent repairs. Additionally, the shower in the Men's restroom on the second floor is leaking due to failures in the pan and tile system.

Floor drains in the apparatus bay require further investigation using a borescope and possibly snaking to assess their condition and address any blockages. In the Women's shower room, the mixing valve has been reported to be installed incorrectly, leading to operational inefficiencies. Furthermore, issues with sanitary piping have been identified, particularly at transitions where temporary Fernco fittings have been used in place of proper replacements. These temporary solutions should be replaced with permanent piping to prevent further failures.

The fixtures in the first-floor restroom are outdated and must be replaced with compliant, water-efficient models. Corrosion throughout the plumbing system is severe, presenting a high risk of failure that could lead to significant operational disruptions and increased maintenance costs.

There are also health concerns related to the location of the ice machine, which is situated in the immediate vicinity of the apparatus bay. Best practices for fire station design highlight the risks of placing ice machines near areas with high potential for contamination, such as apparatus bays, due to the release of carcinogens in these environments. The relocation of the ice machine should be prioritized to mitigate these risks.

Lastly, the hot water system was retrofit with a new Indirect Water Storage tank and pumps that appear to be appropriately sized. If any issues exist with delays in hot water distribution then it is an issue with the distribution system and not the source.

Recommendations for Plumbing Systems:

HIGH PRIORITY ITEMS:

- **Corroded pipes:**

- Scope sanitary waste and vent pipes for corrosion
    1. Sewer line deterioration
- Check domestic water pressure at remote locations and compare versus incoming water pressure

- **Health issues:**
    - Remove ice machine from apparatus bay because of residual diesel exhaust carcinogens
    - Remove all lead pipe and/or asbestos if any
    - Provide eye wash and shower in apparatus bay
    - Decontamination room with the following:
        1. Hot and cold water
        2. Scrubbing tables
        3. Soak tank(s)
        4. Large stainless steels sinks
        5. Floor drain to sanitary sewage
        6. Hose cleaning machine
- **Water Closet Replacement:**
    - Comply with SBC-3 (Plumbing Code) for a maximum water consumption of 1.6 gpf.
- **Water Conservation:**
    - Comply with RISRC-1-20.4.5 405.0 Plumbing for water conservation.

MEDIUM PRIORITY ITEMS:

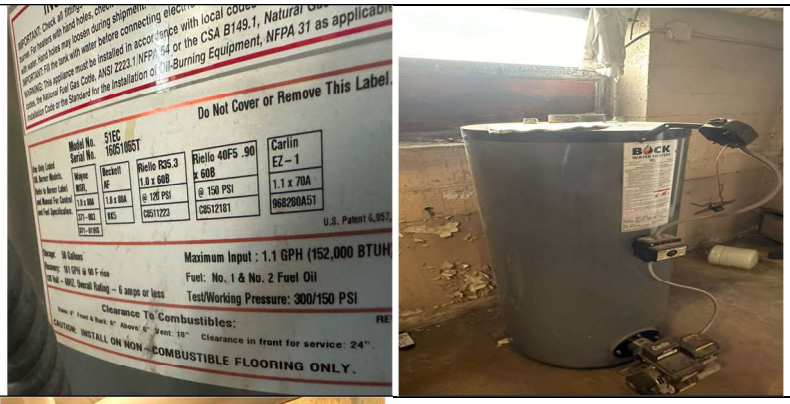
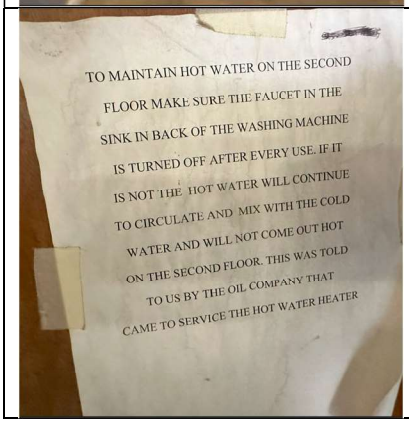
- **Accessibility Requirements:**
    - Coordinate with architectural requirements to address accessibility needs.
- **Temperature Control Measures:**
    - Ensure lavatories and showers are protected by temperature control measures.
- **Outdated drainage pipe and inadequate venting:**
    - Scope and replace as necessary vent piping.
- **Thermostatic Mixing Valve:**
    - Install a master thermostatic mixing valve on water heaters.
    - Ensure bathroom groups are protected by local temperature fluctuations.

- Ensure the installation of hot water recirculation pump and confirm sink temperatures are reached within 10 seconds.

LOW PRIORITY ITEMS:

- **Plumbing Accessories:**
  - Provided shut-off valves at all fixtures
  - Provide drinking fountain in apparatus bay and electric water cooler
  - Provide and/or ensure frost free hose bibs on all exterior walls
  - Provide grease traps for kitchen drains
  - Provide oil separators at drains in apparatus bay, protective clothing laundry, and maintenance areas
  - Provide floor trench drains under vehicle parking areas that do not extend beyond the vehicle to prevent wet spots and slip hazards.
  - Evaluate placing sump pumps on emergency power
- **Roof Drains:**
  - Identify and fix major issues with roof drains, conductors, connections, and leaders.
  - Significant water damage was identified in basement areas on the North Side of the building.
- **Sump pump:**
  - Install appropriately sized pump to aid in dewatering of basement.
  - Ensure pump is powered appropriately
- **Deteriorating valves:**
  - Replace shutoff valves that leak by

PLUMBING REFERENCE PHOTOS:

	PHOTO 1: HOT WATER HEATER
	PHOTO 2: HOT WATER STORAGE TANK
	PHOTO 3:

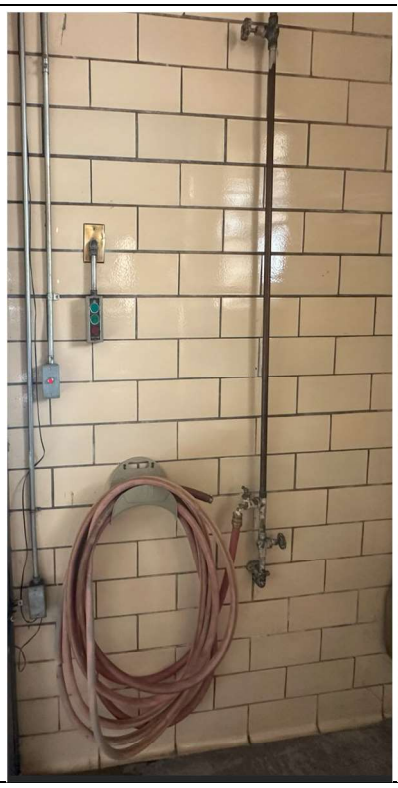
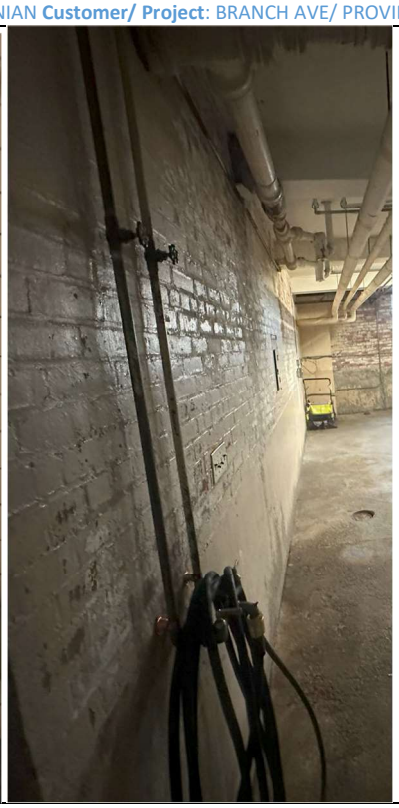



PHOTO 4:
OLD FIXTURES

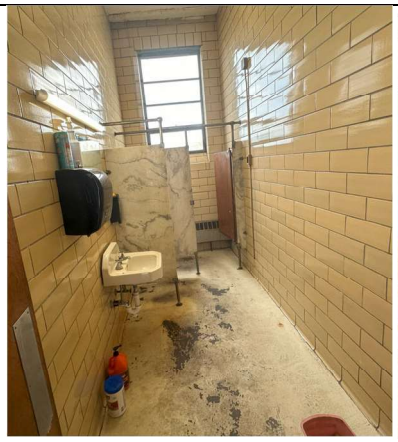
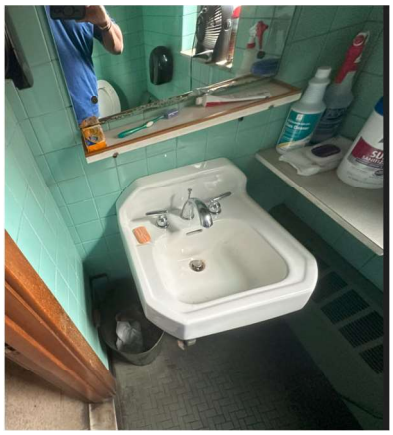



PHOTO 5:
OLD NON-COMPLIANT PLUMBING FIXTURES

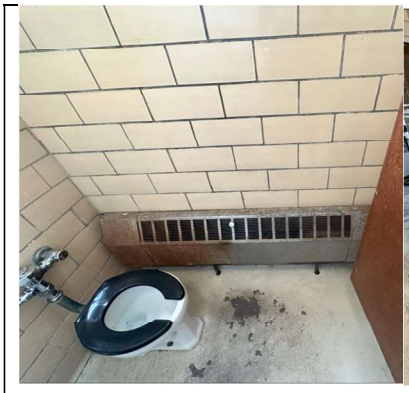
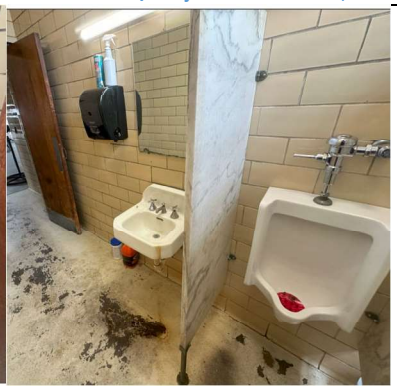
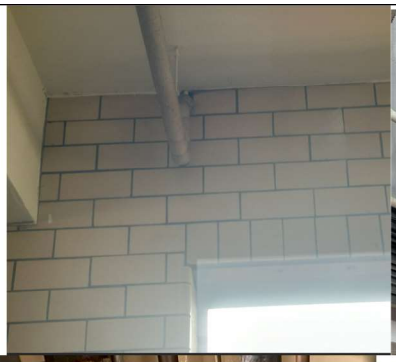



PHOTO 6:
OLD NON-COMPLIANT PLUMBING FIXTURES



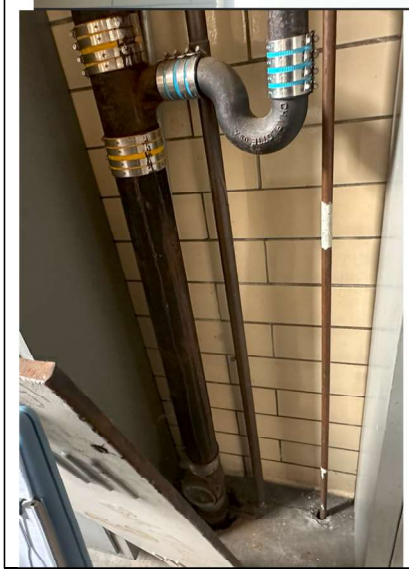
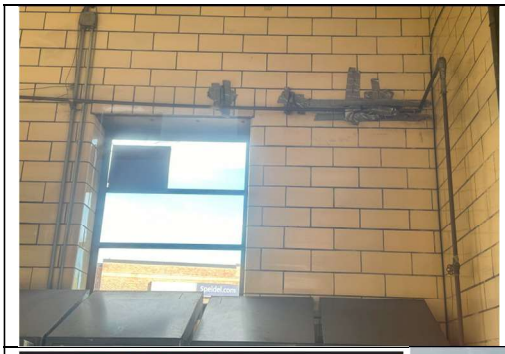
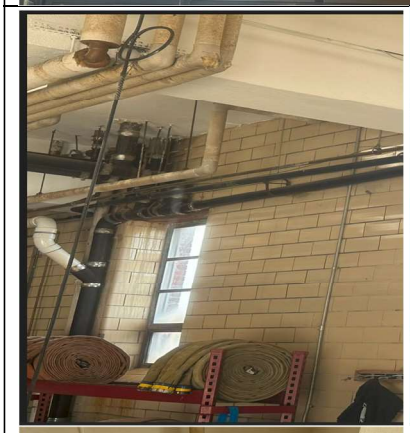
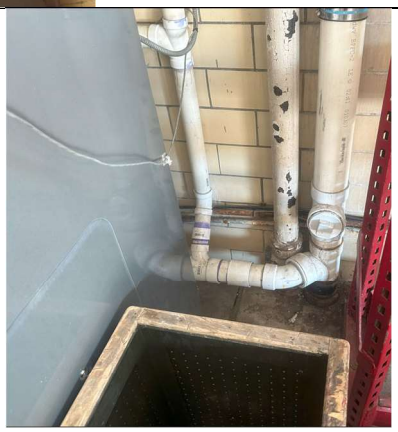
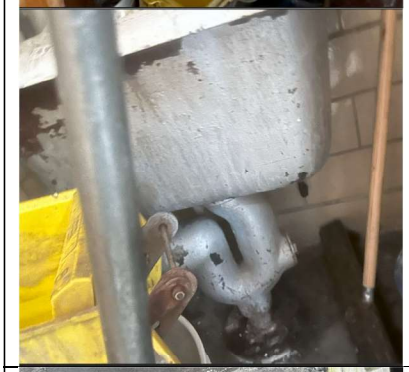


PHOTO 7:
MIX DOMESTIC AND SANITARY PIPING

	PHOTO 8: MIX OF CAST AND PVC SANITARY DRAIN PIPING. LACK OF PROPER VENTING. LACK OF DOMESTIC WATER PROTECTION
	PHOTO 9: DOMESTIC WATER
  	PHOTO 10: SANITARY PIPING

  	PHOTO 11: SERVICE SINK
 	PHOTO 12: RAIN LEADERS
	PHOTO 13: GAS STORAGE

8. FIRE PROTECTION FEASIBILITY STUDY

Existing Conditions Fire Protection System Description:

- **Fire Alarm**
    - The building is provided with a conventional hardwired fire alarm system including local CO/smoke alarms, heat and smoke detectors, and low frequency sounders.
    - The existing devices appear to be out of date, with different models of horn/strobes installed throughout.
    - It is EPM's recommendation that the fire alarm system should be replaced with a new addressable fire alarm control panel, addressable devices (including hardwired CO detectors), and additional horn/strobes in order to comply with NFPA 72.
- **Fire Sprinklers**
    - The building is not sprinklered and the installation of a sprinkler system should be considered depending on the extent of the renovations.
- **Fire Station Alerting System**
    - The existing fire station alerting system no longer provides an intelligible message, possibly due to several factors such as speaker locations, wattage settings, and equipment degradations.
    - A new fire station alerting system should be installed in accordance with NFPA 1225, in order to deliver an intelligible message.
- **Code Compliance**
    - Codes as adopted by the City of Providence, RI.
    - The RISBC-1, Rhode Island Building Code, and RISRC-1, State Rehabilitation Building and Fire Code for Existing Structures are the base building codes along with the specific references. There are multiple codes and ordinances that make up the fire and life safety codes and are as follows: • Fire Safety Code Sections 1 through 6 (450-RICR-00-00-1)
    - RI Fire Code (450-RICR-00-00-7)
    - Incorporates the Fire Code of the National Fire Protection Association, Inc., (NFPA 1), 2018 Edition, by reference
    - RI Life Safety Code (450-RICR-00-00-8)
    - Incorporates the Life Safety Code of the National Fire Protection Association, Inc., (NFPA 101), 2018 Edition, by reference
    - Rehabilitation Building and Fire Code for Existing Buildings and Structures (450-RICR-00-00-9)

- Rhode Island Fire Alarm Code (450-RICR-00-00-10) Incorporates the National Fire Alarm & Signaling Code, (NFPA 72), 2019 Edition, by reference
- National Fire Alarm & Signaling Code, (NFPA 72), 2019 Edition incorporates NFPA 1225, Standard for Emergency Services Communications, 2022 Edition, by reference
- The City of Providence has adopted current RI state codes and regulations. Therefore, the building is reviewed to current referenced editions of the RI reference codes, and NFPA 1 and NFPA 101 for existing apartments for fire elements.
- By definition: DATES OF CONSTRUCTION/ APPLICABLE CODE:
  - For the purposes of this review the fire and life safety system(s) are being reviewed to assess the condition of the current installation, and for a planned rehabilitation.
  - Buildings should comply with the building and rehab codes as well as the existing building portions of NFPA 1 and 101 as adopted by the City of Providence when undergoing alterations.

- **Conditions Assessment**
  - A survey of the building was completed on October 3, 2024, by Mr. Orazine from EPM. The intent of the survey was to review the fire alarm system deficiencies or concerns and evaluate potential modification of the systems to meet the requirements of future alterations. The fire protection systems appear to be maintained by Encore based on labels on the system. Maintenance reports were not provided for this review. The fire alarm system is monitored by the city masterbox system.
- **Sprinkler System (N/A)**
- **Fire Alarm System Review**
  - The fire alarm control panel in Building is an older FCI conventional fire alarm panel.
  - The devices appear to be old and are hardwire/zoned.
  - The system includes smoke alarms, and heat detectors.
  - The system is set up for general alarm and has strobes, and horn/strobes throughout the building common areas and sleeping areas.
  - Smoke detectors are provided at the top of the stair, in the second-floor corridors and offices. Pull stations are not provided at all exits.
  - Note the panel is a conventional hardwired system, and newer systems with 10 or more devices should be addressable.
  - The smoke alarms and heat detectors appear in many cases to be older than the panel, and there are old panel boxes being used as junction boxes.

- The notification appliances appear to be a mix of older and newer styles as old devices may have been replaced.
- There are also several areas that should be provided with notification appliances in order to provide notification coverage in compliance with current codes.
- **Recommend a new fire alarm system since all components are out of date and the system does not meet newer codes. (Rec 1-1)**
- Note the old panel boxes being used as terminal boxes should be removed, and new wiring with proper splices be provided.

- Devices exposed to the weather should be weatherproof with weatherproof boxes, such as the garage which is not conditioned.
  - 15.3.4.5.1 Where a fire alarm system is required, a total (complete) coverage fire detection system in accordance with § 9.6.2.9 shall be provided.
  - 15.3.4.5.2 The requirement of § 15.3.4.4.1 shall not apply to educational occupancies equipped throughout with an approved, supervised automatic sprinkler system in accordance with § 9.7.1.1(1) and an automatic smoke detection system in accordance with § 9.6.2.11(1).
  - Upon alteration Level 2 or rehabilitation, a fire alarm system shall be installed in work areas as required by the Rhode Island Fire Code, Fire Alarm Code, and referenced standards adopted.
  - As per the fire code, 10.1.2* Life Safety Code Every new and existing building shall comply with this Code and NFPA 101.
  - Components for the fire alarm system should be provided with protective coverings and/or rated for the environment including dust. Additional IR or flame detection should be reviewed and considered for welding areas.

- **Fire Station Alerting System**
  - There have been issues regarding the intelligibility of the existing fire station alerting system.
  - The station is provided with a Zetron IP Fire Station Alerting (IP FSA) System with a Model 6203 IP Station Transponder, with speakers installed throughout.
  - The existing speakers appear to be dated with some having exposed wiring.
  - These speakers are not providing an intelligible message, which may be due to numerous reasons such as circuit and equipment degradation, speaker placement, noise from other circuits, wattage provided to speakers, or changes to the interior (finishes, objects/obstructions, background noises).
  - **Recommend a new fire station alerting system including new speakers and speaker circuits throughout. (REC 1-2)**

- ***NFPA 72, 2016 Edition,***

- *14.4.9 In-Building Emergency Radio Communication Systems.*
  - In building emergency radio communication systems shall be inspected and operationally tested in accordance with the requirements of NFPA 1221.
- 14.4.10 Voice Intelligibility
  - 14.4.10.1 Voice communication using prerecorded messages and manual voice announcements shall be verified as being intelligible in accordance with the requirements of 18.4.10.
  - 14.4.10.2 Intelligibility shall not be required to be determined through quantitative measurements.

- ***NFPA 1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems***
  - Please note: As part of the Emergency Response and Responder Safety Document Consolidation Plan (consolidation plan) as approved by the NFPA Standards Council, this Standard has been combined into new consolidated Standard NFPA 1225.
  - As a result of this action, the "current edition" of NFPA 1221 shown on this page is the last published edition of the standard's content as a stand-alone standard.
  - For further information and text of the current consolidated Standard, go to NFPA 1225.
    - NFPA 1225 Standard for Emergency Services Communications, 2022 Edition.

- **Fire Protection Systems**
  - The building is not currently provided with a sprinkler system. Depending on the work, and to comply with newer codes, a sprinkler system should be provided.
  - From the Rhode Island Building Code for enclosed garages - 406.6.3 Automatic Sprinkler System: An enclosed parking garage shall be equipped with an automatic sprinkler system in accordance with Section 903.2.10.
  - 903.2.10 Group S-2 Enclosed Parking Garages
    - An automatic sprinkler system shall be provided throughout buildings classified as enclosed parking garages in accordance with Section 406.6 where either of the following conditions exists:
      - Where the fire area of the enclosed parking garage exceeds 12,000 square feet (1115 m2).
      - Where the enclosed parking garage is located beneath other groups.
      - Exception: Enclosed parking garages located beneath Group R-3 occupancies.

- **Sprinkler protection should be provided in accordance with current codes and standards. (Rec 1-3)**

- **Carbon Monoxide**
  - As per the City of Providence and Rhode Island carbon monoxide detection should be provided in accordance with Rhode Island Life Safety Code. Currently, there are only battery-operated local carbon monoxide detectors. The building requires CO detection for areas with fuel burning equipment.
  - (RI Fire Alarm Code) Where required by other governing laws, codes, or standards, carbon monoxide detectors shall be installed in accordance with the following:
  - On the ceiling in the same room as permanently installed fuel-burning appliances, and
  - Centrally located on every habitable level and in every HVAC zone of the building, and
  - Outside of each separate dwelling unit, guest room, and guest suite sleeping area within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel, and
  - Other locations where required by applicable laws, codes, or standards, or a performance-based design in accordance with Section 17.3 (RI Fire Alarm Code)

- **CO detection should be replaced with hardwired and battery back-up CO detectors and should be provided in accordance with current codes and standards. (Rec 1-4))**

Recommendations For Fire Protection Systems:

- Based on interviews, on-site observations, and experience with similar properties, the following recommendations are included for remedial action along with associated priority, and recommended time frame.

HIGH PRIORITY ITEMS:

- **Replace Fire Alarm System**: **Rec 1-1**
  - The Fire Alarm system is outdated and does not comply with current Rhode Island Building and Fire Codes.
  - The existing fire alarm system is a conventional hardwired system, and newer systems with 10 or more devices should be addressable.
  - Some of the existing fire alarm devices (smoke and heat detectors, horn strobes) are older than the panel itself.
  - Install CO detection in main bunk room, day room, and kitchen.
  - Provide additional notification appliances to provide full audible/notification coverage throughout the station and ensure all notification appliances are synchronized.

- **Install new Fire Station Alerting System**: **Rec 1-2**
  - The fire station alerting system does not deliver an intelligible message over the installed loudspeakers and does not comply with NFPA 72 or NFPA 1221 regarding in building emergency radio communications

- There are several speakers installed throughout the fire station, several of which appear to be outdated, and some with exposed wiring.
- The old FCI fire alarm panel appears to be used as a junction box for the fire station alerting system wiring. This panel should be removed as it is not in service as a fire alarm system and is not intended to be used as a junction box.

MEDIUM PRIORITY ITEMS:

- **Install new Fire Sprinkler System**: **Rec 1-3**
  - From the Rhode Island Building Code for enclosed garages - 406.6.3 Automatic Sprinkler System: An enclosed parking garage shall be equipped with an automatic sprinkler system in accordance with Section 903.2.10.
  - 903.2.10 Group S-2 Enclosed Parking Garages: An automatic sprinkler system shall be provided throughout buildings classified as enclosed parking garages in accordance with Section 406.6 where either of the following conditions exists:
    - Where the fire area of the enclosed parking garage exceeds 12,000 square feet (1115 m2).
    - Where the enclosed parking garage is located beneath other groups.
    - Exception: Enclosed parking garages located beneath Group R-3 occupancies.

LOW PRIORITY ITEMS:

- Replace single station CO alarms with hardwired CO alarms with battery backup: Rec 1-4

FIRE PROTECTION REFERENCE PHOTOS:

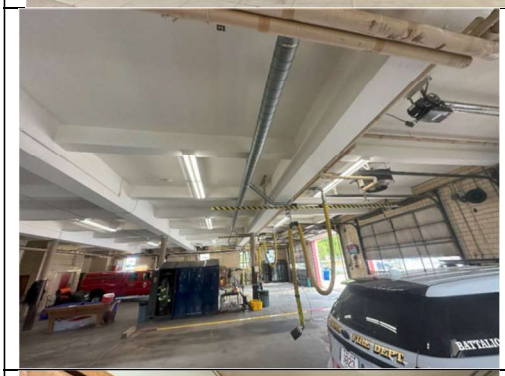
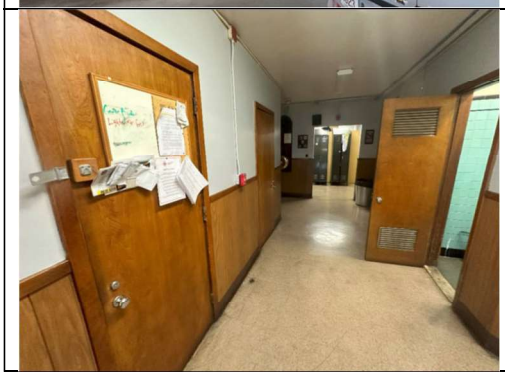
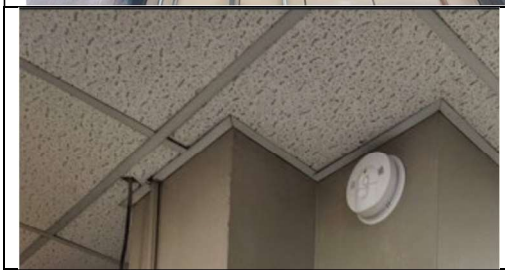
	PHOTO 1: BUILDING EXTERIOR
	PHOTO 2: BUILDING INTERIOR – APPARATUS BAY
	PHOTO 3: BUILDING INTERIOR – SECOND FLOOR

	PHOTO 4: BUILDING INTERIOR – BASEMENT (BOILER)

	PHOTO 5: SMOKE/ CO DETECTOR WITH BATTERY ON WALL AND SPEAKER FOR PA SYSTEM
	PHOTO 6: BUILDING FIRE ALARM CONTROL PANEL (FACP) IN GARAGE
	PHOTO 7: PA SYSTEM
	PHOTO 8: CONVENTIONAL SMOKE DETECTOR

	PHOTO 9: MIXED SPEAKER MODELS
	PHOTO 10: TYPICAL BATTERY CO DETECTOR

10 North Main Street Fire Station

151 North Main Street, Providence, RI 02903

10 North Main Street Fire Station

Overall Condition: Fair to poor

Description:
This two-story fire station covers approximately 13,778 square feet. The first floor includes four apparatus bays, gear storage, utility areas, and an exercise room. On the second floor, you'll find the crew areas, which comprise bunk rooms, offices, a kitchen, a day room, bathrooms, and access to an outdoor patio.

Summary:
The most urgent concerns at this location include the poor condition of the flat roofs, flat roof guard rail, gutter and downspouts and the entry soffit.

High Priority:	Medium Priority:	Low Priority:
▪ Peeling Paint ▪ Gutter and Downspouts	▪ Interior Wall Intrusion ▪ Window Replacement ▪ Door Locks ▪ Vegetation Intrusion ▪ ADA Restroom ▪ Roof Access Hatch	▪ Floating Floor ▪ Interior Stair Treads ▪ Overhead Door ▪ Shower Doors ▪ Kitchen Floor

Building Code Review:

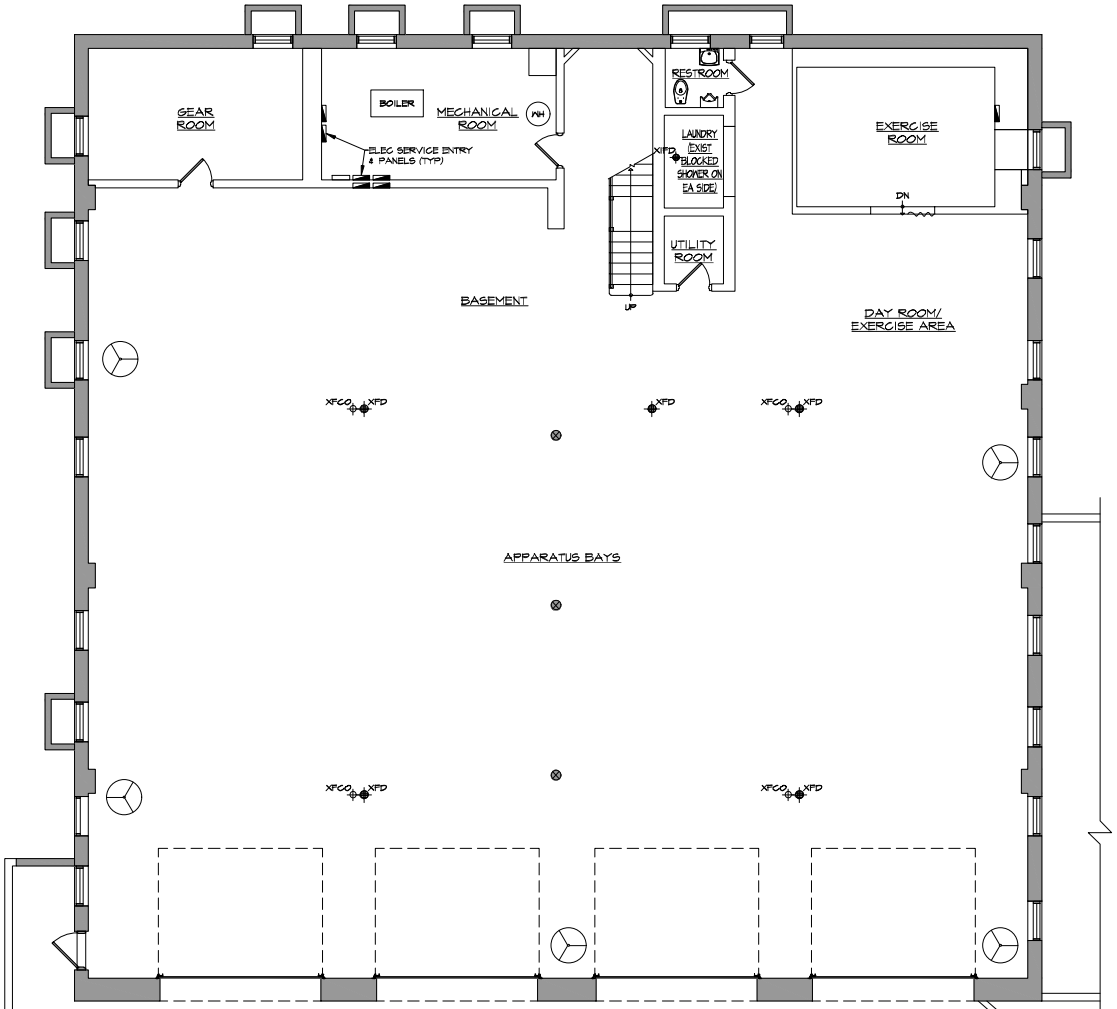
# of Stories above grade: 2 Building Area: Approx 13,778 sf Sprinkler System: None

Construction Type: Assumed type 3B; Primarily masonry wall construction with concrete/ steel floor construction and a wood frame pitched roof structure.

Occupancy Classification: Mixed Use; Business [B], Residential [R-2] & Storage [S-2]

Occupancy Load:

First Floor:		
Business [B] =	884 sf / 150 Gross =	6 Occupants
Storage [S-2] (App. Bay) =	5,337 sf / 200 Gross =	27 Occupants
Storage [S-2] (Storage) =	669 sf / 300 Gross =	1 Occupants
Total First Floor =		**36 Occupants**
Second Floor:		
Business [B] =	5,737 sf / 150 Gross =	39 Occupants
Residential [R-2] =	1,007 sf / 200 Gross =	6 Occupants
Total Second Floor =		**45 Occupants**
Total Building Occupant Load =		**81 Occupants**



EXISTING FIRST FLOOR PLAN

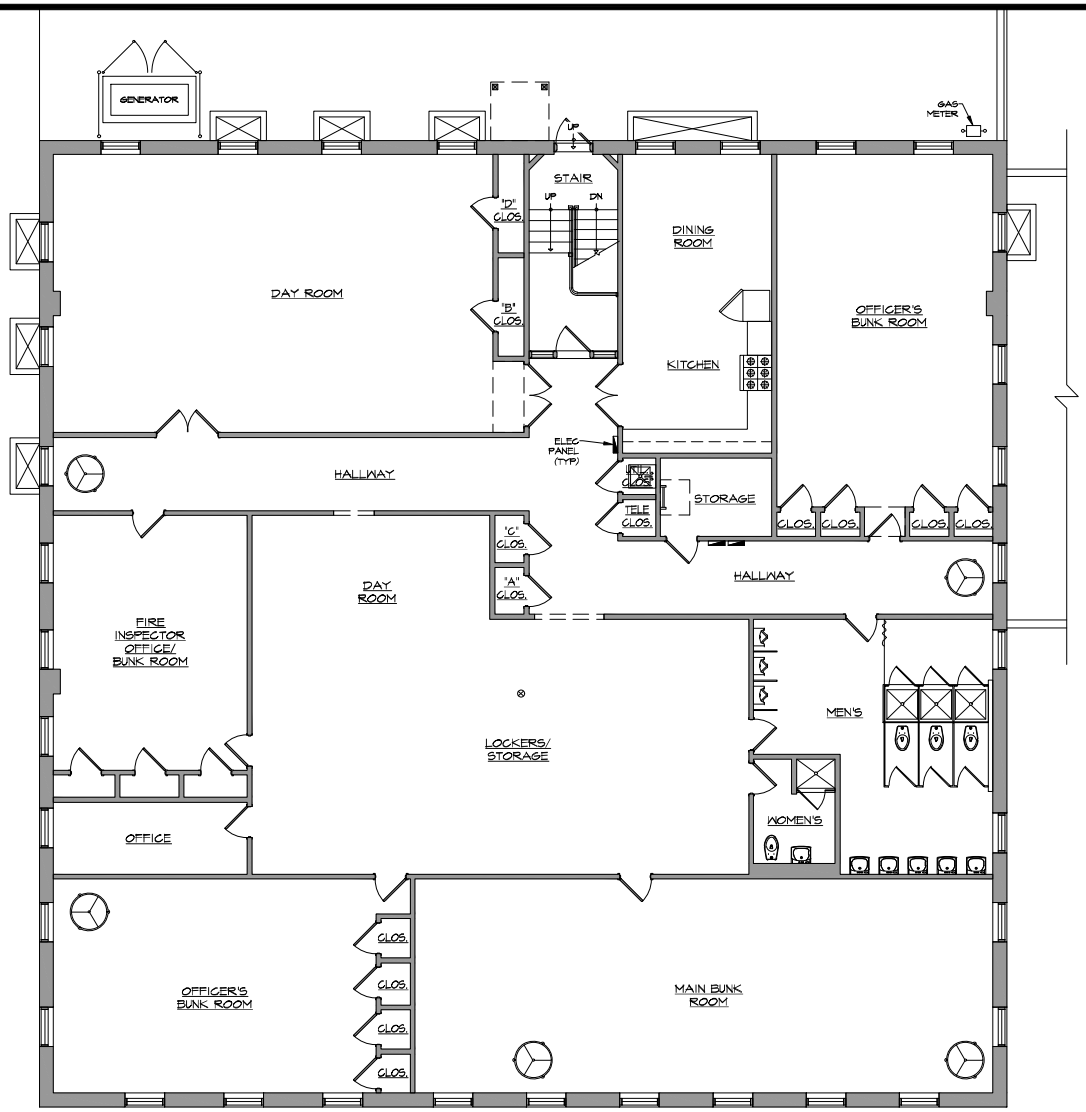
SCALE: 3/32"=1'-0"

N

EXISTING BUILDING DATA	
EXISTING FIRST FLOOR AREA:	6,889± SF
EXISTING SECOND FLOOR AREA:	6,889± SF
TOTAL BUILDING AREA:	13,778± SF

AHARONIAN & ASSOCIATES, INC. ARCHITECTS

151 NORTH MAIN STREET
PROVIDENCE, RHODE ISLAND
SEPTEMBER 27, 2024



AHARONIAN & ASSOCIATES, INC. ARCHITECTS

EXISTING SECOND FLOOR PLAN

SCALE: 3/32"=1'-0"

N

151 NORTH MAIN STREET
PROVIDENCE, RHODE ISLAND
SEPTEMBER 27, 2024

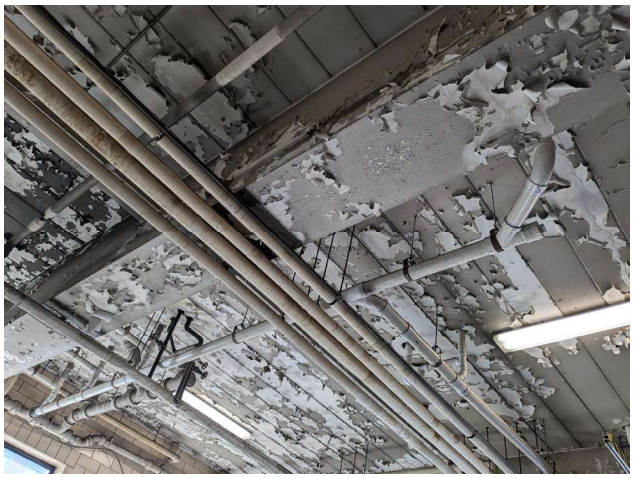
High Priority Items

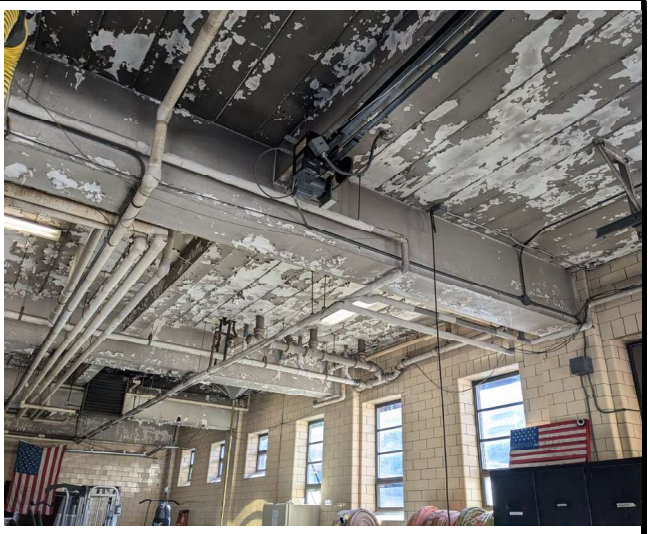
Architectural:

Peeling Paint – *Life Safety*

- Issue: Majority of the apparatus bay ceiling shows peeling paint, likely a result of moisture intrusion.

- Recommendation: Scrape peeling paint from all surfaces, clean, and prep areas for new finish application. Provide new appropriate paint coating for high-humidity areas. Approximately 5,440 SF.





High Priority Items

Architectural Continued:

Gutter and Downspouts – *Quality of Life*

- Issue: Gutters and downspouts throughout the building not working properly to deter water away from the structure. This is causing water intrusion in various locations and exterior façade deterioration.

- Recommendation: Remove and replace gutters and downspouts in its entirety throughout the building. Slope gutters appropriately and provide additional downspout locations for proper drainage. Approximately 335 LF gutter and 9 downspouts.

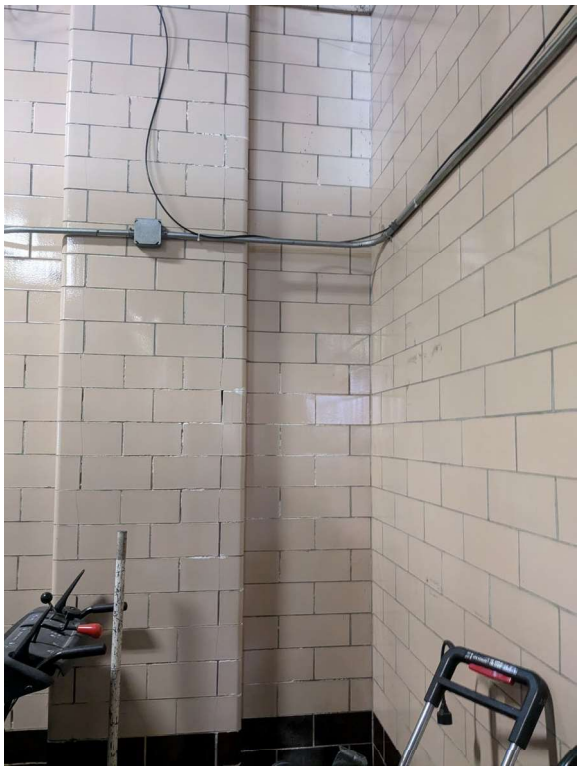
Medium Priority Items

Architectural:

Interior Water Intrusion – *Quality of Life*

- Issue: The existing pilaster at the interior building corner shows signs of water intrusion, resulting in deterioration of the wall tile and grout. This may have also damaged the existing substrate.

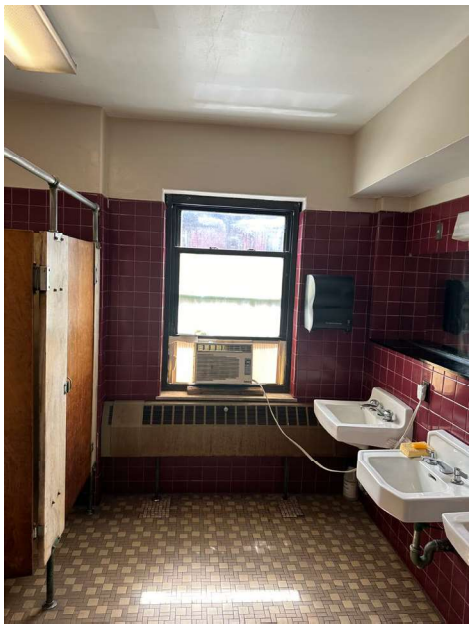
- Recommendation: Remove the existing wall tile back to the substrate and repair any damaged substrate. Investigate the source of the leak for any additional repairs. Provide new tile and grout at the interior wall to match the existing. Approximately 100 SF.



Window Replacement – *Quality of Life*

- Issue: Several windows in the apparatus bays, mechanical room, day room, bunk rooms, offices and men's bathroom are cracked, not operable or have broken seals.

- Recommendation: Replace broken windows at a minimum – Recommend full replacement. Approximately 16 windows are damaged, 56 windows total.



Medium Priority Items

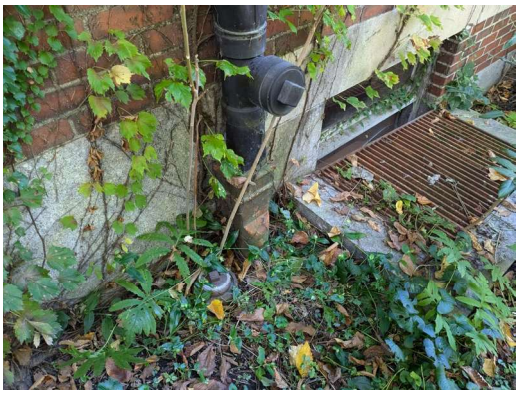
Architectural Continued:

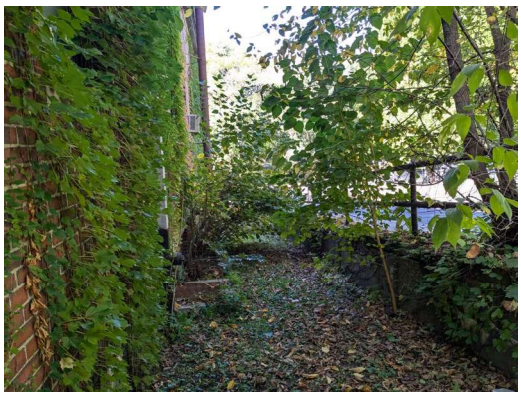
Door Locks – *Emergency Response Performance & Life Safety*

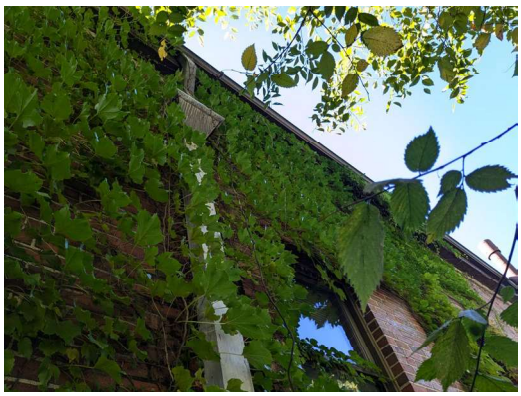
- Issue: The front door lock does not function correctly.
- Recommendation: Replace the lock at the front door and key as required to match the rest of the building.

Vegetation Intrusion – *Life Safety & Quality of Life*

- Issue: There is significant vegetation built up around the exterior, particularly the rear & sides of the building. This is causing façade deterioration and water intrusion.
- Recommendation: Cut back vegetation & provide consistent maintenance to deter build-up.





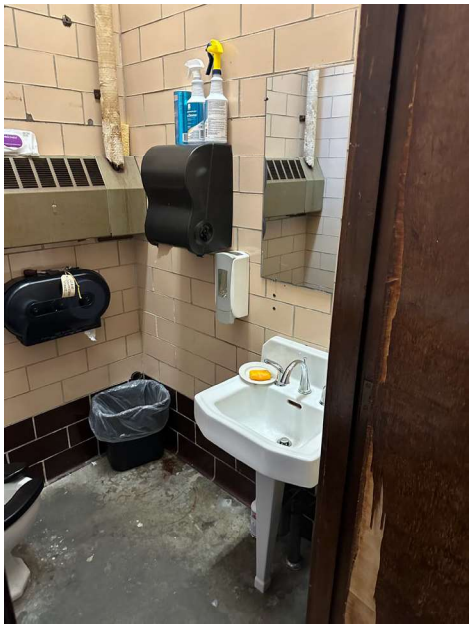


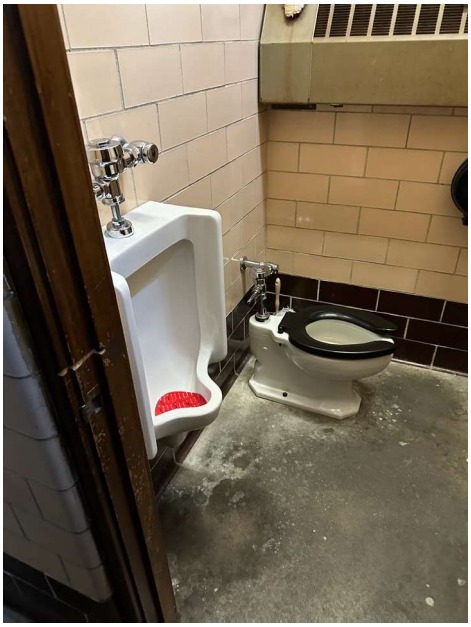
Medium Priority Items

Architectural Continued:

ADA Restroom – *Life Safety*

- Issue: First-floor restroom is not ADA accessible.
- Recommendation: Renovate the first floor restroom and surrounding area to be ADA accessible. This will involve new partitions and re-working of plumbing fixtures. Restroom can be designed as a unisex, single-user bathroom for public use, and could also serve as a de-contamination room off the apparatus bay by adding a shower.





Medium Priority Items

Architectural Continued:

Roof Access Hatch – *Quality of Life & Life Safety*

- Issue: The plaster at the access hatch is peeling away & appears to have moisture damage. Ref Structural Report for additional information.
- Recommendation: Repair plaster around the access hatch opening.

Low Priority Items

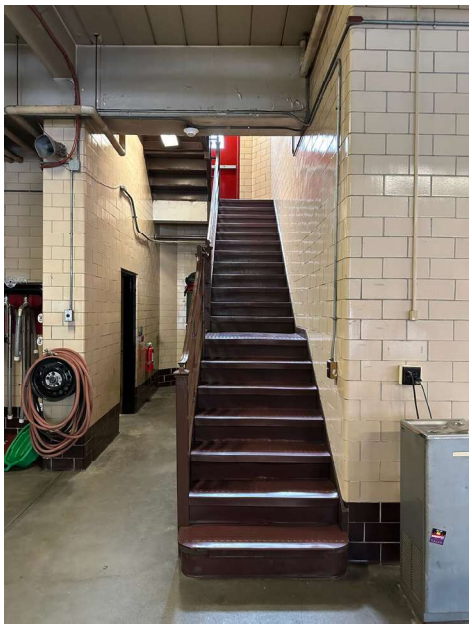
Architectural:

Floating Floor – *Quality of Life*

- Issue: Existing floating floor & system appears to be dilapidated.
- Recommendation: Remove & replace the existing system with rubber flooring. Approximately 205 SF.

Interior Stair Treads – *Emergency Response Performance & Quality of Life*

- Issue: A couple of stair treads & nosings are damaged or detaching from the structure.
- Recommendation: Replace stair treads and nosing to match existing. Approximately 6 locations



Low Priority Items

Architectural Continued:

Overhead Door – *Quality of Life* ▪ Issue: Interior side of Apparatus bay Rescue door is damaged causing the insulation to tear. ▪ Recommendation: Remove and replace the interior door panel including insulation.	

Shower Doors – *Quality of Life* ▪ Issue: Shower doors at the men's restroom are in poor condition and difficult to operate. ▪ Recommendation: Remove and replace the existing shower doors. Approximately 3 doors.	

Low Priority Items

Architectural Continued:

Kitchen Floor – *Quality of Life*

- Issue: The kitchen floor is damaged in a few areas.
- Recommendation: Remove and replace the existing floor with an LVT system. Approximately 330 SF.

10. North Main Street Fire Station - Structural

Overall Condition: The building structure is generally in fair condition.

Description: The two-story building faces west, refer to Attachment J, photos J1 to J4. The building is framed with concrete slabs, concrete-encased steel beams, girders, and steel posts. The second floor consists of precast concrete planks. The building has a wood-framed hip roof that was installed over the original low-slope roof. The exterior walls of the building consist of solid brick supported on a concrete foundation.

Summary of Items with High Priority Repair Recommendations

The conditions at this fire station that have a High Priority repair recommendation are summarized below. Please note, the detailed observations and repair recommendations for all structural items are listed in the Observations and Repair Recommendations section.

- Replace the rusted steel door jambs at the overhead apparatus bay doors with galvanized steel jambs.
- Replace the rusted steel thresholds at the apparatus bay overhead doors.
- Patch the areas of damaged limestone and granite veneer at the west side of the building.
- Patch the damaged plaster wall in the second-floor supply closet below the roof hatch.
- Patch the crack in the north foundation wall to prevent continued rainwater infiltration. This often requires removal of the soil beside the foundation and patching of the crack from the exterior side of the wall. Adjust the grading at the north side of the building to prevent rainwater from flowing toward the east side of the window well.
- Evaluate the wood-framed hip roof framing. Ensure the knee walls are aligned above bearing walls. Repair or replace the roof structure as needed.

Observations and Repair Recommendations

The following are the exterior/interior observations and recommended repairs:

HIGH PRIORITY

1. *Observation* – The steel vertical door jambs at the overhead apparatus bay doors were rusted with significant expansion, refer to photos J5 and J6. The expansion of the jambs caused the adjacent granite and limestone veneers to shift outward and crack/spall.

   Recommendation – Replace the rusted steel door jambs at the overhead apparatus bay doors with galvanized steel jambs. Replace or reset the granite and limestone veneer.

2. *Observation* – The steel thresholds at the apparatus bays were rusted with significant expansion, refer to photos J7 and J8. One threshold was rusted through its full thickness. Another threshold had expansion from the rust that spalled the adjacent concrete apron.

   Recommendation – Replace the rusted steel thresholds at the apparatus bay overhead doors.

3. *Observation* – The limestone and granite veneer at the west side of the building was cracked and spalled at several locations, refer to photos J9 to J12. Some of the spalls were overhead. The limestone was cracked and spalled adjacent to the rusted steel vertical door jambs at the overhead apparatus bay doors. Spalled limestone overhead can create an unsafe condition

   Recommendation – Patch the areas of spalled limestone and granite at the west side of the building.

4. *Observation* – The wall finishes in the second-floor supply closet consisted of plaster on metal lathe, refer to photos J13 and J14. The plaster below the roof hatch was delaminated, loose, and partially missing. Falling overhead plaster creates an unsafe condition. See Architectural Report for additional information.

   Recommendation – Patch the damaged plaster wall finishes in the second-floor supply closet below the roof hatch.

5. *Observation* – Rainwater reportedly enters the apparatus bays at the north wall, refer to photos J15 and J16. There was a vertical crack in the north wall that extended through the wall tile. Efflorescence was present at the tile mortar joints. It appeared that rainwater seeps through the north foundation at the east side of the window well.

   Outside the north wall of the apparatus bay, the grade slopes from east down to west, refer to photos J17 and J18. The east side of the window well creates a dam-like condition for water flowing on the ground along the north foundation wall. It is likely that a shrinkage crack in the concrete foundation wall is allowing rainwater to infiltrate to the apparatus bay. The shrinkage crack in the foundation is likely located behind the vertical cracks in the wall tile. Continued rainwater infiltration through the wall will lead to additional damage to the building components.

   Recommendation – Patch the crack in the north foundation wall to prevent continued rainwater infiltration. This often requires removal of the soil beside the foundation and patching of the crack from the exterior side of the wall. Adjust the grading at the north side of the building to prevent rainwater from flowing toward the east side of the window well.

6. *Observation* – The wood-framed hip roof that was built over the original low-slope roof consisted of 2x8 rafters at 2 feet on center with plywood sheathing. Knee walls and posts were installed to support the long rafter spans. The hip roof was noticeably sagging as viewed from the exterior, refer to photo J19. From the interior, the rafters appeared to be

sagging as much as about 4 inches, refer to photo J20. The 2x4 posts were bowed due to being overloaded. The rafters and posts are undersized.

Recommendation – Evaluate the wood-framed hip roof framing. Ensure the knee walls are aligned above bearing walls. Repair or replace the roof structure as needed.

MEDIUM PRIORITY

7. *Observation* – The concrete slab in the apparatus bays had minor shrinkage cracks, refer to photos J21 and J22. If the shrinkage cracks are not patched, the concrete at the edges of the cracks will be vulnerable to breakage from wear and tear.

   Recommendation – Patch the cracks in the concrete slab in the apparatus bays.

8. *Observation* – The exterior concrete apron in front of the apparatus bays was spalled at a rusted steel threshold, refer to photos J23 and J24.

   Recommendation – Patch the spalled concrete apron at the apparatus bay door.

9. *Observation* – The east concrete foundation wall at the utility room had a normal shrinkage crack, refer to photos J25 and J26. There was peeling paint and efflorescence along the crack, which indicated water infiltration through the crack into the utility room.

   Recommendation – Patch the crack in the foundation wall at the east wall of the utility room.

10. *Observation* – The granite stone retaining wall at the south side of the property had missing mortar, refer to photos J27 and J28.

    Recommendation – Repoint the granite retaining wall at the south side of the property.

11. *Observation* – The concrete retaining wall along the roadway at the north side of the property was spalled, refer to photos J29 and J30.

    Recommendation – Patch the concrete retaining wall at the north side of the property.

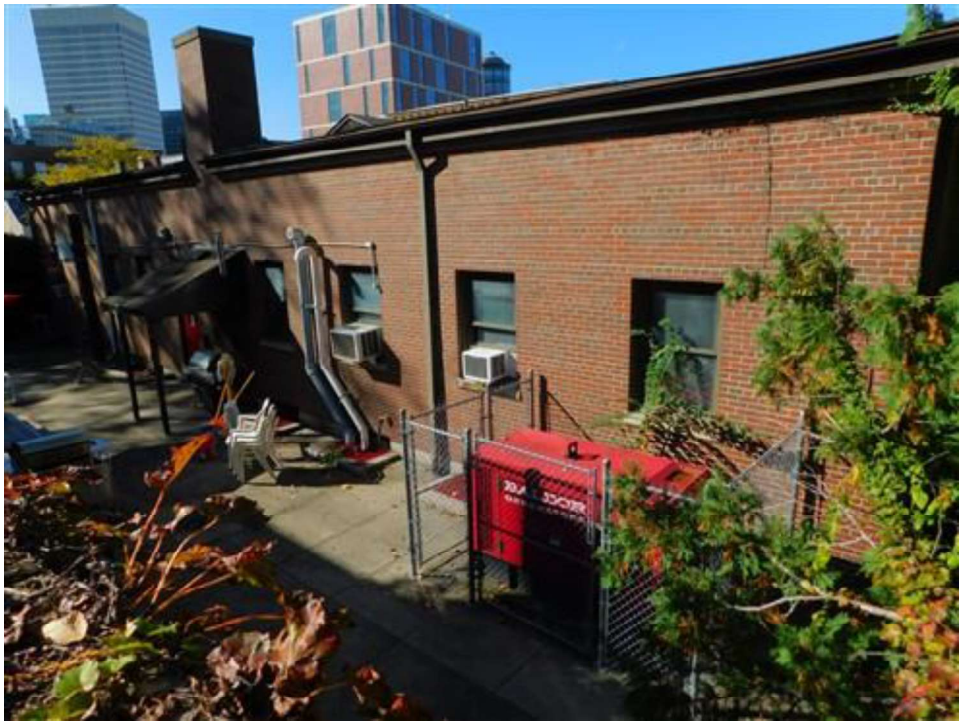
12. *Observation* – The exterior wythe of brick at the south wall of the building had missing mortar in several joints at the upper courses of brick, refer to photos J31 and J32.

    Recommendation – Repoint the exterior wythe of brick as needed.

Attachment J – North Main Street Fire Station

	Photo 1 West (front) view of the building.
	Photo 2 North view of the building.

Attachment J – North Main Street Fire Station

	Photo 3 South (rear) view of the building.
	Photo 4 East view of the building.

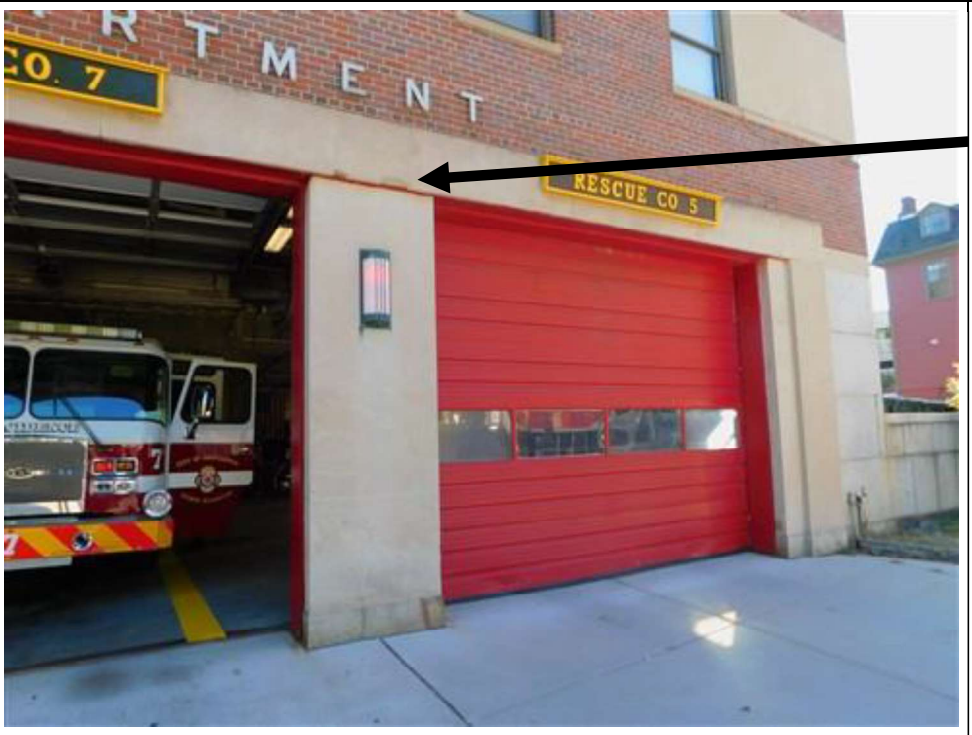
Attachment J – North Main Street Fire Station

	Photo 5 The steel vertical door jambs at the overhead apparatus bay doors were rusted with significant expansion.
	Photo 6 The steel vertical door jambs at the overhead apparatus bay doors were rusted with significant expansion.

Attachment J – North Main Street Fire Station

	Photo 7 The steel threshold at the apparatus bay overhead door was rusted through its full thickness.
	Photo 8 The steel threshold at the apparatus bay overhead door was rusted with significant expansion.

Attachment J – North Main Street Fire Station

	Photo 9 Spalled limestone at the west side of the building.
	Photo 10 Spalled limestone at the west side of the building.

Attachment J – North Main Street Fire Station

	Photo 11 Cracked limestone at the west side of the building.
	Photo 12 Cracked and spalled limestone and granite at the west side of the building.

Attachment J – North Main Street Fire Station

	Photo 13 The plaster at the roof hatch was delaminated, loose, and partially missing.
	Photo 14 The plaster at the roof hatch was delaminated, loose, and partially missing.

Attachment J – North Main Street Fire Station

	Photo 15 Cracked wall tile and efflorescence at the north wall of the apparatus bay.
	Photo 16 Cracked wall tile and efflorescence at the north wall of the apparatus bay.

Attachment J – North Main Street Fire Station

	Photo 17 View of the grading sloping toward the window well at the north side of the apparatus bay.
	Photo 18 View of the grading sloping toward the window well at the north side of the apparatus bay.

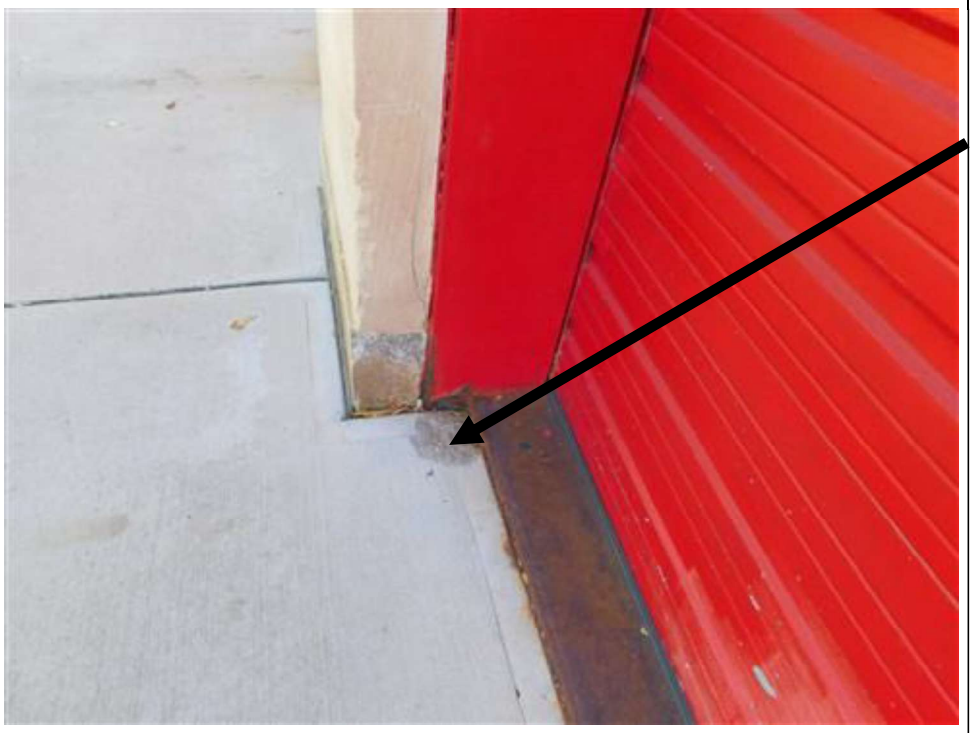
Attachment J – North Main Street Fire Station

	Photo 19 The hip roof had knee walls and posts installed to support the long rafter spans. Note the bowed 2x4 post at the center of the photo.
	Photo 20 The wood-framed hip roof was noticeably sagging.

Attachment J – North Main Street Fire Station

	Photo 21 Shrinkage cracks in the concrete slab at the apparatus bays.
	Photo 22 Shrinkage cracks in the concrete slab at the apparatus bays.

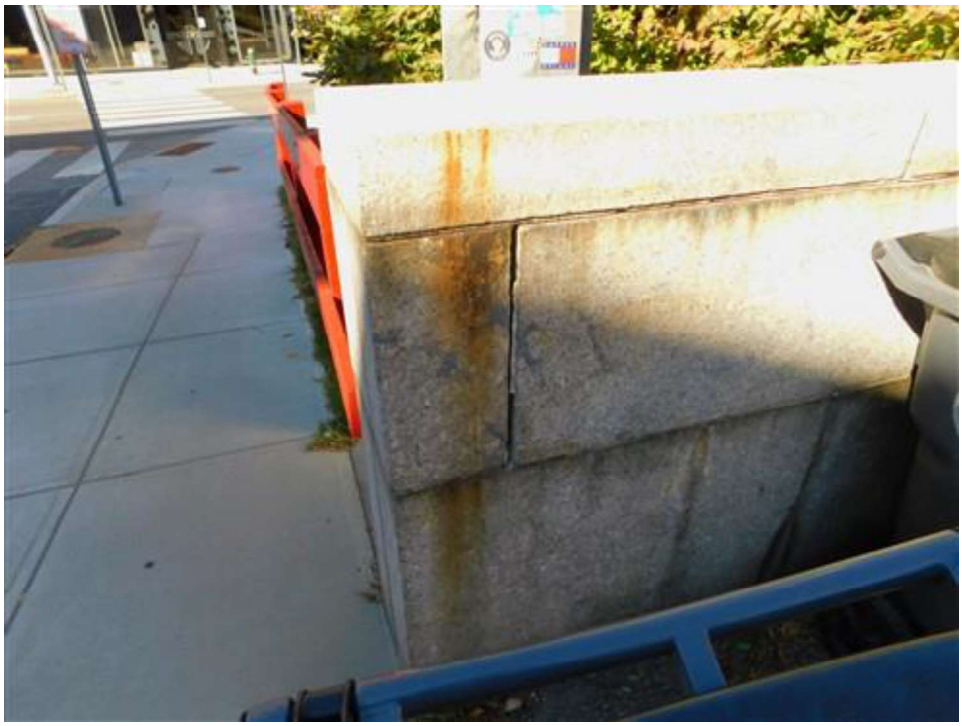
Attachment J – North Main Street Fire Station

	Photo 23 The concrete apron was spalled at the rusted steel threshold.
	Photo 24 The concrete apron was spalled at the rusted steel threshold.

Attachment J – North Main Street Fire Station

	Photo 25 Shrinkage crack in the east foundation wall at the utility room.
	Photo 26 Shrinkage crack in the east foundation wall at the utility room.

Attachment J – North Main Street Fire Station

	Photo 27 Granite stone retaining wall at the south side of the building had missing mortar.
	Photo 28 Granite stone retaining wall at the south side of the building had missing mortar.

Attachment J – North Main Street Fire Station

	Photo 29 Concrete retaining wall at the north side of the building was spalled.
	Photo 30 Concrete retaining wall at the north side of the building was spalled.

Attachment J – North Main Street Fire Station

	Photo 31 Missing mortar in the brick joints at the south side of the building.
	Photo 32 Missing mortar in the brick joints at the south side of the building.

MEP & FP ENGINEERING DESIGN ASSESSMENTS

AGE 2433 23DEC24

ABSTRACT NORTH MAIN ST

This study concludes with a prioritized action plan for addressing each identified code violation, recommending both immediate and long-term solutions. This information will be used to develop budgetary estimates and timelines for remediation and are provided to support informed decision-making by facility stakeholders and ensure regulatory compliance while enhancing overall building safety and functionality.

André Gill, PE

Andre Gill Engineering, LLC

TABLE OF CONTENTS

Assessment MEP & FP Engineering Project Summary

1. EXECUTIVE SUMMARY

1.1. The criteria for this section of the facilities assessment, specifically focuses on Mechanical, Electrical, Plumbing, Fire Protection and Fire Alarm Systems, include compliance with current Building Codes for the State of Rhode Island RISBC-1. This entails adherence to current Fire, and existing buildings, and fire life safety codes. Moreover, it involves aligning with industry best practices for Fire Design, facilities, encompassing standards such as ASHRAE, ventilation for acceptable Indoor Air Quality (IAQ), ADA, security, and emergency preparedness.

1.2. Description of Priorities – High (Immediate Need), Medium (Required and should be completed as soon as is practical), Low (Suggested for consideration as good engineering practice).

1.3. Report Qualifications

- The conclusions, recommendations and opinions of cost presented in this report are based on a review of available drawings, personal and telephone interviews of persons knowledgeable about the facility, our field observations, and our experience on similar projects.
- No materials testing of building components was performed, and no calculations were performed to determine the adequacy of the facility's original design. It was not the intent of this survey to perform an exhaustive study to locate every existing defect. Observations were made by trained professionals but there may be defects at the facility, which were not readily accessible, not visible, or otherwise inadvertently overlooked. Problems not evident at the time of this survey may develop over time. The opinions of costs are listed in current (uninflated) dollars. The actual costs may vary depending on the quality of contractors used, the quality of materials selected, the extent of work performed at one time, the season of the year in which the work is performed if the items are purchased individually or under master purchase contracts and other items. If any cost items listed are considered critical in making decisions about this facility, we recommend that contractor or supplier quotations be obtained for those items before making final decisions about this property.

2. PRIORITY MATRIX CRITERIA

Priority selection criteria

- High (Immediate Need)
- Medium (Required and should be completed as soon as is practical)
- Low (Suggested for consideration as good engineering practice).

3. RECOMMENDATIONS FOR ESTIMATE

3.1. MECHANICAL

HIGH PRIORITY ITEMS:

- Improve HVAC and Air Quality:
  - Replace HVAC System:
  - Add Ventilation and Filtration:
  - Diesel Exhaust Capturing Systems:
  - Insulate and Seal:
  - Evaluate Electrification:
- Ventilation Requirements for Occupied Spaces:
- Bathroom Ventilation Compliance: FOR 1ST FLOOR ONLY
- Overall Ventilation System Improvements:

3.2. ELECTRICAL

HIGH PRIORITY ITEMS:

- Replace most of the electrical distribution system including:
  - Panels which would include AFCI circuit breakers for sleep quarter circuits and GFCI for dryers and other 240V receptacles requiring GFCI protection.
  - Feeders
- Provide junction box for exposed splice for unit heater. Ensure wiring for unit heater is either in conduit or junction box. Ensure unit heater has local disconnect switch.
- Replace MC cable and flexible metal conduit below 8’ and where subject to physical damage with rigid metal conduit (RMC) or with permitted conduit/cable concealed in walls.
- Provide GFCI receptacles in required areas including apparatus bays and laundry areas.

MEDIUM PRIORITY ITEMS:

- Demolish abandoned wiring and conduit.
- Test original circuit wiring or simply replace all circuit wiring.
- Test existing GFCI receptacles and receptacles protected from GFCI receptacles. Replace those receptacles that fail.
- Replace faceplates.

LOW PRIORITY ITEMS:

- Provide receptacles as needed to power existing devices; allow greater flexibility in the future; eliminate extension cords; and reduce power strips.

3.3. PLUMBING

HIGH PRIORITY ITEMS:

- Roof Drains
- Investigate and Repair Corroded pipes
- Health issues:
    - Remove ice machine from apparatus bay
    - Remove all lead pipe and/or asbestos if any
    - Provide eye wash and shower in apparatus bay
    - Decontamination room with the following
        - Hot and cold water
        - Scrubbing tables
        - Soak tank(s)
        - Large stainless steels sinks
        - Floor drain to sanitary sewage
        - Hose cleaning machine

MEDIUM PRIORITY ITEMS:

- Install Thermostatic Mixing Valve:
- Provide Plumbing Accessories
- Replace outdated drainage pipe and inadequate venting:

LOW PRIORITY ITEMS:

- Water Closet Replacement
- Plumbing Fixture Replacement with low flow
- Provide Temperature Control Measures for fixtures
- Replace Sump pump
- Replace Deteriorating valves

3.4. FIRE PROTECTION

HIGH PRIORITY ITEMS:

- Replace Fire Alarm System: Rec 1-1
- Install new Fire Station Alerting System: Rec 1-2

MEDIUM PRIORITY ITEMS:

- Install new Fire Sprinkler System: Rec 1-3

LOW PRIORITY ITEMS:

- Replace single station CO alarms with hardwired CO alarms with battery backup: Rec 1-4

4. GENERAL DESCRIPTION

4.1. The criteria for this section of the facilities assessment, specifically focuses on Mechanical, Electrical, and Plumbing (MEP) and Fire Protection (FP), include compliance with current Building Codes for the State of Rhode Island RISBC-1. This entails adherence to current Fire, Energy, Mechanical, Electrical, Plumbing, and existing buildings, and fire life safety codes. Moreover, it involves aligning with industry best practices for offices and governmental type facilities, encompassing standards such as ASHRAE, ventilation for acceptable Indoor Air Quality (IAQ), ADA, security, and emergency preparedness.

4.2. Upgrade building systems required for meeting current RISBC-1 IAW IBC 2018.

4.2.1. Restrooms require complete renovations to comply with ADA. Plumbing fixtures including water closets, urinals, and lavatory require replacement in addition to ADA compliance and drinking fixtures IAW RISBC-3

4.2.2. HVAC systems including heating, air conditioning and ventilation systems reaching end of useable life require repair and/or replacement in addition to controls and monitoring by CPS central BMS IAW RISBC-4

4.2.3. Electrical systems throughout the site are inadequate and outdated. Repair and/or replacement is required IAW RISBC-5

4.3. Upgrade building systems required to meet current fire code RISBC- 1, Fire Safety Code section 1 through 6 (450-RICR-00-00-1), RI Fire Code (450-RICR-00-00-7), RI Life Safety Code (450-RICR-00-00-8) (NFPA 1, 101 2018), Rehabilitation Building and Fire Code for Existing Buildings and Structures (450-RICR-00-00-9), Rhode Island Fire Alarm Code (450-RICR-00-00-10) (National Fire Alarm & Signaling Code, (NFPA 72), 2019 Edition

4.4. Upgrade building system require to meet current energy code RISBC-8 IAW ICC 2018

4.5. Upgrade building systems required to meet current ASHRAE environmental, ventilation, and energy standards (ASHRAE Standards 55, 62.1, and 90.1)

4.6. Upgrade building systems required to meet current ADA code 2010.

4.7. Repair/ Replace building systems that are near or at the end of their serviceable life.

5. MECHANICAL FEASIBILITY STUDY

Mechanical HVAC System Description of Existing Conditions:

- **System Type and Layout**
    - The fire station's heating and exhaust systems are structured around a hydronic steam boiler setup, various exhaust fans and a Plymovent exhaust system for diesel fume management.
    - This setup primarily provides heating through steam and forced hot air but lacks a broader ventilation approach, relying instead on spot exhaust fans (bathrooms, kitchen, apparatus bay) and the Plymovent system for localized exhaust control equipment.
- **Heating System**:
    - **Hydronic Hot Water Boiler**: The facility uses a Lochinvar FTXL Boiler, supplying heat through radiators and unit heaters.
    - **Hot Water Radiators**: These are installed in sleeping areas, offices, bathrooms, and hallways for primary heating
    - **Apparatus Bay Heating**: The apparatus bay has unit heaters, with additional heat from a forced hot air system
- **Ventilation and Exhaust**:
    - **Mechanical Ventilation**: The facility lacks a centralized mechanical ventilation system.
    - **Spot Exhaust Fans**: Spot shutter exhaust fans provide ventilation in parts of the apparatus bay.
    - **Plymovent Diesel Fume Exhaust**: This system in the apparatus bay offers targeted exhaust management for diesel fumes, using a ducted setup connected to individual exhaust fans.
    - **Kitchen Cooking Appliances**: Requirements for exhaust may not be appropriate for the size of kitchen equipment.

- **Heating and Cooling Equipment**
    - Lochinvar hot water boiler, Model KNIGHT 800, , Type Gas, Gas pressure IN W.C. 4.0” MIN 14” MAX. Input MAX 800,000 BTUH MIN 160,500 BTUH, Output 746,000 BTHU
    - Various window AC units throughout the facility
- **Ventilation and Air Quality Systems**

- Exhaust fans are located throughout the facility. Details on ventilation systems, especially for the apparatus bay (e.g., direct exhaust capture systems, make-up air units).
- No filtration systems exist of any type to improve indoor air quality.
- No controls exist to control the building pressure.

- **Zoning and Controls**
  - The building is not zoned nor controlled in an efficient manner with a minimal number of thermostatic controls.
- **Energy Efficiency Measures**
  - No energy efficiency measures exist in the facility.
- **Special Features and Requirements**
  - Lack of dehumidification is apparent in various areas noticeable by dark spots and odors. The bathrooms, janitors' closets, apparatus bays, boiler room are locations that require attention.
  - It cannot be determined which equipment is on backup power from an HVAC systems perspective to maintain functionality during power outages e.g., Plymovent system.
- **Compliance and Safety**
  - The garage area is not supplied with any mechanical exhaust and not in compliance with 404.1 Enclosed parking garage exhaust requirements.
  - Compliance with NFPA 1500 and other applicable Code shall be coordinated with Architect.

Existing Mechanical Systems Conditions Observations:

The absence of a centralized ventilation system or adequate controls has resulted in poor indoor air quality (IAQ) within the firehouse, raising serious health and safety concerns for staff. Employees have reported issues such as stuffiness, excessive humidity, unpleasant odors, headaches, and fatigue, all of which point to inadequate ventilation and environmental controls.

Cooling within the facility is provided solely by window unit air conditioners. These units are inefficient and fail to maintain consistent cooling across large areas, making them particularly unsuitable for critical spaces like offices and sleeping quarters. Additionally, their lack of proper filtration and dehumidification capabilities exacerbates existing IAQ challenges, further diminishing the overall comfort and safety of the environment.

Ventilation through wall-mounted exhaust fans is another area of concern. These fans, which are manually operated, appear to be undersized and ineffective at maintaining adequate airflow throughout the facility. While the kitchen is equipped with a dedicated exhaust fan, it is likely not interlocked with the cooking equipment, presenting a potential safety hazard and failing to comply with best practices for kitchen ventilation.

In the bathrooms, ventilation rates seem to meet standard requirements, with airflow likely set at 50 cubic feet per minute (cfm) or 70 cfm per fixture and 20 cfm or 50 cfm per showerhead, depending on whether the system operates The janitors' closets represent a notable deficiency in the ventilation system. These spaces rely solely on louvered doors for air circulation, with no forced mechanical exhaust in place. This setup is inadequate for proper ventilation and poses a risk of contaminant buildup, further compromising the air quality in the facility.

Recommendations for Mechanical Systems:

HIGH PRIORITY ITEMS:

Improve HVAC and Air Quality

- **Replace HVAC System**:
  - The HVAC system is outdated and inefficient.
  - The station should be ventilated to prevent infiltration of fuel vapors and exhaust fumes from the apparatus bay and garage areas into administrative and personnel living spaces. Plymovent system provides specific source exhaust, but does not prevent garage fumes from entering areas above.
  - New system would have night setback to improve energy efficiency.
  - Provide Carbon Monoxide and Nitrogen Oxide alarms
  - Installing modern, zoned systems with programmable thermostats for precise control in different areas.
  - For high-usage areas like apparatus bays and sleeping quarters, adding individual climate controls can improve comfort.
  - Low-speed, high-volume large fans, provide excellent circulation and assist HVAC systems to provide comfort to apparatus bay.
  - Install kitchen hood and make-up air system
- **Add Ventilation and Filtration**:
  - Install a direct exhaust capture system in the apparatus bay to control vehicle emissions, and upgrade to high-efficiency filters (e.g., MERV-13 or higher) with additional air quality options like UV-C lights. These improve indoor air quality and reduce airborne contaminants.
- **Diesel Exhaust Capturing Systems**
  - Plymovent systems should be supplemented with other exhaust systems to filter the air from off-gassing of contaminated firefighting equipment and PPE.
  - Installation of sensors can detect a wide range of unhealthy gases, including carbon monoxide, nitrogen oxide, and other gases. When quantities reach an unsafe level fresh air intake and exhaust fans are automatically activated to exchange the volume of air in the building with fresh air.
- **Insulate and Seal**:
  - Insulate walls, attics, and apparatus bays if not already done, and add weatherproofing to windows and doors. This improves energy efficiency, reducing heating and cooling costs over time.
- **Electrification**:
  - Consider the installation of VRF type systems as they are easy to retrofit facilities.

Ventilation Requirements for Occupied Spaces:

- Addition of 100% outside air ERV and ductwork infrastructure provide excess dehumidified and neutral temperature air to the building to improve indoor air quality.
  1. The supply of dehumidified, neutral-temperature air to space enhances the ventilation rates to enhances air circulation and reduces pollutant concentrations including air borne particles, molds, and odors. Continuous, fresh, filtered air that maintains comfortable humidity levels, effectively controlling indoor contaminants.

2. The ERV aids energy efficiency and reduces the load that would be gained by the heating existing heating system. This would allow for the continued use of the current boiler system.

- A smart control system to prevent the building from going excessively out of temperature ranges. While still maintaining operational flexibility to adjust airflow based on occupancy or specific room requirements, maximizing ventilation when needed and conserving energy when possible.
- New exhaust fans that are monitored to ensure operational efficiency.
- The newly installed mechanical ventilation systems will comply with Section 403 of the International Mechanical Code.
- Altered, reconfigured, or extended existing mechanically ventilated spaces should provide at least 5 cfm per person of outdoor air and not less than 15 cfm of ventilation air per person.

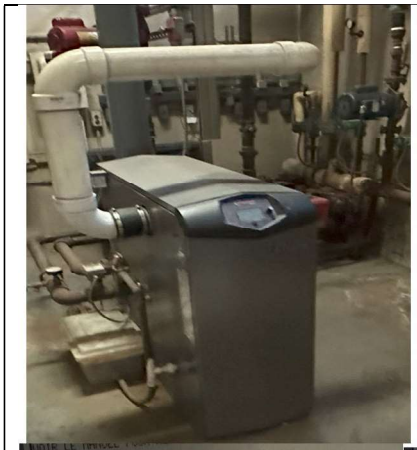
Bathroom Ventilation Compliance:

- Ensure that all bathrooms meet the exhaust rates specified in RISBC Mechanical, removing warm moist air at either 50 cfm or 70 cfm per fixture and 20 cfm or 50 cfm per shower head.
- Consider lower rates for continuous operation and higher rates for intermittent operation.

Overall Ventilation System Improvements:

- Address ventilation concerns bringing the building into compliance with RISBC-4 requirements, either through architectural changes, mechanical changes, or a combination of both.

MECHANICAL REFERENCE PHOTOS:

<table>
<tr>
<td> 

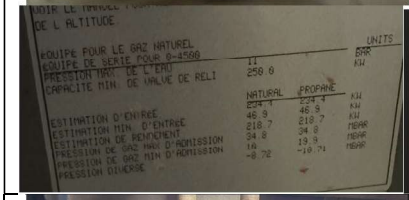
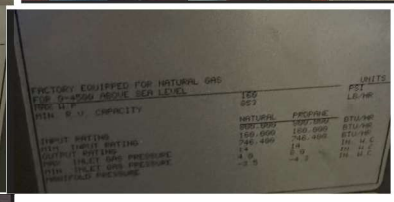
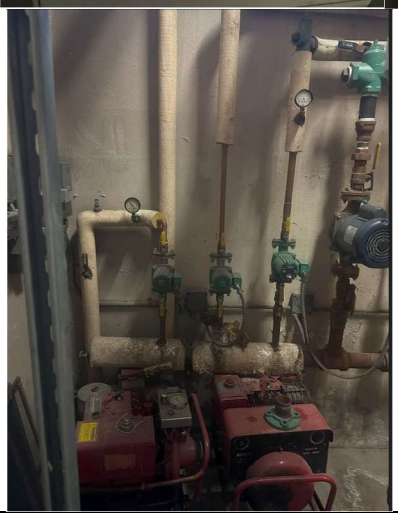
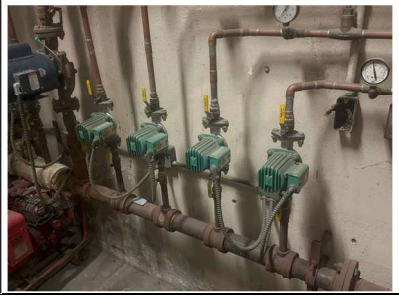
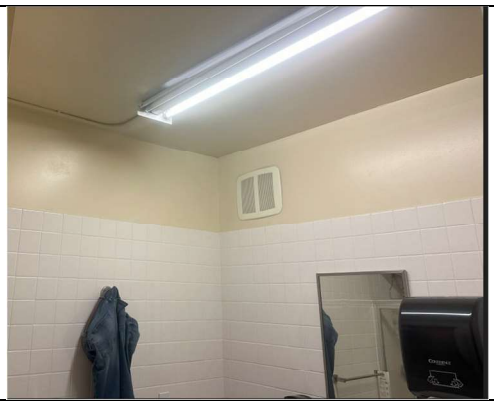
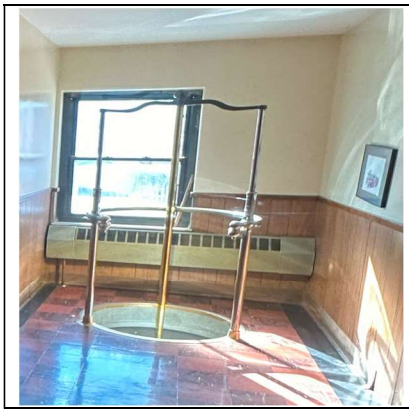
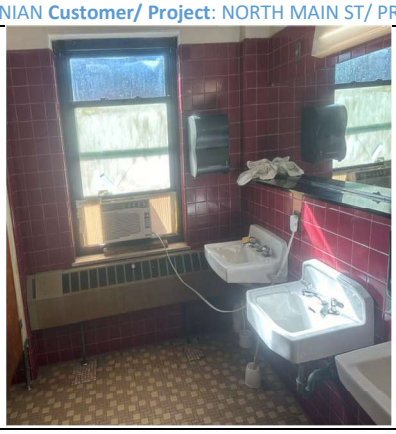
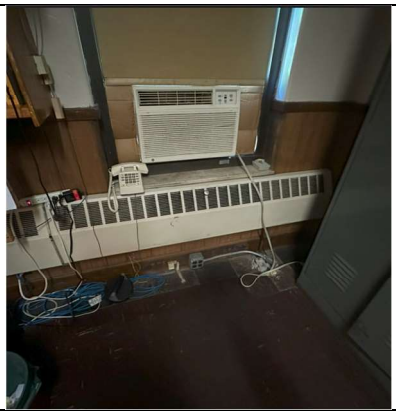

 </td>
<td><u>PHOTO 1:</u>
BOILER</td>
</tr>
<tr>
<td> 
 </td>
<td><u>PHOTO 2:</u>
HVAC PUMPS AND CIRCULATORS</td>
</tr>
</table>

	PHOTO 3: WINDOW UNIT AND BASEBOARD OFFICE
	PHOTO 4: BATHROOM EXHAUST FAN
 	PHOTO 5: WORKOUT AREA RAISED FLOOR VENTS

 	PHOTO 6: RADIATORS IN HALLWAY, GEAR LOCKER AND BATHROOM
 	PHOTO 7: WINDOW AC AND RADIATOR
	PHOTO 8: WINDOW UNIT AND RADIATORS IN COMMON AREAS

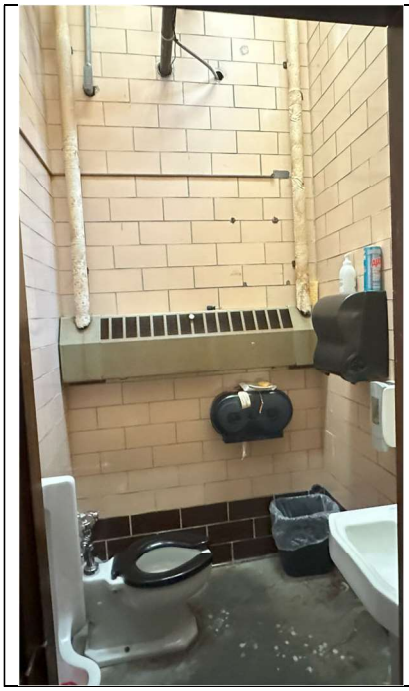


PHOTO 9:
BATHROOM RADIATOR

PHOTO 10:
KITCHEN WINDOW UNIT,
RADIATORS

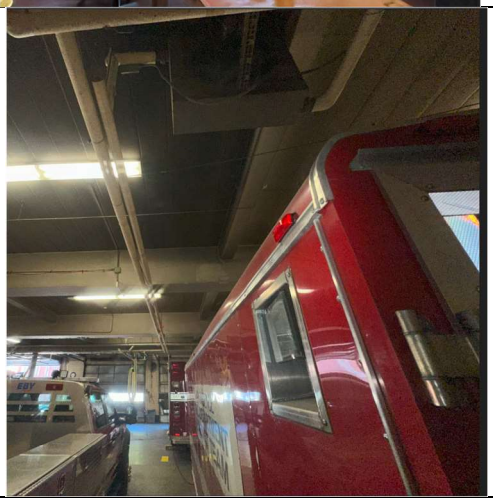
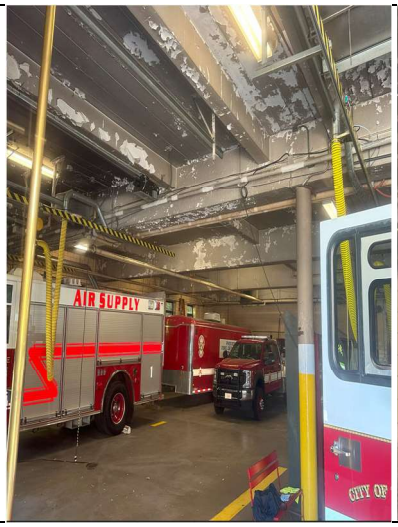


PHOTO 11:
APPARATUS BAY UNIT HEATER

	PHOTO 12: DRYER EXHAUST VENT

	PHOTO 13: APPARATUS BAY UNIT HEATER

	PHOTO 14: KITCHEN HOOD EXHAUST FAN



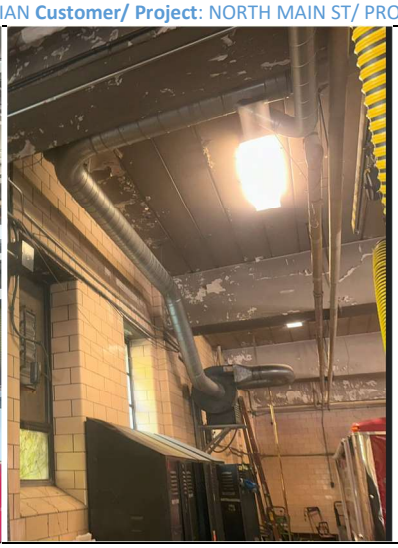


PHOTO 15:
PLYMOVENT


PHOTO 16:
PLYMOVENT FAN


PHOTO 17:
HVAC PIPING

6. ELECTRICAL FEASIBILITY STUDY

Electrical System Description of Existing Conditions:

The North Main Street fire station's electrical distribution is a 208/120V, three phase, four wire system. The building is supplied an underground service to service equipment located along the North Wall. The service disconnect is a 200A enclosed circuit breaker. The meter is located to the right of the service disconnect. The service disconnect is believed to supply the ATS located in the mechanical room. The ATS is Asco and is also supplied by an exterior generator upon loss of normal utility power. Therefore, the whole building is provided with backup power by a generator. The ATS supplies power to a Trumbull Electric panel which is next to the ATS. The Trumbull Electric panel is rated for 225A and contains six (6) 2-pole circuit breakers. These circuit breakers supply 120/208V, single phase feeders which power the other panels located in the facility. The other panels are 120/208V, single phase and Trumbull Electric panels except for one (1) Square D panel. These panels supply power to the mechanical equipment, lighting, and receptacles throughout the building.

Existing Electrical Systems Conditions Observations:

The ATS appears to be installed within the last fifteen years and appears to be in good condition though shovels were placed on the door.

The Trumbull Electric panels may be from the original construction and are over 50 years old. Trumbull Electric was acquired by GE in the 1950's and stopped using the name Trumbull Electric in the 1960's. Their panels appear obsolete due to being over 50 years old. Schneider Electric states the expected life of circuit breakers is 30 years. The Consumer Product Safety Commission (CPSC) estimates a circuit breaker's life expectancy at 30 to 40 years. Though circuit breakers may last longer, especially in good environments and with maintenance; the Trumbull Electric panelboards in the facility are past life expectancy. Though the Square D panel does appear much better; the panel is estimated at approximately 20 years old and is approaching life expectancy. The panels are in poor condition.

The panels did not contain AFCI circuit breakers. On new installations, AFCI protection is required for sleeping quarters in fire stations per NEC 210.12(D). Though the existing installation predates this requirement and is grandfathered, AFCI protection would add greater protection to the inhabitants if installed.

The conductor of the wire often lasts for 100 years. The insulation often fails before the conductor. Insulation may start to fail after 50 years. A proper investigation of the wire was not in the parameters of this investigation. However, cracking insulations was observed in conductor of similar age in other fire stations.

Exposed conductors were observed at the service equipment. A cover plate had fallen off. This is a violation of wiring requirement in NEC Chapter 3.

There appeared to be a complete lack of GFCI protection. In areas such as the laundry where the washing machine and dryers are located, the washing machines and dryers did not appear to be GFCI protected. GFCI receptacles may protect other receptacles on the circuit if wired correctly. However, this does not appear to be occurring. The laundry should have a dedicated circuit and did not contain a GFCI receptacle. Therefore, the installation does not meet code. Per NEC 210.8(B), GFCI protection is required for all the facility receptacles in the bathrooms, kitchen, food preparation areas, rooftops, outdoors, near sinks, damp or wet areas, locker rooms associated with showering, garages, service bays, basements, and laundry areas. There appeared to be a lack of GFCI receptacles in the apparatus bays, laundry areas, bathrooms, and kitchens. In addition to the locations stated, the following equipment require GFCI protection per NEC

210.8: automotive vacuum machines, water coolers, vending machines, high pressure spray washing machines, tire inflation machines, sump pumps, dishwashers, wall mounted ovens, counter mounted cooking equipment, clothes dryers, and microwave ovens. Clothes dryer may require 240V receptacles. This is often accomplished using a GFCI circuit breaker. No GFCI circuit breakers were identified.

There appeared to be a lack of receptacles. Use of power strips was observed in the facility. This increases the likelihood of a circuit breaker tripping due to over amperage or melting the conductor if the circuit breaker fails.

Many faceplates appeared old. One faceplate was falling off a switch.

The building utilizes fluorescent lighting. The lamps are typically 2', 4', or 8' though compact fluorescent lamps were seen. Modern LED replacement fixtures would operate likely between 1/3 and 2/3 the wattage and not contain mercury as the existing fluorescent lamps do. LED fixtures have a significantly greater lifespan too. The return on investment of LED fixtures replacing T12 fixtures would likely be 1-3 years based on similar projects.

There did not appear to be any occupancy/vacancy sensors to shut off the light fixtures in closet or bathrooms. These are requirement in the RI energy code for new installations. However, these controls would help reduce energy usage.

Recommendations for Electrical Systems:

HIGH PRIORITY ITEMS:

- Replace most of the electrical distribution system including:
  - Panels which would include AFCI circuit breakers for sleep quarter circuits and GFCI for dryers and other 240V receptacles requiring GFCI protection.
  - Feeders
- Provide junction box for exposed splice for unit heater. Ensure wiring for unit heater is either in conduit or junction box. Ensure unit heater has local disconnect switch.
- Replace MC cable and flexible metal conduit below 8' and where subject to physical damage with rigid metal conduit (RMC) or with permitted conduit/cable concealed in walls.
- Provide GFCI receptacles in required areas including apparatus bays and laundry areas.

MEDIUM PRIORITY ITEMS:

- Demolish abandoned wiring and conduit.
- Test original circuit wiring or simply replace all circuit wiring.
- Test existing GFCI receptacles and receptacles protected from GFCI receptacles. Replace those receptacles that fail.
- Replace faceplates.

LOW PRIORITY ITEMS:

- Provide receptacles as needed to power existing devices; allow greater flexibility in the future; eliminate extension cords; and reduce power strips.

ELECTRICAL REFERENCE PHOTOS:

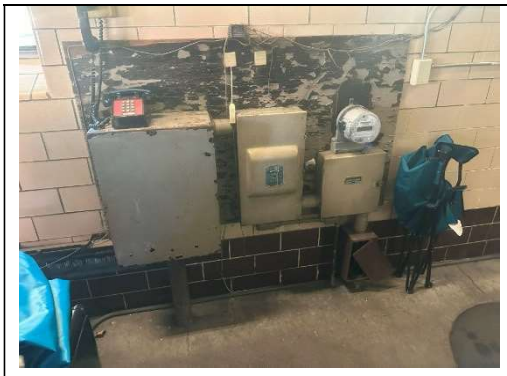
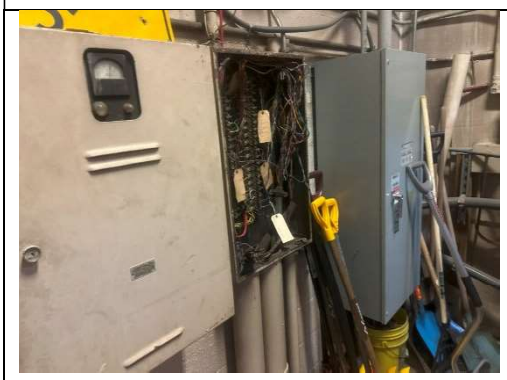
	PHOTO 1: SERVICE EQUIPMENT AND COVER PLATE FALLING OF BOX (BOTTOM RIGHT)
	PHOTO 2: ATS (RIGHT)

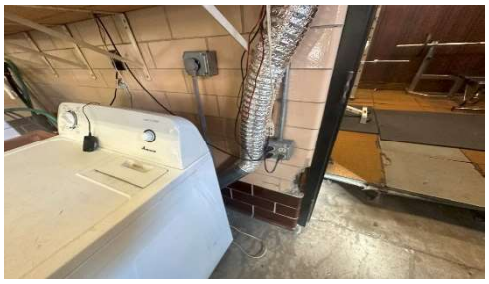
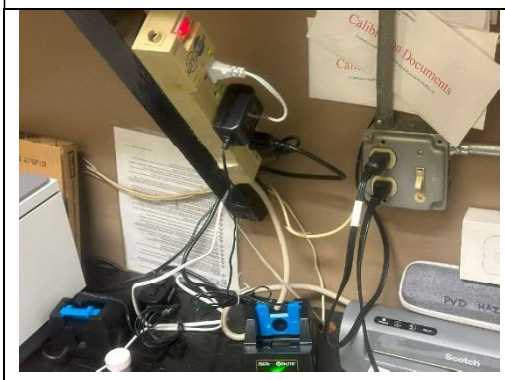
	PHOTO 3: TRUMBULL ELECTRIC WHICH SUPPLIES OTHER PANELS
	Photo 4: Laundry receptacles without GFCI protection

	PHOTO 5: BATHROOM RECEPTACLE WITHOUT GFCI PROTECTION
	PHOTO 6: POWER STRIP

7. PLUMBING FEASIBILITY STUDY

Plumbing System Description of Existing Conditions:

- **Water Supply and Distribution**
    - The main water supply is a mix of copper, PEX and stainless tubing. As the majority of piping is hidden behind wall some piping is assumed to be original to building
    - Water pressure levels cannot be confirmed but are assumed to be relatively high and there are no complaints and appear to be normal.
    - Information on potable and non-potable water lines, especially for hose washing and cleaning facilities, is not clearly defined.
- **Hot Water System**
    - Sandblaster model SBS-75-76-NE 400. Input 75,100 BTU/HR, Recovery GPH 73. MIC 5" WC gas pressure max inlet 14" WC. 2.49% (1,020 BTU/HR) standby loses @ 0.8 thermal efficiency
    - Hot water distribution network and recovery rate do not appear to meet recirculation requirements to minimize wasted energy. The hot water is also required to meet high demand, for decontamination showers.
- **Decontamination Facilities**
    - Details on decontamination showers and wash stations, including flow rate, capacity, and temperature control cannot be confirmed as adequate. The decontamination rooms do not appear to be in use as they are occupied by other equipment
    - **UNKNOWN REQUIREMENTS ON EYEWASH. QUESTION FOR ARCHITECT**
- **Drainage and Wastewater Systems**
    - Floor drains in apparatus bays are not all in working order and have been flagged by personnel. Floor drains in the decontamination area appear to be used by equipment in the decontamination area
    - Locations, if any, cannot be determined if there are interceptors located in the plumbing system (e.g., oil and grease interceptors) **(MAINTENANCE RECORDS HAVE BEEN REQUESTED.)**
    - Backflow prevention devices are installed in multiple locations to protect potable water from cross-contamination.
- **Sanitary Sewer and Wastewater Treatment**
    - Existing piping systems
    - Connection to municipal sewer or on-site wastewater treatment system cannot be determined and is assumed to be adequate can be assumed to be adequate.

- **MAINTENANCE RECORDS HAVE BEEN REQUESTED.**

- **Fixture Types and Locations**
  - Existing plumbing fixtures appear
  - All new fixtures appear to be selected for water conservation (e.g., low-flow toilets, automatic faucets).
- **Compliance and Safety**
  - Compliance with applicable plumbing codes, backflow prevention, and any necessary cross-connection controls.
  - Describe any anti-scald devices and other safety measures in place for hot water systems.

Existing Plumbing System Conditions Observations:
Several issues with plumbing fixtures and piping throughout the facility require immediate attention to ensure compliance with current water conservation codes and to address operational deficiencies. Numerous fixtures are not functioning properly, and corroded pipes are evident across the facility. This corrosion is causing leaks, such as in the Men's restroom toilet area on the first floor, which demands urgent repairs. Additionally, the shower in the Men's restroom on the second floor is leaking due to failures in the pan and tile system.

Floor drains in the apparatus bay require further investigation using a borescope and possibly snaking to assess their condition and address any blockages. Furthermore, issues with sanitary piping have been identified, particularly at transitions where temporary Fernco fittings have been used in place of proper replacements. These temporary solutions should be replaced with permanent piping to prevent further failures.

The fixtures in the first-floor restroom are outdated and must be replaced with compliant, water-efficient models. Corrosion throughout the plumbing system is severe, presenting a high risk of failure that could lead to significant operational disruptions and increased maintenance costs.

There are also health concerns related to the location of the ice machine, which is situated in the immediate vicinity of the apparatus bay. Best practices for fire station design highlight the risks of placing ice machines near areas with high potential for contamination, such as apparatus bays, due to the release of carcinogens in these environments. The relocation of the ice machine should be prioritized to mitigate these risks.

Lastly, the hot water recirculation pump is insufficiently sized, leading to delays in the delivery of hot water for handwashing. Addressing this issue may involve increasing the pump size, improving insulation, or reconfiguring the hot water distribution system to ensure a timely and efficient supply of hot water.

Recommendations for Plumbing Systems:

HIGH PRIORITY ITEMS:

- **Roof Drains:**
  - Identify and fix major issues with roof drains, conductors, connections, and leaders.
  - Significant water damage was identified in basement areas on the North Side of the building.

- **Corroded pipes:**
    - Scope sanitary waste and vent pipes for corrosion
        1. Sewer line deterioration
    - Check domestic water pressure at remote locations and compare versus incoming water pressure
- **Health issues:**
    - Remove ice machine from apparatus bay because of residual diesel exhaust carcinogens
    - Remove all lead pipe and/or asbestos if any
    - Provide eye wash and shower in apparatus bay
    - Decontamination room with the following:
        1. Hot and cold water
        2. Scrubbing tables
        3. Soak tank(s)
        4. Large stainless steels sinks
        5. Floor drain to sanitary sewage
        6. Hose cleaning machine

MEDIUM PRIORITY ITEMS:

- **Thermostatic Mixing Valve:**
    - Install a master thermostatic mixing valve on water heaters.
    - Ensure bathroom groups are protected by local temperature fluctuations.
    - Ensure the installation of hot water recirculation pump and confirm sink temperatures are reached within 10 seconds.
- **Plumbing Accessories:**
    - Provided shut-off valves at all fixtures
    - Provide drinking fountain in apparatus bay and electric water cooler
    - Provide and/or ensure frost free hose bibs on all exterior walls
    - Provide grease traps for kitchen drains
    - Provide oil separators at drains in apparatus bay, protective clothing laundry, and maintenance areas
    - Provide floor trench drains under vehicle parking areas that do not extend beyond the vehicle to prevent wet spots and slip hazards.

- Evaluate placing sump pumps on emergency power

- **Outdated drainage pipe and inadequate venting:**
  - Scope and replace as necessary vent piping.

LOW PRIORITY ITEMS:

- **Deteriorating valves:**
  - Replace shutoff valves that leak by
- **Sump pump:**
  - Install appropriately sized pump to aid in dewatering of basement.
  - Ensure pump is powered appropriately
- **Water Closet Replacement:**
  - Comply with SBC-3 (Plumbing Code) for a maximum water consumption of 1.6 gpf.
- **Water Conservation:**
  - Comply with RISRC-1-20.4.5 405.0 Plumbing for water conservation.
- **Temperature Control Measures:**
  - Ensure lavatories and showers are protected by temperature control measures.

PLUMBING REFERENCE PHOTOS:

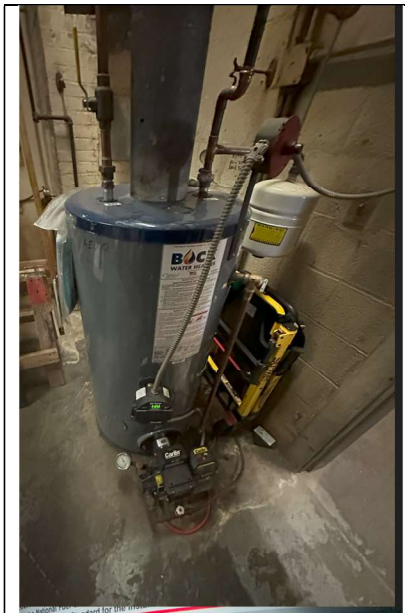
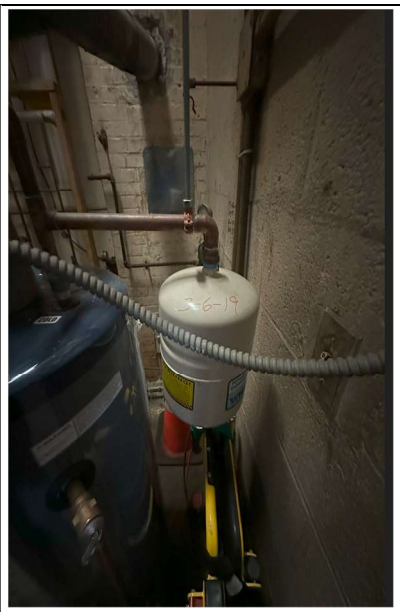
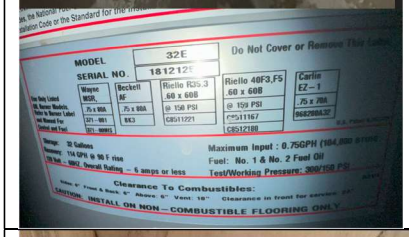
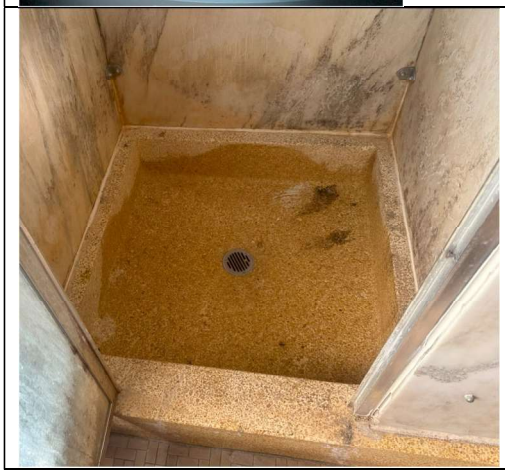
<table>
<tr>
<td> 


</td>
<td><u>PHOTO 1:</u>
HOT WATER HEATER</td>
</tr>
<tr>
<td>  </td>
<td><u>PHOTO 2:</u>
OLD FIXTURES</td>
</tr>
</table>


PHOTO 3:
OLD FIXTURES

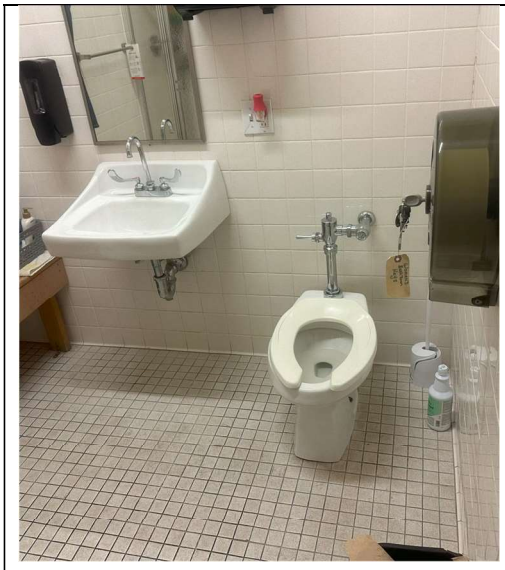


PHOTO 4:
OLD FIXTURES

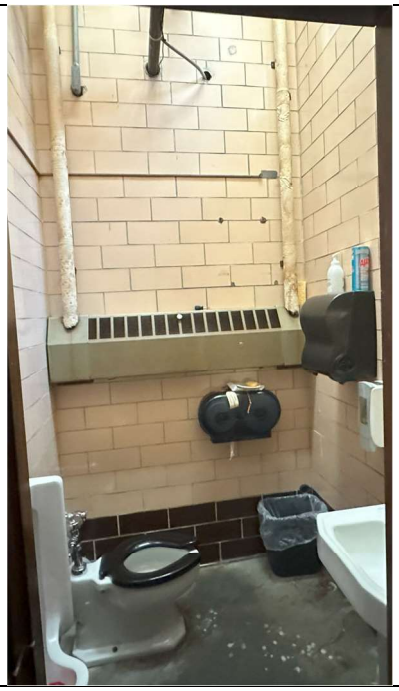


PHOTO 5:
OLD FIXTURES

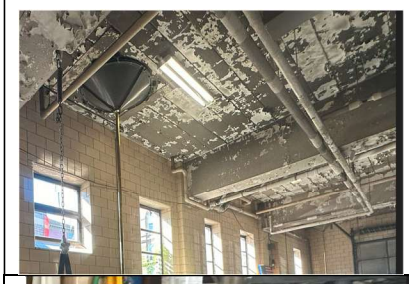


PHOTO 6:
SANITARY PIPING

PHOTO 7:
WASHING MACHINE DRAIN WITH HOSE RUNNING ACROSS FLOOR

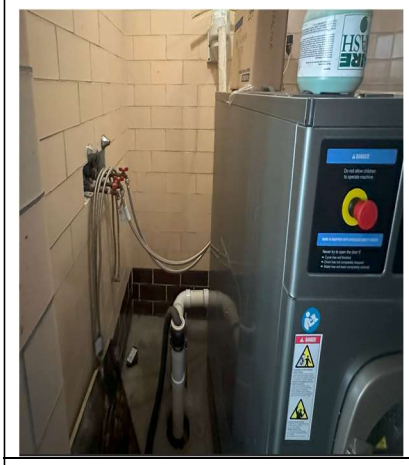
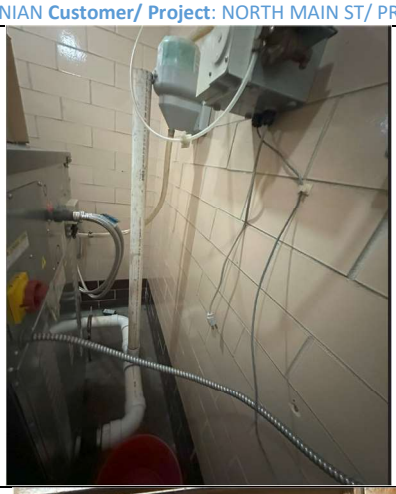
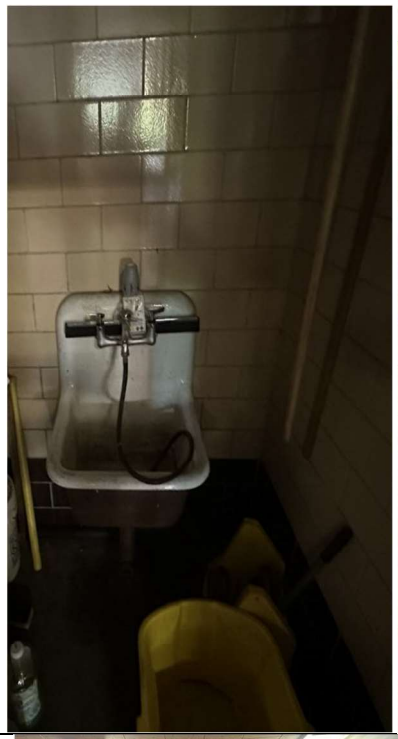
 		
 		PHOTO 8: SERVICE SINK
 		PHOTO 9: KITCHEN SINK

	
	PHOTO 10: APPARATUS BAY FLOOR DRAIN

8. FIRE PROTECTION FEASIBILITY

Existing Conditions Fire Protection System Description:

- **General Description**
    - The building is provided with an addressable fire alarm system including local CO/smoke alarms, heat and smoke detectors, and low frequency sounders.
    - The existing devices appear to be out of date, with different models of horn/strobes installed throughout.
    - It is EPM's recommendation that additional horn/strobes and initiating devices should be installed to provide full detection and notification coverage throughout.
- **Fire Alarm**
    - The building is not sprinklered and the installation of a sprinkler system should be considered depending on the extent of the renovations.
    - The existing fire station alerting system no longer provides an intelligible message, possibly due to several factors such as speaker locations, wattage settings, and equipment degradations.
- **Fire Sprinklers**
    - The building is not sprinklered and the installation of a sprinkler system should be considered depending on the extent of the renovations.
- **Fire Station Alerting System**
    - The existing fire station alerting system no longer provides an intelligible message, possibly due to several factors such as speaker locations, wattage settings, and equipment degradations.
    - A new fire station alerting system should be installed in accordance with NFPA 1225, in order to deliver an intelligible message.
- **Code Compliance**
    - Codes as adopted by the City of Providence, RI.
    - The RISBC-1, Rhode Island Building Code, and RISRC-1, State Rehabilitation Building and Fire Code for Existing Structures are the base building codes along with the specific references. There are multiple codes and ordinances that make up the fire and life safety codes and are as follows: • Fire Safety Code Sections 1 through 6 (450-RICR-00-00-1)
    - RI Fire Code (450-RICR-00-00-7)
    - Incorporates the Fire Code of the National Fire Protection Association, Inc., (NFPA 1), 2018 Edition, by reference

- RI Life Safety Code (450-RICR-00-00-8)
- Incorporates the Life Safety Code of the National Fire Protection Association, Inc., (NFPA 101), 2018 Edition, by reference
- Rehabilitation Building and Fire Code for Existing Buildings and Structures (450-RICR-00-00-9)
- Rhode Island Fire Alarm Code (450-RICR-00-00-10) Incorporates the National Fire Alarm & Signaling Code, (NFPA 72), 2019 Edition, by reference
- National Fire Alarm & Signaling Code, (NFPA 72), 2019 Edition incorporates NFPA 1225, Standard for Emergency Services Communications, 2022 Edition, by reference
- The City of Providence has adopted current RI state codes and regulations. Therefore, the building is reviewed to current referenced editions of the RI reference codes, and NFPA 1 and NFPA 101 for existing apartments for fire elements.
- By definition: DATES OF CONSTRUCTION/ APPLICABLE CODE:
  - For the purposes of this review the fire and life safety system(s) are being reviewed to assess the condition of the current installation, and for a planned rehabilitation.
  - Buildings should comply with the building and rehab codes as well as the existing building portions of NFPA 1 and 101 as adopted by the City of Providence when undergoing alterations.

- **Conditions Assessment**
  - A survey of the building was completed on October 3, 2024, by Mr. Orazine from EPM. The intent of the survey was to review the fire alarm system deficiencies or concerns and evaluate potential modification of the systems to meet the requirements of future alterations. The fire protection systems appear to be maintained by Encore based on labels on the system. Maintenance reports were not provided for this review. The fire alarm system is monitored by the city masterbox system.
- **Description**
  - The building is provided with a Fire-Lite MS-5UD addressable fire alarm panel located in the lower mechanical room.
  - The fire alarm panel is monitored by the City Masterbox.
  - The fire alarm system is designed for general evacuation by activating horns, strobes, and horn/strobes on alarm from an initiating device.
  - Initiating devices include common area smoke detectors, heat detectors, and manual pull stations.
  - The panel is provided with battery back-up.
  - There is an emergency generator onsite.

- **Sprinkler System (N/A)**

- **Fire Alarm System Review**

  - The fire alarm control panel in Building is a Fire-Lite MS-5UD conventional fire alarm panel.
  - The devices appear to be old and are hardwire/zoned.
  - The system includes smoke alarms, and heat detectors.
  - The system is set up for general alarm and has strobes, and horn/strobes throughout the building common areas.
  - Smoke detectors are provided at the top of the stair, and throughout the second floor.
  - Pull stations are provided at exits.
  - Several areas throughout are lacking in notification, including the apparatus bay, exercise room, bunk rooms, portions of the day room, hallways, and the kitchen/dining room.
  - Additional horn strobes should be provided for complete coverage throughout.
  - Bunk rooms and day rooms should be provided with low frequency notification.
  - **Recommend modifying existing fire alarm system, including providing low frequency notification in sleeping areas, and installing additional horn strobes throughout in order to provide full notification coverage. (REC 1-1).**
  - Note the old panel boxes being used as terminal and junction boxes should be removed, and new wiring with proper splices be provided.
  - Sleeping rooms are all provided with system smoke detectors, and local 120V smoke/carbon monoxide alarms.
  - Devices exposed to the weather should be weatherproof with weatherproof boxes.
    - 15.3.4.5.1 Where a fire alarm system is required, a total (complete) coverage fire detection system in accordance with § 9.6.2.9 shall be provided.
    - 15.3.4.5.2 The requirement of § 15.3.4.4.1 shall not apply to educational occupancies equipped throughout with an approved, supervised automatic sprinkler system in accordance with § 9.7.1.1(1) and an automatic smoke detection system in accordance with § 9.6.2.11(1).
    - Upon alteration Level 2 or rehabilitation, a fire alarm system shall be installed in work areas as required by the Rhode Island Fire Code, Fire Alarm Code, and referenced standards adopted.
  - As per the fire code, 10.1.2* Life Safety Code Every new and existing building shall comply with this Code and NFPA 101.
  - Components for the fire alarm system should be provided with protective coverings and/or rated for the environment including dust. Additional IR or flame detection should be reviewed and considered for welding areas.

- **Fire Station Alerting System**

  - There have been issues regarding the intelligibility of the existing fire station alerting system.
  - The station is provided with a Zetron IP Fire Station Alerting (IP FSA) System with a Model 6203 IP Station Transponder, with speakers installed throughout.
  - The existing speakers appear to be dated with some having exposed wiring.

- These speakers are not providing an intelligible message, which may be due to numerous reasons such as circuit and equipment degradation, speaker placement, noise from other circuits, wattage provided to speakers, or changes to the interior (finishes, objects/obstructions, background noises).
- **Recommend a new fire station alerting system including new speakers and speaker circuits throughout. (REC 1-2)**

- ***NFPA 72, 2016 Edition,***
  - *14.4.9 In-Building Emergency Radio Communication Systems.*
    - In building emergency radio communication systems shall be inspected and operationally tested in accordance with the requirements of NFPA 1221.
  - 14.4.10 Voice Intelligibility
    - 14.4.10.1 Voice communication using prerecorded messages and manual voice announcements shall be verified as being intelligible in accordance with the requirements of 18.4.10.
    - 14.4.10.2 Intelligibility shall not be required to be determined through quantitative measurements.
- ***NFPA 1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems***
  - Please note: As part of the Emergency Response and Responder Safety Document Consolidation Plan (consolidation plan) as approved by the NFPA Standards Council, this Standard has been combined into new consolidated Standard NFPA 1225.
  - As a result of this action, the "current edition" of NFPA 1221 shown on this page is the last published edition of the standard's content as a stand-alone standard.
  - For further information and text of the current consolidated Standard, go to NFPA 1225.
    - NFPA 1225 Standard for Emergency Services Communications, 2022 Edition.
- **Fire Protection Systems**
  - The building is not currently provided with a sprinkler system. Depending on the work, and to comply with newer codes, a sprinkler system should be provided.
  - From the Rhode Island Building Code for enclosed garages - 406.6.3 Automatic Sprinkler System: An enclosed parking garage shall be equipped with an automatic sprinkler system in accordance with Section 903.2.10.
  - 903.2.10 Group S-2 Enclosed Parking Garages
    - An automatic sprinkler system shall be provided throughout buildings classified as enclosed parking garages in accordance with Section 406.6 where either of the following conditions exists:

- Where the fire area of the enclosed parking garage exceeds 12,000 square feet (1115 m2).
- Where the enclosed parking garage is located beneath other groups.
- Exception: Enclosed parking garages located beneath Group R-3 occupancies.

- **Sprinkler protection should be provided in accordance with current codes and standards. (Rec 1-3)**

- **Carbon Monoxide**
  - As per the City of Providence and Rhode Island carbon monoxide detection should be provided in accordance with Rhode Island Life Safety Code. Currently, there are only battery-operated local carbon monoxide detectors. The building requires CO detection for areas with fuel burning equipment.
  - (RI Fire Alarm Code) Where required by other governing laws, codes, or standards, carbon monoxide detectors shall be installed in accordance with the following:
  - On the ceiling in the same room as permanently installed fuel-burning appliances, and
  - Centrally located on every habitable level and in every HVAC zone of the building, and
  - Outside of each separate dwelling unit, guest room, and guest suite sleeping area within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel, and
  - Other locations where required by applicable laws, codes, or standards, or a performance-based design in accordance with Section 17.3 (RI Fire Alarm Code)

- **CO detection should be replaced with hardwired and battery back-up CO detectors and should be provided in accordance with current codes and standards. (Rec 1-4))**

Recommendations For Fire Protection Systems:

- Based on interviews, on-site observations, and experience with similar properties, the following recommendations are included for remedial action along with associated priority, and recommended time frame.

HIGH PRIORITY ITEMS:

- **Replace Fire Alarm System**: **Rec 1-1**
  - The Fire Alarm system is outdated and does not comply with current Rhode Island Building and Fire Codes.
  - The existing fire alarm system is a conventional hardwired system, and newer systems with 10 or more devices should be addressable.
  - Some of the existing fire alarm devices (smoke and heat detectors, horn strobes) are older than the panel itself.
  - Install CO detection in main bunk room, day room, and kitchen.

- Provide additional notification appliances to provide full audible/notification coverage throughout the station and ensure all notification appliances are synchronized.

- **Install new Fire Station Alerting System**: **Rec 1-2**
  - The fire station alerting system does not deliver an intelligible message over the installed loudspeakers and does not comply with NFPA 72 or NFPA 1221 regarding in building emergency radio communications
  - There are several speakers installed throughout the fire station, several of which appear to be outdated, and some with exposed wiring.
  - The old FCI fire alarm panel appears to be used as a junction box for the fire station alerting system wiring. This panel should be removed as it is not in service as a fire alarm system and is not intended to be used as a junction box.

MEDIUM PRIORITY ITEMS:

- **Install new Fire Sprinkler System**: **Rec 1-3**
  - From the Rhode Island Building Code for enclosed garages - 406.6.3 Automatic Sprinkler System: An enclosed parking garage shall be equipped with an automatic sprinkler system in accordance with Section 903.2.10.
  - 903.2.10 Group S-2 Enclosed Parking Garages: An automatic sprinkler system shall be provided throughout buildings classified as enclosed parking garages in accordance with Section 406.6 where either of the following conditions exists:
    1. Where the fire area of the enclosed parking garage exceeds 12,000 square feet (1115 m2).
    2. Where the enclosed parking garage is located beneath other groups.

       Exception: Enclosed parking garages located beneath Group R-3 occupancies.

LOW PRIORITY ITEMS:

- **Replace single station CO alarms with hardwired CO alarms with battery backup**: **Rec 1-4**
  - As per the City of Providence and Rhode Island carbon monoxide detection should be provided in accordance with Rhode Island Life Safety Code. Currently, there are only battery-operated local carbon monoxide detectors. The building requires CO detection for areas with fuel burning equipment.
  - (RI Fire Alarm Code) Where required by other governing laws, codes, or standards, carbon monoxide detectors shall be installed in accordance with the following:
    1. On the ceiling in the same room as permanently installed fuel-burning appliances, and
    2. Centrally located on every habitable level and in every HVAC zone of the building, and
    3. Outside of each separate dwelling unit, guest room, and guest suite sleeping area within 21 ft (6.4 m) of any door to a sleeping room, with the distance measured along a path of travel

4. Other locations where required by applicable laws, codes, or standards, or a performance-based design in accordance with Section 17.3 (RI Fire Alarm Code)

FIRE PROTECTION REFERENCE PHOTOS:

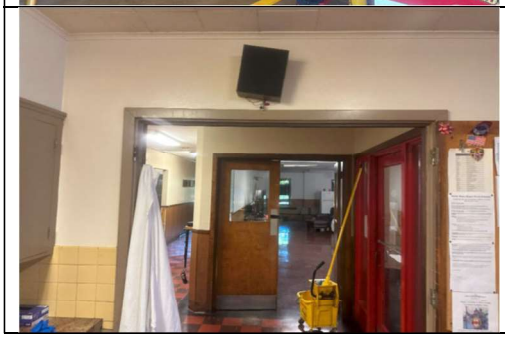
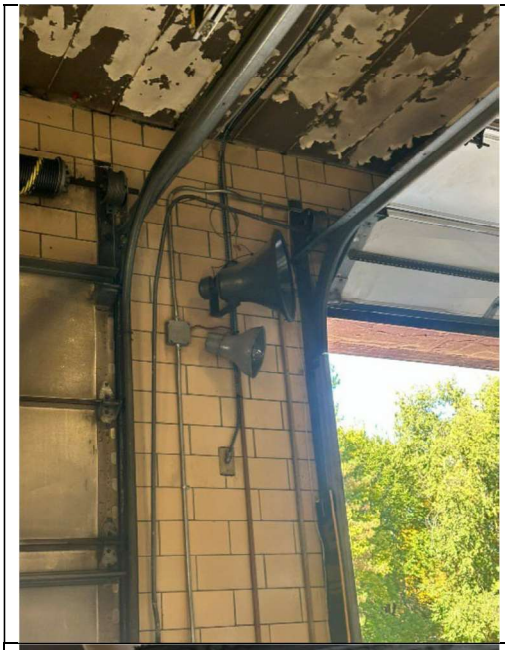
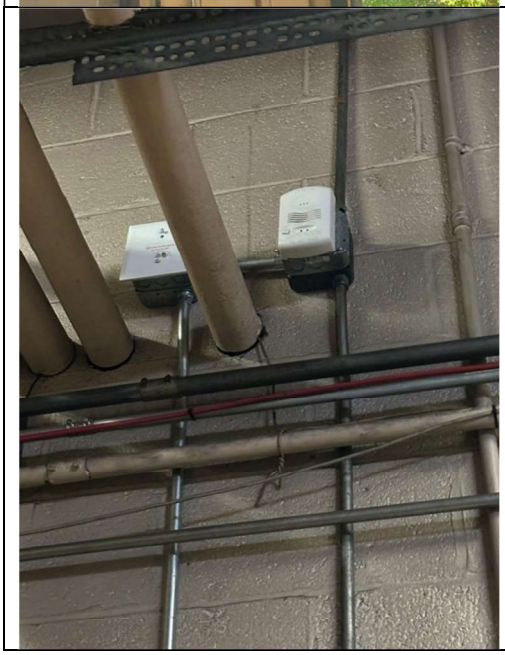
	PHOTO 1: BUILDING EXTERIOR
	PHOTO 2: BUILDING INTERIOR – GARAGE
	PHOTO 3: BUILDING INTERIOR – SECOND FLOOR
	PHOTO 4: BUILDING INTERIOR- BOILER ROOM

	PHOTO 5: BUILDING FIRE ALARM CONTROL PANEL (FACP) IN GARAGE
	PHOTO 6: OLDER FIRE ALARM PANEL USED AS TERMINAL BOX
	PHOTO 7: PA SYSTEM

	PHOTO 8: MIXED SPEAKER MODELS FOR PA SYSTEM
	PHOTO 9: TYPICAL BATTERY CO DETECTOR