

# Chester Fire Station

## Existing Facilities Conditions Report: *Needs Assessment Analysis*

April 9, 2024

Acre Architects  
S2 Architecture  
Dillon Consulting  
CBCL



# Table of Contents

- 1.0 Executive Summary
- 2.0 Context
- 3.0 Fire Stations as Workplaces
  - 3.1 Safety in Movement
  - 3.2 Safety in Zones
  - 3.3 Safety in the Community
- 4.0 Functional Requirements
  - 4.1 Archetypal Descriptions
  - 4.2 Site Location
  - 4.3 Sustainable Strategies
  - 4.4 Exterior Area
  - 4.5 Public Realm Area
  - 4.6 Administrative Area
  - 4.7 Apparatus Bay
  - 4.8 PPE Handling Area
  - 4.9 Support Spaces
  - 4.10 Building Services
  - 4.11 Hose Drying Infrastructure
- 5.0 Existing Conditions: 149 Central St.
  - 5.1 General Conditions
  - 5.2 Architecture
  - 5.3 Civil Context / Services
  - 5.4 Structural Context
  - 5.5 Mechanical Services
  - 5.6 Electrical Services
- 6.0 Conclusion

# 1.0 Executive Summary

Acre Architects has been retained to conduct an existing conditions assessment of the Chester fire station, summarized in this report, and complete a conceptual design and cost estimate for the potential development of a new fire station.

The purpose of this report is to evaluate the current condition and functionality of the existing fire station to determine if the needs of the fire department could be met by modifying the building, or if a new building will be required. To establish an evaluation baseline, an archetypal contemporary fire station is summarized in this report, followed by a comparative assessment of the existing Chester fire station.

The existing fire station is located in the heart of the village with constrained site access and circulation, insufficient site conditions for expansion, and limited access to water, which reduces the efficiency of refilling apparatus that carry water. The Village of Chester has purchased a site for the potential development of a new station which will benefit response times, operational costs, and long-term durability. Collecting rainwater, implementing heat-sink solutions, and building an energy-efficient building will help mitigate long-term operational costs of a building that sees intermittent but extreme exposure to outdoor conditions when apparatus doors are in use.

The salient point for the community to appreciate is the contemporary realities and emerging guidelines, policies, and codes relating to fire stations as workplaces for volunteers to support efficient response workflows, firefighter culture, cohort support and comradeship, and the mitigation of potential environmental exposures. A contemporary fire station must accommodate segregated support rooms to ensure the proper ventilation, cleaning, and off-gassing of firefighting equipment to support the long-term health of firefighters.

Existing Fire Station Location



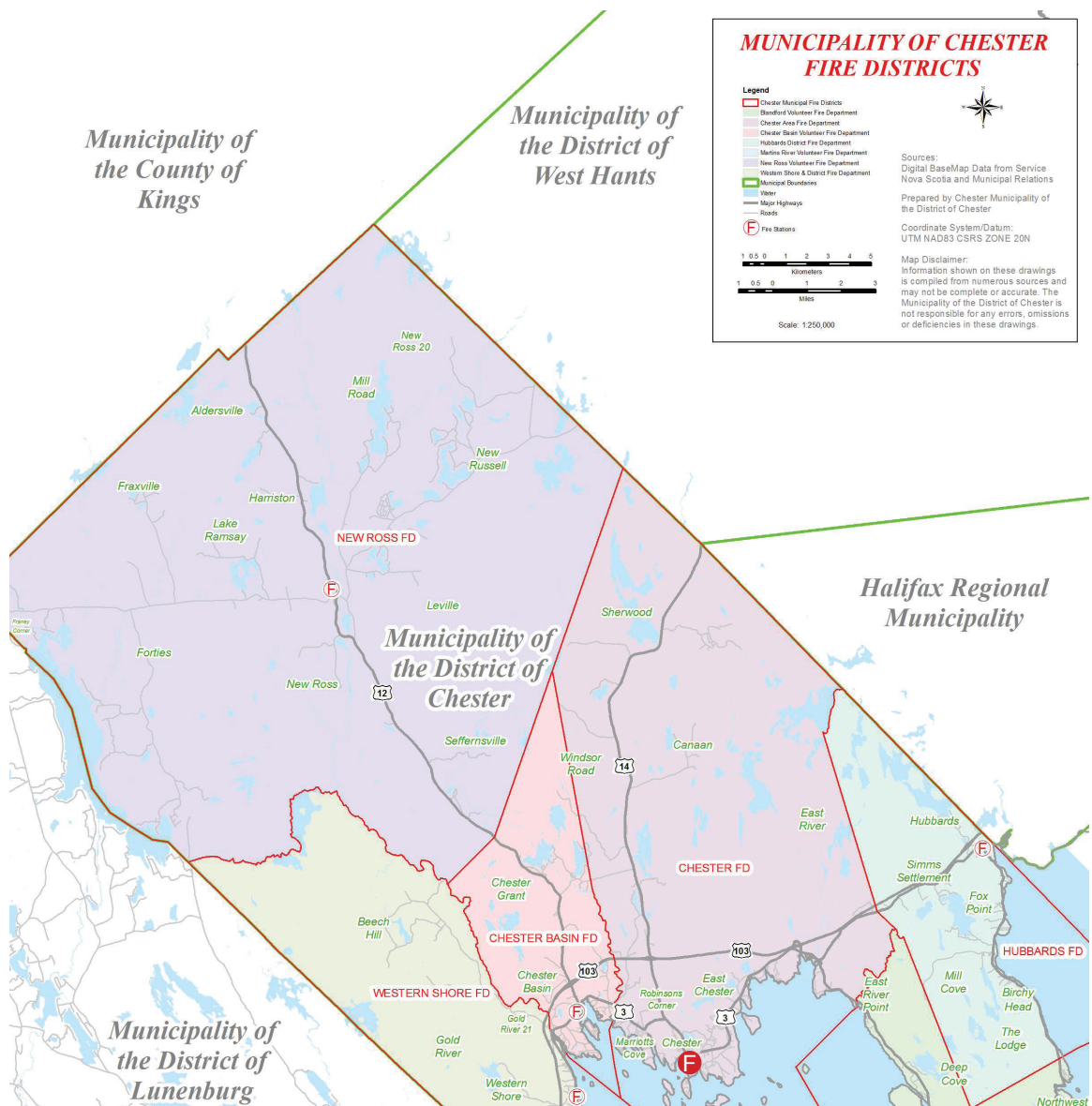
Existing Fire Station Location



# 2.0 Context

Chester has many unique, charming and beautiful characteristics with a rich architectural history. As an ocean-front community, Chester is known for it's fishing, sailing and bathing. It contains many homes, cottages, small businesses, artisan shops, community buildings and more.

The Chester Volunteer Fire Department (CVFD) provides fire protection and emergency services for Electoral Districts 3, 7 and part of 1 within the Municipality of Chester in Nova Scotia, depicted within the Chester FD zone in the below image.



## 3.0 Fire Stations as Workplaces

Over many decades of refinement, municipal fire stations have collectively evolved to become modern, versatile, and active workplaces. Given the nature of work performed by firefighters, their required infrastructure is expected to reliably support them in mobilizing to response sites efficiently and safely, and cultivate the required skills and comradeship to do so. Safety is the highest priority in any fire station.

### 3.1 Safety in Movement

Fire stations require slip-resistant surfaces that are free of obstructions, hazards, accumulation of refuse, snow or ice to ensure safe working conditions for firefighters. Clearances between moving parts of machines or any material carried by machines shall be adequate to ensure the safety of any worker in the area is not endangered. In conditions of constrained spacing between parked vehicles, firefighters are at risk of injury should a vehicle be moved without the prior knowledge of the firefighter.

### 3.2 Safety in Zones

Fire stations must support the long-term health of firefighters. With growing evidence of a link between ailments in firefighters to toxins that collect on bunker gear after fighting fires, contemporary fire station designs should incorporate decontamination rooms and bunker gear storage rooms where cleaned bunker gear can off-gas and be safely stored away from fuel-venting vehicles in the apparatus bay.

### 3.3 Safety in the Community

Fire stations must function when called upon by their community. Post-Disaster standards are a requirement in the 2020 National Building Code, which will soon be adopted, for Fire Stations, Hospitals, Police Stations, and other critical facilities which need to be functional following a disaster event within the community.

# 4.0 Functional Requirements

## 4.1 Archetypal Descriptions

The following section outlines the functions and features required in a typical volunteer fire station. This baseline can be used to comparatively assess the existing facility and plan a new one. Even though firefighters are presumed to be able-bodied people, it is best practice for all functional spaces in a fire station to be accessible to accommodate all potential occupants of the space. Generally, a contemporary fire station incorporates the functions and features listed throughout this section.

## 4.2 Site Location

Fire stations should be in a central location within their catchment area, but not constrained by it. Access to and from the station should always be intuitively clear, without adjacent services and their functions impeding access to the fire station. An appropriate site for a contemporary fire station includes the following qualities:

- The site allows for quick access in all response directions.
- Main routes leading away from fire stations have minimal stop signs, on-street parking and dense pedestrian services, such as shops, churches, recreation, or school zones.
- There is appropriate access or capability for services, such as water, sanitary, power, and data.
- The site has space to accommodate current and future storage needs.
- Given the industrial-like elements such as noise, training and chemicals associated with firefighting, the location favors more immediate commercial and industrial areas rather than residential or care facilities.
- As a community focal point, an emergency centre, and a workplace, the fire station is easily accessible and integrated into the community it serves.

## 4.3 Sustainable Strategies

Sustainable strategies use the latest technologies and standards to provide an environmentally responsible facility that is sensitive to its surroundings and users, while contributing to lower operational costs throughout its lifespan. These strategies include but are not limited to the following:

### Site Features:

- Controlled storm water runoff with a sediment control system.
- Oil-grit separator to control drainage.
- Landscaped parking islands to reduce urban heat island effect.
- Reflective roofing material on buildings to reduce heat absorption.
- Reduced light pollution by avoiding off-site lighting.

### Water Efficiency:

- Landscaped areas include indigenous plants to reduce irrigation requirements.
- Capability to capture and store rain and snow-melt for functional water use.
- Use of high-efficiency plumbing fixtures to reduce wastewater volumes.

### Energy & Atmosphere:

- Reduced energy consumption and costs by using high-efficiency mechanical and electrical systems.
- Fundamental building elements and systems are calibrated to operate as intended.

### Waste & Recycling:

- Area for recyclable collection and storage to reduce waste generated by building occupants.

### Indoor Environmental Quality:

- Controlled carbon dioxide quantity for indoor air quality.
- Adequate ventilation from washroom, shower and kitchen areas.
- Use of low emitting materials (paints, coating, adhesives, sealants, carpets, etc.).

## 4.4 Exterior Area

A fire station is a focal point in every community. Always ready to serve, the exterior functions convey the message of approachability, preparedness, safety and responsibility.

### Apparatus Bay Apron:

- The service apron is long enough to park the longest apparatus, with ample clearances on all sides.
- There is no ambiguity with other adjacent functions. Firefighter and visitor parking are clearly separated from the service apron.
- Adequately sloped away from garage doors with insulated coverage to mitigate frost heaving and ensure smooth transitions and safe surfaces.

### Chief and Captain Parking:

- Marked asphalt parking spaces reserved for chief and captains adjacent to entrance.
- Clear signage indicating 'reserved' status.

### Volunteer firefighter parking:

- Marked asphalt parking spaces in close proximity to apparatus bay.
- Clear signage indicating 'reserved' status.

### Visitor parking:

- Marked asphalt parking spaces adjacent to main entrance but clearly separate from service apron.
- Accessible spaces and pathways provided per building code and municipal bylaws and guidelines.
- Clear signage indicating 'accessible,' with appropriate accessible symbol, or 'visitor' status.

### Services:

- Services and their access points are located away from service apron and firefighter access points.
- Water access, collection and storage meet current and future demands, and allow for the efficient refill of apparatus.
- Designated area for recyclable collection and storage to reduce waste.

## 4.5 Public Realm Area

Fire stations execute a certain level of public education, safety program outreach, and, in times of need, can become a refuge for the community. As public safety is paramount in and around a fire station, public access must be planned and controlled. The chief's office should ideally see and control primary access points into the building. The following qualities contribute to a successful public realm interface:

### Main Entrance:

- Incorporates an air-lock vestibule to energy code requirements.
- Serves as a control point for access and group control.
- Includes coordination space in disaster scenario.
- The active firefighter entrance is a separate point of access, restricted to the public.
- Constructed with clear glazing elements for safe circulation and inviting character.
- Location and way-finding strategies provide easy navigation to the main entrance from public parking areas.
- Use of safe, durable and easily maintained finishes.

### Accessibility:

- Barrier-free parking stalls located near the main entrance with a barrier-free pathway leading to the entrance.
- Accessible main entrance, corridor and washroom in areas that may be occupied by the public, meeting applicable building code requirements.

## 4.6 Administrative Area

The administrative area must incorporate separate HVAC systems from the apparatus bay, such that administrative areas have positive pressure to prevent cross-contamination from other zones.

Given that volunteer firefighter stations are not continuously occupied, strategically located windows with daylighting units ensure appropriate lighting levels while reducing power consumption and increasing thermal resistance of the building envelope. Transparent glazing units should be provided to ensure visibility where required and views to natural settings to support a healthy and positive human experience.

### Chief's Office:

- Designed to be an appropriate venue for private dialogue.
- Includes secure record storage area.
- Line of sight to main entrance and general circulation through the station to ensure easy awareness of occupants.
- Chief's office must have efficient access to apparatus bay.

### Small Meeting Room:

- Unassigned workstations for line officers to complete paperwork or personal meetings.

### Meeting Room:

- Space for training with equipment for presentations.
- Storage for safety training collateral and equipment.
- Ability to serve as command center during disaster event.

### Washroom Facilities:

- Meets building code requirements, serving occupant load capacity.

### Kitchen Facilities:

- Includes casework cabinets for storage and commercial grade appliances.

### Fitness Room:

- Space for physical training equipment with durable, sound absorbing floor finish.

## 4.7 Apparatus Bay

Given the long life cycle of a fire station, daylighting strategies may be cost effective solutions for lighting large garage spaces while mitigating risks associated with skylights, reducing electricity consumption, and providing higher resistance to energy loss. Providing roof overhangs can also help mitigate heat gain during summer months. Subject to major exhaust of air volumes when the garage doors are open, the apparatus bay must have separate, more robust equipment capable of conditioning large air volumes.

### Main Apparatus Garage:

- Short bays are  $\pm 60'$  in length with a front-facing 16'x16' garage door per bay.
- Long bays are  $\pm 100'$  in length with front and rear-facing 16'x16' garage doors to accommodate drive-through operations for larger apparatus.
- Adequate clearances are provided relating to vehicles, equipment handling and circulation.
- Vertical clearance to the underside of structural or building service elements is  $\pm 22'$ .
- Direct access is provided from parking to gear and apparatus for quick firefighter response. Air-lock vestibule is not required as the garage door openings render energy conservation a moot point. Safe, but fast, access is a priority.
- It is current code and best practice to have separate decontamination and bunker gear rooms with direct access to apparatus bay.
- Industrial, long-wearing, epoxy flooring for increased petroleum resistance with appropriate slopes and trench drains to ensure quick and safe handling of melting snow and cleaning water.
- In-floor radiant heating is preferred as it provides general heat recovery over extended periods of time, provides de-icing of vehicle undercarriage, assists in controlling moisture from the top of slab, and provides improved comfort for personnel while inside the apparatus bay.
- Finishes should be light-colored to better reflect light throughout the space.

## 4.8 PPE Handling Area

### PPE Storage:

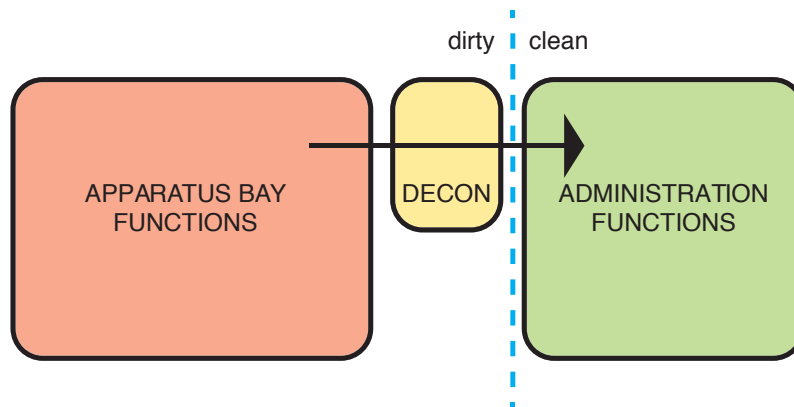
- Located immediately adjacent to the apparatus bay, cleaned bunker gear is stored in separate room to off-gas properly after cleaning, requiring appropriate ventilation and space for air circulation.
- Storage lockers organize gear for quick access and accommodate charging battery-powered devices.

### Locker Room:

- Includes lockers with  $\pm 24$ " width for appropriate air circulation to reduce odors.
- Has direct connection to bathrooms with showers.

### Decontamination Room:

- Space relationships enable the separated decontamination area to be accessed directly from the apparatus bay where firefighters can shower and access extractors and dryers to clean bunker gear.
- Washer-dryer pairs and tub sink(s) are provided to suit firefighter count.



## 4.9 Support Spaces

### Self-Contained Breathing Apparatus (SCBA) Room:

- Has access to exterior wall (roof not recommended) for fresh air intake away from vehicle and other types of exhaust.
- Interior access is adjacent to apparatus bay for ease of equipment handling.
- Secure with sound attenuating partition to mitigate compressor noise.

#### **Small Maintenance Workshop Area:**

- Includes work bench with cabinet storage for small equipment and minor vehicle repairs.
- Includes sink to support SCBA maintenance processes.
- Ideally located adjacent to apparatus bay and SCBA room.

#### **Janitor Room:**

Supports facility cleaning and consumables maintenance.

### **4.10 Building Services**

#### **Mechanical & Electrical:**

- Main electrical equipment and panel(s).
- Heat and water service equipment and meters.
- Compressed air equipment for SCBA.
- All equipment has adequate space for operational clearances, maintenance, and replacement access.

#### **IT / Communications:**

- Interior space for IT services.
- Mounting space on exterior wall for access control devices, CCTV (if applicable) and other systems' control devices.

#### **Back-Up Generator:**

- Critical building response functions are supported by back-up generator.

### **4.11 Hose Drying Infrastructure**

To accommodate efficient drying and prevent premature hose decay, modern fire stations include mechanical or passive infrastructure for hose drying. A hose drying tower is an example of a passive drying system which can double as an internal training area.

# 5.0 Existing Conditions: 149 Central St.

## 5.1 General Conditions

The existing building was originally completed in 1936 and has undergone several major renovations/additions, including a reconstruction completed in 1960 due to a fire that took place in 1959. As no original building drawings are available and the extent of the previous renovations are unclear, this will present a challenge to complete a full assessment of the building condition to determine if upgrades will be structurally feasible, and the extent that would be required to meet current building code and post disaster requirements.

The fire station has several non-conforming conditions, including the contemporary requirement to serve as a post-disaster building. This requirement largely impacts the structural system, which is not limited to roof, columns, cross-bracing, foundations and footings, and can also impact fixed-in-place components and equipment. Due to the structural implications, this can be a cost-prohibitive retrofit for typical buildings. However, for fire stations which must maintain operations during renovations, such work also requires major solutions to spatial and system impacts during construction.



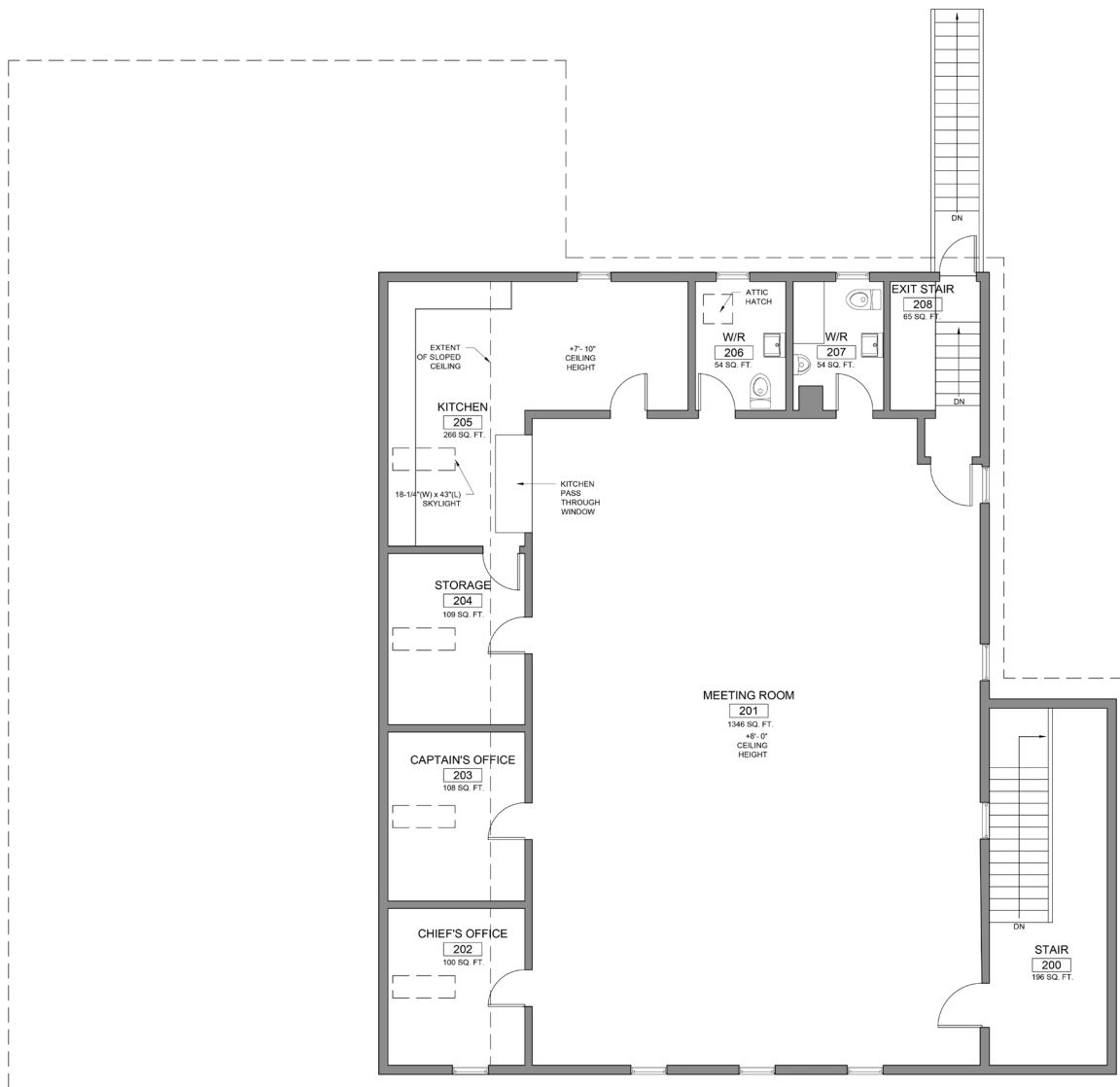
Existing Fire Station

## 5.2 Architecture

There is insufficient space and support functions in the existing fire station to meet the demands of the fire department, resulting in a lack of comfort for the volunteer firefighters, improper storage, inefficient operations and, ultimately, slower response times.



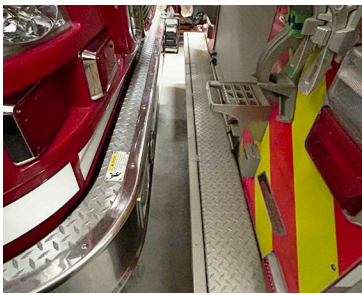
Existing First Floor Plan



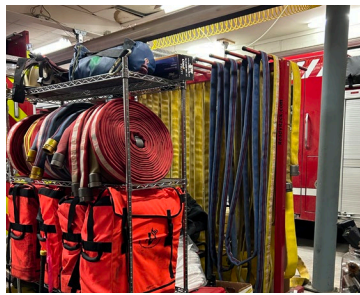
Existing Second Floor Plan

### Apparatus Bay:

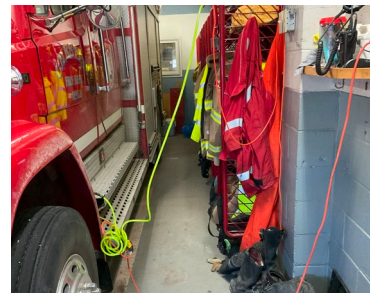
The apparatus bay does not meet the current nor future requirements of the fire department. There is insufficient height, length and space within the apparatus bay for operational and safety clearances, to work on or wash apparatus, or to house the rescue boat and other equipment. The bay doors are not an adequate width or height to accommodate modern apparatus. There is a lack of separated PPE storage space and no isolated decontamination facilities to support the long-term safety of the volunteers. There is insufficient hose drying infrastructure and storage space, which results in inefficiencies and the degradation of hoses over time.



Bay 4 Firetruck Clearance



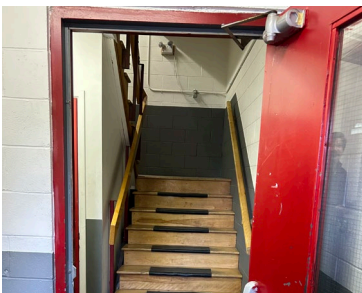
Bay 3 Hose Drying/Storage



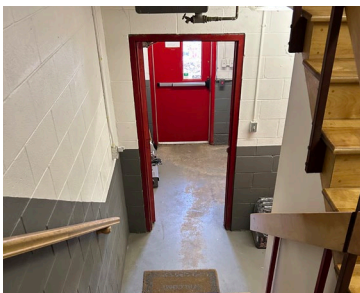
PPE Storage/Radio in Bay 1

### Accessibility:

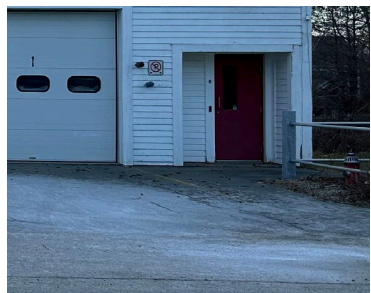
The existing building does not provide a barrier-free entrance, circulation space or washroom facilities and is therefore not suitable for the public. There are no designated barrier-free parking spaces or a barrier-free path of travel leading to the entrance. The only access to the meeting room on the second floor is via stairs.



Stair at Entry



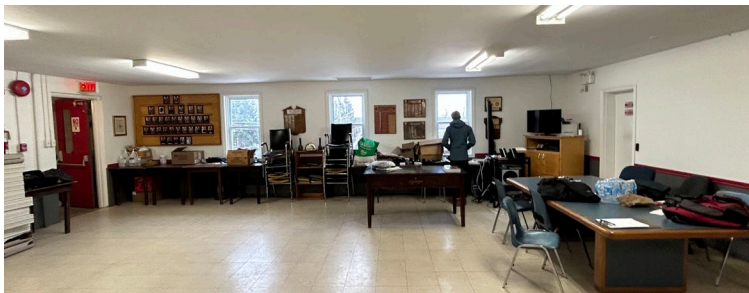
Stair looking at Entry



Main Entrance from Exterior

## Meeting Room:

The current meeting room has insufficient space and height to accommodate training, department meetings and social functions. It was noted that poor acoustics result in auditory challenges during larger meetings and events. The only cooling system is one window air conditioning unit, resulting in discomfort during larger gatherings throughout the warmer months. The only access to the meeting room is via stairs, rendering it an inaccessible space.



Meeting Room



Residential-Style Air Conditioning Unit

## Windows:

The existing windows appear to be at least 30 years in age with vinyl frames. Due to the height of the sloped roof, there is insufficient wall space to accommodate windows on the south wall, resulting in skylights in these rooms. The skylights are in very poor condition with significant water damage at several locations.



Exterior Window



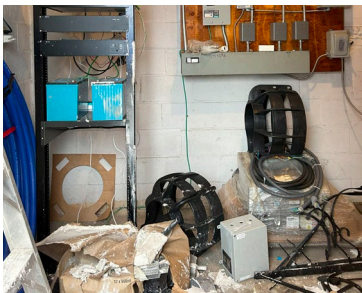
Skylight Water Damage



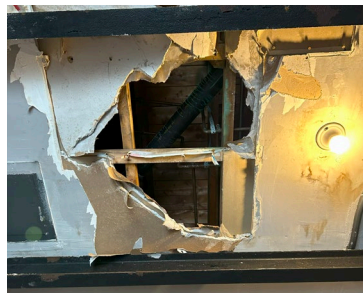
Bathroom Window

### Building Services:

There is significant water damage in the mechanical and electrical room that requires repairs. There is also insufficient operational clearances in front of the mechanical and electrical equipment. As there is no IT / communications room, the IT equipment is housed in the secure chief's office which leads to access challenges when servicing is required.



Fallen Ceiling in Mechanical Room



Ceiling Hole in Mechanical Room



Mechanical Room

### Building and Energy Code Compliance:

The building envelope and building systems would require major upgrades to meet current energy code requirements. Entrance and circulation spaces do not meet accessibility requirements and the main entrance lacks an appropriate vestibule to meet current energy code requirements.

### Support Spaces:

There are insufficient washroom and shower facilities in the current building to accommodate the volunteers and an absence of lockers. Washroom areas currently double as storage area which is not an acceptable solution for storage needs. The washrooms are not properly ventilated.

### 5.3 Civil Context / Services

The current site is approximately 0.380ha. The eastern half is generally level, at or near the elevation of Central Street. The building is located in the north-east corner of the site and is connected to Central Street by an asphalt service apron along the entire building frontage. There is a gravel parking area to the south of the building, and a small gravel access route with various accessory buildings to the west (rear) of the building. The remainder of the west site area slopes steeply down to Prince Street.



Existing Site Plan

### Service Apron:

The service apron is gently sloped from the building towards Central Street. The asphalt is in poor condition with significant rutting and cracking. The fire department requires approximately 20m-25m of hard-surfaced staging area outside the bay doors to fit firefighting apparatus, which the current site can not accommodate.



Service Apron to Bays



Asphalt at Building

### Parking:

The on-site portion of the existing gravel parking lot is approximately 20m x 25m, providing unmarked parking for approximately 20 vehicles. The gravel parking lot is in fair condition requiring minor regrading and maintenance. Department events require parking for approximately 50-75 vehicles which the current site can not accommodate.

In addition to the parking being unmarked, there are no dedicated barrier-free parking spaces or a barrier free path of travel leading to the entrance.



Firefighter Gravel Parking



Firefighter Gravel Parking from Street

### Access & Circulation:

Vehicle access to the site is constrained by the condition and capacity of Central Street. Central Street is narrow with limited connections to major streets and bordered by intersections. Better access to highways and major streets would improve response time and reduce the risk of delays due to congestion, ease of maneuverability and potential road closures.

There is no clear, safe, or barrier free travel path to the various on-site areas. On-site pedestrian circulation is generally from the parking lot, across the front of the apparatus bays and either to the bays themselves, or to the main building entrance. This creates a potential conflict between vehicles and pedestrians as they cross the service apron, creating a safety risk.

### Services:

The site is connected to adequate municipal sewer service. Water is supplied to the site by a well as there is no municipal water supply. There is insufficient on-site water supply and storage to provide for tanker truck filling, leading to inefficient operations. There are no systems to capture and store rain and snow-melt.

### Exterior Service Spaces:

Existing storage includes a shed and exterior equipment storage. Additional covered exterior storage for equipment is desirable.

Existing exterior training area is limited. Exterior training areas are generally larger than what the current site can accommodate and can include hard surfaced areas for training such as hose training, vehicle extraction, stair tower, and etc.



Back Shed



Back Gravel Pad and Shed



Back Gravel Pad

## 5.4 Structural Context

### Foundations & Slab on Grade:

There is no basement present in the building. The mechanical and electrical room which houses the boiler and other equipment is located at the rear of the building. There is currently water damage in the room due to a burst pipe.

The original building foundation appears to be concrete masonry construction whereas the building additions appear to be conventional concrete foundations. However, the majority of the perimeter foundation wall is not exposed above grade and was covered with snow at the time of the review, so was not able to be reviewed in detail.

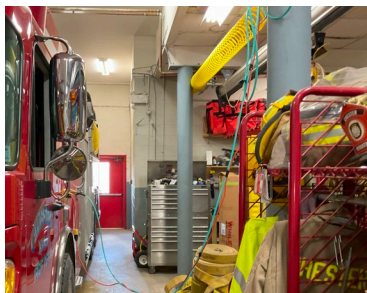
The interior concrete slab on grade in the main garage areas is in fair condition. However, drainage is poor with insufficient number of drains and inadequate sloping to the existing drains

### Building Superstructure:

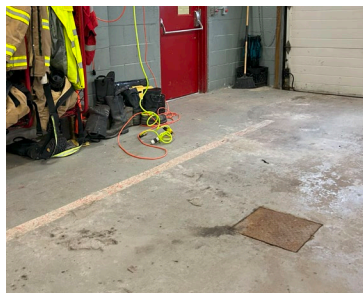
The building superstructure appears to be a hybrid of steel, wood and load bearing masonry structure, however the majority of the structure is not exposed for review. The existing structure supporting the second floor has been previously modified to provide a greater clear span in the garage area below with the installation of steel columns and steel beams.

Several locations on the upper level show water damage, namely around skylights and in and around the kitchen and washroom areas.

Vibration can be felt throughout the upper level floor when fire engines are started and running below. There is no seismic bracing present for the suspended mechanical and electrical services that are exposed.



Structural System Change in Bay 4



Slab in Bay 1



Foundation at Side Door

### Structural Assessment:

Due to the age of the building, various structure types, and lack of exposed superstructure, it is extremely difficult to determine the level of effort and exact requirements to upgrade the facility to comply with current codes and Post Disaster (PD) requirements. Work required to investigate and enable a thorough review and assessment of the structure would include but not be limited to:

- Removal of all interior sheathing/Gyproc of all walls and underside of floors and roofs to expose the primary superstructure of the building.
- Review and assessment of the structure to determine structure layout, load paths throughout the building, design loads, member sizes, lengths and strengths, connection types and sizes, and condition of the structure.
- Due to the age of the wood, wood sampling and testing is required to grade the wood and determine its various design strength parameters to complete required design calculations.
- Full calculation design review to determine if the structure can withstand the stated climatic, live and dead loads of current building codes. This calculation review would require similar efforts to the design of a new building.

Each structural material (concrete, steel, wood and masonry) has specific design codes outlining specific requirements to meet the PD ratings. With various structural materials present, it will be challenging to determine if the existing structure meets PD requirements and to reinforce/retrofit the structure accordingly.

As the design storm requirements have changed from 1:30 year return storms to 1:50 year return storms in current codes, the design snow, wind and seismic loads can potentially increase by approximately 15-25%, depending on the load type and building location. If PD is a requirement, the snow and wind loads are increased by a further 50%. Therefore, significant upgrades to the building would be required, which could potentially involve a complete replacement, including foundations.

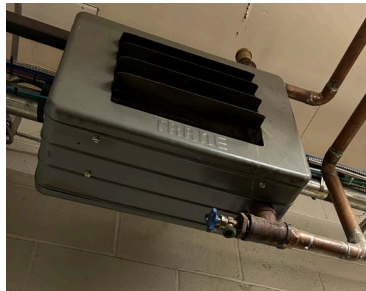
## 5.5 Mechanical Services

### Heating and Cooling:

Heating is provided by two hot water propane gas-fired boilers. While the exact installation date of the boilers is unknown, they appear to be recent and in good condition. Accessories serving the boilers (valves, air vent, strainers, steel piping, etc.) display external corrosion. Un-insulated copper piping distributes the heating water throughout the building and would require upgrades to meet current energy code requirements. In general, hot water unit heaters are installed in the garage and technical spaces, and hot water baseboard are used in the office spaces. The building's only AC equipment is a window unit located in the multi-purpose/meeting room.



Unit Heater



Unit Heater



Window Air Conditioning Unit

### Plumbing:

The building is connected to the municipal sewer system. The absence of a domestic water supply results in water being sourced via a well. Equipment for the water well including the UV light, sediment filter, and expansion tank appears to be in good condition. Domestic hot water is generated using a 178-liter tank with 3 kW electric elements, installed in 2019. Domestic water distribution employs un-insulated copper piping which would require upgrades to include insulation.

While the existing plumbing fixtures operate adequately, they are outdated and lack aesthetic appeal. Given their age, the plumbing fixtures likely exceed the maximum water flow permitted by energy code requirements. Wall hydrants in the apparatus bay lack back flow preventers or vacuum breakers.

### Ventilation and Controls:

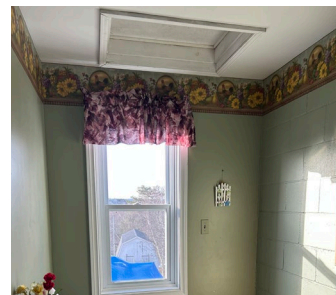
The apparatus bay requires upgrades to include general ventilation meeting ASHRAE 62.1 standards, an air exhaust system, and a CO/NOx detection system. The administration areas also require general ventilation to comply with ASHRAE 62.1. Exhaust fans (or HRVs) would be required for washrooms, kitchens, and janitor closets to facilitate air extraction.



Bathroom Water Damage



Vehicle Exhaust Ventilation System



Bathroom Without Ventilation

### Gas:

On-site storage comprises two 1,000-gallon tanks for liquified propane gas from Superior Propane. Propane distribution throughout the building uses black iron piping, exhibiting visible external corrosion.

## 5.6 Electrical Services

The existing building is equipped with a Kantech access control system. Electrical systems are generally run exposed in conduit on the upper floor level or AC90 in the apparatus bays. The existing service entrance for electrical equipment does not have adequate clearance space. Arc flash warning labels are missing from all electrical panels and disconnects, and knockouts are missing from electrical boxes, resulting in exposed live wiring. There is no seismic bracketing for electrical infrastructure.

### Emergency Systems:

The building is protected by a Mircom fire alarm system with no maintenance dates recorded on site. Fire alarm devices are mounted too high to comply with current code requirements. Emergency exit lighting was not noted on site.

Electrical infrastructure was noted to be installed in areas containing water lines which has resulted in extensive damage to the town emergency alert system.

### Power:

Existing electrical service is fed from a Sylvania 200A-3 pole fusible disconnect switch. As GTE Sylvania stopped producing these components in the 1980's, this provides an indication of the minimum age of the system. The electrical system is backed up by a Baldor power guard natural gas fueled generator.

Several deficiencies were noted, including:

- Power bars appear to be permanently installed in the fire chief's office which is not acceptable per code.
- Extension cords appear to be permanently in use in the apparatus bays which is not acceptable per code.
- Several instances of AC90 cabling not properly supported.
- Cover plates missing on receptacles
- Receptacles missing GFCI protection near kitchen sink.

### Lighting:

Existing lighting system is comprised of on-off controls (no dimming, or occupancy) controlling fluorescent lamp luminaires. Lighting controls cover plates were noted to be empty and not blanked off. Daylighting, dimming and occupancy controls would require upgrades to meet current energy code requirements.

## 6.0 Conclusion

The existing Chester fire station is over 60 years in age and in poor condition. Due to a lack of accessibility, the fire station does not welcome the public. There is a significant lack of space for storage, gathering, and safe, efficient operations. Furthermore, the existing space does not successfully accommodate modern apparatus. The building does not provide health considerations and protection for the firefighters through the separation of zones and adequate building systems.

The current site location results in additional response time to safely navigate through narrow streets and congested residential surroundings. Site constraints prohibit the expansion of the service apron to meet the needs of the fire department, and can not accommodate the additional required parking. Insufficient water supply results in an inefficient process to refill apparatus that carry water.

Upgrading the existing building to meet the needs of the fire department as well as current code and post-disaster requirements is not a feasible option due to structural complexities, site constraints, and the condition of the existing building and its systems. It is recommended that a new fire station be developed on a different site with improved access.



9 7 0 6  
a c t e  
STORIED ARCHITECTURE

HALIFAX  
1741 Brunswick Street, Suite 405  
Halifax, NS, B3J 3X8  
T 902 417 0658

SAINT JOHN  
44 Chipman Hill, Suite 110  
Saint John, NB, E2L 2A9  
T 506 658 9679