



Engineering,  
Scientific,  
Planning and  
Management  
Consultants

3 Spectacle Lake Drive  
Suite 100  
Dartmouth Nova Scotia  
Canada B3B 1W8

Bus 902 468 7777  
Fax 902 468 9009

[www.jacqueswhitford.com](http://www.jacqueswhitford.com)



## FINAL REPORT

Building Condition Assessment  
Yarmouth Fire Hall  
Yarmouth, Nova Scotia

TOWN OF YARMOUTH

PROJECT NO. 1021439

**Jacques  
Whitford**

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**PROJECT NO. 1021439**

REPORT TO                    **Town of Yarmouth  
400 Main Street  
Yarmouth, NS B5A1 G2**

FOR                            **Building Condition Assessment**

ON                             **Yarmouth Fire Hall  
Yarmouth, Nova Scotia**

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**March 28, 2007**

Jacques Whitford Limited  
3 Spectacle Lake Drive  
Dartmouth, Nova Scotia  
B3B 1W8

Phone: 902-468-7777

Fax: 902-468-9009

[www.jacqueswhitford.com](http://www.jacqueswhitford.com)





## EXECUTIVE SUMMARY

Jacques Whitford Limited (Jacques Whitford) was retained by the Town of Yarmouth, to complete a Building Condition Assessment that will establish a global estimate of the renewal requirements for the building.

The subject building is located on 221 Pleasant Street in Yarmouth, Nova Scotia. The two-storey building was constructed in 1974 to house the Yarmouth Fire Department and local RCMP detachment. The building currently houses the Yarmouth Fire Department. The building houses five full time staff throughout the day, three staff in the evenings and volunteers as needed. The majority of the building footprint is occupied by truck bays on the first floor, housing fire trucks and equipment for the fire department. The building also contains offices, lounge areas, sleeping quarters and restrooms located on the first floor. A number of smaller offices, a kitchen/bar, storage areas as well as a large assembly hall for dances and receptions are located on the second floor of the structure. The assembly hall can be accessed separately from the rear of the building.

The site components generally consist of asphalt paved areas and concrete flatwork. A training area is located at the far rear of the property.

Based on information gathered and observations made during the assessment, the building and site features appear to be in fair to poor condition overall.

The following Priority 1 repairs are anticipated within the evaluation period:

- Replace all gutters and downspouts;
- Seal and firestop all floor penetrations;
- Repair the voids and holes in the second floor level concrete of Hall area and kitchen;
- Install fire rated drywall;
- Replace all interior doors serving fire rated exits and corridors;
- Replace all damaged ceiling tiles;
- Construct/install ceilings on first and second floors in areas of exposed structure;
- Post a facility-wide exit plan outside all entrances and exits;
- Remove and rebuild the non-conforming wood exit stair at the rear of the building;
- Renovate the exit stair at the front of the building to correct the life safety issues;
- Upgrade existing washrooms to provide barrier free accessibility;
- Add water closets and lavatories in the second floor occupancy;
- Designate ground floor washrooms by gender;
- Install caution signage for emergency vehicles;
- Relocate BBQ and its related propane tank storage;
- Regrade existing asphalt at door thresholds to provide barrier-free accessibility;
- Retrofit an approved fall arrest system on the roof;



- Upgrade emergency exits;
- Relocate rated cabinet for storage of volatile materials;
- Conduct a structural review of the second floor;
- Install an exhaust fan in the main floor shower room;
- Install dedicated exhaust system for main floor paint storage room;
- Install a dedicated machine shop exhaust in a main floor room designated for machine shop use;
- Install new sprinkler heads below roll up doors in sprinkler bays;
- Relocate kitchen exhaust hood manual activation;
- Replace water extinguishers with multi purpose extinguishers;
- Provide an access door or panel for the rear stairwell sprinklers;
- Remove all clothing and miscellaneous items from the electrical room;
- Provide signage on electrical room doors for identification;
- Provide ventilation in electrical room;
- Upgrade the fire detection system control panel;
- Install a fire alarm smoke detector in the electrical and mechanical rooms;
- Install a red breaker complete with lock on device to supply the fire detection system;
- Upgrade battery emergency lighting system in the public dance hall and stair well areas;
- Have all receptacles checked for proper grounding;
- Relocate and re-power receptacles in kitchens;
- Provide adequate support for surface run AC90 armoured cable in the truck bay; and
- Replace surface runs of NMD to lighting fixtures in back stairwell with wire in conduit.

The following further investigations are recommended:

- Intrusive testing including video inspection is recommended to confirm the condition and adequacy of the services to the building.
- A structural review is recommended to confirm the adequacy of the second floor for current loading conditions.

The capital cost of current deferred maintenance and estimated future capital work are summarized as follows:

Year	Accumulated maintenance cost	Accumulated maintenance cost (\$/sq.ft.)
0	\$ 582,475	\$ 24.26 / sq. ft.
5	\$ 639,075	\$ 26.63 / sq. ft.
25	\$ 1,048,725	\$43.70 / sq. ft.



These values may be compared to the cost of construction of a replacement building using current design standards and contemporary construction materials and methods to produce a building that (a) has a similar standard of quality, in terms of aesthetics, durability and operation, (b) meets the current functional requirements of the existing building, (c) includes site-specific requirements related to appearance, zoning restraints, etc. and (d) has a gross plan area similar to that of the existing building. The equivalent cost of new construction is estimated to be approximately \$120 per square foot, or \$2,880,000.

The current recapitalization requirements for the building are summarized as follows:

Building Evaluated	Building Area	ADM	Soft Costs (25%)	Estimated Replacement Value	FCI (2007)
Yarmouth Firehall	24,000 ft <sup>2</sup>	\$ 582,475	\$ 145,619	\$ 2,880,000	20%

The level of deferred maintenance is considered to be currently fair to poor in comparison with industry standards.

The statements made in this Executive Summary are subject to the limitations included in the Closure Section of this report, and are to be read in conjunction with the remainder of this report.



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## 1.0 INTRODUCTION

Jacques Whitford Limited (Jacques Whitford) was retained by the Town of Yarmouth to complete a Building Condition Assessment in order to determine a global estimate of the cost of recapitalization of the property. The renewal requirements are based on the suitability of the building to meet the needs of the Yarmouth Fire Department in terms of functionality and replacement costs and to bring the building to current standards for operation based on their present permitted usage.

The subject building is located on 221 Pleasant Street in Yarmouth, Nova Scotia. The two-storey building was constructed in 1974 to house the Yarmouth Fire Department and local RCMP detachment. The building currently houses the Yarmouth Fire Department. The building houses five full time staff throughout the day, three staff in the evenings and volunteers as needed. The majority of the building footprint is occupied by truck bays on the first floor, housing fire trucks and equipment for the fire department. The building also contains offices, lounge areas, sleeping quarters and restrooms located on the first floor. A number of smaller offices, a kitchen/bar, storage areas as well as a large assembly hall for dances and receptions are located on the second floor of the structure. The assembly hall can be accessed separately from the rear of the building.

The site components generally consist of asphalt paved areas and concrete flatwork. A training area is located at the far rear of the property.

We understand that the Town of Yarmouth intends to rely on this report to identify building components that have exceeded their useful lives and require upgrades, or are expected to require major repair or replacement over a 25-year evaluation period, and to compare the cost of capital replacements to the replacement cost of a similar building.

In addition to recapitalizing the existing building components, the recommended repairs and/or replacements are to include the correction of code violations and improvements to bring the building to current quality and code standards.

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## 2.0 SCOPE AND METHODOLOGY

As outlined in the Terms of Reference, the primary purpose of our assessment was “to determine the suitability of the present structure to meet those needs of the Fire Department in light of the age of the building systems and the cost to replace them.”

Our scope included a visit to the site and assessment by civil/structural, mechanical and electrical engineers and architects to evaluate and document the existing condition of the buildings. Based on this assessment, major defects in materials or systems that might significantly affect the value of the property or continued operation of the facility were identified and quantified.



The assessment of the buildings was performed using methods and procedures that are consistent with good commercial and customary practice as outlined in ASTM Standard E2018-01. Every reasonable effort was made to ensure the accuracy of the data forming the basis of the projection of the life expectancy and replacement costs that were developed for this report. Responsibility cannot be accepted for unknown factors that might adversely affect the accuracy of these projections.

The scope of our work included interviews of maintenance personnel and visual assessments of the building by professional engineers, architects and/or technicians to document existing conditions. As-built drawings, specifications, operating records and previous building condition reports that were available were reviewed at the time of our investigation. Our work did not include destructive testing, testing of life safety systems or quantitative testing. The major components and systems assessed included:

Site Components	Building Structure
Building Exterior	Building Interior
Mechanical Systems	Electrical Systems
Life Safety	

The Expected Useful Life (EUL) and the Remaining Useful Life (RUL) of the building components were estimated, from which estimates were made of the schedule and cost of major repairs and replacements. A schedule of these repair or replacement items and their costs is included in Appendix A, together with an evaluation of deferred maintenance.

The EUL of the standard building components given in this report is mainly a function of the quality of materials used, manufacturing, and installation, as well as the degree of maintenance afforded to the component, and local weather conditions. Also, the realization of a component's EUL does not necessarily constitute replacement of that component. Risk, including safety or the cost of damage to the asset and its use, was considered in estimating the RUL and the schedule for major repairs or replacements.

Recommendations for remedial action were defined and categorized into a three priority system, as follows:

- Priority 1 Recommendations are to correct problems with fire and life safety, electrical safety, mandatory code compliance, occupational health, indoor air quality and the like. It is recommended that Priority 1 items be carried out without delay.
- Priority 2 Recommendations are to extend the useful life of the building and/or systems significantly, and/or prevent or reduce deterioration or damage. Priority 2 recommendations avoid excessive expenditures later on.
- Priority 3 Recommendations are for all other recommended solutions to existing problems. These recommendations are typically for improvements, and can be budgeted in later years if necessary.

The facility condition index (FCI) concept was also used to rate the evaluated building. The FCI is a standard benchmark used by the real estate industry and institutions to assess the current and projected condition of a building asset. By definition, the FCI is the ratio of the Annual Deferred Maintenance Costs (ADM) to the Current Building Replacement Value (CRV) and is expressed as a percentage. Not included in the FCI are upgrades or replacements that result in partial or significant



changes in usage of the facility, and upgrades/changes to existing systems or components beyond that of the base system installed. Industry standards for the FCI of buildings or portfolios are as follows:

FCI (%)	Remarks
0-5	Excellent to Good
5-10	Good to Fair
>10	Fair to Poor

### 3.0 GENERAL SITE DESCRIPTION

The subject building is located on 221 Pleasant Street in Yarmouth, Nova Scotia. The two-storey building was constructed in 1974 to house the Yarmouth Works Department. The building currently houses the Yarmouth Fire Department. The building houses five full time staff throughout the day, three staff in the evenings and volunteers as needed. The majority of the building footprint is occupied by truck bays on the first floor, housing fire trucks and equipment for the fire department. The building also contains offices, lounge areas, sleeping quarters and restrooms located on the first floor. A number of smaller offices, a kitchen/bar, storage areas as well as a large assembly hall for dances and receptions are located on the second floor of the structure. The assembly hall can be accessed separately from the rear of the building.

The footprint of the building measures 13,000 sq. ft. (1208 square meters). A second storey measures 10,050 sq. ft. (934 square meters). The building is classified by the National Building Code of Canada (NBCC), as amended and adopted by the Province of Nova Scotia, as an F3 major occupancy with an adjoining A2 use (bingo/dancehall) upstairs.

The site components generally consist of asphalt paved areas and concrete flatwork. A training area is located at the far rear of the property.

### 4.0 FINDINGS

The site visit was conducted by:

Mark Stiles, B.Sc.Eng.	Report Writer, Site and Structural Assessor
David Lea, P.Eng.	Mechanical Assessor
Bob Kyte, P.Eng.	Electrical Assessor
Clay Radcliffe, R.A.	Architectural and Life Safety Assessor

The weather was sunny with partial cloud cover and the ambient temperature was approximately -8°C at the time of the site visit. Jacques Whitford was accompanied by Mr. Ken Kelly, Fire Chief for the Yarmouth Fire Department during the site visit. The exterior and interior portions of the building were generally accessible at the time of the site visit.



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## 4.1 Site Components

The property is accessed via two curb cuts off Pleasant Street, one of which provides access for fire trucks and vehicles accessing the adjacent public works building, and one providing access to parking spaces along the south side of the property.

Hard landscaping and site components include access driveways, asphalt-paved parking lots, concrete curbing, associated catch basins, concrete walkways and concrete retaining walls.

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### 4.1.1 Grading and Drainage

#### Findings

The Site topography is essentially flat. Drainage provisions appear adequate with asphalt paved areas sloped to on-site catch basins. According to design drawings, floor drains located within the structure are tied to a 6" line which outfalls to a ditch on the east side of the property. Metal downspouts are located around the perimeter of the building for roof drainage.

Drainage provisions appear adequate with the asphalt paved areas well-sloped to appropriate storm drains. No indication of ponding or significant erosion was observed. Some rain water leaders around the building have been disconnected allowing for potential ponding against the building.

#### Recommendations

- 1) Tie in the rain water downspouts to the sub-surface drainage system to prevent ponding against the buildings exterior walls and ice formation at the site.

This is a priority 2 recommendation with a cost estimate of \$1,500.

(Priority 2; \$1.5K in 2007)

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### 4.1.2 Paving, Flatwork and Retaining Walls

#### Findings

Asphalt paving is located on all sides of the building with a parking lot containing regular parking and accessible spaces provided on the south side of the site. Concrete curbing surrounds the perimeter of the parking lot. The grade was cut back along the south elevation of the building and parking was added approximately two years ago. Sections of asphalt pavement on the north and west sides of the site appear to have been replaced in the last few years. Pavement on the east side of the property appears to be generally original to construction of the building.

The original asphalt-paved surfaces at the rear of the property are in poor condition with severe alligator cracking and pot holes apparent, indicating that the sub base material has likely been compromised. Longitudinal cracking was observed in the fire truck entrance of Pleasant Street. Concrete curbing was observed to be in good condition overall.

A low concrete retaining wall is used to accommodate the change in grade between the landscaped yard and asphalt parking lot at the front of the building. The wall appears to be in fair condition with no significant signs of post construction movement or cracking.



## Recommendations

- 1) Full depth asphalt replacement should be completed at the original asphalt pavement sections on the east side of the site.

This is a priority 2 recommendation with a cost estimate of \$27,000.

(Priority 2; \$27K in 2010)

- 2) Ongoing crack-filling and seal-coating should be performed on a four-year cycle to prevent water from entering the sub-base material and extend the serviceable life of the asphalt.

This is a priority 3 recommendation with cost estimate of \$1,000.

(Priority 3; \$1K in 2007)

- 3) Monitor and inspect the retaining wall on a regular basis as part of routine maintenance.

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### 4.1.3 Site Services

#### Findings

The building is connected to municipal water supply and sewer services. Design drawings indicate a 6" sanitary service and a 6" water service enters the building from the main located along Pleasant Street.

No problem was reported with the capacity and pressure of the municipal water supply and sewer services.

#### Recommendations

- 1) Jacques Whitford recommends that intrusive testing including video inspection be performed to confirm the condition and adequacy of the services to the building.

This is a priority 2 recommendation and a cost estimate of \$1,500.

(Priority 2; \$1.5K in 2007)

- 2) A budgetary allowance is also recommended for contingencies over the evaluation period.

(Priority 3; \$15K)

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### 4.1.4 Landscaping

#### Description

Landscaping on the site consists mainly of grassed areas with small shrubs on the south and west sides of the building. A flagpole and firefighters monument is also located along the front of the building, affording high visibility along Pleasant Street.

#### Commentary

Landscaping provisions appear adequate for their intended use.

#### Recommendation

- 1) Costs associated with maintenance and upkeep of landscaping should be covered under Operations and Maintenance (O&M).



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## 4.2 Building Exterior

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### 4.2.1 Exterior Wall Systems

#### Findings

The subject building is a steel-framed, pre-engineered building manufactured by American Steel. The typical exterior wall section consists of vertical steel siding, batt insulation, girts or steel studs and a gypsum board finish. The wall assembly sits on an exposed concrete frost wall which projects 2.5' to 3' above grade.

A visual observation identified approximately four inches of insulation between the gypsum board and the exterior steel siding. The insulation has an R12 insulating value which is insufficient by today's standards. The insulation does not fill the wall cavity which is leading to settling of the batts and air movement within the wall cavity. There is no vapour or air barrier within the wall assembly resulting in condensation and moisture transport into the wall assembly. Also, significant air leakage through the building envelope into the building was noted.

The siding was observed to be in fair condition overall with numerous areas of corrosion observed, more extensively around openings, and at the sill plate where the steel siding meets the concrete foundation at the base of the wall. Multiple areas of impact damage were observed creating indentations in the siding. The siding was re-painted approximately three years ago and appears to be of low quality and poor workmanship. Only one coat was applied which is showing signs of premature deterioration and flaking. Other deficiencies observed include localized areas where the siding has been cut/modified and not finished or sealed properly and missing/damaged fasteners and fittings from modifications.

Areas of minor impact damage and settlement cracking were observed in the exposed concrete foundation walls. The exposed walls have a painted finish which is peeling and flaking. Staining from the steel siding located above was also evident.

#### Recommendations

- 1) A vapour and air barrier should be retrofitted within the building. This will help prevent water from entering the building and will also help limit air movement through wall cavities. A proper air barrier will control heat loss by limiting air infiltration and can translate into energy savings. A vapour barrier will prevent/control water movement into the wall assembly and keep moisture in the wall to a minimum. It is recommended that a spray-on soft foam insulation and air barrier system product such as Icynene is used. This will provide air and vapour barrier protection and can be installed from the exterior of the building by removal of the siding, foam installation, then re-installation of the siding.

This is a priority 2 recommendation to improve air quality by controlling the deterioration of exterior wall materials and reducing air leakage through the wall into the building with a cost estimate of \$75,000

(Priority 2; \$75K in 2007)

- 2) Replace all fiberglass batt insulation that may be damaged, settled or deemed to be inadequate in preventing heat loss. This recommendation may not be necessary should a replacement insulation system be implemented as in recommendation 1 (above) and is therefore not budgeted.



- 3) Repair the building's steel siding. Mend areas of the siding that have exposed electrical wiring or devices to current standards. Repair/replace any seals of openings into the wall cavities. Any rusted fittings should be cleaned and/or replaced and staining/rust damage repaired. Allow for water drainage from the wall cavity at the base of the wall. Install sill flashing over the foundation wall. Re-caulk and seal any penetrations into the wall cavity. Re-paint the exterior of the building (siding, fascia, foundation).

This recommendation can be instituted during or after recommendation 1 above.

This is a priority 2 recommendation with a cost estimate of \$25,000.

(Priority 2; \$25K in 2007)

- 4) Replace the building's steel siding on all elevations in approximately eight years time (2015). The most affected building face(s) should be replaced first in a phased type program. The other affected areas could be repaired using the discarded steel siding that is still in good serviceable condition instead of needing full replacement. Assume 75% replacement over entire façade for a two year facility program.

This is a priority 2 recommendation with a cost estimate of \$60,000.

(Priority 2; \$60K in 2015)

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#### 4.2.2 Roof

##### Findings

The roof is currently finished with a torched down, modified bitumen membrane. The site contact indicated that two layers of fiberboard and a two ply modified bitumen membrane were installed prior to the installation of the more recent torched-down membrane.

The roof assembly is comprised of steel 'portal' frames with girts running perpendicular. Fiberglass batt insulation in polyethylene bags run between the girts and is pinched between the girts and the standing seam steel roof, creating a thermal bridge in these areas.

The new roof membrane was installed approximately three years ago and was observed to be in good condition overall. Roof curbs on all penetrations are installed and appear in good condition and finished using good construction practice. Some guy wire supports for mechanical/electrical equipment that are secured to the roof are rusted and lack proper sealants which may lead to leakage.

The roof is not equipped with a life safety/ fall arrest restraint system. Please refer to Section 4.3.10 for further information.

##### Recommendations

- 1) Secure all equipment and guy wires properly, repair/replace worn or damaged fittings and reseal/caulk all roof penetrations. Provide regular inspection and repair.

This is a priority 2 recommendation with an opinion of probable cost of \$3,500.

(Priority 2; \$3.5K every five years)

- 2) Budget for roof replacement in the long term of the evaluation period.

This is a priority 2 recommendation with a cost estimate of \$130,000.

(Priority 2; \$130K in 2024)



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#### 4.2.3 Windows - Exterior

##### Findings

Windows include aluminum glazing units and vertical/horizontal sliders with wood or vinyl frames. The majority of the windows have single pane glazing. A small number of thermopane glazed units were observed. The original windows are wood-framed, while replacement windows are vinyl or wood-framed, thermopane units.

The original wood-framed windows with vinyl inserts are exhibiting signs of wood rot and water damage. Both condensation damage and water leakage were evident at sills. This has resulted in staining, on the lower storey and potential mould growth. Both the horizontal and the vertical sliders are missing insect screens and security mesh. Sealants and flashings were observed to be in poor condition overall or non-existent.

The front entrance to the building consists of a set of typical storefront style doors with anodized aluminum framed glazing extending vertically from the double doors to the underside of the roof with a combination of spandrel and glass panel inserts. The aluminum framed glazing is in poor condition: corrosion of the aluminum frames was observed and is likely the result of an electrolytic reaction with the steel building elements. The steel flashings are also showing signs of extensive corrosion. The doors do not open properly and are reportedly locked at all times.

A steel security screen is installed over a slider window in the storage/workshop. It has severe rusting and may be affecting the underlying window.

Significant air infiltration was noted at all window locations. Improper installation, incomplete sealants and lack of maintenance have led to a poor condition overall. All original windows are inefficient in preventing heat loss and preventing moisture from entering the building.

##### Recommendations

- 1) It is recommended that all windows including the aluminium curtain wall system, horizontal sliders, and the vertical sliders should be replaced with new vinyl thermopane windows. This includes installation of proper flashings and installation according to good building practice.

This is a priority 2 recommendation, affecting indoor air quality, with an opinion of probable cost of \$30 000.

(Priority 2; \$30K in 2007)

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#### 4.2.4 Doors - Exterior

##### Findings

Exterior doors for the building consist of single and double man doors and overhead doors within the truck bays.

All of the single and double doors, with the exception of two aluminum doors, are original, uninsulated, painted steel doors set in steel frames. The doors were observed to be in poor condition overall with the majority exhibiting signs of surface abrasions and corrosion at the base of the doors and frames. Although generally functional, many of the doors were observed to be missing weather stripping and



seals and have not been maintained. The steel slab exit doors located on both sides of the Fire Chief's office are completely non-functional due to extensive rust from water damage

The overhead doors are located on both the front and rear elevations of the building and are comprised of steel framed, uninsulated, sectional steel doors with inset glazing panels of varying size. The overhead vehicle doors all were observed to be in good working order and appear to receive regular maintenance. Numerous areas exhibiting signs of corrosion were observed, particularly at the base of the door where the frames meet the steel siding. None of the overhead doors have functioning weather-stripping or seals resulting in significant water and air infiltration into the building at the ground level.

#### Recommendations

- 1) All exterior doors, with the exception of the elevator exit door, should be replaced with insulated steel doors and frames. Replacement doors are to meet the standards of barrier-free accessibility. This includes appropriate hardware (panic and passage sets).

This is a priority 2 recommendation with an opinion of probable cost of \$17 000.

(Priority 2; \$17K in 2007)

- 2) All overhead steel doors should have proper seals and weather-stripping installed. In addition the doors should be cleaned, have rust damage repaired and be re-painted.

This is a priority 2 recommendation with an opinion of probable cost of \$6 500.

(Priority 2; \$6.5K in 2007)

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#### 4.2.5 Façade Components

##### Findings

Roof drainage is accomplished by metal gutters and downspouts which run the length of the building. Extensive corrosion and numerous holes within the gutters were observed along the length of the building. The downspouts drain directly onto the ground or the foundation wall, causing water damage and algae growth at the base of the wall and potential for water infiltration. Underground drainage for the rain water leaders were observed but not connected. Connection to the municipal storm sewer is discussed in under "Site".

The rear exit stair addition is exhibiting signs of water damage throughout, with areas of loose and deteriorated plywood observed. The underside of the upper landing shows signs of rotting and pulling away from the joists and the steel fascia along the roof line was observed to be rusted and stained.

##### Recommendations

- 1) All gutters and downspouts should be replaced.

This is a priority 1 recommendation with a cost estimate of \$5 000.

(Priority 1; \$5K in 2007)

- 2) The existing rear exit stair is addressed in Section 4.3.6.

- 3) Electrical outlets are addressed in Section 4.6.



---

## 4.3 Building Interior

The Yarmouth Town Fire Station and Hall is a pre-engineered steel building constructed in 1974.

The footprint of the building measures 13,000 sq. ft. (1208 square meters). A second storey measures 10,050 sq. ft. (934 square meters).

The building is classified by the National Building Code of Canada (NBCC), as amended and adopted by the Province of Nova Scotia, as an F3 major occupancy with an adjoining A2 use (bingo/dancehall) upstairs.

The buildings floors include a concrete slab-on-grade, concrete over steel deck on OWSJ and wood floors in the mezzanine, stage and storage areas. Finishes on these floors include exposed concrete, painted concrete, vinyl composite flooring (VCT), sheet vinyl, ceramic tile and commercial grade carpet.

Interior partitions include concrete block walls with painted finish, wood framed partitions with painted drywall finish and wood framed partitions with prefinished panel board. Perimeter walls are also finished with painted gypsum board.

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### 4.3.1 Floors

#### Findings

The exposed concrete slab on the ground floor (slab-on-grade) has clear indications of cracking and in some cases minor differential movement has occurred. Cracking is also evident around column and pier bases where lack of control joints and proper slab joints are evident. The concrete slab has been painted in the past and is in need of resurfacing preferably with a slip resistant finish. In all areas at the exterior man doors there is significant evidence of water damage and some rust staining on the flooring surface and lifting in areas where the water has penetrated the floor finish.

Many of the floor areas have vinyl or rubber base glued to the wall which is loose or missing in some places. Other areas have a one or two piece wood base installed which is likely original to the building. This is problematic in wet areas such as washrooms, entrances and the truck bay where obvious damage has occurred.

Ceramic tile flooring located in washrooms and at entrances is generally in fair condition. Deficiencies including cracking, surface damage and grout staining were observed, typical of original finishes in a building of this vintage.

On the second floor, cracks in the concrete floor have telegraphed through the VCT flooring and, in some cases, holes in the concrete are visible. Through the course of the site visit movement or 'bounce' was observed in the open Hall area.

Based on the age and condition of the floor finishes, replacement of all applied floor finishes is necessary.



## Recommendations

- 1) Seal and firestop all floor penetrations between fire-rated (separated) compartments in this building. Penetrations in fire rated partitions (mechanical rooms, exit stairs and corridors) require appropriate fire stopping caulking. Larger voids will need patching prior to caulking.

This is a priority 1 recommendation with a cost estimate of \$6 000.

(Priority 1; \$6K in 2007)

- 2) Resurface the truck bay slab with a non-slip coating. Storage areas and clear paths of travel should be identified and indicated in the floor coating.

This is a priority 2 recommendation with a cost estimate of \$4 000.

(Priority 2; \$4K in 2007)

- 3) Expose and repair the voids and holes in the concrete over metal pan on the second floor level. This applies to the cracking in the Hall area and the kitchen floor.

This is a priority 1 recommendation with a cost estimate of \$1 000.

(Priority 1; \$1K in 2007)

- 4) Repair all significant slab cracking in truck bay area by cutting out the affected crack and sealing the resulting joint with an appropriate mastic.

This is a priority 2 recommendation with a cost estimate of \$4 000.

(Priority 2; \$4K in 2007)

- 5) Institute a facility wide program of flooring replacement. This will involve giving priority to the worst areas or those that directly affect life safety. Assume 25% new flooring per year for four a year program.

This is a priority 2 recommendation with a cost estimate of \$10 000.

(Priority 2; \$10K in 2009)

- 6) Damaged wood base and loose or missing rubber/vinyl base should be repaired or replaced.

This is a priority 2 recommendation with a cost estimate of \$500.

(Priority 2; \$500)

- 7) Create a series of new control joints in the existing slab to properly direct any new cracking that may occur in this slab.

This is a priority 2 recommendation with a cost estimate of \$3 000.

(Priority 2; \$3K in 2010)

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### 4.3.2 Walls

#### Findings

Concrete block walls show evidence of cracking caused by movement of the structure. Block wall infill at the portal frame locations have cracks in the masonry joints. Other areas of cracking were observed at wall intersections and penetrations.



Drywalled partitions and finishes on exterior walls include original finishes installed when the building was constructed and walls on wood framing added over the lifetime of the building. Most interior drywall partitions are painted. Some service areas (furnace room, generator room) are unfinished. Much of the exterior wall drywall shows evidence of water damage and deterioration. This is particularly evident at the base of the walls and is due to maintenance activity, condensation and leaks around windows and doors. Some structural cracks in the drywall and swelling and peeling paint indicate ongoing water damage. Some areas have large holes through the drywall into the wall cavity.

Many of the office and recreation area walls are finished with prefinished panel board. The panel board shows damage easily and dampness makes the material warp and cup. This type of damage can be seen in all areas where this finish was installed.

Stairwell and exit corridor walls in this use/occupancy are required to have a fire resistance rating of 90 minutes. None of these walls meet this standard and as such need to be upgraded immediately.

Firestopping in walls at voids and penetrations throughout the building is inadequate. The integrity of fire separations is compromised and voids or holes not through fire separations need to be smoke-sealed to meet the 'separation without a rating' requirement.

### Recommendations

- 1) Install fire rated drywall to provide fire separations where required by the National Building Code of Canada (NBCC) as amended and adopted by the Province of Nova Scotia.

This is a priority 1 recommendation with a cost estimate of \$12 000.

(Priority 1; \$12K in 2007)

- 2) Seal and firestop all wall penetrations between compartments in this building. Penetrations in fire rated partitions (mechanical rooms, exit stairs and corridors) require appropriate fire stopping caulking. Larger voids will need patching prior to caulking. Penetrations through non-rated partitions need smoke-sealing at all locations.

This is a priority 1 recommendation with a cost estimate of \$12 000.

(Priority 1; \$12K in 2007)

- 3) Repair all damaged drywall finish. Assume 35% replacement of ground floor drywall finish; further study may be required to determine full extent of repair.

This is a priority 2 recommendation with a cost estimate of \$22 000.

(Priority 2; \$22K in 2007)

- 4) Repair cracks in the masonry block partitions. Cut out loose or damaged mortar and replace with a suitable flexible mastic where flexible joints are required.

This is a priority 2 recommendation with a cost estimate of \$5 000.

(Priority 2; \$5K in 2007)

- 5) Remove all panelling and panel board materials. These are unsuitable to this use and some have damage that is not repairable. These walls can then be finished with drywall, taped, sanded and painted.

This is a priority 3 recommendation with a cost estimate of \$10 000.

(Priority 3; \$10K in 2007)



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### 4.3.3 Doors

#### Findings

Interior doors are wood or steel slab construction. Most doors appear to be original to the building, are operational, but are in poor condition due to age. Areas that require fire rated doors are served by doors that are not rated or served by doors whose ratings are insufficient. Much of the door hardware examined was either inadequate or barely functional and some hardware was missing or damaged beyond use and repair.

#### Recommendations

- 1) All interior doors serving fire rated exits and corridors need to be replaced and upgraded to rated doors. These doors also require upgrades to their frames and hardware.

This is a priority 1 recommendation with a cost estimate of \$8 000.

(Priority 1; \$8K in 2007)

- 2) With a few exceptions interior doors serving the rest of the building need to be replaced. Due to the type and use of this facility we recommend solid core wood doors with paint grade finish. Hardware for these doors needs to be to current standards (including barrier-free accessibility). A master keying plan can be implemented that will improve the safety and security of the facility overall. All interior doors should have nameplates affixed to either the frame or door face to clearly identify the spaces beyond. This will improve way-finding and safety in the building as well. Doors that serve meeting/training rooms and personal offices should have sound seals for privacy.

This is a priority 2 recommendation with a cost estimate of \$11 000.

(Priority 2; \$11K in 2007)

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### 4.3.4 Ceilings

#### Findings

Ceilings are exposed structure, t-bar suspended ceiling or suspended gypsum board.

The suspended t-bar ceilings show evidence of water damage from leaking above the ceiling or condensation staining and rust on the underside of the tiles and t-bar. Many areas have damaged tiles from abuse and tiles are missing throughout the building. A few tiles have suspected mould and fungus damage that requires urgent attention/remediation.

Exposed structure in lieu of finished ceilings is problematic where ground floor areas require fire separation from adjacent parts of the building. Some spaces on the upper floor have exposed insulation enclosed in polyethylene, which is unacceptable by today's code standards.

Suspended drywall ceilings are found in most service rooms (electrical, boiler and generator) and are taped and filled but not sanded and painted. There is no firestopping or sealant at many locations where mechanical/electrical equipment penetrates the ceiling, which is not to acceptable standards.

The rear exit stairwell walls and ceiling are finished with plywood and wood battens that have been painted.



## Recommendations

- 1) Replace all damaged ceiling tiles. T-bar areas with water damage need to have all causes of damage investigated and repaired before new tiles are installed. Tiles showing evidence of mould and fungus need immediate attention and a program of removal, cleaning and remediation.

This is a priority 1 recommendation (for ceiling only) with a cost estimate of \$10 000.

(Priority 1; \$10K in 2007)

- 2) Seal and firestop all penetrations between fire-rated (separated) compartments in this building. Penetrations in fire rated ceilings (mechanical rooms, exit stairs and corridors) require appropriate fire-stopping caulking. Larger voids will need patching prior to caulking. Penetrations through non-rated ceilings need smoke-sealing at all locations.

This is a priority 1 recommendation with a cost estimate of \$8 000.

(Priority 1; \$8K in 2007)

- 3) Construct/install ceilings on first and second floors in areas of exposed structure. In the truck bays the space is recommended to have a 90 minute separation from the floor above. We recommend a spray-on application over all exposed steel structure and underside of the deck in order to provide the required fire rating. Construction of a rated suspended ceiling in this area is problematic due to existing clearance issues between the underside of the structure and some vehicle equipment. Areas that do not have specific ceiling height requirements can have suspended drywall ceiling systems installed in order to meet current requirements for fire resistance. In the second floor a suspended ceiling of t-bar or gypsum board is recommended.

This is a priority 1 recommendation with a cost estimate of \$35 000.

(Priority 1; \$35K in 2007)

- 4) Refurbish existing t-bar ceiling systems. Rusted or stained t-bar ceiling grid needs to be cleaned, repainted or replaced through a program of maintenance and replacement. Replace all missing ceiling tiles in t-bar systems. Tiles may be 'swapped' to reduce the areas that get completely new tiles.

This is a priority 2 recommendation with a cost estimate of \$6,000.

(Priority 2; \$6K in 2007)

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### 4.3.5 Special Construction

#### Findings

There are numerous special constructions and add-ons that have been purpose-made over the lifetime of the building.

Casework includes a dispatcher's desk and kitchen cabinetry. The dispatcher's desk is a Douglas fir plywood construction and seems to be designed specifically for this function. It is damaged in some areas and is in need of refurbishment or replacement. This area would benefit from an ergonomic assessment to properly review user's needs.

Kitchen cabinetry and countertops on both floors is reasonably new and in serviceable condition. A bar/canteen servicing the dance hall was recently added and is in good condition.



Vanity counters in the washroom areas are in poor condition and in need of replacement. As the sinks are either worn or damaged they should be replaced and located in a new countertop. At least one lavatory counter in each washroom designated to be barrier free needs to be designed according to that standard.

There are two storage mezzanines above the floor of the truck bays constructed of wood with plywood floors. These areas were cluttered with various items in storage. Both storage areas lack easy access and proper railing systems.

Other miscellaneous cabinetry, shelving and storage racking throughout the building is purpose made/manufactured and in serviceable condition.

### Recommendations

- 1) A steel pipe railing system and a permanent wall mounted access ladder needs to be installed for two storage mezzanines in the truck bays. In addition a system of organization should be implemented so that users can better utilize the space and are knowledgeable in its contents.

This is a priority 2 recommendation with a cost estimate of \$5 000.

(Priority 2; \$5K in 2007)

- 2) Replace all post-formed countertops in washroom areas. This includes provisions for counters that meet the design standard for barrier-free fixtures and fittings.

This is a priority 2 recommendation with a cost estimate of \$3 000.

(Priority 2; \$3K in 2007)

- 3) Conduct an ergonomic assessment of dispatcher's area and replace dispatcher's desk casework with a new unit.

This is a priority 2 recommendation with a cost estimate of \$6 800.

(Priority 2; \$6.8K in 2007)

- 4) Assessment of utility rooms and storage needs is recommended as a maintenance item.

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#### 4.3.6 Circulation Spaces and Stairwells

##### Findings

Hallways and Stairwells are limited in number and are in poor condition overall. Many of the hall and corridor areas are of inadequate width, have inappropriate finishes, inadequate lighting and suffer from a lack of clear exiting strategies. Many of the circulation spaces have evolved with the numerous changes to the facility floor plan as use of the building has changed.

Virtually none of the hallways meet current NBCC requirements for barrier-free accessibility.

Three stairwells were originally built to service the second floor level. One was removed to allow for the construction of an elevator and another removed to provide more useable floor space on the second level. One stairwell was added to the rear of the building outside of the original building footprint. This stairwell was intended to supplement the exit requirements of the second level as the two original stairways were eliminated.



The remaining original exit stair has the following NBCC related deficiencies: a mixture of open riser and closed risers can currently be found in this stair. Open risers are not allowed by today's standards. The rise and run of this stair system is not to NBCC standards, code allows for a maximum rise of 180mm (7") and a maximum run of 280mm (11"). Landings are undersized and not to NBCC standards. Existing handrails are not ergonomic (easy to grip) and are not terminated or extended correctly. Doors and hardware serving the exit stair are not to NBCC standards and must be 60 minute rated from the ground floor and 45 minute rated from the upper floor. All walls encasing the exit stair need to be 90 minute rated from the ground floor and 60 minute rated from the upper storey. All wall mounted fittings (ashtrays, trophies and photo cases) should be removed and the walls patched. The leading edge of all stair treads needs a contrasting edge (colour or material). All interior glazing must be non-combustible and meet NBCC area requirements.

The wooden exit stair added at the rear of the building has the following NBCC related deficiencies: the rise and run of this stair system is not to NBCC standards, code allows for a maximum rise of 180mm (7") and a maximum run of 280mm (11"). Doors and hardware serving the exit stair are not to NBCC standards and must be 60 minute rated from the ground floor and 45 minute rated from the upper floor. As the addition the underside of the exit stair is directly over an existing exit from the ground floor, this requires a fire rating of 90 minutes. All walls encasing the exit stair need to be 90 minute rated from the ground floor and 60 minute rated from the upper storey. The leading edge of all stair treads needs a contrasting edge (colour or material). The landings of this stair do not meet NBCC standards, especially the landing at the bottom of the stair. As the plywood floors are rotting and the finish flooring has deteriorated significantly, this presents a hazard for the buildings occupants. The stairwell is unheated and the stairs may 'ice-up' causing a safety issue for users.

### Recommendations

- 1) A facility-wide exit plan should be posted outside all entrances and exits. This will improve the life-safety and enhance way finding throughout the building. This is a standard practice in municipal buildings that needs to be implemented.

This is a priority 1 recommendation with a cost estimate of \$1,000.

(Priority 1; \$1K in 2007)

- 2) Remove and rebuild the non-conforming wood exit stair at the rear of the building.

This is a priority 1 recommendation with a cost estimate of \$25 000.

(Priority 1; \$25K in 2007)

- 3) Renovate the exit stair at the front of the building to correct the life safety issues that currently exist.

This is a priority 1 recommendation with a cost estimate of \$8 000.

(Priority 1; \$8K in 2007)



#### 4.3.7 Washrooms

##### Findings

Washroom facilities are limited in numbers and are in poor condition overall. Most of the washrooms are inadequate in size, circulation, fixtures, lack proper ventilation and require floor drains. All of the washroom facilities are original (1974) to the building. There have been some renovations to the first floor washrooms and addition of two stalls in the second level women's washroom and a urinal in the second floor men's washroom.

None of the washrooms in the building meet current code requirements for barrier-free accessibility.

Users report excessive water consumption in the facility and suspect the aged supply piping is leaking.

This was not observed during the site visit however. In the many locations where water damage was observed, none were 'wet' and no standing water from plumbing leaks was seen.

The second floor men's and women's washrooms adjacent to the hall area are in poor condition. The washrooms are inadequate for the current occupant loads for the space by NBCC standards. They lack proper barrier-free stalls, fixtures, and handrails, and lack the required circulation space for maneuvering. There are on-going issues with the sink drains backing up. The supply piping to the toilets and urinals on the second floor is not installed to a proper standard. The tile work around all the fixtures is in poor condition, allowing water to leak into the exposed wall cavity. There are no floor drains for any of the buildings washrooms, which is a violation of the NBCC. A wall mounted heating unit located in a stall in the women's washroom is too close to the plumbing fixture. It encroaches on the minimum width recommended for a standard toilet stall. The fixtures themselves are in poor condition with stained porcelain water closets, worn down and rusted enameled steel lavatories. Water damage was found on the ceiling tiles.

The lower level men's washroom adjacent the truck bays also does not conform to NBCC requirements for barrier-free accessibility. It lacks circulation space to maneuver, proper barrier-free stalls, fixtures, and handrails. Water damage was also found on the ceiling tiles. The single washroom located adjacent to the Fire Chief's office is not barrier-free accessible. It lacks the proper maneuvering space, fixtures and handrails.

The on-call washroom facilities are in poor condition. The overall space is small and lacks adequate circulation space. The shower room for on-call personnel is undersized.

NBCC dictates the following fixtures by occupancy type and occupant load. For the F3 occupancy (Light Industrial) on the ground floor, two WC's per gender are required. The ground floor currently has eight toilets (assume four per gender) so the minimum code requirement is met on this level. The assembly occupancy (A2) on the second floor has ten existing WC's (assume 5 per gender) and, a posted maximum occupancy of 695, a total current requirement of six WC's for Male and eleven for the Female washrooms.



## Recommendations

- 1) Upgrade existing washrooms to allow for the minimum required barrier free accessibility. This applies to at least one washroom for each gender on the ground floor and all public washrooms on the second floor level.

This is a priority 1 recommendation with a cost estimate of \$10 000.

(Priority 1; \$10K in 2007)

- 2) Add water closets and lavatories in the second floor occupancy to meet minimum NBCC requirements.

This is a priority 1 recommendation with a cost estimate of \$20 000

(Priority 1; \$20K in 2007)

- 3) Existing washrooms on the ground floor need to be designated by gender to meet minimum NBCC standards.

This is a priority 1 recommendation and is included as part of maintenance.

- 4) Replace all worn plumbing fixtures and assess those that are to remain to ensure they are in good working order and are reasonably efficient. Assume 50% replacement.

This is a priority 2 recommendation with a cost estimate of \$4 500.

(Priority 2; \$4.5K in 2007)

- 5) All fixture supply piping should be replaced in the second floor washrooms, eliminating the unfinished plywood pipe chases that are currently mounted over the existing piping. An assessment of all domestic supply piping should also be undertaken to ensure aged piping and installation are operating leak-free and do not need replacing.

This is a priority 2 recommendation with a cost estimate of \$6 000.

(Priority 2, \$6.0K in 2007)

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### 4.3.8 Assembly Hall

#### Findings

The assembly hall is original to the building. The original intent of the building did not include a second floor assembly space, but the space was added during construction. Some major modifications have since been made including the removal of two internal exit stairs, the addition of an elevator and storage room, the addition of a external exit stair system, the expansion of the kitchen area, the addition of a bar area, janitors room and cooler room, and addition of a stage. This area is well used for functions, dances, weddings, meetings and training.

The assembly hall was observed to be in fair condition overall with worn, cracked and/or loose floor tiles and water damaged ceiling tiles with corroded T-Bar framing. Please refer to Section 4.4 for further information regarding the floor structure. The stage was observed to be in good condition overall but is constructed over wall mounted heating units, which compromises access to the units.

The elevator and elevator lobby are in good condition with no visible damage. However, there is no emergency lighting in this area.



The kitchen area was expanded several years ago. The area where the original wall was removed was finished improperly. The concrete and VCT have eroded/broken away in this area leaving holes and the floor decking exposed. There are numerous depressions in the floor in this area that pose a safety risk. There are also cracks in the walls where this renovation work was done.

All other amenity spaces adjacent to the hall are in fair to poor condition. A make-shift security gate for the assembly hall restricts exiting and is not to NBCC standards. All rooms have some damage on the ceiling tiles and walls. Flooring is in poor condition in most spaces. There is extensive damage to the floor tile in the cooler room.

### Recommendations

- 1) Removal of the sliding gate located adjacent the washroom facilities. The replacement security gate is to conform to NBCC standards.

This is a priority 2 recommendation with a cost estimate of \$600.

(Priority 2; \$0.6K in 2007)

- 2) Access to the existing wall mounted heaters currently under the stage construction needs to be reinstated. This will necessitate some reconstruction of the wooden stage platform.

This is a priority 2 recommendation with a cost estimate of \$5 000.

(Priority 2; \$5.0K in 2007)

- 3) Clearly post all equipment maintenance certificates adjacent the applicable equipment.

This is a priority 2 recommendation and is included as part of maintenance.

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### 4.3.9 Truck Bays

#### Findings

Electrical deficiencies include inadequate light levels, regular overloading (circuit breakers tripping) of areas of the branch circuitry, lack of controlled ventilation and/or sufficient heating. Undefined issues with air quality and frequent respiratory illness were reported by the users of the building.

Volatile and hazardous materials storage appears to be inadequate and located in inappropriate areas that may pose a safety risk.

On-call spaces (sleeping quarters) are said to be too few and in poor overall condition. The recreation room adjacent the truck bays is said to be underutilized. Housekeeping and maintenance equipment is located within the truck bay area which may cause circulation and safety issues. An assessment of current users' needs and space allocation would yield a better environment for the Firefighters and staff.

#### Recommendations

- 1) The storage of frequently accessed clothing and equipment should be better located in the truck bay area and could better organized with new storage units in clearly defined 'zones' best suited to a rapid response environment.

This is a priority 2 recommendation with a cost estimate of \$4 000.

(Priority 2; \$4K in 2007)



- 2) The removal of all non-essential apparatus and maintenance equipment should be done to easily accessed adjacent areas. Upgrades to way-finding and room identification is part of this recommendation.

This is a priority 2 recommendation with a cost estimate of \$3 000.

(Priority 2; \$3K in 2007)

- 3) An assessment of the recreation spaces and on-call quarters in the facility is recommended, together with a budgetary allowance for implementation.

This is a priority 2 recommendation with a cost estimate of \$15 000.

(Priority 2; \$15K in 2007)

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#### 4.3.10 Fire and Life Safety

##### Findings

The building has several significant fire and/or life safety issues as outlined below.

There are problems with access/exiting at all doors. Thresholds are too high to allow barrier-free access and can present a tripping hazard. Many of the exit doors appear to be original issue and are in disrepair. Several are inoperable.

Exterior lighting around the building is inadequate for security of the public.

There are many tears, dents and damaged areas of the exterior siding that result in sharp exposed edges and could lead to injury. Electrical wiring, unsecured light fixtures, unprotected electrical receptacles (no covers or GFI devices) all present some level of hazard to users of the building and passers-by alike.

There is no fall arrest system on the roof of this building. Fall restraint (e.g., railings or scaffolding) or arrest equipment is required for work at the perimeter of the roof. Anchors, lanyards and harnesses are recommended for access to the roof.

At the rear of the building there is a makeshift BBQ area with a large BBQ, beverage keg and portable propane tanks nearby. This all occurs within a few feet of a fire exit and directly under the wood construction of the replacement exit stair.

On the main road caution signage indicating frequent emergency vehicle presence is not present.

The fire rating for various fire separated compartments of the building is missing entirely. This building is classed as a Light Industrial (F3) major occupancy with an adjacent Assembly (A2) occupancy as such a 90 minute fire resistance rating is a minimum standard between these occupancies. This rating is also required at exit corridors and exit stairwells. Exit stairwells need the 90 minute rating on the ground floor and a 60 minute rating on the second floor. Doors and frames serving the exit stairs need to be clearly identified as 60 minute on the ground floor and 45 minute on the second floor. All interior spaces need to be upgraded to meet this standard.



Other spaces that the NBCC requires have fire separation from the rest of the building include the electrical room(s), boiler room and the generator room. These spaces also require fire rated doors, frames and appropriate hardware.

Fire stopping and smoke-seals are missing between rated rooms and assemblies at penetrations from mechanical equipment, plumbing and wiring.

The current maximum occupant load of the second floor is posted as 695 people. However, the existing stairs will accommodate only 498 people exiting safely.

Storage of volatile and combustible materials inside the building on the ground floor represents a fire and life safety hazard that needs awareness and improvement. An Underwriters Laboratory of Canada (ULC) rated fire proof storage cabinet is in place in the truck bay area and contains various gasoline storage containers. The storage cabinet has gas cans used for refueling the fire fighters equipment. Although the cabinet allows for venting, the vent is plugged. There are oil storage drums on the floor adjacent this storage cabinet. Various fire retardant foams are also stored in this area. The combination of dangerous materials storage and storage of the materials used to fight fire is considered to be unsafe.

### Recommendations

- 1) Caution signage should be added to the road used by the emergency vehicles in front of the station. A minimum of two signs for the approaches to the station is recommended.

This is a priority 1 recommendation with a cost estimate of \$1 000.

(Priority 1; \$1.0K in 2007)

- 2) We recommend relocation of the BBQ and its related propane tank storage requirement away from overhanging combustible construction and exit doors.

This is a priority 1 recommendation and is included as part of maintenance

- 3) Regrading of the existing asphalt to allow for barrier-free access at door thresholds and to prevent tripping is recommended.

This is a priority 1 recommendation with a cost estimate of \$2 500.

(Priority 1; \$2.5K in 2007)

- 4) An approved fall arrest system should be retrofitted on the roof of the building in order to meet current code and labour standards.

This is a priority 1 recommendation with a cost estimate of \$18 000.

(Priority 1; \$18K in 2007)

- 5) The posted occupant load of the second floor needs to be amended, or an additional means of egress added. The current non-conforming emergency exiting will only allow for exiting of 496 people (at capacity). In order to service the current listed capacity an additional exit stair would need to be build (to code) with an exit width of 2134mm (7'-0"). This would be in addition to the recommended stair upgrades found in section 4.3.6.

This is a priority 1 recommendation and is included as part of maintenance.



- 6) The rated cabinet for storage of volatile materials needs to be relocated away from potential sources of ignition and paths of exit travel. Also the cabinet should be vented to the outside as per manufacturer's recommendations to prevent the build-up of fumes inside the cabinet. Any other volatile materials should be relocated to a safer place in the building and that area not combined with storage of other hazardous substances. These areas of hazardous storage should be clearly labeled and protected from vehicle traffic.

This is a priority 1 recommendation with a cost estimate of \$2 000.

(Priority 1; \$2.0K in 2007)

- 7) Other fire safety and barrier free recommendations are included under Sections 4.3 and 4.6.

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## 4.4 Structure

### Findings

The first floor of the two-storey structure is occupied primarily by truck bays for the fire department, offices and sleeping/recreation areas for staff. The second floor serves as a dance hall and reception area equipped with a bar, kitchen and several offices. Signage posted on the wall indicates the maximum occupant load is 695 people for meetings and 519 or 610 for dance functions. The second floor also contains a stage area which was built approximately seven years ago and is equipped with compartments which store tables and chairs.

The building is constructed of rigid frames, roof joists, and wall girts, constructed in 1974. The two-storey structure consists of a pre-engineered, "American" steel building. The frames consist of tapered, wide-flange structural steel girders and columns. Roof joists are steel members supporting a corrugated metal deck.

The metal deck is insulated thus preventing visual observation of either side of the deck. The metal siding on the exterior walls is likely supported by horizontal and vertical girts.

Design drawings indicate the main floor of the structure consists of a 4" or 6" reinforced concrete slab-on-grade with reinforced concrete foundation walls and footings.

The second floor is understood to have been designed and added around the time of the original construction. The second floor consists of a concrete and metal deck and open web steel joist floor system supported by steel beams and columns.

The second floor structure has undergone significant structural repairs over the past five years. A structural assessment of open web steel joists (OWSJ) was completed by CBCL Limited in 1998. The report identified the OWSJ to be manufactured by Robb Engineering, and of the same configuration as those under investigation throughout Atlantic Canada. A total of 24 OWSJ were identified to have weld failures and other defects. Where observed, the repairs that were recommended were subsequently noted to have been carried out. Subsequent to the above-noted Robb Joist investigation and repairs, modifications to the structure were reportedly completed by a local welder in an attempt to stiffen the second floor. The modifications included the connection of OWSJ bottom chords to beams. No structural of this work was reported.



A visual assessment of the structure identified cracking in the concrete topping on the second floor structure consistent with characteristic deflections and shrinkage. The site contact indicated that cracks have been present for at least 15 years. The site contact indicated that floor vibrations are significant during large gatherings on the second floor, resulting in the overhead doors located on the main floor to vibrate and shake significantly. During the assessment, vibrations were easily noticed in the floor while other personnel were walking in the area.

The roof structure was found to have increased loading since its original design and construction through the addition of a built-up roofing system and modified bitumen roofing system.

### Recommendations

- 1) A full review of the second floor structure is recommended to confirm its adequacy. It is recommended that an analysis of dynamic forces due to vibration be included. It is also recommended that the increase in roof loading be assessed.

This is a priority 1 recommendation with an opinion of probable cost of approximately \$15,000.

(Priority 1; \$15K in 2007)

- 2) A contingency allowance is also recommended for minor repairs. Any major deficiency may be addressed by placing limitations on the building useage.

This is a priority 2 recommendation with an opinion of probable cost of approximately \$5,000.

(Priority 2; \$5K in 2009)

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## 4.5 Mechanical Systems

There are various mechanical systems throughout the building. Equipment age varies from about 33 years old to equipment installed in the past few years. The comments and recommendations were limited to observed equipment only.

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### 4.5.1 Heating

#### Findings

Space heating in most areas of the building is provided by a single Burnham model FD 312 hot water boiler fired on No. 2 oil. The boiler is original to the building (1975), rated at 1690 MBH output, and is in fair condition overall. The Riello burner appears to be newer than the boiler and is estimated to be 15 – 20 years old. Terminal heating is provided by vertical downflow hydronic unit heaters in the vehicle bays and by finned tube perimeter radiation upstairs and on the lower perimeter. One heater in the vehicle bays is located over top of a tool storage area with mezzanine storage above. The unit should be relocated or replaced with a horizontal unit heater to more effectively heat the vehicle bay. An 18 KW electric heating coil is located in the fresh air supply unit in the vehicle bay. Small electric baseboard heaters have been installed in areas to provide supplemental heating. Asbestos containing insulation has been removed from supply and return heating water lines and breeching in the boiler room but the lines have not been reinsulated. Hydronic circulating pumps were observed to be reasonably new and in good condition overall.



Fuel oil to the boiler is supplied from an aboveground single wall tank located behind the building. This steel tank, manufactured by Stenpro, has a capacity of 3409 litres. The tank was manufactured in 1994 and is in fair condition with visible surface rust. The tank is located within a roofed, semi enclosed, concrete block containment with an EPDM membrane liner. This liner is damaged in several locations. The containment has no visible means of drainage and was observed to be full of ice covered water to a level above the bottom of the tank. The fuel supply line from the tank to the building is not properly protected against potential damage from falling ice or other external force.

Propane supply to the building is solely for the upstairs kitchen appliances. Tank and piping appear to be in good condition.

Boiler water temperature is not currently scheduled based on outdoor air temperature. Boiler water temperature is set at 180 degrees F and can be manually adjusted at the boiler. Boiler operation is currently required to provide domestic hot water all year. Boiler room combustion air is provided by fixed wall mounted intake louver. Boiler breeching is uninsulated but in good condition. The double wall stainless steel stack is in good condition.

### Recommendations

- 1) Insulate hot water heating lines and breeching in the boiler room. The lines are close enough to the floor for personnel contact and can reach a temperature of greater than 60 deg C so as a personnel safety issue.

This is a Priority 1 recommendation with a cost estimate of \$500.

(Priority 1; \$0.5K in 2007)

- 2) Replace the boiler and burner with new equipment. At over 30 years of age the boiler is beyond its useful life and can no longer be considered reliable.

This is a priority 2 recommendation with a cost estimate of \$20,000.

(Priority 2; \$20K in 2007)

- 3) Engage a hydronic balancing contractor to balance the heating system to provide a better heating distribution to the remote areas of the building.

This is a priority 2 recommendation with an opinion of probable cost of \$10,000.

(Priority 2; \$10K in 2007)

- 4) Provide a means to drain the oil tank containment to prevent the buildup of water and ice. The drain will need to be normally closed to prevent oil escape and will need to run through an oil water separator to remove any residual oil before drain water can be disposed of.

This is a priority 2 recommendation with a cost estimate of \$4000.

(Priority 2; \$4.0K in 2010)

- 5) Relocate unit heater in SE corner of vehicle bay away from mezzanine storage.

This is a priority 3 recommendation with a cost estimate of \$1000.

(Priority 3; \$1.0K in 2012)



## 4.5.2 Ventilation

### Findings

A manually operated exhaust system in the vehicle bay is used to vent engine exhaust when operating vehicles inside the vehicle bay. A series of exhaust branches drop along columns beside each vehicle and terminate with a manual damper. Someone wishing to use this system would open the damper and insert a flex hose that had been connected to the vehicle exhaust pipe into the branch duct and then turn on the exhaust fan before starting the vehicle. This system is not capable of ensuring complete capture and safe venting of engine exhaust. The size of the branch ducts also appear to be undersized for the exhaust volume from the larger vehicles. A purpose built vehicle exhaust system with an extendable boom type swing arm should allow any vehicle in the bay to be reached with only one or two swing arms.

Other rooms on the main floor are supplied with tempered fresh air from a suspended unit located in the vehicle bay. This unit is a fresh air only with an electric heating coil set for a discharge temperature of 25 deg C. Measurements taken at the discharge of the coil indicate a total air flow of 700 cfm. Measurements taken at the supply outlets from this system show a wide variation in output from over 100 cfm in the training room to zero in the platoon chiefs office. This system requires rebalancing to provide fresh air quantities closer to guidelines of 15 cfm per person. An exhaust system provides continuous exhaust from most occupied rooms on the main floor. The system has not been balanced to match the supply air system. A modern building would utilize a heat recovery ventilation system to ensure proper balancing and much improved energy efficiency. The shower room on the main floor has no working exhaust.

The upstairs meeting room has three main wall mounted exhaust fans and two roof mounted gravity intakes. The kitchen has a separate cooktop exhaust system and the washrooms have a separate exhaust system. The kitchen exhaust fan is reasonably new while the other equipment appears to be original. With no supply air tempering ability the intake vents are rarely opened for winter events to prevent cold air from spilling onto meeting room occupants. The room's maximum occupancy is over 600 which could lead to excess humidity and high CO<sub>2</sub> levels in the room if adequate ventilation is not provided. The three main exhaust fans have a capacity of approximately 6000 cfm which is sufficient for 400 people if an equivalent amount of fresh outside air is provided. If the meeting room is to be used regularly in the winter for large gatherings the ventilation system should be upgraded to ensure that a source of tempered fresh air can be provided.

Some machining and other industrial shop activities appear to be taking place in the building. Currently this appears to take place in an unventilated storage room or in the vehicle bay. These activities require continuous ventilation when taking place to prevent a build-up of dangerous pollutants into the building environment. One room should be designated for this work and provided with dedicated supply and exhaust air as well as bench top or point of use exhaust capability. Paints and cleaning products stored in a room adjacent to the vehicle bay requires a dedicated exhaust unit to provide continuous ventilation and prevent the build-up of vapours from these products.



## Recommendations

- 1) Install a dedicated purpose built vehicle exhaust extraction system for the vehicle bay. The system should be designed to allow one vehicle to operate at a time.  
This is a priority 2 recommendation with an opinion of probable cost of \$5000.  
(Priority 2; \$5.0K in 2007)
- 2) Balance supply and exhaust systems on main floor.  
This is a priority 2 recommendation with an opinion of probable cost of \$1500.  
(Priority 2; \$1.5K in 2007)
- 3) Install a heat recovery ventilation system to supply the main floor areas outside of the vehicle bay.  
This is a priority 3 recommendation with a cost estimate of \$8000.  
(Priority 3; \$8.0K in 2007)
- 4) Install a heat recovery ventilation system in the upstairs meeting room. System should be composed of multiple units so capacity can be adjusted according to the size of the crowd.  
This is a priority 2 recommendation with an opinion of probable cost of \$18,000.  
(Priority 2; \$18K in 2007)
- 5) Install an exhaust fan in the main floor shower room.  
This is a priority 1 recommendation with an opinion of probable cost of \$500.  
(Priority 1; \$0.5K in 2007)
- 6) Install dedicated exhaust system for main floor paint storage room.  
This is a priority 1 recommendation with an opinion of probable cost of \$500.  
(Priority 1; \$0.5K in 2007)
- 7) Install a dedicated machine shop exhaust in a main floor room designated for machine shop use.  
This is a priority 1 recommendation with an opinion of probable cost of \$1000.  
(Priority 1; \$1.0K in 2007)

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### 4.5.3 Controls

#### Findings

The building has line voltage thermostats to control the heating system. Ventilation system controls are manual. A previous recommendation to balance the heating system to provide more even heat distribution would be enhanced with more modern digital thermostats. The existing ventilation system is very rudimentary and continuous so would not benefit greatly from enhanced controls. The new recommended ventilation equipment would include automatic control.



## Recommendations

- 1) Replace existing thermostats with new programmable digital thermostats once the heating system zoning and rebalancing has taken place.

This is a priority 2 recommendation with a cost estimate of \$500.

(Priority 2; \$0.5K in 2007)

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### 4.5.4 Plumbing and DHW Systems

#### Findings

Building water supply enters under the front of the building and comes up through the floor to a sprinkler valve and potable water meter in the storage room behind the main floor washroom. The building is supplied from the municipal water system. The water meter is in good condition.

Most plumbing fixtures appear to be original to the building. There is evidence of past water leaks in the main floor washroom adjacent to the dispatcher's desk. Water consumption in the building has increased significantly in the past couple of years with no appreciable increase in building use. Leaking fixtures are suspected. The upstairs men's washroom has a 13 liter flush tank connected to 3 urinals. It is filling and flushing every 60 seconds, resulting in a monthly consumption from this appliance alone of over 500,000 liters. Other reports were provided of plumbing system leaks in washrooms although no active leaks were observed during our site investigation. The plumbing fixtures in the building are all still functional but are old and inefficient with respect to water conservation.

The building sanitary drainage system functions normally with no reported problems.

#### Recommendations

- 1) Install a flow restrictor or other device in the fill line to the urinal flush tank in the upper men's washroom to reduce water consumption.

This is a priority 2 recommendation with a cost estimate of \$25.

(Priority 2; \$0.25K in 2007)

- 2) Replace existing plumbing fixtures to reduce water consumption and improve the building's functionality.

This is a priority 3 recommendation with a cost estimate of \$9,000.

(Priority 3; \$9K in 2007)

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### 4.5.5 Fire Protection

#### Findings

Fire protection is provided throughout the building. A full wet pipe system is extended throughout the building. The unheated stairwell at the rear of the building has an antifreeze loop installed to prevent freezing of the sprinkler lines in this area. The system is composed of upright and pendant heads with both new and old style deflectors. NFPA 13 requirements stipulate that systems with sprinkler heads that are 50 years old must have sample of the heads removed for testing and that this must be



repeated at least every 10 years. Given the low cost of replacement heads it is usually simpler to replace the heads rather than have samples removed and tested. The system receives regular inspections and tests. A copy of the latest test report is included with the appendix of this report.

Previous inspection reports have identified the need to install sprinkler heads under the overhead doors when they are up. This work has not yet been done.

The kitchen exhaust hood has an automatic dry chemical fire suppression system. Manual activation of the system requires removing a control box cover to access the activation switch. The switch is also not immediately adjacent to the room exit.

Portable fire extinguishers in the building are a combination of water extinguishers and type ABC extinguishers. A previous fire marshals inspection report recommends replacement of the water extinguishers with ABC extinguishers.

### Recommendations

- 1) Install new sprinkler heads below roll up doors in sprinkler bays.  
This is a priority 1 recommendation with a cost estimate of \$1500.  
(Priority 1; \$1.5K in 2007)
- 2) Relocate kitchen exhaust hood manual activation to a position near the kitchen door and include a prominent sign indicating its purpose.  
This is a priority 1 recommendation with a cost estimate of \$500.  
(Priority 1; \$0.5K in 2007)
- 3) Replace water extinguishers with multi purpose extinguishers.  
This is a priority 1 recommendation with a cost estimate of \$300.  
(Priority 1; \$0.3K in 2007)
- 4) Provide an access door or panel to be able to access the antifreeze loop for the rear stairwell sprinklers.  
This is a priority 1 recommendation with a cost estimate of \$200.  
(Priority 1; \$0.2K in 2007)

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### 4.5.6 Special Systems

#### Findings

An air compressor located in the boiler room provides compressed air for emergency vehicle brakes in the vehicle bays and shop air for air tools. The compressor is in good condition and was recently inspected. A breathing air compressor is used for refilling firefighters self contained breathing apparatus. This unit is only 2 years old and is in good condition.



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## 4.6 Electrical

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### 4.6.1 Electrical Service

#### Findings

The electrical service and distribution is illustrated on the Single Line diagram 070401-E-01 provided in Appendix B. The electrical service for the Yarmouth Fire Station is rated 400A, 120/208V, 3 phase, 4 wire. The service is supplied from a bank of three 25KVA, single phase pole mounted transformers, located at the south east side of the building. The service runs overhead to the building to a 4" PVC service conduit terminating at the service entrance switchboard main 400A breaker.

The electrical service entrance was upgraded in 1994 from a 200A service to a 400A service and is in good condition. The service grounding is achieved by means of a 3/0 AWG ground wire connected to two ground rods placed 6' apart located in the electrical room floor adjacent to the main switchboard and appears to be on good condition.

The main electrical room is located towards the back of the building. The electrical room also serves as a communications room. The electrical room is adequate in size, with proper clearances for distribution equipment. The electrical room is also being used as a closet for miscellaneous fire fighting clothing. The electrical room is not equipped with fire detection, and has no ventilation. No door signage is installed distinguishing this room as an electrical room. These items violate current CEC requirements. The electrical room lighting is fed from the emergency panel providing emergency lighting. Interior access to the mechanical and diesel generator rooms is provided through the electrical room.

The electrical service is metered by Nova Scotia Power electronic energy meter #1052344. The utility meter is located inside the electrical room. The CT's are located within the main switchboard. NSPI billing does not record peak demand readings; therefore it is not possible to determine the percentage of loading on service feeders and equipment. Based on the size of NSPI's transformers which are slightly undersized for a 400A service, it is estimated that the load is in the order of 300A.

#### Recommendations

- 1) All clothing and miscellaneous items presently stored in the electrical room must be removed in conformance with CEC section 2-312.  
This is a Priority 1 recommendation with an approximate cost of \$50.  
(Priority 1; \$0.05K in 2007)
- 2) Provide signage on electrical room doors identifying the room as the electrical room per CEC.  
This is a Priority 1 recommendation with an approximate cost of \$50.  
(Priority 1; \$0.05K in 2007)
- 3) Provide ventilation in electrical room per CEC section 2-318.  
This is a Priority 1 recommendation with an approximate cost of \$200.  
(Priority 1; \$0.2K in 2007)



- 4) Provide additional battery powered emergency lighting in the electrical and mechanical rooms to facilitate access and egress if the diesel generator fails to start on loss of power.

This is a Priority 2 recommendation with an approximate cost of \$600.

(Priority 2; \$0.6K in 2009)

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#### 4.6.2 Distribution System

##### Findings

Utility Power is distributed throughout the building from the 400A, 120/208V, 3 phase, 4 wire main switchboard which consists of a 400A main breaker, utility CT compartment and breaker distribution section. The distribution section utilizes molded case circuit breakers to supply major loads and distribution panel boards as detailed on the Single Line Diagram. The main switchboard also provides utility power supply to the emergency panel boards via an automatic transfer switch. The emergency supply is provided by a diesel generator. The emergency generator provides back- up power to essential loads within the facility. The diesel generator is tied to the main switchboard by an automatic transfer switch. The transfer switch will start the diesel generator set on loss of utility power and feed essential loads.

The Diesel Generator is a 50KVA Caterpillar Diesel generator set model 94A03138-S, Serial Number 2014077. It delivers 208A at 120/208V, 3Phase 4W to power the emergency systems. The transfer switch is an Olympian CTS system, model 94A03138-W, serial number 26477. The diesel generator and transfer switch are in good condition and are exercised on a regular basis.

The diesel generator room has a few problems. Access to the diesel generator main breaker is limited due to the narrowness of the room and location of the day tank. The backboard used to mount the transfer switch is made of plywood and represents a fire hazard. The fuel piping from the day tank to the Diesel are run along the floor and are not protected from mechanical abuse. The doors to the diesel generator room do not appear to be fire rated.

In general the entire power distribution system including the diesel generator set and transfer switch is in good condition down to the panelboard level. The main switchboard, several distribution panel boards, diesel generator and transfer switch were all replaced in 1994. Original panelboards remaining in the system are also in reasonably good condition and are not overloaded based on the size of their supply breakers. Panel boards are all identified with nameplates and have circuit schedules.

In some cases, non essential circuits have been added to the emergency power supply distribution panels for convenience. Such circuits should have been placed on non essential panelboards. This does not appear to be a critical issue but is not a good practice and may eventually cause overloading of the diesel generator set.

##### Recommendations

- 1) In future, all non essential loads should be wired from non essential power supply panelboards.

This is a Priority 2 recommendation. No costs are included.



- 2) If future renovations dictate the installation of an additional non essential service panelboard; review loads currently on essential service panelboards and rewire non essential loads to the new panelboard to reduce loading on essential services.

This is a Priority 2 recommendation with an approximate cost of \$4,000.

(Priority 2; \$4K in 2011)

- 3) Paint the plywood backboard in the diesel generator room with two coats of fire retardant paint. Care should be taken during application to provide adequate ventilation.

- 4) Provide mechanical protection for fuel lines to the Diesel Generator set.

This is a Priority 2 recommendation with an approximate cost of \$250.

(Priority 2; \$0.25K in 2012)

- 5) Address location of day tank to allow access to the generator main breaker.

This is a Priority 2 recommendation with an approximate cost of \$2,000.

(Priority 2; \$2K in 2012)

- 6) Remove equipment in front of emergency transfer panel.

This is a Priority 2 recommendation. No costs are included.

#### 4.6.3 Lighting

##### Findings

The interior lighting system in the Yarmouth Fire Hall consists of surface and ceiling mounted 2x 4' fluorescent fixtures throughout the building. Exterior lighting and parking lot lighting is provided by either incandescent wall mounted fixtures or street lighting mounted on utility poles.

Inspection of lighting fixtures was carried out on a room by room basis, and assessments are based on acceptable luminance values found in the Illumination Engineering Society (IES) Lighting Handbook, Application Guide. Municipal fire halls are generally illuminated to 30 foot candles.

The following are rooms and areas and their recorded illumination values and recommended values:

Location	Measured Foot Candles	Recommended Foot Candles
Corridors and Entrances	7.5	10 - 20
Truck Bay	4.3 to 16	20 - 50
Offices	30 to 46	20 - 50
Kitchen	50	50 - 100
Stair wells	7 to 10	10 - 20
Washrooms	50	10 - 20
Training room	25	20 - 50
Dance Hall	7.5	5 - 10
Mechanical Rooms	35	20 - 50

The lighting levels are generally low within the Fire Station. In addition, the truck bay also has a large variation in luminance level which can reduce the ability to see task in many instances. This is a potential safety issue based on the rapid response times required by personnel in this area during a fire alarm and the tight equipment parking requirements when backing in equipment.



Exterior building lighting is poor as well. There is no lighting on the south side of the building with the exception of two HID pole lights. Building lighting on the north side of the building is in disrepair and needs to be replaced. In addition, the power supply feeding one of the pole mounted lights at the front of the building is in disrepair.

### Recommendations

- 1) Re-lamp fluorescent fixtures having non functional lamps.

This is a Priority 2 recommendation with an approximate cost of \$100.

(Priority 2; \$0.1K in 2012)

- 2) Redesign and upgrade the building lighting system in the truck bay to provide a proper lighting environment for the activities required in this area.

This is a Priority 3 recommendation with an approximate cost of \$7,000.

(Priority 3; \$7K in 2007)

- 3) Redesign and upgrade the remaining building lighting system to provide a proper lighting environment.

This is a Priority 3 recommendation with an approximate cost of \$10,000.

(Priority 3; \$10K in 2013)

- 4) Provide additional HID exterior lighting on both sides of the building.

This is a Priority 3 recommendation with an approximate cost of \$5,000.

(Priority 3; \$5K in 2014)

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## 4.7 Systems

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### 4.7.1 Fire Alarm System

#### Findings

The fire alarm system is an Edwards 1527 one zone fire detection system original to the building. It provides manual pull station and alarm annunciation for the dance hall on the second floor and public entrances. The components of the fire alarm system appear to be in good condition; however the control panel, Ca 1974, is due for replacement.

The branch circuit breaker feeding the Fire Alarm System control panel is not clearly identified as supplying the fire alarm system and is not colored red with a lock on device per section 32-108(2) of the CEC.

There is no fire detection provided in the mechanical equipment, diesel generator or electrical rooms although these areas are protected by sprinklers.

It does not appear that the fire detection system is tied into the sprinkler system fire valves.



## Recommendations

- 1) Upgrade the fire detection system control panel and add additional zones for equipment rooms, electrical rooms, sprinkler interface and public areas.

This is a Priority 1 recommendation with an approximate cost of \$10,000.

(Priority 1; \$10K in 2007)

- 2) Install a fire alarm smoke detector in the electrical and mechanical rooms and connect to the fire alarm system and interface with sprinkler system.

This is a Priority 1 recommendation with an approximate cost of \$3,000.

(Priority 1; \$3.0K in 2008)

- 3) Install a red breaker complete with lock on device to supply the fire detection system.

This is a Priority 1 recommendation with an approximate cost of \$100.

(Priority 1; \$0.1K in 2007)

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### 4.7.2 Emergency Lighting System

#### Findings

There are two emergency lighting systems installed in the Fire Hall. Much of the building lighting is powered from the essential service panelboards powered from the utility supply and backed up by the auxiliary diesel generator set. In addition, a conventional low voltage battery based emergency lighting system complete with exit signage is located in the dance hall and stair wells servicing this area.

The battery backed up lighting system is in disrepair having a broken fixture head in the dance hall and damaged exit sign on the front door. This system is also inadequate for the dance hall area especially in the stair wells where there is no emergency lighting at the lower levels.

#### Recommendations

- 1) Upgrade battery emergency lighting system in the public dance hall and stair well areas.

This is a Priority 1 recommendation with an approximate cost of \$3,000.

(Priority 1; \$3.0K in 2007)

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### 4.7.3 Gas Detection System

#### Findings

A CO monitor is installed in the truck bay and is in good condition.



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#### 4.7.4 Wiring Devices

##### Findings

Inspection of the facilities' receptacles was performed on room by room basis. Most receptacles are in good condition. Receptacle boxes in the truck bay were in fair condition. A random check of receptacle wiring indicated that a few receptacles in the first floor kitchen area were not properly grounded. Receptacles in both kitchens were also located too close to the sink areas based on current CEC requirements.

##### Recommendations

- 1) Have all receptacles checked for proper grounding.

This is a Priority 1 recommendation with an approximate cost of \$800.

(Priority 1; \$0.8K in 2007)

- 2) Relocate and re-power receptacles too close to sinks in kitchens per CEC 27-712.

This is a Priority 1 recommendation with an approximate cost of \$800.

(Priority 1; \$0.8K in 2007)

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#### 4.7.5 Mechanical Equipment Power Supplies

##### Findings

##### Furnace

The disconnect switch on the power feeder to the furnace is not readily accessible being located on the wall behind the boiler. The disconnect should be relocated if the boiler is replaced.

##### 4.7.5.1 Air Compressor

The feeder and disconnect to the air compressor were observed to be in good condition. The disconnect switch is located for ease of access.

##### 4.7.5.2 Unit Heaters

Unit heaters having electrical fans do not have local disconnects required by code.

##### 4.7.5.3 Elevator

The elevator was redone about two years ago and the electrical supply upgraded with a new disconnect switch.

##### Recommendations

- 1) All individual electrical equipment should be identified with lamacoid nameplates indicating equipment identification, supply voltage, phase and source of power (panel board).

This is a Priority 2 recommendation with an approximate cost of \$500.

(Priority 2; \$0.5K)



- 2) Install local disconnects on unit heaters if the heating system is upgraded.

This is a Priority 2 recommendation with an approximate cost of \$2,000.

(Priority 2; \$2.0K in )

- 3) Relocate local disconnect for boiler.

This is a Priority 2 recommendation with an approximate cost of \$500.

(Priority 2; \$0.5K in00)

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#### 4.7.6 Branch Circuit Wiring

##### Findings

Branch circuit wiring refers to the wiring emanating from panelboards and terminating at various loads such as receptacles, mechanical equipment disconnects and lighting. Most of the original branch wiring consists of RW90 copper conductors installed in rigid conduit or electrical metallic tubing (EMT) and is in good shape. Much of the wiring between panelboards was changed in 1994 during the electrical upgrade and appears in good condition.

Many electrical changes have been carried out on the buildings branch wiring since the building was erected in 1974. Most of the wiring is run in AC90 armoured cable. Much of this cable is surface run in building trusses and is not adequately supported. This problem is evident in the truck bay ceiling. Surface runs of NMD building wire was also found interconnecting lighting in the back stairwell. In addition, allocation of new circuits to panel boards has been carried out the based on convenience as discussed earlier and should be re-evaluated based on panel board usage.

##### Recommendations

- 1) Surface run AC90 armoured cable requires adequate support in the truck bay in accordance with CSA.

This is a Priority 1 recommendation with an approximate cost of \$350.

(Priority 1; \$0.35K in 2007)

- 2) Replace surface runs of NMD to lighting fixtures in back stairwell with wire in conduit.

This is a Priority 1 recommendation with an approximate cost of \$200.

(Priority 1; \$0.2K in 2007)

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#### 4.7.7 Elevators

##### Findings

There is one hydraulic elevator servicing the building, reportedly installed in 2003. The elevator is manufactured by Thyssen Krupp and has a capacity of 1,600 Kg or 16 passengers.

The elevator is reportedly in good working order and is under a maintenance contract with the manufacturer.



## Recommendations

- 1) Allow for modernization and upgrades following 15 years of service.

This is a priority 3 recommendation with an opinion of probable cost of \$25,000.

(Priority 3; \$25K in 2018)

- 2) Budget for replacement of interior cab finishes following 20 years of service.

This is a priority 3 recommendation with an opinion of probable cost of \$10,000.

(Priority 3; \$10K in 2023)

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## 5.0 CONCLUSIONS

Based on information gathered and observations made during the assessment, the building and site features appear to be in fair to poor condition overall.

The following Priority 1 repairs are anticipated within the evaluation period:

- Replace all gutters and downspouts;
- Seal and firestop all floor penetrations;
- Repair the voids and holes in the second floor level concrete of Hall area and kitchen;
- Install fire rated drywall;
- Replace all interior doors serving fire rated exits and corridors;
- Replace all damaged ceiling tiles;
- Construct/install ceilings on first and second floors in areas of exposed structure;
- Post a facility-wide exit plan outside all entrances and exits;
- Remove and rebuild the non-conforming wood exit stair at the rear of the building;
- Renovate the exit stair at the front of the building to correct the life safety issues;
- Upgrade existing washrooms to provide barrier free accessibility;
- Add water closets and lavatories in the second floor occupancy;
- Designate ground floor washrooms by gender;
- Install caution signage for emergency vehicles;
- Relocate BBQ and its related propane tank storage;
- Regrade existing asphalt at door thresholds to provide barrier-free accessibility;
- Retrofit an approved fall arrest system on the roof;
- Upgrade emergency exits;
- Relocate rated cabinet for storage of volatile materials;
- Conduct a structural review of the second floor;



- Install an exhaust fan in the main floor shower room;
- Install dedicated exhaust system for main floor paint storage room;
- Install a dedicated machine shop exhaust in a main floor room designated for machine shop use;
- Install new sprinkler heads below roll up doors in sprinkler bays;
- Relocate kitchen exhaust hood manual activation;
- Replace water extinguishers with multi purpose extinguishers;
- Provide an access door or panel for the rear stairwell sprinklers;
- Remove all clothing and miscellaneous items from the electrical room;
- Provide signage on electrical room doors for identification;
- Provide ventilation in electrical room;
- Upgrade the fire detection system control panel;
- Install a fire alarm smoke detector in the electrical and mechanical rooms;
- Install a red breaker complete with lock on device to supply the fire detection system;
- Upgrade battery emergency lighting system in the public dance hall and stair well areas;
- Have all receptacles checked for proper grounding;
- Relocate and re-power receptacles in kitchens;
- Provide adequate support for surface run AC90 armoured cable in the truck bay; and
- Replace surface runs of NMD to lighting fixtures in back stairwell with wire in conduit.

The following further investigations are recommended:

- Intrusive testing including video inspection is recommended to confirm the condition and adequacy of the services to the building.
- A structural review is recommended to confirm the adequacy of the second floor for current loading conditions.

Items recommended for replacement, upgrade, refurbishment or addition over the evaluation period are identified and are listed, together with cost estimates, in the attached Table A, Remaining Life and Adjusted Cost. Estimated cash flow over the period, adjusted to present worth, is described in Table B, Replacement Cost Summary.

The capital cost of current deferred maintenance and estimated future capital work are summarized as follows:

Year	Accumulated maintenance cost	Accumulated maintenance cost (\$/sq.ft.)
0	\$ 582,475	\$ 24.26 / sq. ft.
5	\$ 639,075	\$ 26.63 / sq. ft.
25	\$ 1,048,725	\$43.70 / sq. ft.



These values may be compared to the cost of construction of a replacement building using current design standards and contemporary construction materials and methods to produce a building that (a) has a similar standard of quality, in terms of aesthetics, durability and operation, (b) meets the current functional requirements of the existing building, (c) includes site-specific requirements related to appearance, zoning restraints, etc. and (d) has a gross plan area similar to that of the existing building. The equivalent cost of new construction is estimated to be approximately \$120 per square foot, or \$2,880,000.

The current recapitalization requirements for the building are summarized as follows:

Building Evaluated	Building Area	ADM	Soft Costs (25%)	Estimated Replacement Value	FCI (2007)
Yarmouth Firehall	24,000 ft <sup>2</sup>	\$ 582,475	\$ 145,619	\$ 2,880,000	20%

The level of deferred maintenance is considered to be currently fair to poor in comparison with industry standards.

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## 6.0 CLOSURE

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The opinions of cost presented in this report are intended for global budget purposes only. Actual costs for work recommended can only be determined after preparation of tender documents, understanding of site restrictions, effects of ongoing operations of the building and definition of the construction schedule. The scope of recapitalization work recommended in this report must be confirmed with a more detailed site investigation prior to implementation. We expressly waive any responsibility for the effects of any action taken as a result of this service unless we are specifically advised and participate in the action, in which case our responsibility will be agreed to at that time. No other warranty, expressed or implied is made.



The assessment is based on portions of the buildings which were accessible during our assessment. Conditions may exist that are not as per the general condition of the system being observed and reported in this report. In some instances, a provisional cost has been applied to a component in order to provide for foreseeable future repairs for which an actual cost cannot be applied at this time.

The assessment is also based on information received during interviews with Town of Yarmouth representatives. During our assessment, we have attempted to verify all information received, however we cannot be held responsible for incorrect information received during the interview process. Although attempts were made, whenever possible, to obtain a minimum of two confirmatory sources of information, Jacques Whitford in certain instances has been required to assume that information provided from a single source.

The conclusions presented represent the best judgment of the assessor(s) based on the visual observations of the accessible areas of the Site observed on the site visit date, data made available to the assessor, and interviews with Town of Yarmouth personnel. Should additional information become available with respect to the findings provided in this report, Jacques Whitford requests that this information be brought to our attention so that we may re-assess the conclusions presented.

This report was prepared collaboratively by the assessors named above, compiled by Mark Stiles and reviewed by Jim Fletcher.

Respectfully submitted,

**JACQUES WHITFORD LIMITED**



Mark Stiles, B.Sc.Eng.,  
Site Assessor/Report Writer



Jim Fletcher, M.A.Sc, P.Eng.  
Senior Reviewer

P:\enveng\102xxxx\1021439 firehall facility condition assessment - town of yarmouth\Final\Yarmouth Fire Hall - Final.doc





# **APPENDIX A**

Deferred Maintenance and Replacement Reserve Costs



TABLE A-1: REMAINING LIFE AND ADJUSTED REPLACEMENT COST

2007 Study Year	Town of Yarmouth Yarmouth Fire Hall	Component	Year of Construction or Repair	Normal Life Expectancy (Years)	Current Age (Years)	Remaining Life Based on Inspection (Years)	Anticipated Year for Next Action	Action	Priority	Unit	Unit Cost 2007 Dollars	Quantity	Replacement Event Cost 2007 Dollars	Number of Events in 25 Year Period	Total Cost Est. (25 Years)
4.1	Site	Grading and Drainage - The in rain water leaders	1974	100	98	0	2007	Repair	1	Lump Sum \$	1,500	1	1,500	1	1,500
4.1.1		Brick, Block and Redding Walls - Full depth asphalt replacement	1974	10	94	3	2010	Reurfacing	X	Lump Sum \$	27,000	1	27,000	3	81,000
4.1.2		Brick, Block and Redding Walls - Chipping seal coating and crack filling	1974	4	33	0	2007	Reurfacing	X	Lump Sum \$	1,000	1	1,000	7	7,000
4.1.3		Site Services - Inhouse testing building services	1974	20	33	0	2007	Investigation	X	Lump Sum \$	1,500	1	1,500	2	3,000
4.1.3		Site Services - Outriggers for site services	1974	5	33	0	2007	Repair	X	Lump Sum \$	3,000	1	3,000	5	15,000
4.2	Building Exterior														
4.2.1		Exterior walls - Install air and vapour barrier	1974	25	33	0	2007	Upgrade	X	unit	75,000	1	75,000	1	75,000
4.2.1		Exterior Walls - Repair & Paint	1974	30	33	0	2007	Repair	X	Lump Sum \$	25,000	1	25,000	1	25,000
4.2.1		Exterior Walls - Siding replacement	1974	40	33	0	2015	Replacement	X	Lump Sum \$	60,000	1	60,000	1	60,000
4.2.2		Roof - Repair and maintenance	2004	5	3	0	2007	Repair	X	Lump Sum \$	3,500	1	3,500	5	17,500
4.2.2		Roof - Replacement	2004	20	33	17	2024	Replace	X	Lump Sum \$	130,000	1	130,000	1	130,000
4.2.3		Windows - Replace	1974	35	33	0	2007	Replace	X	Lump Sum \$	30,000	1	30,000	1	30,000
4.2.4		Exterior Doors - Replace	1974	35	33	0	2007	Replace	X	Lump Sum \$	17,000	1	17,000	1	17,000
4.2.4		Overhead Doors - Repair	1974	20	33	0	2007	Repair	X	Lump Sum \$	6,500	1	6,500	2	13,000
4.2.5		Roof Components - Gutters & Downpipes	1974	20	33	0	2007	Replace	X	Lump Sum \$	5,000	1	5,000	2	10,000
4.3	Building Interiors														
4.3.1		Floors - Seal floor penetrations	1974	50	33	0	2007	Replacement	X	Lump Sum \$	6,000	1	6,000	1	6,000
4.3.1		Floors - Resurface the truck bays	1974	25	33	0	2007	Replacement	X	Lump Sum \$	4,000	1	4,000	1	4,000
4.3.1		Floors - Repair holes in the concrete slab	1974	50	33	0	2007	Repair	X	Lump Sum \$	1,000	1	1,000	1	1,000
4.3.1		Floors - Seal cracking in floor slab	1974	50	33	0	2007	Repair	X	Lump Sum \$	4,000	1	4,000	1	4,000
4.3.1		Floors - Malleable	1974	10	33	2	2009	Replace	X	Lump Sum \$	10,000	1	10,000	3	30,000
4.3.1		Floors - Blotboard	1974	50	33	2	2009	Replace	X	Lump Sum \$	600	1	600	1	600
4.3.1		Walls - Introduce control joints in floor slab	1974	30	33	3	2010	Repair	X	Lump Sum \$	3,000	1	3,000	1	3,000
4.3.2		Walls - Install fire separations	1974	50	33	0	2007	Replacement	X	Lump Sum \$	12,000	1	12,000	1	12,000
4.3.2		Walls - Fire stop at penetrations	1974	50	33	0	2007	Replacement	X	Lump Sum \$	12,000	1	12,000	1	12,000
4.3.2		Walls - Downfall wall linings	1974	50	33	0	2007	Replace	X	Lump Sum \$	22,000	1	22,000	1	22,000
4.3.2		Walls - Inexpensive and repair lock	1974	50	33	0	2007	Investigate and repair	X	Lump Sum \$	5,000	1	5,000	1	5,000
4.3.2		Doors - Fire rated	1974	30	33	0	2007	Replace	X	Lump Sum \$	10,000	1	10,000	1	10,000
4.3.3		Doors - General	1974	30	33	0	2007	Replace	X	Lump Sum \$	8,000	1	8,000	1	8,000
4.3.4		Ceiling - Replace and remediate ceiling tiles	1974	30	33	0	2007	Replace	X	Lump Sum \$	11,000	1	11,000	1	11,000
4.3.4		Ceiling - Fire stop penetrations	1974	30	33	0	2007	Replace/ventilate	X	Lump Sum \$	10,000	1	10,000	1	10,000
4.3.4		Ceiling - Fire stop ceilings	1974	30	33	0	2007	Upgrade	X	Lump Sum \$	8,000	1	8,000	1	8,000
4.3.4		Ceiling - Reduce existing low ceiling systems	1974	30	33	0	2007	Upgrade	X	Lump Sum \$	35,000	1	35,000	1	35,000
4.3.5		Special Construction - Storage Muzzarine - Access and Guards	1974	30	33	0	2007	Reinforcement	X	Lump Sum \$	6,000	1	6,000	1	6,000
4.3.5		Special Construction - Washrooms - Countertops	1974	30	33	0	2007	Upgrade	X	Lump Sum \$	5,000	1	5,000	1	5,000
4.3.5		Special Construction - Washrooms - Ergonomic assessment & network	1974	30	33	0	2007	Upgrade	X	Lump Sum \$	6,000	1	6,000	1	6,000
4.3.6		Circulation - Install exit signage	1974	30	33	0	2007	Upgrade	X	Lump Sum \$	1,000	1	1,000	1	1,000
4.3.6		Circulation - Reinforce rear exit stair	1974	30	33	0	2007	Repair	X	Lump Sum \$	25,000	1	25,000	1	25,000
4.3.6		Circulation - Banister-free upgrades	1974	30	33	0	2007	Upgrade	X	Lump Sum \$	8,000	1	8,000	1	8,000
4.3.7		Washrooms - Plumbing fixtures	1974	40	33	0	2007	Upgrade	X	Lump Sum \$	10,000	1	10,000	1	10,000
4.3.7		Washrooms - Sundry piping	1974	40	33	0	2007	Partial replacement	X	Lump Sum \$	20,000	1	20,000	1	20,000
4.3.8		Assembly Hall - Stair	1974	30	33	0	2007	Partial replacement	X	Lump Sum \$	4,500	1	4,500	1	4,500
4.3.8		Assembly Hall - Stair Gate	1974	30	33	0	2007	Repair	X	Lump Sum \$	5,000	1	5,000	1	5,000
4.3.9		Truck Bays - Equipment storage	1974	30	33	0	2007	Repair	X	Lump Sum \$	600	1	600	1	600
4.3.9		Truck Bays - Way finding signage	1974	30	33	0	2007	Upgrade	X	Lump Sum \$	4,000	1	4,000	1	4,000
4.3.10		Truck Bays - Assessment and upgrades	1974	30	33	0	2007	Upgrade	X	Lump Sum \$	3,000	1	3,000	1	3,000
4.3.10		Fire and Life Safety - Street Signage	1974	30	33	0	2007	Reinforcement	X	Lump Sum \$	15,000	1	15,000	1	15,000
4.3.10		Fire and Life Safety - Asphat at entrances	1974	30	33	0	2007	Upgrade	X	Lump Sum \$	1,000	1	1,000	1	1,000
4.3.10		Fire and Life Safety - Roof anchors	1974	30	33	0	2007	Repair	X	Lump Sum \$	2,500	1	2,500	1	2,500
4.3.10		Fire and Life Safety - Hazardous Storage	1974	30	33	0	2007	Repair	X	Lump Sum \$	18,000	1	18,000	1	18,000
4.3.10			1974	30	33	0	2007	Upgrade	X	Lump Sum \$	2,000	1	2,000	1	2,000



TABLE A-1: REMAINING LIFE AND ADJUSTED REPLACEMENT COST

Study Year	Component	Year of Construction or Repair	Normal Life Expectancy (Years)	Current Age (Years)	Remaining Life Based on Inspection (Years)	Anticipated Year for Next Action	Action	Priority	Unit	Unit Cost 2007 Dollars	Quantity	Replacement Event Cost 2007 Dollars	Number of Events in 25-yr period	Total Cost Est. (25 years)
2007	Town of Yarmouth Fire Hall													
4.4	Structure - Investigation	1974	100	33	0	2007	Investigation	1	Lump Sum	15,000	1	15,000	1	15,000
4.4.1	Structure - Contemporary	1974	5	33	2	2009	Repair Contemporary	1	Lump Sum	5,000	1	5,000	5	25,000
4.5	Mechanical Equipment													
4.5.1	Heating - Insulate Heating Lines and Bleeding	1974	30	33	0	2007	Replacement	1	Lump Sum	500	1	500	1	500
4.5.1	Heating - Replace Boiler and Burner	1974	30	33	0	2007	Replacement	1	Lump Sum	20,000	1	20,000	1	20,000
4.5.1	Heating - Balance Heating System	1974	30	33	0	2007	Upgrade	1	Lump Sum	10,000	1	10,000	1	10,000
4.5.1	Heating - Replace Exhaust Fan and Install Drain	1974	30	33	0	2007	Repair	1	Lump Sum	4,000	1	4,000	1	4,000
4.5.1	Heating - Replace Unit Heater	1974	30	33	0	2012	Repair	1	Lump Sum	1,000	1	1,000	1	1,000
4.5.2	Ventilation - Replace exhaust extraction system	2007	30	0	0	2007	Upgrade	1	Lump Sum	5,000	1	5,000	1	5,000
4.5.2	Ventilation - Replace main floor supply and exhaust	2007	30	0	0	2007	Replacement	1	Lump Sum	1,500	1	1,500	1	1,500
4.5.2	Ventilation - Replace hv system for main floor	2007	20	0	0	2007	Replacement	1	Lump Sum	8,000	1	8,000	2	16,000
4.5.2	Ventilation - Replace hv system for upstairs	2007	15	0	0	2007	Replacement	1	Lump Sum	18,000	1	18,000	2	36,000
4.5.2	Ventilation - Install shower room exhaust	2007	15	0	0	2007	Replacement	1	Lump Sum	500	1	500	2	1,000
4.5.2	Ventilation - Install paint storage room exhaust	2007	15	0	0	2007	Replacement	1	Lump Sum	500	1	500	2	1,000
4.5.3	Controls - Replace Thermostat	2007	30	33	0	2007	Replacement	1	Lump Sum	1,000	1	1,000	1	1,000
4.5.3	Controls - Replace low resistance in in alarm tank supply line	2007	30	0	0	2007	Upgrade	1	Lump Sum	500	1	500	1	500
4.5.4	Punching & Driv - Replace Failures	2007	30	33	0	2007	Upgrade	1	Lump Sum	25	1	25	1	25
4.5.4	Fire Protection - Install new sprinklers below roll up doors	1974	30	33	0	2007	Upgrade	1	Lump Sum	9,000	1	9,000	1	9,000
4.5.5	Fire Protection - Replace kitchen exhaust hood extinguisher manual activation	1974	30	33	0	2007	Repair	1	Lump Sum	1,500	1	1,500	1	1,500
4.5.5	Fire Protection - Replace water extinguishers with multi purpose extinguishers	1974	20	33	0	2007	Replacement	1	Lump Sum	500	1	500	1	500
4.5.5	Fire Protection - Install access door to antifreeze loop	2007	50	0	0	2007	Upgrade	1	Lump Sum	300	1	300	2	600
4.6	Electrical Equipment													
4.6.1	Service - Remove ceiling fans from electrical room	1974	50	0	0	2007	Safety	1	Lump Sum	50	1	50	1	50
4.6.1	Service - Upgrade for electrical room door	1974	30	33	0	2007	Code Requirement	1	Lump Sum	50	1	50	1	50
4.6.1	Service - Ventilation for electrical room	1974	30	33	0	2007	Code Requirement	1	Lump Sum	200	1	200	1	200
4.6.1	Service - Emergency lighting	1974	30	33	2	2009	Upgrade	1	Lump Sum	600	1	600	1	600
4.6.2	Distribution - Remove non essential loads to new panelboard	1974	30	33	4	2011	Upgrade	1	Lump Sum	4,000	1	4,000	1	4,000
4.6.2	Distribution - Protect generator set fuel lines	1974	30	33	5	2012	Upgrade	1	Lump Sum	250	1	250	1	250
4.6.2	Distribution - Replace generator day tank	1974	30	33	5	2012	Upgrade	1	Lump Sum	2,000	1	2,000	1	2,000
4.6.3	Lighting - Replace non-functional lamps	1974	30	33	5	2007	Repair	1	Lump Sum	100	1	100	1	100
4.6.3	Lighting - Upgrade track bay lighting	1974	30	33	0	2007	Upgrade	1	Lump Sum	7,000	1	7,000	1	7,000
4.6.3	Lighting - Upgrade lighting in remainder of building	1974	30	33	6	2013	Upgrade	1	Lump Sum	10,000	1	10,000	1	10,000
4.6.3	Lighting - Upgrade exterior lighting	1974	30	33	7	2014	Upgrade	1	Lump Sum	5,000	1	5,000	1	5,000
4.7	Systems													
4.7.1	Fire Alarm Systems - Upgrade Fire Detection System	1974	30	33	0	2007	Upgrade	1	Lump Sum	10,000	1	10,000	1	10,000
4.7.1	Fire Alarm Systems - Install smoke detectors in main and other rooms	1974	30	33	1	2008	Upgrade	1	Lump Sum	3,000	1	3,000	1	3,000
4.7.1	Fire Alarm Systems - Install and hooker cables for fire detection system	1974	30	33	0	2007	Upgrade	1	Lump Sum	100	1	100	1	100
4.7.2	Emergency Lighting Systems - Upgrade in dance hall and stairwell areas	1974	30	33	0	2007	Code Requirement	1	Lump Sum	3,000	1	3,000	1	3,000
4.7.2	Emergency Lighting Systems - Upgrade in dance hall and stairwell areas	1974	30	33	0	2007	Code Requirement	1	Lump Sum	800	1	800	1	800
4.7.4	Wiring Devices - Replace switch receptacles	1974	30	33	0	2007	Code Requirement	1	Lump Sum	800	1	800	1	800
4.7.4	Wiring Devices - Replace switch receptacles	1974	30	33	0	2007	Code Requirement	1	Lump Sum	800	1	800	1	800
4.7.5	Mechanical Equipment Supplies - Label all equipment	1974	30	33	0	2007	Code Requirement	1	Lump Sum	500	1	500	1	500
4.7.5	Mechanical Equipment Supplies - Label all equipment	1974	30	33	0	2010	Code Requirement	1	Lump Sum	2,000	1	2,000	1	2,000
4.7.6	Mechanical Equipment Supplies - Replace the boiler disconnect	1974	30	33	3	2007	Repair	1	Lump Sum	500	1	500	1	500
4.7.6	Mechanical Equipment Supplies - Replace the boiler disconnect	1974	30	33	0	2007	Upgrade	1	Lump Sum	200	1	200	1	200
4.7.6	Branch Circuit Wiring - Improve annunciator cable supports	2003	15	33	0	2007	Upgrade	1	Lump Sum	25,000	1	25,000	1	25,000
4.7.7	Elevators - Contemporary for Modernization	2003	11	4	11	2018	Modernization	1	Lump Sum	25,000	1	25,000	1	25,000
4.7.7	Elevators - Contemporary for Modernization	2003	20	4	16	2023	Replacement	1	Lump Sum	10,000	1	10,000	1	10,000
4.7.7	Elevators - Cab finishes	2003	20	4	16	2023	Replacement	1	Lump Sum	10,000	1	10,000	1	10,000
														1,048,725







# **APPENDIX B**

Photos





Photo 1 - View Of Electrical Room

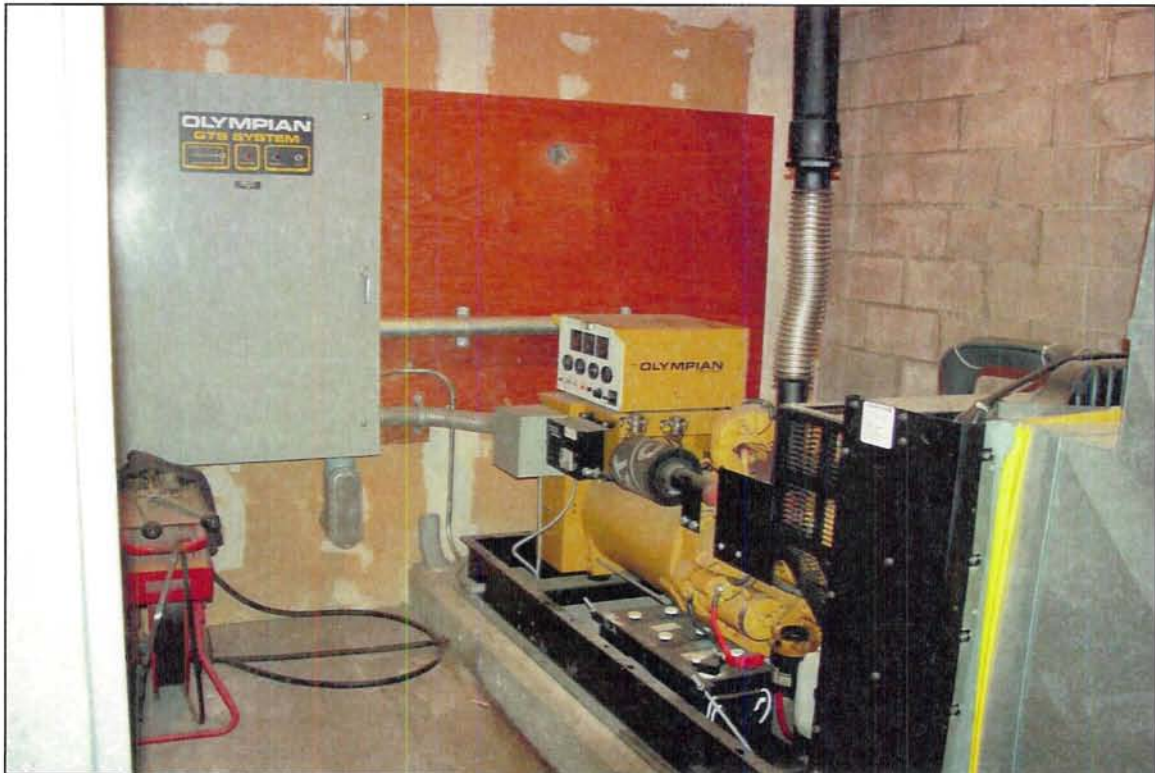


Photo 2 - View of Diesel Generator Room





**Photo 3 - View Of Exterior Lighting On South Side Of The Building**



**Photo 4 - View Of Exterior Lighting On North Side Of The Building**





**Photo 5 – Exposed Structural Steel Framing In The Mechanical Room**

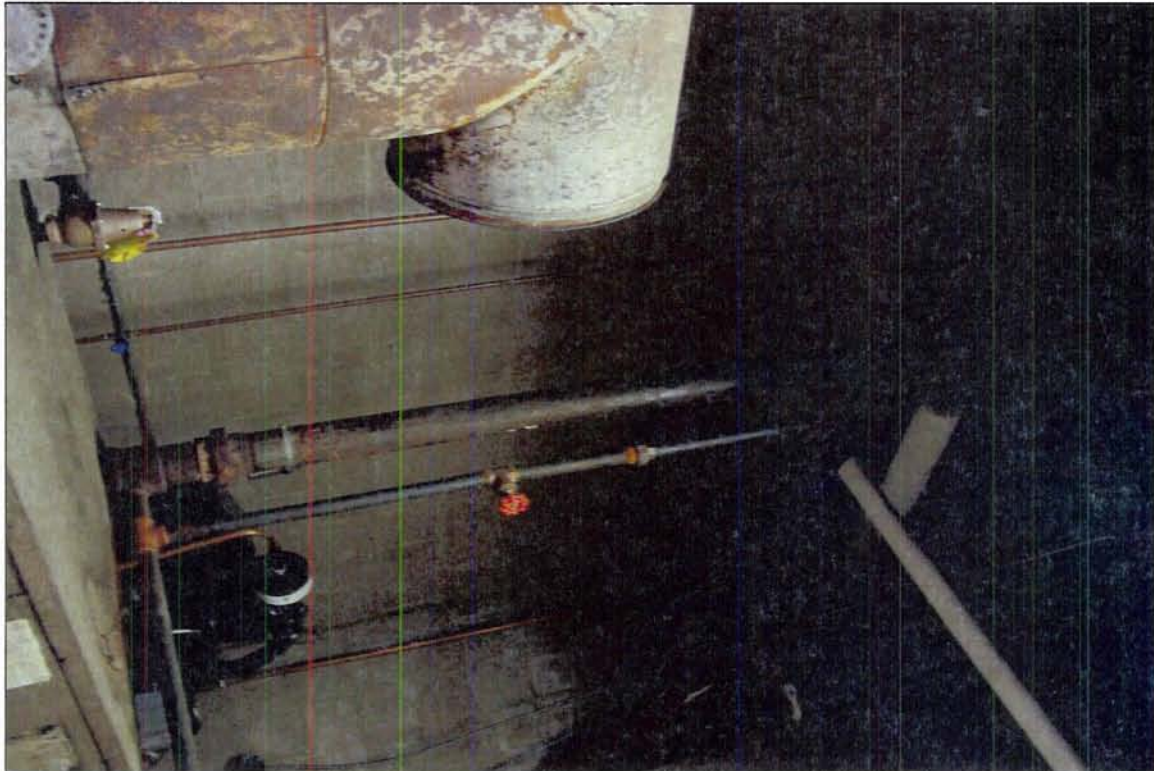


**Photo 6 – Typical Open Web Steel Joist In the Truck Bay**





**Photo 7 – View of Water Meter and Entrance**



**Photo 8 - Uninsulated Piping And Breeching In Boiler Room**





Photo 9 - Existing Boiler



Photo 10 - Paints And Oils Stored In Unventilated Room





Photo 11 - Manual Activation For Cooktop Fire Suppression System

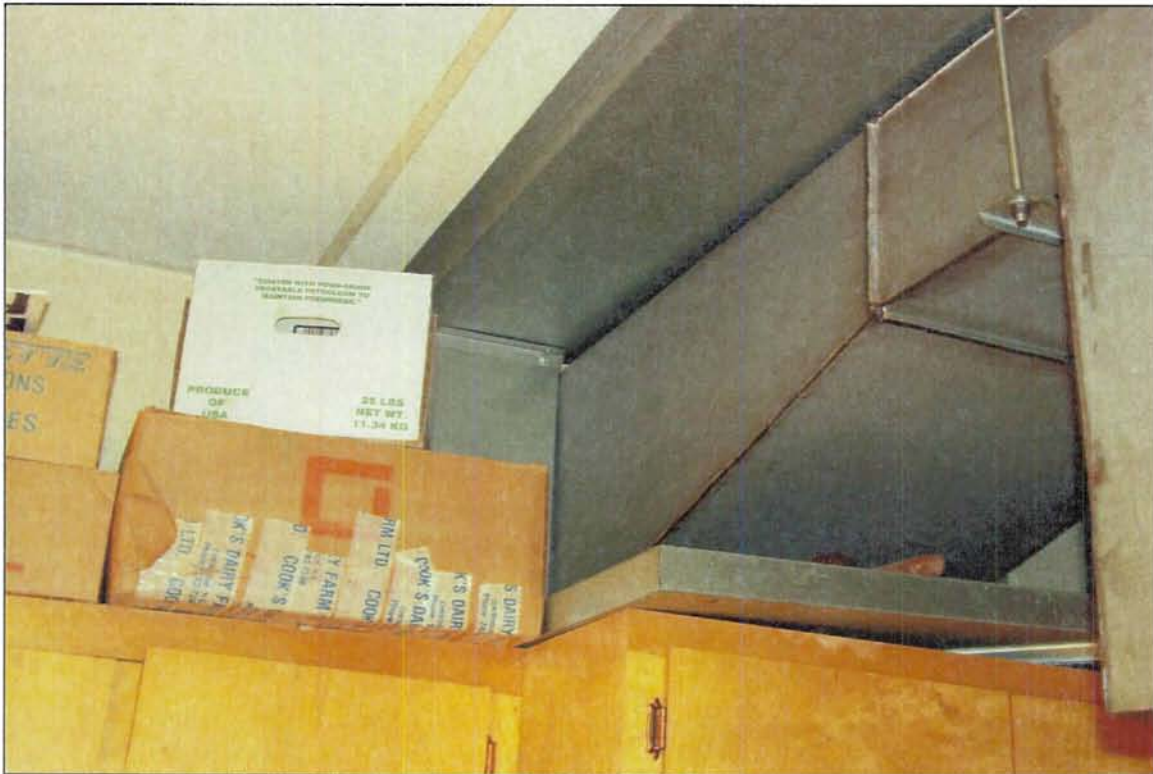


Photo 12 - Combustibles In Proximity To Grease Duct





Photo 13 - No Label On Propane Shut Off



Photo 14 - Unit Heater Over Mezzanine On Main Floor



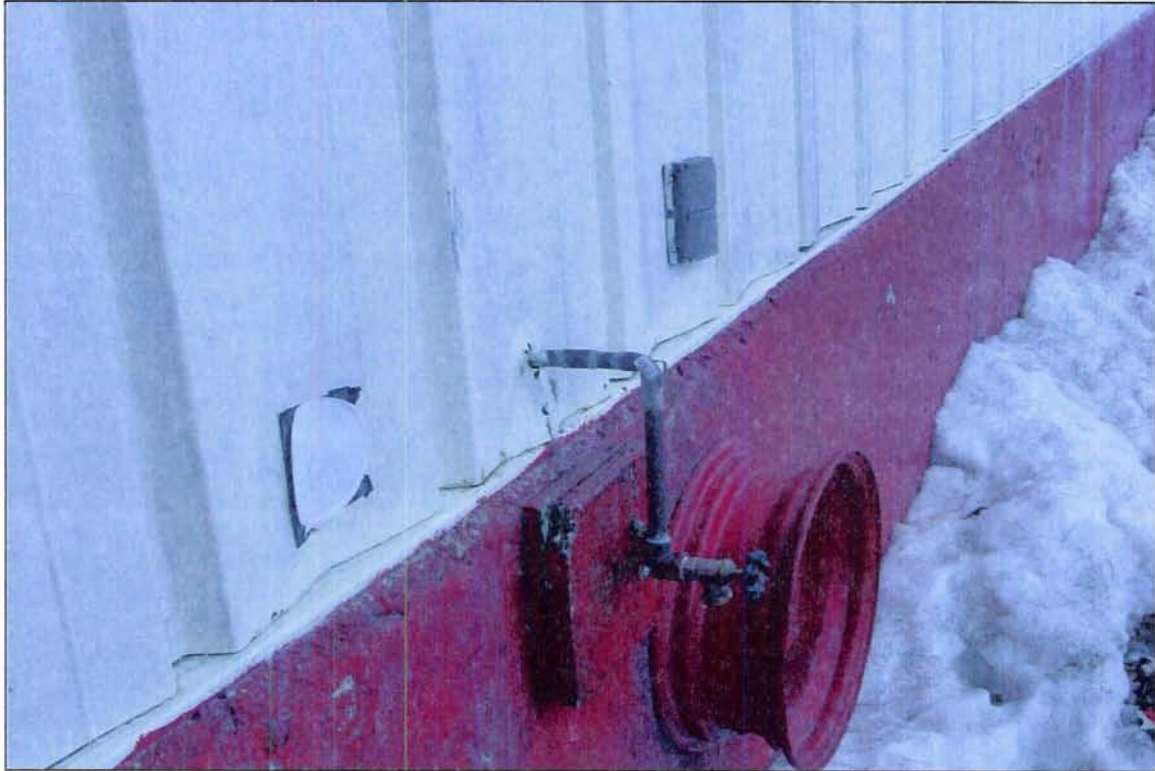


**Photo 15 - Evidence Of Past Plumbing Leaks In Main Floor Washroom**



**Photo 16 - AST In Concrete Containment. Note Damaged Liner And Ice Buildup**





**Photo 17 - Potential Freeze Condition With External Faucet**



**Photo 18 - Alligator Cracking In Asphalt**





**Photo 19 - Cracking In The Second Floor**



**Photo 20 - Overall Condition Of Asphalt Pavement As Seen From The Roof**





**Photo 21 - Typical Joist To Beam Connection**



**Photo 22 - Cracking In The Concrete Floor Slab**





**Photo 23 - East Elevation**



**Photo 24 - Non-Compliant Egress Stairs At The Rear Of The Building**





Photo 25 - North Elevation



Photo 26 - Second Floor Reception Hall





**Photo 27 - South Elevation**



**Photo 28 - Stained Ceiling Tile In The Washroom**





**Photo 29 - Typical Condition Of The Roofing Assembly**



**Photo 30 - West Elevation Of The Yarmouth Firehall**



# **APPENDIX C**

Schematic Drawings





REFERENCE:

SCALE : N.T.S.  
DATE : 2007/02/06  
DRAWN BY : P.J.SOO  
APPROVED BY :

TOWN OF YARMOUTH  
YARMOUTH FIRE HALL  
BUILDING CONDITION ASSESSMENT  
YARMOUTH FIRE HALL, YARMOUTH, NS

DRAWING NO. 1021439-1  
FIRST FLOOR PLAN







REFERENCE:

SCALE : N.T.S.

DATE : 2007/02/06

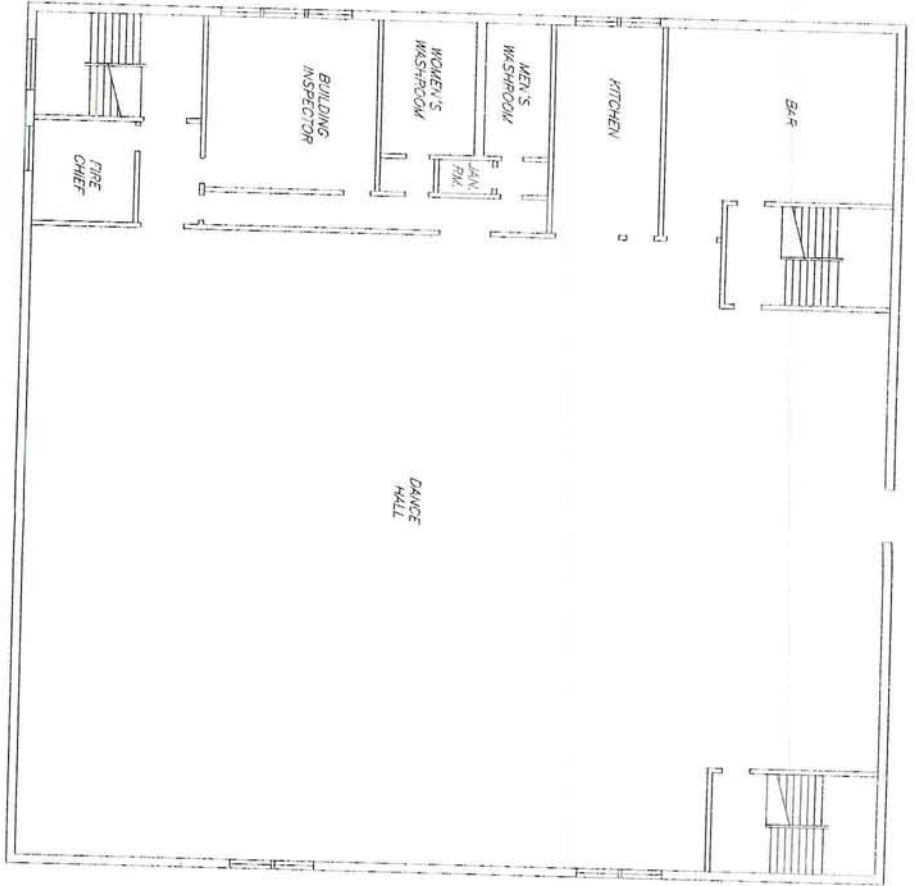
DRAWN BY : P.J.SOO

APPROVED BY :

TOWN OF YARMOUTH  
**YARMOUTH FIRE HALL**  
**BUILDING CONDITION ASSESSMENT**  
 YARMOUTH FIRE HALL, YARMOUTH, NS

DRAWING NO. **1021439-1**

**SECOND FLOOR PLAN**

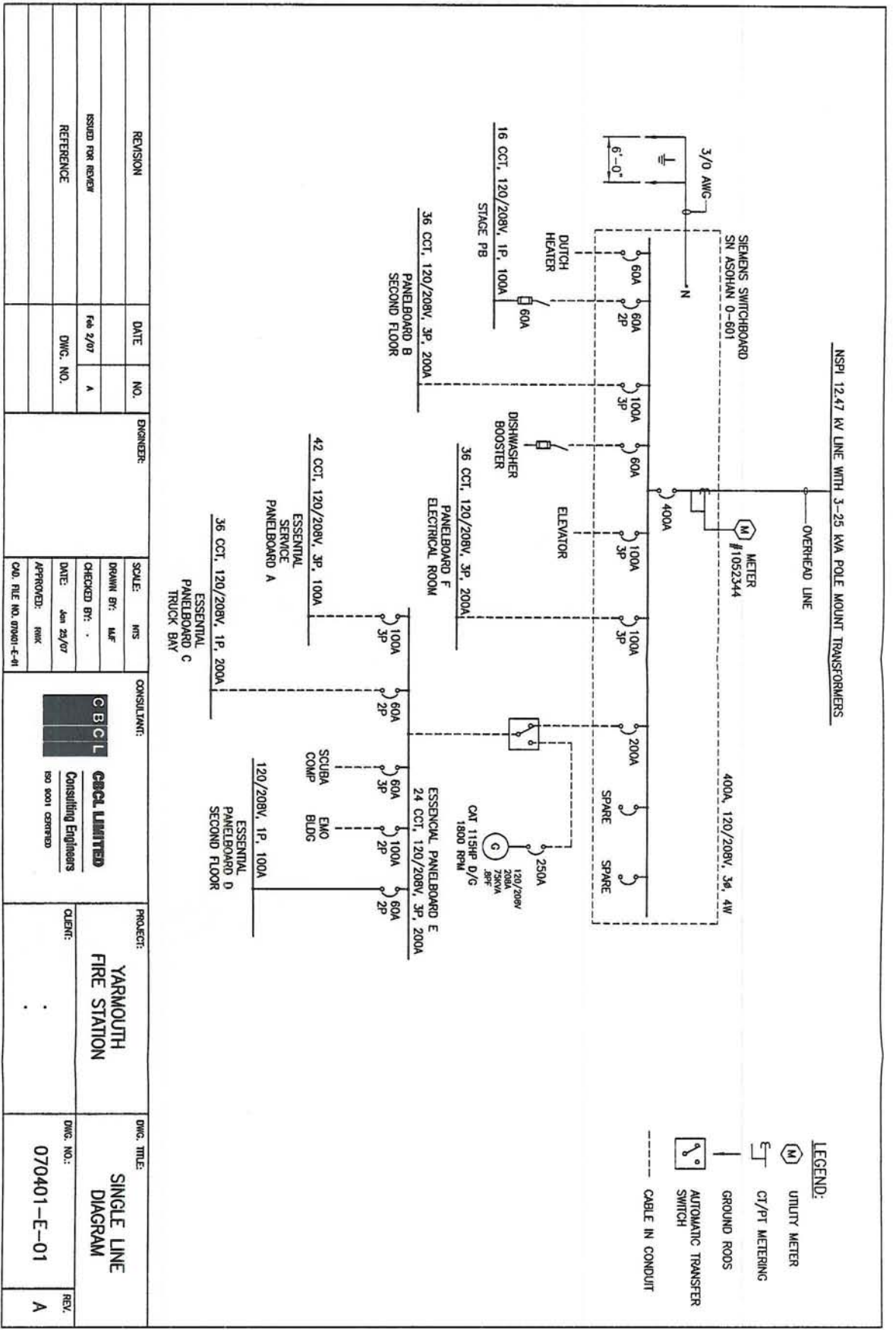




# **APPENDIX D**

Additional Information





REVISION	DATE	NO.	ENGINEER
ISSUED FOR REVIEW	Feb 2/07	A	
REFERENCE			DMG. NO.

SCALE:	INS	CONSULTANT:
DRAWN BY:	MF	 <b>GBCCL LIMITED</b> Consulting Engineers ISO 9001 CERTIFIED
CHECKED BY:	-	
DATE:	Jan 23/07	
APPROVED:	RMK	
C.D. FILE NO. 070401-E-11		

PROJECT:	DMG. TITLE:
YARMOUTH FIRE STATION	SINGLE LINE DIAGRAM

CLIENT:	DMG. NO.:	REV.
.	070401-E-01	A

