FINAL

Baseline Property Condition Assessment with Specialist Reviews of the Mechanical, Electrical, Fire and Life Safety Systems

2205 Otter Point Road
Sooke, British Columbia

Prepared for:

District of Sooke
2205 Otter Point Road
Sooke, British Columbia V9Z 1J2

Attention: Teunesha Evertse

March 2, 2020

Pinchin File: 249997.000

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EXECUTIVE SUMMARY

Pinchin Ltd. (Pinchin) was retained by the District of Sooke (Client) to conduct a Baseline Property Condition Assessment (BPCA), subject to the limitations outlined in Section 6.0 of this report. As discussed with the Client, this service includes specialist reviews of the mechanical and electrical systems, as well as the fire and life safety systems. Mr. Michael Pullinger, of Vortex Engineering, performed the specialist reviews of the mechanical systems, while Paul Fritz, of SMP Engineering, performed the specialist reviews of the electrical systems, as well as the fire and life safety systems, on December 13, 2019. The municipal address for the property is 2205 Otter Point Road, Sooke, British Columbia (the Site). Mr. Joshu Bocskei, of Pinchin, conducted a visual assessment of the Site on December 13, 2019, at which time Pinchin interviewed, and was accompanied primarily by, the Captain of the Sooke Fire Department (hereafter referred to as the Site Representative).

Pinchin was advised by the Client that the purpose of the BPCA was to assess visible deficiencies in relation to maintenance of the Site and for capital planning purposes.

For the purpose of this report, Otter Point Road is inferred to be oriented in an east-west direction and the Site is located on the north side of Otter Point Road.

The Site is an irregular-shaped property, approximately 3.18 acres in area. The Site is occupied by a two-storey fire hall and office building (Site Building A) located on the east portion of the Site and a single-storey building, used as a gym, located on the mid-north portion of the Site (Site Building B). The two buildings are collectively known as the Site Buildings.

The details of the Site Buildings are summarized in the following table:

Site Building	Approximate Date of Construction	Footprint Area	Total Building Area
A	1995	~ 17,225 ft²	~ 23,000 ft²
B	1995	~ 750 ft²	~ 750 ft²

The Site Buildings have a combined footprint area of approximately 17,975 Square Feet (ft²) and combined total building area of approximately 23,750 ft². Asphalt-paved surface parking areas are located adjacent to the east and west elevations of Site Building A with parking for approximately 55 vehicles.

The substructures of the Site Buildings are constructed with cast-in-place concrete slabs-on-grade (i.e., no basement level) supporting concrete floor slabs and roof decking. The superstructure of Site Building A is comprised of a wood-framed structure (i.e., beams, columns and joists) supporting wood intermediate floors and a wood roof deck. The superstructure of Site Building B is comprised of a wood-framed structure supporting a wood roof deck. The exterior walls of Site Building A are clad with wood siding on

all elevations and the exterior walls of Site Building B are clad with fibre-cement siding on all elevations. Wooden trim boards are installed around window and door openings at both Site Buildings.

The Site Buildings appear to be in satisfactory condition and in comparable standing to similar commercial properties in the area.

Based on our visual assessment, the Site Buildings appear to have been constructed in general accordance with standard building practices in place at the time of construction.

The assessment did not reveal any visual evidence of major structural failures, soil erosion or differential settlement.

Of note, specialist reviews were completed on the mechanical systems by Mr. Michael Pullinger, of Vortex Engineering, and on the electrical systems, as well as the fire and life safety systems, by Mr. Paul Fritz, of SMP Engineering. (Refer to Appendix II and III, respectively.)

Immediate costs of $317,250.00 have been identified for the following:

- Sealing of all openings and penetrations between the apparatus bay and other living areas to prevent a potential safety hazard;
- Repair the settled paver stones at the entrance of Site Building B, in a timely manner, to prevent a potential tripping hazard;
- Repairs of the gas leak;
- Replacement of the Heat Recovery Ventilator (HRV) and upgrades to the ducting;
- Replacement of the Chlorinated Polyvinyl Chloride (cPVC) domestic water piping;
- Upgrades to the sprinkler system to comply with National Fire Protection Association (NFPA) 13 Code requirements;
- Service and maintenance of the electrical distribution equipment;
- Replacement of the fire alarm panel and corrections to ensure Code compliance;
- Repairs to the damaged light pole and exposed wiring located in the parking lot; and
- Service and maintenance of the main electrical breaker.

Repair and replacement requirements (under replacement reserves) over the term of the analysis (i.e., 10 years) of $1,122,750.00 have been identified. As noted during the Site visit, deficiencies relating to the roof systems, wall systems, balcony systems, elevator systems, interior finishes, Site features and mechanical/electrical systems require correction to re-establish a satisfactory level of performance.

Of note, recommendations, repairs and replacements for the following items are included throughout the term of the analysis:

- Replacement of the Built-Up asphalt Roof (BUR) serving Site Building A within the early portion of the term of the analysis;
- Replacement of the Asphalt-shingled roof serving Site Building A within the early portion of the term of the analysis;
- Remediation of mould and asbestos in conjunction with the roof replacements of Site Building A within the early portion of the term of the analysis;
- Replacement of the Asphalt-shingled roof serving Site Building B within the early portion of the term of the analysis;
- Repairs to the roof systems;
- Re-painting of the exterior walls at Site Building A within the early-to-mid portion of the term of the analysis;
- Repairs to the wall systems;
- Replacement of the balcony waterproofing membranes serving Site Building A within the early portion of the term of the analysis;
- Repairs to the balcony systems (no costs);
- Specialist review of the elevator system to assess modernization requirements within the early portion of the term of the analysis;
- Repairs to the interior finishes;
- Repairs to the Site features;
- Replacement of the original Roof-Top Unit (RTU) within the early portion of the term of the analysis;
- Installation of the Make-Up Air Unit (MUA) interlocked with exhaust in the Fire Hall Apparatus Floor within the mid portion of the term of the analysis;
- Upgrade and replacement of the Fire Hall washroom exhaust system within the early portion of the term of the analysis;
- Replacement of the Municipal Hall in-ceiling ducted split system;
- Repairs to the mechanical systems;
- Replacement of the transfer switches within the early portion of the term of the analysis;

- Replacement of the original 1995 panel boards or new panels and feeds within the early portion of the term of the analysis;
- Replacement of the exterior receptacles within the early portion of the term of the analysis;
- Upgrades to the exterior lighting and controls within the early portion of the term of the analysis;
- Complete a single line and arc flash study within the early portion of the term of the analysis;
- Replacement of the exit sign within the mid portion of the term of the analysis;
- Upgrades of the fluorescent lighting to Light Emitting Diodes (LED) lighting within the latter portion of the term of the analysis;
- Replacement of the emergency power generator within the latter portion of the term of the analysis; and
- Upgrades of lighting controls to comply with National Energy Code for Buildings (NECB) 2017 within the latter portion of the term of the analysis.

Regular maintenance should be conducted on the roof systems, wall systems, balcony systems, structural elements, elevator systems, interior finishes, Site features and the mechanical/electrical systems to ensure that the Projected Useful Life (PUL) of the major components is realized. Repair costs for the aforementioned items have been included over the term of the analysis (i.e., 10 years) included within Appendix I. The specific deficiencies identified during the BPCA and their associated recommendations for repair are described in the main body of the report. These deficiencies should be corrected as part of routine maintenance unless otherwise stated within the report. Costs associated with desired upgrades have not been carried.

The detailed breakdown of all costs for the Site can be found in Appendix I.

This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.

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1.0 INTRODUCTION

Pinchin Ltd. (Pinchin) was retained by the District of Sooke (Client) to conduct a Baseline Property Condition Assessment (BPCA), subject to the limitations outlined in Section 6.0 of this report. As discussed with the Client, this service includes specialist reviews of the mechanical, electrical, and fire and life safety systems. Mr. Michael Pullinger of Vortex Engineering performed the specialist reviews of the mechanical systems while Paul Fritz of SMP Engineering performed the specialist reviews of the electrical and fire and life safety systems on December 13, 2019. The municipal address for the property is 2205 Otter Point Road, Sooke, British Columbia (the Site). Mr. Joshu Bocskei of Pinchin conducted a visual assessment of the Site on December 13, 2019, at which time Pinchin interviewed and was accompanied primarily by the Captain of Sooke Fire Department (hereafter referred to as the Site Representative).

Pinchin was advised by the Client that the purpose of the BPCA was to assess visible deficiencies in relation to maintenance of the Site and for capital planning purposes.

The Client has advised Pinchin that no previous Baseline Property Condition Assessments or other building reports have been prepared for the Site.

The term of analysis requested by the Client was 10 years.

The results of the BPCA are presented in the following report. This report is subject to the Limitations discussed in Section 6.0.

2.0 SCOPE AND METHODOLOGY

The scope of the BPCA included a visual examination (without any intrusive testing or demolition of finishes to observe hidden areas) of the following:

- The building envelope, comprised of the exterior walls, windows, exterior doors and roof systems;
- The structural elements (i.e., cast-in-place concrete foundation walls, slabs, beams and columns, etc.);
- The balcony systems;
- The interior finishes of the common areas and a selection of the individual units; and
- The Site features.

The scope for the specialist reviews included a visual examination (without any intrusive testing or demolition of finishes to observe hidden areas) of the following:

- The mechanical systems;
- The electrical systems; and
- The fire and life safety systems.

The object of the BPCA included the following:

- A visual examination of the property in order to assess the condition of the major elements;
- Review of general documentation on the repair/maintenance history of the elements, if available;
- Cursory review of previous reports pertaining to the Site Building, if made available by the Site Representative;
- Interviews and discussions with on-Site personnel regarding the repair/maintenance conducted on the Site Building;
- Documentation of observed existing deficiencies observed within the various elements;
- Photographic documentation of various components and observed deficiencies; and
- Compilation of Pinchin's findings in a formal written report including observed deficiencies, together with a list of recommendations for repair/replacement with associated estimated costs for both short and long term.

The report provides:

- A basic description of each of the various major components of the Site Building;
- A list of deficiencies noted with respect to the components examined; and
- Recommendations and cost estimates for the corrections recommended.

Pinchin also performed a hazardous materials assessment and mould investigation in the attic space of Site Building A in the same time period. The objective of the mould investigation was to assess previous reports of mould growth in the attic space and the radio room located in the southwest corner of Site Building A. The results and conclusions of the mould investigation are included in Pinchin report entitled "Investigation of Mould Growth" dated January 13, 2020.

The hazardous materials assessment was performed to assess whether asbestos containing materials are present in the attic space of Site Building A. The results and conclusions of this assessment are included in Pinchin bulk sample results letter dated January 9, 2020.

This report includes budgetary estimates for the repair and abatement of the mould and asbestos containing materials found in the attic space of Site Building A.

Cost estimates provided in this report are preliminary Class "D" and provided only as an indication of the order of magnitude of the remedial work. These values have been arrived at by determining a representative quantity from the visual observations made at the time of our Site visit and by applying current market value unit costs to such quantities and or a reasonable lump sum allowance for the work. More precise cost estimates would require more detailed investigation to define the scope of work. They are not intended to warrant that the final costs will not exceed these amounts or that all costs are covered. The estimates assume the work is performed at one time and do not include costs for potential de-mobilization and re-mobilization if repairs/replacement are spread out over the term of analysis.

All costs are identified in 2020 Canadian Dollars, and do not include consulting fees or applicable taxes. (For consulting fees, Pinchin typically recommends a budget allowance of 10% to 15% of the costs identified).

All cost estimates assume that regular annual maintenance and repairs will be performed to all building elements at the facility. No cost allowance is carried for this regular maintenance.

The cost estimates provided in this report are based on costs of past repairs at similar buildings, recent costing data such as "RS Means Repair and Remodelling Cost Data – Commercial/Residential" and "Hanscomb's Yardsticks for Costing", or Pinchin's professional judgment.

Unless otherwise stated, the replacement costs identified for an element reflects the cost to remove and replace the existing element with the same type of element.

3.0 OBSERVATIONS AND COMMENTS

3.1 Site Information

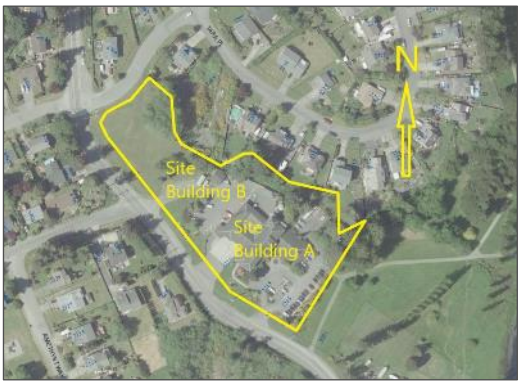
Partial view of the north elevation of Site Building A.

Partial view of the east elevation of Site Building A.

General view of the south elevation of Site Building A.

General view of the west elevation of Site Building A.

General view of the east and south elevations of Site Building B.



Aerial view of the Site.

(Courtesy of District of Sooke Map, 2019)

Table 3.1 – Site Information

Site Occupant/Name	**District of Sooke Municipal Hall**		
Site Address	**2205 Otter Point Road, Sooke, British Columbia**		
Existing Land Use Type	Commercial	*Primary On-Site Activity*	Fire Hall / Office
Multi-Tenant/Single Occupant	Single Occupant	*Number of Units*	1
Date First Developed	Unknown	*Site Area*	~ 3.18 acres
Number of Buildings	2	*Building Footprint Areas*	Site Building A: ~ 17,225 ft^2 Site Building B: ~ 750 ft^2
Number of Stories above grade	Site Building A - 2 Site Building B - 1	*Total Building Areas*	Site Building A: ~ 23,000 ft^2 Site Building B: ~ 750 ft^2
Date Building(s) Constructed	~ 1995	*Area of Tenant Spaces*	Varies
Date Building(s) Renovated	Ongoing	*Basement and/or U/G Parking*	No
Type of Roof System(s)	Built Up asphalt Roof (BUR) systems Asphalt shingles	*Number of Levels U/G*	N/A
Type of Wall Cladding	Wood siding Fibre-cement siding	*Area of Roof System(s)*	Site Building A: Built-Up asphalt Roof ~ 800 ft^2 Asphalt Shingles ~ 29,500 ft^2 Site Building B: Asphalt Shingles ~ 775 ft^2
Type of Doors	Insulated Glass (IG) units within metal frames Metal doors within metal frames Insulated sectional metal overhead door complete with glazing inserts	*Types of Windows*	Fixed and operable IG units in metal and vinyl frames within punched openings

Table 3.1 – Site Information

Site Occupant/Name	**District of Sooke Municipal Hall**		
Site Address	**2205 Otter Point Road, Sooke, British Columbia**		
Above Grade Parking Area	Asphalt-surfaced with one barrier free parking space on the north portion of the Site	*Electrical Source*	BC Hydro
Surface Type	Asphalt pavement Cast-in-place concrete and paver stone walkways	*Type of Heating/Cooling*	Refer to Appendix II for heating and cooling information

3.2 Roof Systems

The roof systems of Site Building A consist primarily of a sloped asphalt-shingled roof system with a low-sloped, Built-Up asphalt Roof (BUR) located atop the west portion of the building. The roof system atop Site Building B consists of a sloped asphalt-shingled roof system.

The low-sloped roof system is presumed to be installed atop a layer of rigid insulation atop wood roof decks whilst the sloped roof systems are presumed to be installed atop wood sheathing, fastened to wood roof trusses with batt and blown insulation, atop wood roof decks. Neither the presence of a vapour barrier, nor the type or the thickness of the insulation could be verified, as the scope of the work did not include destructive testing.

Drainage of the low-sloped roof systems is provided by internal roof drains which presumably drain to the municipal sewer system whilst drainage of the sloped roof systems is provided via perimeter eavestroughs which discharge to the municipal sewer system via downpipes. Penetrations through the roof systems consist of plumbing vents, roof drains, HVAC service connections, and pitch pockets serving conduits.

The details of the roof systems atop the Site Buildings are summarized in the following table:

Reference	Roof System	Roof Deck	Roof Area	Estimated Age (years)
Site Building A	BUR	Wood	~ 800 ft²	Reportedly ~ 25
	Asphalt Shingles	Wood	~ 29,500 ft²	Reportedly ~ 25
Site Building B	Asphalt Shingles	Wood	~ 775 ft²	Reportedly ~ 25

The total area of the roof systems is larger than the footprint area of the Site Buildings at approximately 31,075 ft² due to slope, overhangs, and the presence of skirt roofs above the ground-floor level of Site Building A.

No active leaking within the roof systems was reported at the time of the Site visit; however, reports of past leaks have been reported by the Site Representative and as such, a separate mould investigation study has been completed.

Table 3.2 outlines the findings of the inspection of the roof systems:

Table 3.2 – Roof Systems

Findings	Remarks/Recommendations
Major Deficiencies/Findings	
• The BUR system serving Site Building A is reportedly original to construction in 1995 (i.e., ~ 25 years old) and has attained its PUL.	• Based on age and observed condition, Pinchin recommends the replacement of the BUR system serving Site Building A within the early portion of the term of the analysis.
• The asphalt-shingled roof systems serving the Site Buildings are reportedly original to construction in 1995 (i.e., ~ 25 years old) and has attained its PUL.	• Based on age and observed condition, Pinchin recommends the replacement of the asphalt-shingled roof systems serving the Site Buildings within the early portion of the term of the analysis.
Minor Deficiencies/Findings	
• Organic growth and the improper termination of downspouts were noted on the asphalt-shingled roof system atop Site Building A.	• Remove organic growth. Consideration should be given to extend the downspout into the lower eavestroughs to prevent accelerated deterioration of asphalt shingles at localized areas.
• Detached downspout section was noted at the southwest corner of Site Building A.	• Re-secure downspout sections.
• Eavestrough surrounding the asphalt-shingled roof system atop Site Building A were noted to be clogged with leaves and debris.	• Remove leaves and debris from eavestroughs.
• Trees were noted to be encroaching onto the asphalt-shingled roof surfaces of Site Building A.	• Trees should be pruned to minimize the accumulation of leaves and organic debris build-up.
• Granule loss was noted at various location of the asphalt-shingled roof system atop Site Building A.	• Undertake localized repairs until the recommended roof replacement.
• Signs of corrosion were noted on the metal flashings atop Site Building A.	• Undertake localized repairs until the recommended roof replacement.
• Signs of ponding, organic growth, debris, and loose wiring were noted on the BUR atop Site Building A.	• Remove organic growth and debris as part of routine maintenance. Consideration should be given to reviewing the slope or additional drains during the next recommended roof replacement.
• Failed sealants were noted around HVAC service penetrations atop Site Building A.	• Replace sealants.
• Warped gutter sections were noted atop Site Building B.	• Replace warped gutter sections.

General view of the sloped asphalt-shingled roof system atop Site Building A.

General view of the low-sloped BUR atop Site Building A.

Organic growth and the improper termination of downspouts were noted on the asphalt-shingled roof system atop Site Building A.

Detached downspout section was noted at the southwest corner of Site Building A.

Eavestrough surrounding the asphalt-shingled roof system atop Site Building A were noted to be clogged with leaves and debris.

Trees were noted to be encroaching onto the asphalt-shingled roof surfaces of Site Building A.

Granule loss was noted at various location of the asphalt-shingled roof system atop Site Building A.

Signs of corrosion were noted on the metal flashings atop Site Building A.

Signs of ponding, moss growth, debris, and loose wiring were noted on the BUR atop Site Building A.

Failed sealants were noted around HVAC service penetrations atop Site Building A.

Warped gutter sections were noted atop Site Building B.

It has been Pinchin's experience that the Projected Useful Life (PUL) of a BUR system typically ranges between 20 to 25 years and the PUL of an asphalt-shingled roof typically ranges between 15 to 20 years, depending on the quality of building materials used, the quality of workmanship during installation and the level to which the roof system has been maintained.

The roof systems atop the Site Buildings are reportedly original to construction in 1995 (i.e., ~ 25 years old) and have attained their PUL. Based on age and observed condition, Pinchin recommends the replacement of the roof systems serving the Site Buildings within the early portion of the term of the analysis.

During replacement and/or repair of the roof systems, consideration must be given to the presence of mould and asbestos containing material in the attic space above the Fire Hall portion of Site Building A. No presence of mould and/or asbestos containing material was observed in the attic space above the Municipal Hall portion of Site Building A.

Recommendations regarding the treatment and abatement of mould and asbestos-containing material in the attic space are included in Pinchin report entitled "Investigation of Mould Growth" dated January 13, 2020 and Pinchin's asbestos bulk sample results letter dated January 9, 2020. Repair and/or abatement of the mould and asbestos containing material within the attic space could be performed independently of

roof repairs/replacement; however, Pinchin recommends that this work be performed at once to minimise disruption to building operations.

Assuming the above referenced deficiencies are addressed, replacements are undertaken, and regular maintenance is performed, the roof systems of the Site Buildings should perform in a satisfactory manner throughout the term of the analysis. Annual walk-on inspections are recommended to ensure the integrity of the roof systems and to extend the service life.

3.3 Wall System

The exterior walls of Site Building A are clad with wood siding on all elevations and the exterior walls of Site Building B are clad with fibre-cement siding on all elevations. Wooden trim boards are installed around window and door openings at both Site Buildings.

The window systems of the Site Buildings consist primarily of fixed and operable Insulated Glass (IG) units set within metal frames installed within punched openings. A window on the south elevation of Site Building B was noted to consist of an IG unit set within vinyl frame installed within a punched opening.

Exterior doors serving the main entrance of Site Building A consist of IG units set into metal frames. Metal doors within metal frames were observed serving the mechanical and electrical rooms and at the entrance of Site Building B. Balconies/patios are accessed via IG units in metal frames. Six insulated sectional metal overhead doors with glazing inserts serve the fire truck area of Site Building A.

Table 3.3 outlines the findings of the inspection of the wall systems:

Table 3.3 – Wall Systems

Findings	Remarks/Recommendations
Major Deficiencies/Findings	
• Peeling paint and localized damages were noted on the wood siding of Site Building A.	• Pinchin recommends a phased re-painting project of the exterior walls at Site Building A within the early to mid-portion of the term of the analysis.
Minor Deficiencies/Findings	
• Stains were noted at localized wall sections of the Site Buildings.	• Clean and remove stains.
• A failed IG unit was noted on the north elevation of Site Building A.	• Replace failed glass unit.
• Loose and detached metal soffit sections were noted at localized areas of Site Building A.	• Re-secure sagging and detached soffits.

General view of the wall systems serving Site Building A.

General view of typical sectional metal overhead doors with glazed inserts serving the fire truck area of Site Building A.

General view of the wall systems serving Site Building B.

Peeling paint and localized damages were noted on the wood siding of Site Building A.

Peeling paint and localized damages were noted on the localized wooden trim boards of Site Building A.

Organic stains were noted at localized wall sections of Site Building A.

Organic stains were noted at localized wall sections of Site Building B.

A failed IG unit was noted on a window on the north elevation of Site Building A.

Loose and detached metal soffit sections were noted at localized areas of Site Building A.

The wall, window and door systems of the Site Buildings were generally noted to be in fair but serviceable condition at the time of the Site visit. Pinchin has included a budget for the phased repainting project of Site Building A within the early to mid-portion of the term of the analysis.

Assuming the above-referenced deficiencies are addressed, and that regular maintenance is performed, the wall, window and door systems of the Site Buildings should perform in a satisfactory manner throughout the term of the analysis.

3.4 Balcony Systems

The balcony systems are located on the north elevation of Site Building A and consist of cantilevered and wood column-supported wood-framed floors.

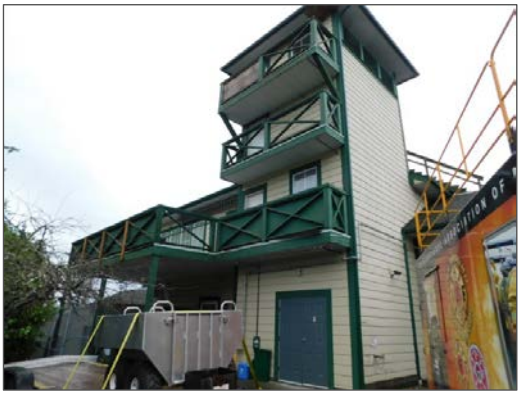
Drainage of the balcony systems is assumed to be provided via surface runoff.

The balcony systems are covered with waterproofing membranes which are original to construction (i.e., ~ 25 years old). Fall protection for the balcony systems is provided by wood guards with wood panel inserts secured to the balcony floors and to the adjacent walls.

Table 3.4 outlines the findings of the inspection of the balcony systems:

Table 3.4 – Balcony Systems

Findings	Remarks/Recommendations
Major Deficiencies/Findings	
• The balcony waterproofing membranes of Site Building A are approximately 25 years old and have attained their PUL.	• Based on age and observed condition, Pinchin recommends replacement of the balcony waterproofing membranes within the early portion of the term of the analysis.
Minor Deficiencies/Findings	
• Localized ponding and stains were noted on the balcony waterproofing membranes.	• Clean stains as part of routine maintenance.



General view of the balcony systems from grade level.

General view of the waterproofing membrane on a typical balcony system.

Note: Localized ponding and stains.

Localized damage and deterioration were noted on the wood guards serving the balcony systems.

The balcony systems of Site Building A were noted to be in serviceable condition at the time of the Site visit.

It has been Pinchin's experience that the PUL of a waterproofing membrane is approximately 15 years, depending on the quality of building materials used, the quality of workmanship during installation and the level to which the balcony systems have been maintained.

The balcony waterproofing membranes of Site Building A are approximately 25 years old and have attained their PUL. Based on age and observed condition, Pinchin recommends replacement of the balcony waterproofing membranes within the early portion of the term of the analysis.

Assuming the above-referenced deficiencies are addressed, replacements are undertaken, and that regular maintenance is performed, the balcony systems of Site Building A should perform in a satisfactory manner throughout the term of the analysis.

3.5 Structural Elements

As outlined in the scope of work, a visual assessment of the condition of the structural elements was carried out on the elements which were visible at the time of the inspection.

The substructures of the Site Buildings are constructed with a cast-in-place concrete slabs-on-grade (i.e., no basement level) supporting concrete floor slabs and roof decking. The superstructure of Site Building A is comprised of a wood-framed structure (i.e., beams, columns and joists) supporting wood intermediate floors and a wood roof deck. The superstructure of Site Building B is comprised of a wood-framed structure supporting a wood roof deck.

Table 3.5 outlines the findings of the inspection of the structural elements:

Table 3.5 – Structural Elements

Findings	Remarks/Recommendations
Major Deficiencies/Findings	
• None observed/reported.	• None required.
Minor Deficiencies/Findings	
• None observed/reported.	• None required.

General view of typical structural elements serving Site Building A.

General view of typical structural elements serving Site Building A.

General view of typical structural elements serving Site Building A.

Note: Incomplete finishing due to reported repairs/inspection. Refer to Section 3.8 – Interior Finishes.

Assessment of the original or existing building design, compliance with prior or current Building Code or detection or comment upon concealed structural deficiencies are outside the scope of work. Accordingly, the findings are limited to the extent that the assessment has been made based on a walk-through visual inspection of accessible areas of the structures.

Pinchin's visual review of the structural elements and data provided by the Site Representative indicated that no major deterioration existed within the visibly accessible components of the Site Buildings.

3.6 Underground Parking Garage

The Site Buildings do not possess underground parking garages.

Table 3.6 outlines the findings of the inspection of the underground parking garage:

Table 3.6 – Underground Parking Garage

Findings	Remarks/Recommendations
Major Deficiencies/Findings	
• N/A	• N/A
Minor Deficiencies/Findings	
• N/A	• N/A

3.7 Elevator Systems

The following is a brief description of the elevator system present at Site Building A:

	Elevator
Manufacturer:	Concord Elevator Inc.
Drive System:	Hydraulic
Floors Served:	M – 2
Date installed:	1995
Date of Modernization:	N/A
Capacity:	1,000 lbs
Function:	Passenger
Alarm:	Yes
Emergency Stop:	Yes
Emergency Phone:	No
Emergency Power:	No
Braille Call Buttons	No

The typical elevator “full maintenance” contract covers the replacement of major components in addition to the labour and materials necessary for ongoing repairs, adjustments and preventive maintenance work. Entrances and cab finishes are normally excluded. If a “full maintenance” contract is purchased, the only additional costs to the Owner, during the first 15 to 25 years of use, should be for malicious damage and repairs to the elevator cabs and entrances. It is assumed that repairs required due to “Acts of God” (i.e.,

flood, fires, etc.) are covered by insurance. It was reported to Pinchin that the elevator systems are maintained on an all-inclusive contract by “ThyssenKrupp”.

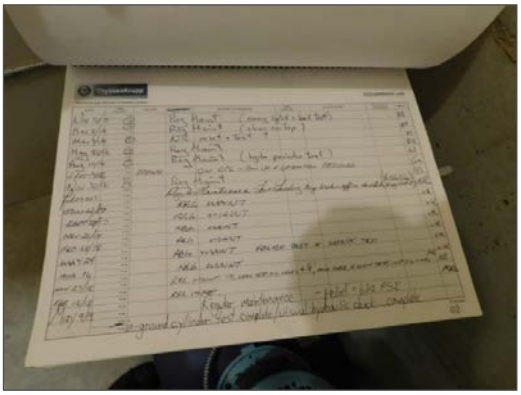
Table 3.7 outlines the findings of the inspection of the elevator systems:

Table 3.7 – Elevator Systems

Findings	Remarks/Recommendations
Major Deficiencies/Findings	
• The elevator system serving Site Building A is original to construction (i.e., ~ 25 years old) with no major upgrade or modernization reported.	• Based on age, Pinchin recommends a specialist review of the elevator system within the early portion of the term of the analysis to assess modernization requirements.
Minor Deficiencies/Findings	
• None observed/reported.	• None required.

General view of the control panel within the elevator cab serving Site Building A.

General view of the elevator machines serving Site Building A.



General view of the elevator maintenance log from “ThyssenKrupp”.

As the current assessment was performed as a Baseline Property Condition Assessment without Specialist review, our information is solely based on the information and documentation provided as well as the visual appearance of the elevator cab, etc.

Based on Pinchin’s experience, minor components may require modernization, due in part to obsolescence, which are not covered under a full maintenance contract. Additionally, service personnel capable of performing the numerous adjustments necessary to keep this equipment operating properly will become increasingly difficult to find as newer equipment designs become more predominant. Thus, the Client may be faced with significant modernization costs in order to maintain reasonable service. It was reported to Pinchin that the elevators are maintained and serviced by “ThyssenKrupp” on a monthly basis with the last date of inspection noted to have taken place in December of 2019.

The elevator system serving Site Building A is reportedly original to the date of construction in 1995 (i.e., ~ 25 years old) with no major upgrade or modernization reported. Due to the age of the elevator system, Pinchin recommends that modernization be considered within the term of the analysis. No allowances have been provided until an elevator specialist has been retained to assess modernization requirements. Pinchin recommends a specialist review of the elevator system within the early portion of the term of the analysis to assess modernization requirements.

Assuming that modernization is undertaken, and that regular maintenance is performed, the elevator systems should perform in a satisfactory manner throughout the term of the analysis.

3.8 Interior Finishes

As outlined in the scope of work, the interior finishes of the Site Building were reviewed during the Site assessment.

The floor finishes within the Site Buildings consist of a combination of vinyl floor tiles, carpeting, laminate flooring, and concrete slabs.

The wall finishes within the Site Buildings consist primarily of painted gypsum board with concrete walls within the service rooms.

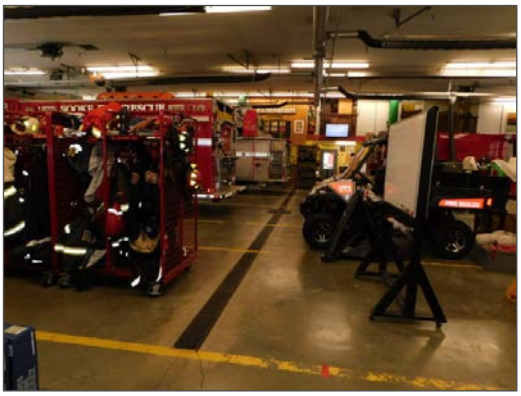
The ceiling finishes within the Site Buildings primarily consist of suspended ceiling assemblies complete with lay-in ceiling tiles with areas of gypsum board bulkheads.

Table 3.8 outlines the findings of the inspection of the interior finishes:

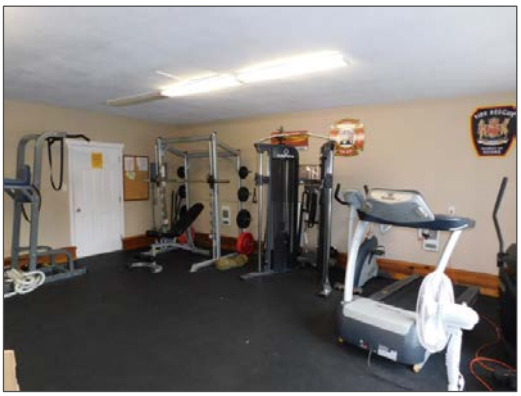
Table 3.8 – Interior Finishes

Findings	Remarks/Recommendations
Major Deficiencies/Findings	
• Lack of an air-tight seal was noted between the apparatus bay for fire trucks and other living areas within Site Building A.	• Seal all openings and penetrations between the apparatus bay and other living areas to prevent a potential safety hazard.
Minor Deficiencies/Findings	
• Various door handles were noted to be of residential grade and were of unsatisfactory condition.	• Replace door handles in unsatisfactory condition.
• Localized cracks were noted on the flooring and concrete slabs within Site Building A.	• Conduct localized repairs as needed and monitor condition.
• Incomplete finishing was noted within Site Building A due to reported repairs/inspection.	• Conduct repairs upon completion of the current repairs/inspection.

General view of the interior finishes within a typical office of Site Building A.



General view of the interior finishes within the fire truck area of Site Building A.



General view of the interior finishes within the exercise area of Site Building B.

Lack of an air-tight seal was noted between the apparatus bay for fire trucks and other living ares within Site Building A.

Various door handles were noted to be of residential grade and were of unsatisfactory condition.

Localized cracks were noted on the flooring within Site Building A.

Localized cracks were noted on the concrete floor slabs within Site Building A.

Incomplete finishing was noted within Site Building A due to reported repairs/inspection.

The interior finishes within the Site Buildings were observed to be in serviceable condition; however, the lack of an air-tight seal noted between the apparatus bay for fire trucks and other living ares within Site Building A is a potential safety hazard and should be addressed immediately.

Assuming the above referenced deficiencies are addressed and that regular maintenance is performed, the interior finishes of the Site Buildings should perform in a satisfactory manner throughout the term of the analysis.

3.9 Site Features

The Site Building occupies approximately 13% of the 3.18-acre Site. The remainder of the Site is occupied by asphalt-surfaced parking areas and areas of soft landscaping (i.e., grassed area with trees) located on the Site perimeters. The asphalt-surfaced parking areas are located adjacent to all elevations of Site Building A with parking for approximately 55 vehicles. The asphalt-surfaced parking areas are bordered by concrete curbs at some locations. Cast-in-place concrete walkways are located at various locations of the Site while paver-stone-covered entrance pads are located around select areas of the Site Buildings. In additional, chain-link fencing is located around select sections of the surface parking areas.

Drainage of the Site pavements is provided by on-Site catch basins which presumably drain the water to the municipal sewer system. Since the inspection was limited to visible areas no examination of the catch basins was performed and no review of the initial compliance with code was performed. The inspection of underground or concealed components is outside the scope of work. No issues were reported with the catch basins or their ability to drain the Site.

Access to the Site is provided by three entrances from Otter Point Road located on the south portion of the Site.

Table 3.9 outlines the findings of the inspection of the Site features:

Table 3.9 – Site Features

Findings	Remarks/Recommendations
Major Deficiencies/Findings	
• Areas of settled paver stones were noted at the entrace to Site Building B.	• Repair the settled paver stones at the entrance of Site Building B in a timely manner to prevent a potential tripping hazard.
Minor Deficiencies/Findings	
• Localized ponding was noted on the asphalt pavement.	• Monitor condition and undertake localized repairs as needed.
• Cracking was noted at various locations of the asphalt pavement.	• Undertake localized repairs of the asphalt and concrete pavement as needed.
• Localized cracks were noted on the concrete walkways and concrete curbs.	
• Signs of leaning were noted at localized sections of the chain-link fencing.	• Undertake localized repairs of the chain-link fencing as needed.

General view of a typical asphalt surface parking area and sections of chain-link fencing.

Note: Localized ponding.

General view of a typical catch basin serving the Site.

General view of the concrete walkway leading to the entrance of Site Building A.

Areas of settled paver stones were noted at the entrace to Site Building B.

Cracking was noted at various locations of the asphalt pavement.

Note: Southeast entrance to the Site shown.

Localized cracks were noted on the concrete walkways.

Localized cracks were noted on the concrete curbs.

Signs of leaning were noted at localized sections of the chain-link fencing.

The Site features appeared to be in serviceable condition at the time of the Site visit; however, areas of settled paver stones were noted at the entrace to Site Building B and is a potential tripping hazard. As such, Pinchin recommends repairs to the settled paver stones in a timely manner.

Pinchin also recommends that regular annual maintenance of the Site features be performed throughout the term of the analysis.

Assuming the above referenced deficiencies are addressed, and that regular maintenance is performed, the Site features should perform in a satisfactory manner throughout the term of the analysis.

3.10 Mechanical Systems

3.10.1 Major Service Providers

The following providers serve the subject property:

Water	-	Capital Regional District
Electric	-	BC Hydro
Sewer	-	Capital Regional District
Natural Gas	-	Fortis BC
Police	-	Royal Canadian Mounted Police
Fire	-	District of Sooke Fire Rescue Service

3.10.2 Heating, Ventilation and Air Conditioning (HVAC)

A specialist review of the heating, ventilation and air conditioning systems as well as the plumbing system was performed by personnel from “Vortex Engineering”. Please refer to Appendix II for the complete findings of the HVAC/plumbing systems.

3.10.3 Fire Protection

A specialist review of the fire protection systems was performed by personnel from “Vortex Engineering”. Please refer to Appendix II for the complete findings of the fire protection systems.

3.11 Electrical Systems

3.11.1 Electrical Power

A specialist review of the electrical systems was performed by personnel from “SMP Engineering”. Please refer to Appendix III for the complete findings of the electrical systems.

3.11.2 Fire Alarm System and Life Safety

A specialist review of the fire alarm and life safety systems was performed by personnel from “SMP Engineering”. Please refer to Appendix III for the complete findings of the fire alarm and life safety systems.

4.0 KNOWN VIOLATIONS OF CODE

It was reported to Pinchin by the Site Representative that no outstanding violations from the Building Department existed pertaining to the property. Compliance with the National Building Code (NBC) and National Fire Code (NFC) was not reviewed as it was beyond the scope of this survey.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on Pinchin’s review of the property, conducted on December 13, 2019 the Site Buildings appear to be in satisfactory condition and in comparable standing to other similar commercial properties in the area. Based on our visual assessment the Site Buildings appear to have been constructed in general accordance with standard building practices in place at the time of construction.

The assessment did not reveal any evidence of major structural failures, soil erosion or differential settlement.

Immediate costs of $317,250.00 have been identified for the following:

- Sealing of all openings and penetrations between the apparatus bay and other living areas to prevent a potential safety hazard;
- Repair the settled paver stones at the entrance of Site Building B in a timely manner to prevent a potential tripping hazard;
- Repairs of the gas leak;
- Replacement of the HRV and Upgrades to the ducting;

- Replacement of the cPVC domestic water piping;
- Upgrades to the sprinkler system to comply with NFPA 13 Code requirements;
- Service and maintenance of the electrical distribution equipment;
- Replacement of the fire alarm panel and corrections to ensure Code compliance;
- Repairs to the damaged light pole and exposed wiring; and
- Service and maintenance of the main electrical breaker.

As noted during the Site visit, deficiencies relating to the roof systems, wall systems, balcony systems, elevator systems, interior finishes, Site features and mechanical/electrical systems require correction to re-establish a satisfactory level of performance. Of note, recommendations, repairs and replacements for the following items are included throughout the term of the analysis:

- Replacement of the BUR serving Site Building A within the early portion of the term of the analysis;
- Replacement of the Asphalt-shingled roof serving Site Building A within the early portion of the term of the analysis;
- Remediation of mould and asbestos in conjunction with the roof replacements of Site Building A within the early portion of the term of the analysis;
- Replacement of the Asphalt-shingled roof serving Site Building B within the early portion of the term of the analysis;
- Repairs to the roof systems;
- Re-painting of the exterior walls at Site Building A within the early to mid-portion of the term of the analysis;
- Repairs to the wall systems;
- Replacement of the balcony waterproofing membranes serving Site Building A within the early portion of the term of the analysis;
- Repairs to the balcony systems (no costs);
- Specialist review of the elevator system within the early portion of the term of the analysis to assess modernization requirements;
- Repairs to the interior finishes;
- Repairs to the Site features;
- Replacement of the original RTUs within the early portion of the term of the analysis;

- Installation of MUA interlocked with exhaust in the Fire Hall Apparatus Floor within the mid-portion of the term of the analysis;
- Upgrade and replacement of the Fire Hall washroom exhaust system within the early portion of the term of the analysis;
- Replacement of the Municipal Hall in-ceiling ducted split system;
- Repairs to the mechanical systems;
- Replacement of the transfer switches within the early portion of the term of the analysis;
- Replacement of the original 1995 panel boards or new panels and feeds within the early portion of the term of the analysis;
- Replacement of the exterior receptacles within the early portion of the term of the analysis;
- Upgrades to the exterior lighting and controls within the early portion of the term of the analysis;
- Complete a single line and arc flash study within the early portion of the term of the analysis;
- Replacement of the exit sign within the mid-portion of the term of the analysis;
- Upgrades of the fluorescent lighting to LED lighting within the latter portion of the term of the analysis;
- Replacement of the emergency power generator within the latter portion of the term of the analysis; and
- Upgrades of lighting controls to comply with NECB 2017 within the latter portion of the term of the analysis.

Regular maintenance should be conducted on the roof systems, wall systems, balcony systems, structural elements, elevator systems, interior finishes, Site features and the mechanical/electrical systems to ensure that the PUL of the major components is realized. Repair costs for the aforementioned items have been included over the term of the analysis (i.e., 10 years) included within Appendix I. The specific deficiencies identified during the BPCA and their associated recommendations for repair are described in the main body of the report. These deficiencies should be corrected as part of routine maintenance unless otherwise stated within the report. Costs associated with desired upgrades have not been carried.

Based on discussions with the Client subsequent to the Site review, budgetary estimates for the entire replacement of major structural, mechanical and electrical systems have been provided as an alternative to progressive repairs/replacements. The following summarises the budgetary costs for such replacements noting that these estimates are based on buildings of similar size:

- Roof replacement:
- Site Building A = $311,000.00;
- Site Building A (Fire hall including asbestos abatement and mould repairs) = $411,000.00;
- HVAC system = $150,000.00;
- Domestic water distribution system = $100,000.00;
- Sprinkler Systems = $100,000.00;
- Electrical system (including distribution and switchboards) = $340,000.00; and
- Fire and life safety systems = $35,000.00.

The advantages of performing a complete system replacement include the possibility of improving occupant comfort, ensuring latest Code compliance and making use of new technological advances that may result in energy savings and Greenhouse Gas emission reductions.

6.0 TERMS AND LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

In accordance with the proposed scope of work, no physical or destructive testing or design calculations were conducted on any of the components of the buildings. Assessment of the original or existing building design, or detection or comment upon concealed structural deficiencies and any buried/concealed utilities or components are outside the scope of work. Similarly, the assessment of any Post Tension reinforcing is not included in the scope of work. Determination of compliance with any Codes is beyond the scope of this Work. The Report has been completed in general conformance with the ASTM Designation: *E 2018 –*

15 Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process.

It should be noted that Pinchin has attempted to identify all the deficiencies required by this Standard associated with this project. Pinchin does not accept any liability for deficiencies that were not within the scope of the investigation.

As indicated above the personnel conducting the building assessment, where applicable, have performed a non-specialist review of the building and all associated finishes and related systems including the elevator, mechanical and electrical (including fire alarm and life safety) systems, Site features, etc. The personnel conducting the assessment are knowledgeable of building systems and construction, but not technical specialists in each of these fields. The intent of Pinchin's comments on these systems are for the sole purpose of identifying areas where Pinchin has observed a noteworthy condition which will lead to a likely significant expenditure during the term of the assignment and/or where Pinchin would recommend that the Client consider a further, more detailed investigation. The budget costs for remedial work for each specific item has been provided to the best of our ability and will provide an order of magnitude cost for the individual item and the overall possible remedial work. Our experience has shown that the costs that Pinchin have provided are appropriate and of reasonable accuracy for the purpose intended. It should be noted that the budget cost or reserve costs for any specific item may vary significantly based on the fact that the schedule or phasing of the future remedial work is unknown at this time, the impact on building operations of this remedial work is unknown at this time and that no intrusive inspection or detailed design work is included in the BPCA. If a more accurate, detailed or documented reserve cost is required at this time the Client should request Pinchin to provide the additional proposal to provide a more accurate cost estimate.

It should be noted that recommendations and estimates outlined in this report do not include allowances for future upgrading of components pertaining to Client or tenant fit-up that may be necessary or required by Authorities Having Jurisdiction (AHJ).

The assessment is based, in part, on information provided by others. Unless specifically noted, Pinchin has assumed that this information was correct and has relied on it in developing the conclusions.

It is possible that unexpected conditions may be encountered at the Site that have not been explored within the scope of this report. Should such an event occur, Pinchin should be notified in order to determine if we would recommend that modifications to the conclusions are necessary and to provide a cost estimate to update the report.

The inspection of the interior of boilers, pressure vessels, equipment, fan coils, ductwork or associated mechanical, etc., was beyond the scope of work. It should be noted that the heating and cooling duct

work within the Site Building may contain interior insulation. The Site Representative was unaware of the presence of insulation within the duct work within the Site Building. It is Pinchin's experience that interior insulation within duct work is prone to deterioration or development of mould which may require removal of the insulation. In the case where interior insulation is present within the duct work, Pinchin recommends that the duct work insulation be inspected for the presence of mould.

Due to the concealed nature of the plumbing system the condition of the pipes and associated components could not be verified.

Environmental Audits or the identification of designated substances, hazardous materials, PCBs, insect/rodent infestation, concealed mould and indoor air quality are excluded from this BPCA report.

Further to the aforementioned, determination of the presence of asbestos containing material within the building such as drywall joint compound or the lead content within the older paint finishes was beyond the scope of work.

This report presents an overview on issues of the building condition, reflecting Pinchin's best judgment using information reasonably available at the time of Pinchin's review and Site assessment. Pinchin has prepared this report using information understood to be factual and correct and Pinchin is not be responsible for conditions arising from information or facts that were concealed or not fully disclosed to Pinchin at the time of the Site assessment.

APPENDIX I

Table 1 – Summary of Anticipated Expenditures

ITEM	Projected Useful Life (yrs)	Effective Age (yrs)	Remaining Projected Useful Life (yrs)	Quantity	Unit	Unit Cost	Total Cost	Immediate Costs	Replacement Reserve Costs										
									2020 1 yr Cost	2021 2 yr Cost	2022 3 yr Cost	2023 4 yr Cost	2024 5 yr Cost	2025 6 yr Cost	2026 7 yr Cost	2027 8 yr Cost	2028 9 yr Cost	2029 10 yr Cost	1 - 10 Year Total
Life Safety, Consulting and ADA																			
Life Safety & Code Compliance																			$0
Follow-up Recommendations																			$0
General ADA Accessibility																			$0
Table 3.2 - Roof Systems																			
Roof Structures and Roofing (BUR Replacement - Site Building A)	20-25	~ 25	~0	800	SF	$20	$16,000		$16,000										$16,000
Roof Structures and Roofing (Asphalt-Shingled Roof Replacement - Site Building A)	15-20	~ 25	~0	29,500	SF	$10	$295,000		$295,000										$295,000
Roof Structures and Roofing (Recommended Remediation of Mould and Asbestos in Conjunction with Roof Replacement - Site Building A)	Varies	Varies	Varies	1	LS	$100,000	$100,000		$100,000										$100,000
Roof Structures and Roofing (Asphalt-Shingled Roof Replacement - Site Building B)	15-20	~ 25	~0	775	SF	$10	$7,750		$7,750										$7,750
Roof Structures and Roofing (Repairs)	Varies	Varies	Varies	1	LS	$12,500	$12,500		$5,000			$2,500			$2,500			$2,500	$12,500
Table 3.3 - Wall Systems																			
Exterior Walls (Re-Painting - Site Building A)	Varies	Varies	Varies	1	LS	$25,000	$25,000			$12,500	$12,500								$25,000
Exterior Walls (Repairs)	Varies	Varies	Varies	1	LS	$2,500	$2,500		$2,500										$2,500
Table 3.4 - Balcony Systems																			
Balcony Systems (Waterproofing Membrane Replacement - Site Building A)	~ 15	~ 25	~ 0	1	LS	$6,000	$6,000		$6,000										$6,000
Fall Protection (Wood Railings Replacement - Site Building A)	Varies	Varies	Varies	1	LS	$4,000	$4,000		$4,000										$4,000
Table 3.5 - Structural Elements																			
Foundations																			
Superstructure																			
Table 3.6 - Underground Parking Garage																			
Not Applicable	N/A	N/A	N/A																
Table 3.7 - Elevator Systems																			
Elevator Systems (Specialist Review - Site Building A)	Varies	Varies	Varies	1	LS	$1,000	$1,000		$1,000										$1,000
Table 3.8 - Interior Finishes																			
Interior Finishes (Repairs)	Varies	Varies	Varies	1	LS	$3,000	$3,000		$3,000										$3,000
Interior Finishes (Apparatus Bay Sealing Repairs) - Immediate								$1,000											
Table 3.9 - Site Features																			
Parking and Paving (Tripping Hazard Repairs) - Immediate								$250											
Parking and Paving (Repairs)	Varies	Varies	Varies	1	LS	$10,000	$10,000			$5,000			$2,500			$2,500			$10,000
Table 3.10 - Mechanical Systems																			
Building Heating and Cooling (Please refer to Vortex Report - Original RTU Replacement)	15-20	~ 25	~ 1-5	1	LS	$30,000	$30,000		$30,000										$30,000
Building Heating and Cooling (Please refer to Vortex Report - Installation of Fire Hall Apparatus Floor Make-Up Air Unit Interlocked with Exha	Varies	Varies	~ 5-10	1	LS	$10,000	$10,000							$10,000					$10,000
Building Heating and Cooling (Please refer to Vortex Report - Testing of Apparatus Floor Exhaust Fan)	20-25	~ 25	~ 0	1	LS	$1,000	$1,000		$1,000										$1,000
Building Heating and Cooling (Please refer to Vortex Report - Allowance for Apparatus Floor Exhaust Motor and/or Fan Replacement)	20-25	~ 25	~ 0	1	LS	$4,000	$4,000		$4,000										$4,000
Building Heating and Cooling (Please refer to Vortex Report - Apparatus Floor Heating System Replacement)	~ 30	~ 25	~ 5	1	LS	$15,000	$15,000							$15,000					$15,000
Building Heating and Cooling (Please refer to Vortex Report - Testing of Fire Hall Kitchen Ventilation System)	20-25	~ 25	~ 0	1	LS	$1,000	$1,000		$1,000										$1,000
Building Heating and Cooling (Please refer to Vortex Report - Allowance for Fire Hall Kitchen Ventilation System Motor and/or Fan Replacem	20-25	~ 25	~ 0	1	LS	$4,000	$4,000		$4,000										$4,000
Building Heating and Cooling (Please refer to Vortex Report - Gas Leak Repairs) - Immediate								$1,000											
Building Heating and Cooling (Please refer to Vortex Report - Fire Hall Washroom Exhaust System Upgrade and Replacement)	20-25	~ 25	~ 0	1	LS	$15,000	$15,000		$15,000										$15,000
Building Heating and Cooling (Please refer to Vortex Report - Municipal Hall Make-Up Air Unit - HRV Replacement and Ducting Upgrade) - Immediate								$30,000											
Building Heating and Cooling (Please refer to Vortex Report - Municipal Hall In-Ceiling Ducted Split System Replacement)	~ 15	~ 25	~ 0	1	LS	$65,000	$65,000		$65,000										$65,000
Plumbing and Hot Water (Please refer to Vortex Report - DHW Replacement)	~ 15	~ 10	~ 5	1	EA	$10,000	$10,000							$10,000					$10,000
Plumbing and Hot Water (Please refer to Vortex Report - cPVC Piping Replacement) - Immediate								$100,000											
Fire Protection & Security (Please refer to Vortex Report - Sprinkler System Upgrade to comply with NFPA 13 Code Requirements) - Immediate								$100,000											
Table 3.11 - Electrical Systems																			
Electrical Systems (Please refer to SMP Report - Distribution Equipment Service and Maintenance) - Immediate								$20,000											
Electrical Systems (Please refer to SMP Report - Fire Alarm Panel Replacement and Code Violation Correction) - Immediate								$25,000											
Electrical Systems (Please refer to SMP Report - Damaged Light Pole Base Repairs and Exposed Wiring Protection) - Immediate								$20,000											
Electrical Systems (Please refer to SMP Report - Main Breaker Service and Maintenance) - Immediate								$20,000											
Electrical Systems (Please refer to SMP Report - Transfer Switches Replacement)	Varies	Varies	Varies	1	LS	$110,000	$110,000		$110,000										$110,000
Electrical Systems (Please refer to SMP Report - Panels and Feeds Replacement)	Varies	Varies	Varies	1	LS	$75,000	$75,000			$75,000									$75,000
Electrical Systems (Please refer to SMP Report - Exterior Receptacles and Covers Replacement)	Varies	Varies	Varies	1	LS	$20,000	$20,000			$20,000									$20,000
Electrical Systems (Please refer to SMP Report - Exterior Lighting and Control Upgrades)	Varies	Varies	Varies	1	LS	$50,000	$50,000			$50,000									$50,000
Electrical Systems (Please refer to SMP Report - Single Line and Arc Flash Study)	Varies	Varies	Varies	1	LS	$25,000	$25,000			$25,000									$25,000
Electrical Systems (Please refer to SMP Report - Exit Sign Replacement)	Varies	Varies	Varies	1	LS	$15,000	$15,000						$15,000						$15,000
Electrical Systems (Please refer to SMP Report - Fluorescent to LED Lighting Upgrade)	Varies	Varies	Varies	1	LS	$40,000	$40,000											$40,000	$40,000
Electrical Systems (Please refer to SMP Report - Generator Replacement)	Varies	Varies	Varies	1	LS	$125,000	$125,000											$125,000	$125,000
Electrical Systems (Please refer to SMP Report - Lighting Controls to NECB 2017)	Varies	Varies	Varies	1	LS	$25,000	$25,000											$25,000	$25,000
TOTALS (Uninflated)							$1,440,000	$317,250	$670,250	$187,500	$12,500	$2,500	$17,500	$35,000	$2,500	$2,500	$0	$192,500	$1,122,750
Inflation Factor		Inflation Rate	2.5%						1.00	1.025	1.050	1.075	1.100	1.125	1.150	1.175	1.200	1.225	
TOTALS (Inflated)									$670,250	$192,188	$13,125	$2,688	$19,250	$39,375	$2,875	$2,938	$0	$235,813	$1,178,500

Term of Analysis **10**
Total Square Feet within the Building **23,750**

Average Cost per square foot per Year (Uninflated)	**$4.73**
Average Cost per square foot per Year (Inflated)	**$4.96**

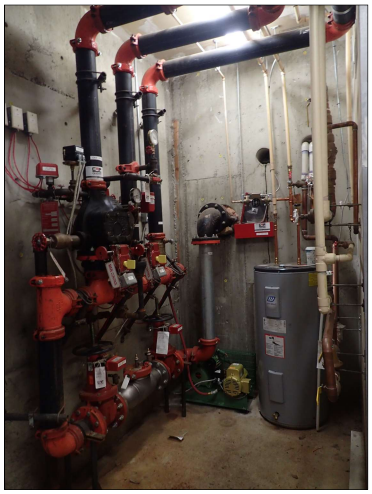
LS - Lump Sum
SF - Square Foot
EA - Each (per unit component)
LF - Lineal Foot

APPENDIX II

Specialist Review of the Mechanical Systems

District of Sooke Municipal Hall and Fire Hall – Mechanical Condition Assessment

Prepared For: Pinchin Ltd.



Rev.	Date	Issued For
0	February 28, 2020	Final Report

Report Prepared by:

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February 28, 2020

VORTEX ENGINEERING

EXECUTIVE SUMMARY

Vortex Engineering was retained by Pinchin Ltd. to prepare a mechanical condition assessment for the Sooke Fire Hall and Municipal Hall, owned by District of Sooke (DOS). This building was constructed in 1995, and consists of approximately 2,200 m^2 of floor space, two storey/split level arrangement.

A site review was undertaken by Michael Pullinger of Vortex Engineering on December 10, 2019. The site review consisted of a walk-through of main building spaces and visual review of the key equipment. This condition assessment is a high-level overview of potential capital costs likely to be incurred by the facility over the coming years. It is not intended to be a detailed inspection of every component, nor is it anticipated that every potential issue has been identified. Costs are indicative estimates only, and should be confirmed by contractor quotations prior to approving any capital expenditures.

With the building now being approximately 25 years old, numerous systems and equipment may soon require upgrades to maintain safe building operation and continued, reliable performance.

While some recommended upgrade measures may have some flexibility as far as timing, there are three measures that should be undertaken immediately. The three measures recommended for immediate implementation are as follows:

- Upgrade the sprinkler system to provide compliance with current codes (NFPA 13) through substantial equipment replacement and upgrades (Scope to be confirmed through a detailed review).
- Replace existing cPVC domestic water distribution piping to reduce risk of further, potentially costly pipe breakages and flooding (numerous pipe failures have already occurred).
- Replace the makeup air unit serving the Municipal Hall area and reconfigure ducting to provide compliance with ventilation codes (ASHRAE 62.1).

Of these, the sprinkler system upgrade and domestic water piping replacement could be undertaken as stand-alone projects. However, for the makeup-air unit replacement, there may be benefits in undertaking a complete HVAC upgrade design to provide a cohesive, energy-efficient and code compliant design for upgrading the HVAC systems. Implementation of the makeup air unit replacement could then proceed immediately afterwards, while the other HVAC upgrade measures could be undertaken incrementally as budgetary and other priorities dictate.

Based on our review, the indicative estimate of potential capital costs by year is provided in the table below.

Recommended Upgrade Timeline				
Now	1-5 Yr	5-10 Yr	10-20 Yr	>20 Yr
$231,000	$120,000	$35,000	$25,000	$300,000

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1 INTRODUCTION

1.1 OVERVIEW

Vortex Engineering (Vortex) was retained by Pinchin Ltd. (Pinchin) to prepare a mechanical condition assessment for the Sooke Fire Hall and Municipal Hall (Figure 1), owned by District of Sooke (DOS). This building was constructed in 1995, and consists of approximately 2,200 m^2 of floor space, two storey/split level arrangement. The Municipal Hall is located on the lower floor, with the Fire Hall and council chambers on the upper level.

Figure 1: Sooke Fire Hall (top) and Municipal Hall (bottom).

1.2 SITE REVIEW

A site review was undertaken by Michael Pullinger of Vortex Engineering on December 10, 2019. Mr. Pullinger was accompanied by Joshu Bocskei of Pinchin, Ltd. and Paul Fritz of SMP Engineering (Electrical). The team was escorted around the facility by Captain Chris McCrea of the Sooke Fire Department (DOS). Other personnel interviewed during the site review included Constance MacDonald (Human Resources/Building Maintenance, DOS), Matt Barney (Deputy Fire Chief, DOS) and Teunesha Evertse (Planner, DOS).

The site review consisted of a walk-through of main building spaces and visual review of the key equipment. No internal inspection or testing was undertaken on the equipment, and some inaccessible equipment was not reviewed.

Further to the site review, Jess Everden, the maintenance contractor who has overseen the HVAC systems since approximately 2011 was interviewed to understand the maintenance history of the HVAC equipment.

1.3 REFERENCE DOCUMENTS

This assessment was prepared with reference to the following documents:

- Mechanical and Plumbing drawing M1, prepared by E&M Consultants (1995). Only available for "CRD Adjunct Space, lower level (no HVAC drawings for Fire Hall or council chambers area).
- Sprinkler drawings SP-1 through SP-4, prepared by ACB Systems Engineering, Ltd (1995).
- Drawings/scans of recent proposed changes/upgrades to sprinkler system were scanned at an insufficiently low resolution for legibility, and so could not be reviewed.
- Fire Equipment Checklist, prepared by Cascade Fire Protection, Ltd. (October 4, 2019).
- Fire Services Act Order, prepared by Local Assistant to the Fire Commissioner, Steven Sorensen, 13 July, 2015.
- Tech Fire Protection Systems, quote for repairs to sprinkler system, prepared March 14, 2016.

In addition, the following industry publications were utilised in preparation of this report:

- National Fire Protection Association (NFPA), NFPA 13 – Standard for the Installation of Sprinkler Systems.
- ASHRAE Handbook, 2015 – Applications.

1.4 PROJECT LIMITATIONS

This condition assessment is a high-level overview of potential capital costs likely to be incurred by the facility over the coming years. It is not intended to be a detailed inspection of every component, nor is it anticipated that every potential issue has been identified. Costs are indicative estimates only, and may not reflect actual market conditions for performance of the work. The District of Sooke should seek quotations from qualified contractors before approving any of the potential capital expenditures.

Should District of Sooke require any clarification of any items discussed in this report, please contact us for further details.

2 SYSTEMS DESCRIPTION AND CONDITION

2.1 HEATING, VENTILATION AND AIR-CONDITIONING (HVAC) SYSTEMS

The HVAC system includes central, packaged rooftop units for the Fire Hall. An inoperable makeup air unit serves the Municipal Hall, with individual split systems (a mix of old and new) serving the individual office zones. Local exhaust systems serve the washrooms, and kitchen in the Fire Hall lounge. The fire apparatus (fire truck) area is served by a dedicated vehicle exhaust extraction system and radiant tube heaters.

We understand that a DDC system was included in the original building, and is still in place. However, in lieu of upgrading the DDC control systems, most equipment is now controlled locally, with the exception of some exhaust fans controlled by on/off timer from the outdated DDC system.

2.1.1 FIRE-HALL ROOFTOP AIR-CONDITIONING UNITS

The Fire Hall is served with packaged rooftop air-conditioning units, often simply known as "rooftop units" (RTUs). These include gas-fired heating coils and direct-expansion (DX) air-conditioning coils for heating and cooling of the air supply to the building.

With the exception of a new (<2 years) York unit serving the council meeting chambers, these units are original to the building. At approximately 25 years of age, these units are now beyond the median service life for similar equipment in other buildings (ASHRAE 2015). Replacement of the remaining units should be anticipated, and included in the facility's capital budget plan. Given the substantial issues that were encountered following the failure of the unit serving the council chambers (eventually leading to its replacement), this should be considered a high priority issue for continued comfort of building occupants.

With replacement of these units, consideration should be given to reconfiguring the system(s) to improve occupant comfort. Currently the units serve dissimilar spaces (both perimeter and interior zones) which may have differing heating and cooling requirements, and thus one or the other group of spaces may be uncomfortable at any given time.

The flexible duct connectors for many of these units have perished, likely resulting in air leakage, and poor performance of the units. Much of the equipment includes corroded piping and valves. In the case of the gas piping, this could be a safety issue, as the corrosion may eventually lead to incorrect performance of the pressure regulating valve, or leakage at pipe joints. These observations provide increased rationale for replacing the units as soon as practical.

Fire Hall Rooftop Air-Conditioning Units	
Age of System/Equipment	25 years
Typical Service Life	15-20 years
Remaining Service Life	0 years
Replacement Cost	$30,000
Recommended Replacement Timeframe	1-5 years
Recommended Upgrades/Repairs?	No.
Cost for Upgrades/Repairs	$0
Recommended Upgrade Timeframe	N/A
Consequences of not performing upgrade	Possible loss of heating if unit(s) fail.

Figure 2: Packaged air-conditioner serving Fire Hall Lounge.

Figure 3: New packaged air-conditioner serving council chambers.

Figure 4: Packaged air-conditioners serving Fire Hall Lounge (left) and Fire Hall (right).

Figure 5: Packaged air-conditioners serving Fire Hall Lounge (left) and Fire Hall (right).

2.1.2 FIRE-HALL, APPARATUS FLOOR EXHAUST DUCTING

A Nederman vehicle exhaust extraction system was installed approximately 12 years ago, and appears to be in reasonable operating condition. This system replaced the previous general exhaust system which did not provide for direct extraction of vehicle exhaust at the tail-pipes of the individual fire trucks. The previous exhaust system has been abandoned in favour of the new code-compliant direct extraction system. The extraction/ventilation system could still remain in place and is anticipated to still have an additional 10-15 years of service life remaining. The components that should be reviewed regularly are the flexible elbows and collection hoods, which are subject to increased rates of wear and tear due to regular movement.

The apparatus floor currently has no makeup air system to replace exhausted air with warm air when the exhaust system is operational. While not required from a code or safety point of view, provision of a makeup air unit could be considered to improve occupant comfort in this space.

Fire Hall, Apparatus Floor Exhaust Ducting (Excluding Fan)	
Age of System/Equipment	12 years
Typical Service Life	20-25 years (ducting only, excluding fan)
Remaining Service Life	10-15 years
Replacement Cost	$25,000
Recommended Replacement Timeframe	10-15 years
Recommended Upgrades/Repairs?	No. However, installation of a heated makeup air unit for operation during exhaust mode would improve comfort. This is considered optional.
Cost for Upgrades/Repairs	$10,000
Recommended Upgrade Timeframe	5-10 years.
Consequences of not performing upgrade	Reduced occupant comfort.

Figure 6: Fire Hall apparatus floor – vehicle exhaust ducting.

Figure 7: Fire Hall apparatus floor – vehicle exhaust ducting.

2.1.3 FIRE-HALL, APPARATUS FLOOR EXHAUST FAN

The original Cincinnati Fans rooftop exhaust fan still provides exhaust ventilation and has evidence of ongoing wear and tear, including exterior corrosion and perished flexible connectors, which may reduce the efficiency of the fan. The fan itself is nearing the end of its useful service life of approximately 20-25 years. The fan could either be replaced, or the following could be performed to maximise its service life:

- Replace flexible connectors.
- Carry out electrical testing on motor to confirm that insulation resistance and overall performance are within expected and acceptable parameters.
- Complete updated airflow testing on system to confirm that it still meets required performance.

If the fan does not pass the above testing it should be replaced.

Fire Hall, Apparatus Floor Exhaust Fan	
Age of System/Equipment	25 years
Typical Service Life	20-25 years
Remaining Service Life	0 years
Replacement Cost	$4,000
Recommended Replacement Timeframe	1-5 years
Recommended Upgrades/Repairs?	Yes – Detailed inspection and testing may allow life extension.
Cost for Upgrades/Repairs	$1,000
Recommended Upgrade Timeframe	1-5 years
Consequences of not performing upgrade	Increased risk of fan failure.

Figure 8: Fire Hall apparatus floor – exhaust fan.

Figure 9: Fire Hall apparatus floor – exhaust fan/flexible connector.

2.1.4 FIRE-HALL, APPARATUS FLOOR HEATING SYSTEM

The overhead radiant heating system is original to the building, but was switched to natural gas supply (instead of propane) within approximately the last ten years. The system appears to be reasonably effective, but may be approaching the end of its useful service life. The system should be monitored for continued effective performance, including regular maintenance inspections.

Fire Hall, Apparatus Floor Heating System	
Age of System/Equipment	25 years
Typical Service Life	30 years
Remaining Service Life	5 years
Replacement Cost	$15,000
Recommended Replacement Timeframe	5-10 years
Recommended Upgrades/Repairs?	No.
Cost for Upgrades/Repairs	$0
Recommended Upgrade Timeframe	N/A
Consequences of not performing upgrade	N/A

Figure 10: Fire Hall apparatus floor – radiant tube heater.

Figure 11: Fire Hall apparatus floor – radiant heater roof vent.

2.1.5 FIRE HALL, KITCHEN VENTILATION SYSTEM

This exhaust system currently operates 24/7 due to an unidentified minor gas leak somewhere either in the gas piping serving the kitchen cooker, or in the cooker itself. We understand that a gas fitter has inspected the equipment and has been unable to identify the source of this minor ongoing leak.

The source of the gas leak should be identified. While the leak is currently minor, if it is not addressed, it could progress further to the point of becoming a safety issue. We recommend an additional gas fitter or kitchen appliance specialist inspect the equipment in an additional effort to identify the leak. If it cannot be repaired, the cooktop should be replaced, as we understand this equipment was purchased second hand when installed in the original building, and is likely now beyond the end of its useful service life.

With the gas leak repaired, the kitchen exhaust system should run less frequently, which may save substantial heating and exhaust fan energy. We understand that the kitchen cooking equipment is currently used briefly during lunch time once or day, or 4-5 times a year for bigger meals during functions in the Fire Hall. Given this infrequent use, it is likely that substantial energy wastage is currently occurring.

The rooftop mounted, vertically discharged exhaust fan appears to be original to the building. While no performance issues were identified, this fan is likely approaching the end of its useful service life of 20-25 years. The fan could either be replaced, or the following could be performed to maximise its service life:

- Complete cleaning and degreasing by qualified kitchen exhaust contractor.
- Carry out electrical testing on motor to confirm that insulation resistance and overall performance are within expected and acceptable parameters.
- Complete updated airflow testing on system to confirm that it still meets required performance.

If the fan does not pass all of the above tests, it should be replaced.

Fire Hall, Kitchen Ventilation System	
Age of System/Equipment	25 years
Typical Service Life	20-25 years
Remaining Service Life	0 years
Replacement Cost	$4,000
Recommended Replacement Timeframe	1-5 years
Recommended Upgrades/Repairs?	Yes – Detailed inspection and testing may allow life extension for fan.
Cost for Upgrades/Repairs	$1,000
Recommended Upgrade Timeframe	1- 5 years.
Consequences of not performing upgrade	Increased risk of fan failure.
Additional Recommended Repairs	Yes – identify source of gas leak. Replace kitchen stove and piping if leak cannot be repaired.
Cost for Additional Repair	$1,000
Consequences of not performing additional repair	Ongoing gas leak. Safety concern and excess energy consumption.

Figure 12: Fire Hall – Lounge kitchen exhaust hood.

Figure 13: Fire Hall – Lounge kitchen exhaust fan.

2.1.6 FIRE HALL, WASHROOM EXHAUST SYSTEM

Due to increased demand over recent years, the exhaust system serving the washrooms and showers in the Fire Hall appears to now be inadequate. We understand that there are now persistent issues with high humidity in these washrooms due to increased use of showers, as well as improper configuration in the women's washroom due to the relative increase in the number of female fire fighters since the building was constructed. We understand that due to the above (non-mechanical) factors, consideration for rearranging the Fire Hall washroom/change-room area. Whether or not this upgrade goes ahead, an increased volume ventilation system should be installed to provide adequate removal of humid air in the space. The use of a de-humidifier to remove this moisture may not be as effective and will likely increase energy consumption compared to a suitable exhaust ventilation system.

No immediate issues were observed with the rooftop exhaust fan. However, this fan is likely approaching the end of its useful service life of 20-25 years. This provides additional rationale for replacing the existing exhaust ventilation system.

Fire Hall, Washroom Exhaust System	
Age of System/Equipment	25 years
Typical Service Life	20-25 years
Remaining Service Life	0 years
Replacement Cost	$15,000
Recommended Replacement Timeframe	1-5 years
Recommended Upgrades/Repairs?	No.
Cost for Upgrades/Repairs	$0
Recommended Upgrade Timeframe	N/A
Consequences of not performing upgrade	N/A

Figure 14: Fire Hall – Washroom exhaust fan.

2.1.7 MUNICIPAL HALL, MAKEUP AIR UNIT

The Municipal Hall area is served by an Engineered Air DJ-20-0 makeup air unit to supply outside air to the ceiling space in the downstairs office area. This unit is original to the building, and is therefore beyond its useful service life of 15 years. The unit was not in operation at the time of the site review, and we understand that this unit has been out of operation since approximately 2011. In addition, the local disconnect switch to the unit is inoperable, and the unit did not appear to be operating during the site review. We understand that the system currently operates through the negative pressure of the exhaust system drawing in air to the ceiling plenum. However, this may not meet the code requirements of ASHRAE 62.1 (Ventilation for Acceptable Indoor Air Quality).

Since return air is also circulated in the ceiling plenum, the delivery of outdoor air to the ceiling space (rather than to the individual fan-coil units or individual office spaces) does not meet Section 5.1.2. of ASHRAE 62.1 (Ventilation for Acceptable Indoor Air Quality), and thus does not meet current building code requirements.

This unit should be replaced, and the outdoor air supply ducting to the offices should be reconfigured to supply outdoor air to each of the individual office spaces as required by ASHRAE 62.1. Given that the washroom exhaust fan for the downstairs offices is located adjacent to the makeup air unit, there appears to be scope for installing a heat recovery ventilator (HRV) which would reduce energy consumption in heating/cooling the outdoor air supplied to the building.

Municipal Offices, Makeup Air Unit, Outdoor Ducting and Exhaust Air Heat Recovery	
Age of System/Equipment	25 years
Typical Service Life	15-20 years
Remaining Service Life	0 years
Replacement Cost	$30,000 (including engineering, ductwork and heat recovery system).
Recommended Replacement Timeframe	Immediately
Recommended Upgrades/Repairs?	No.
Cost for Upgrades/Repairs	$0
Recommended Upgrade Timeframe	N/A
Consequences of not performing replacement	System does not meet code requirements for fresh air supply to the building.

Figure 15: Municipal Hall – Abandoned makeup air unit.

Figure 16: Municipal Hall – Abandoned makeup air unit.

Figure 17: Municipal Hall – Abandoned makeup air unit.

Figure 18: Municipal Hall – Makeup air duct.

2.1.8 MUNICIPAL HALL, WASHROOM EXHAUST SYSTEM

The washroom exhaust fan is a horizontally discharged centrifugal unit original to the building. No operational concerns were reported or observed. However, the fan is now beyond its median anticipated service life of 20-25 years. While it is possible that some extension of the life of this piece of equipment may be possible, replacement would allow installation of a heat-recovery ventilation system (please refer to Section 0 above for details).

Figure 19: Municipal Hall – Washroom exhaust fan.

Figure 20: Municipal Hall – Washroom exhaust fan, adjacent to makeup air duct. Possibly suitable to replace both with a heat recovery ventilator.

2.1.9 MUNICIPAL HALL, IN-CEILING, DUCTED SPLIT SYSTEMS

The Municipal Hall area was originally served by split-systems with ducted ceiling-mounted fan-coil units. Due to ongoing heating and cooling issues, a number of these ducted units have since been replaced with wall-mounted indoor units with outdoor condensing units. A total of 13 office areas have been identified as still having heating and cooling issues, and have been listed as potentially requiring upgrades.

Of the original split systems left in place, it is apparent that they are aged beyond their expected service life of 15 years. The outdoor condensing units exhibit signs of corrosion and wear, with exposed refrigerant lines (worn insulation) and non-functional local disconnect switches. Wherever the original systems are still operating, it would appear that these should be replaced as soon as practical.

Furthermore, it is critical that the original units be properly drained of their refrigerant fluid and removed, not just abandoned in-situ. While the name plates or original drawings did not identify, it is possible (given the age of these units) that these split systems originally contained the ozone-depleting HCFC refrigerant fluid R-22 or similar. While this may have been swapped out in the lifetime of the units, this should be confirmed, as this substance is now highly restricted. If they were retrofitted at some stage during their operational life-time, the replacement refrigerant should nevertheless be drained and disposed of carefully due to the high Global Warming Potential (GWP) of refrigerants that replaced R-22.

It is our recommendation that prior to proceeding with any additional heating and cooling upgrades that a comprehensive upgrade design be prepared that recognises the integrated nature of the HVAC systems serving the Municipal Hall offices. These should consider the following:

- Adequate outdoor air supply to each space, as required by ASHRAE 62.1.
- Independently controlled heating and cooling to each room, confirmed by updated heating/cooling load calculations.
- Re-use of existing ducting if possible to reduce upgrade costs.
- Removal of any redundant system components to ensure energy efficient operation, and proper disposal of any disused equipment and refrigerant fluids.

In-Ceiling Ducted Split Systems	
Age of System/Equipment	25 years
Typical Service Life	15 years
Remaining Service Life	0 years
Replacement Cost	$65,000
Recommended Replacement Timeframe	1-5 years
Recommended Upgrades/Repairs?	No.
Cost for Upgrades/Repairs	$0
Recommended Upgrade Timeframe	N/A
Consequences of not performing upgrade	N/A

Figure 21: Municipal Hall – Typical ceiling-mounted split system ducted indoor unit (old).

Figure 22: Municipal Hall – Typical wall-mounted split system, indoor unit (new).

Figure 23: Municipal Hall – Some condensing units for older split systems are on fire hall roof.

Figure 24: Municipal Hall – Makeup air duct.

Figure 25: Municipal Hall – Additional condensing units, located adjacent to makeup air unit.

Figure 26: Municipal Hall – New condensing units.

2.2 PLUMBING SYSTEMS

2.2.1 DOMESTIC HOT WATER HEATERS

Two domestic hot water tanks are installed in the building – one in the Fire Hall kitchen, which serves the Fire Hall portion of the building. The other domestic hot water tank is located in the water entry/sprinkler room and serves the Municipal Hall portion of the building.

The John Wood 3 kW electric water heater serving the Municipal Hall was installed in 2012 (based on the serial number). The John Wood natural gas water heater serving the Fire Hall was installed in September 2010. No operational issues were observed or reported, and it expected that these water heaters should have approximately 5-10 more years of useful service life remaining.

Domestic Hot Water Heaters	
Age of System/Equipment	10 years
Typical Service Life	15 years
Remaining Service Life	5 years
Replacement Cost	$10,000
Recommended Replacement Timeframe	5-10 years
Recommended Upgrades/Repairs?	No.
Cost for Upgrades/Repairs	$0
Recommended Upgrade Timeframe	N/A
Consequences of not performing upgrade	N/A

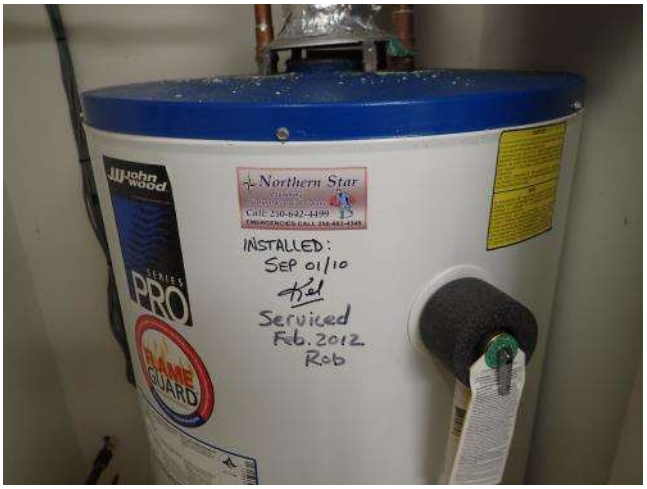

Figure 27: Fire Hall – Domestic hot water tank.

Figure 28: Municipal Hall – Domestic hot water tank.

2.2.2 DOMESTIC WATER PIPING SYSTEMS

Much of the interior piping is cPVC, and this piping has failed in a number of locations (four failures in the past 6 months), causing substantial water damage and repair costs. This type of piping is notorious for premature piping failures. The fact that piping has failed in a couple of locations already is a reasonable indication that the entire cPVC domestic water piping distribution system is now degraded beyond its useful life. To prevent future leaks, all remaining cPVC piping should be removed and replaced with more resilient piping materials. We understand that the underground piping is PEX, so it is likely that only the above ground piping in the walls and ceiling needs to be considered in this case. This should be confirmed as part of any upgrade project.

Domestic Water Piping Systems	
Age of System/Equipment	25 years
Typical Service Life	Variable for cPVC
Remaining Service Life	0 years
Replacement Cost	$100,000
Recommended Replacement Timeframe	Immediately
Recommended Upgrades/Repairs?	Yes – Detailed inspection and testing may allow life extension.
Cost for Upgrades/Repairs	$0
Recommended Upgrade Timeframe	N/A
Consequences of not performing replacement	Costly water damage due to failed pipes.

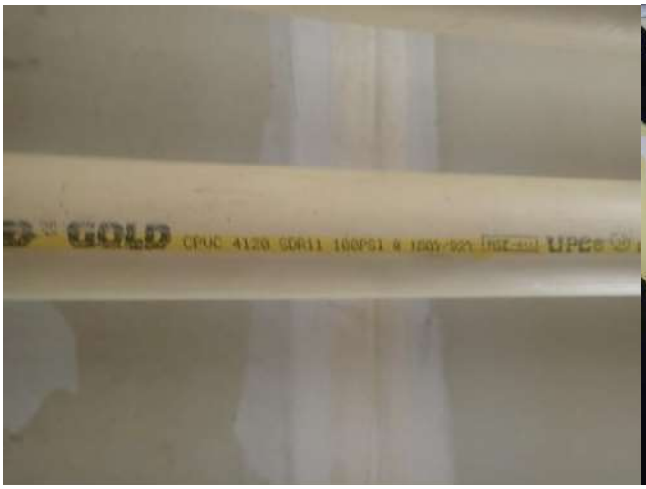

Figure 29: cPVC piping, typical of domestic water distribution piping throughout building.

Figure 30: Fire Hall – Hose bib piping replacement due to failed cPVC domestic cold water piping.

2.2.3 SANITARY PIPING SYSTEMS

When originally constructed, the building was connected to a septic system, which we understand was abandoned in approximately 2005. The sanitary drainage is now connected to the municipal sanitary sewer. The original pump systems were removed from the septic system.

Given its typical underground location, the sanitary drainage system could not be observed during this site review. The only reported issue was one of the toilets in the men's washroom/change-room in the Fire Hall being prone to clogging. It is possible that this is due to an inadequate drain pipe slope, which should be modified if the washrooms/change-rooms are reconfigured in the near future.

2.3 SPRINKLER SYSTEMS

The building has a sprinkler system throughout, with the majority of the building served by a wet sprinkler system, and a dry sprinkler system installed in areas exposed to freezing conditions (such as the fire apparatus floor and the training tower).

Numerous deficiencies exist in the sprinkler system, first identified following a failure of the dry system in approximately 2004. It is understood that water entered the dry system, freezing a pipe, and therefore causing a burst of the sprinkler pipe. The pipe burst then activated the system, causing substantial water damage. However, it is understood that the sprinkler alarm did not activate as is required by NFPA 13. Following repair of the system, a number of deficiencies were subsequently identified by both sprinkler system contractors and engineers who have reviewed the system. However, it appears that many of the identified issues have not yet been rectified.

The system has been inspected by Cascade Fire Protection as recently as October 2019, with test tags for 2018 also noted on the equipment, while an additional test report from 2016 (all from Cascade Fire Protection) was provided by DOS.

A condition assessment of this nature is not sufficiently detailed to all of the identified issues as listed in Cascade Fire Protection's 2019 test and inspection report. Nevertheless, a number of the issues outlined in that report were confirmed, including lack of fire stopping in the sprinkler room wall, galvanized piping in the sprinkler inlet piping, and incorrect sprinkler coverage in some areas of offices with altered interior partition walls. This report therefore confirms that the sprinkler system in the building is not currently in compliance with NFPA 13, but has not confirmed whether the issues identified in Cascade Fire Protection's test and inspection report are all issues that require rectification, or whether they are fully comprehensive and cover all issues that are currently present in the building.

We recommend that the fire sprinkler system be upgraded as soon as possible to bring the system in compliance with NFPA. In order to complete this work, we recommend the following:

- Given the contradictory nature of some of the available drawings (original drawings with some markups and changes from varying dates all provided by DOS), a complete set of current as-built drawings should be prepared following a detailed, component-by-component inspection of the entire sprinkler system.
- Following this inspection and preparation of the current as-built drawings, the proposed Scope of Work for the proposed sprinkler upgrade should be reviewed for adequacy, and amended if necessary (complete with drawings and specifications for the proposed work).
- This should be undertaken and overseen by a P.Eng. who is able to provide Letters of Assurance for the upgrade works, and certify completion of the work.

Beyond the deficiencies with the system outlined above, the equipment and components themselves appear to be in reasonable condition, and given their infrequent operation, are not anticipated to reach the end of their useful service life any time soon. However, NFPA requires a minimum number of spare sprinkler heads to be kept on site, and Cascade Fire Protection's report identified that the required number are not available, with some of the available spare heads being a recalled model number. While eventual replacement of the sprinkler system needs to be tracked in long-term capital budget planning, it is nevertheless imperative that the upgrades necessary to provide compliance with NFPA 13 should be considered an immediate priority.

Age of System/Equipment	25 years
Typical Service Life	50 years
Remaining Service Life	25 years
Replacement Cost	Up to $300,000 est.
Recommended Replacement Timeframe	25 years
Recommended Upgrades/Repairs?	Yes – bring system into compliance with NFPA 13 through substantial equipment replacements and upgrades. Scope to be confirmed through detailed review and design.
Cost for Upgrades/Repairs	$100,000
Recommended Upgrade Timeframe	Immediately
Consequences of not performing upgrade	Building code violations. System does not meet NFPA 13 as required by code.

Figure 31: Sprinkler system (left), including galvanized inlet pipe and lack of fire-stopping at wall.

Figure 32: Sprinkler system – valve with recent test tag.

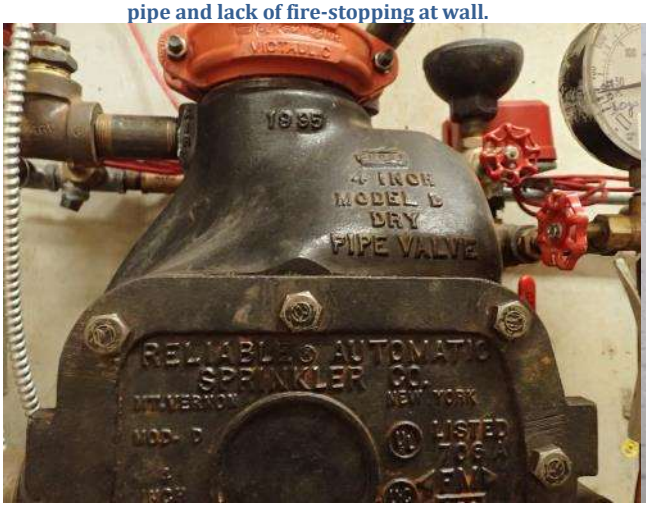

Figure 33: Sprinkler system dry pipe valve.

Figure 34: Typical sprinkler head in office space. Coverage not compliant with code in some areas.

3 CONCLUSIONS AND RECOMMENDATIONS

3.1 DISCUSSION OF FINDINGS

With the building now being approximately 25 years old, numerous systems and equipment may soon require upgrades to maintain safe building operation and continued, reliable performance. Three key measures (sprinkler system upgrade, domestic water piping replacement and makeup air unit replacement) are recommended for immediate implementation. Of these, the sprinkler system upgrade and domestic water piping replacement could be undertaken as stand-alone projects.

However, for the makeup-air unit replacement, there may be benefits in undertaken a complete HVAC upgrade design, with implementation of the makeup air unit replacement undertaken as soon as possible, while the remaining HVAC upgrade measures could then be undertaken incrementally over subsequent years. This would allow the estimated total HVAC cost of $150,000 to spread over multiple years to reduce the budgetary impact of the other recommended upgrade measures. Preparing a detailed design of the entire scope of proposed HVAC upgrades would ensure a holistic and proactive upgrade plan in lieu of continued ad-hoc equipment replacements upon failure of individual components. A comprehensive HVAC system upgrade design would also provide for the most energy efficient approach while also complying with relevant ventilation codes.

3.2 OVERALL RECOMMENDATIONS

A summary of the recommended upgrade measures and timeline for implementation is included in Table 1. The timeline may shift depending on actual continued operational performance of the equipment and budgetary constraints. However, we do not recommend delaying any of the items recommended for implementation “now” as they all involve either necessary upgrades to meet building code and safety requirements, or (in the case of the domestic water pipe replacement) they may prevent substantial future costly damage.

Item	Description of Work	Rationale for Work	Recommended Upgrade Timeline				
			Now	1-5 Yr	5-10 Yr	10-20 Yr	>20 Yr
*Fire Hall Rooftop Air-Conditioning Units	*Replacement	Prevent unexpected heating loss due to equipment failure.		$30,000			
Fire Hall, Apparatus Floor Exhaust Ducting	Replacement	End of Life Replacement				$25,000	
	Optional - Install Makeup Air Unit Interlocked With Exhaust	Provide tempered makeup air. Improve occupant comfort.			$10,000		
*Fire Hall, Apparatus Floor Exhaust Fan	*Testing and detailed inspection	Maximise service life of fan.		$1,000			
	*Replacement	Replace motor and/or fan if does not pass testing. Allowance for end-of-life replacement		$4,000			
Fire Hall, Apparatus Floor Heating System	Replacement	End of Life Replacement			$15,000		
Fire Hall, Kitchen Ventilation System	*Testing and detailed inspection	Maximise service life of fan.		$1,000			
	*Replacement	Replace motor and/or fan if does not pass testing. Allowance for end-of-life replacement		$4,000			
	*Repair Gas Leak	Safety hazard due to gas leak, excess energy consumption due to 24/7 fan operation to remove gas. Note: Cost of replacing gas cooktop (if required following gas inspection) is not included.	$1,000				
Fire Hall, Washroom Exhaust System	*Upgrade and replacement	Insufficient ventilation, build-up of humidity, risk of mould, excess energy consumption (due to running dehumidifier).		$15,000			
Municipal Hall, Makeup Air Unit	*Remove and replace with heat recovery ventilator, upgrade ducting.	System currently not code compliant. Work necessary to be code compliant.	$30,000				
Municipal Hall, Washroom Exhaust System	*Replacement - in parallell with makeup air unit replacement.	Reduce energy consumption. Minimal increased cost compared to replacing systems separately.					
Municipal Hall, In-ceiling Ducted Split Systems	*Remove older systems, replace with new air-conditioning systems (split system or VRF).	Remove environmentally hazardous R-22 refrigerant, improve occupant comfort. Improved energy efficiency.		$65,000			
Domestic Hot Water Heaters	Replacement	End of Life Replacement			$10,000		
Domestic Water Piping Systems	Replace cPVC piping.	Prevent risk of further pipe breakage and costly flood damage.	$100,000				
Sprinkler Systems	Upgrade system to bring in line with NFPA 13 code requirements.	Provide code compliant system.	$100,000				
	Replacement	End of Life Replacement (high end estimate)					$300,000
		TOTAL	**$231,000**	**$120,000**	**$35,000**	**$25,000**	**$300,000**

*Items recommended to be included in an integrated HVAC system design and upgrade = $151,000 total.

APPENDIX III

Specialist Reviews of the Electrical, Fire and Life Safety Systems

SOOKE REGIONAL MUNICIPALITYAND FIRE HALL

2225 Otter Road
Sooke, British Columbia

Electrical System Condition Assessment

Prepared by:

SMP Project No.: 19-01-0568

SMP Engineering
400 – 601 West Broadway
Vancouver, BC • V5Z 4C2

January 2020 Rev1

Evaluated by:

Paul Fritz PEng. Partner

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1 PROJECT DETAILS AND INTENT

The intent of this report is to evaluate the electrical systems of the District of Sooke Municipal Hall & Fire Hall building located at 2225 Otter Road in Sooke British Columbia in terms of their operational condition, and compliance to both the Canadian Electrical Code (with BC amendments) and British Columbia Building Code with specific respect to the electrical systems.

This report is based on review of existing reports and based on site review performed December 13, 2019. Day was partly cloudy, cool with a temperature of approximately 5°C.

No testing of any system or verification of operation was carried out. Our review was based on a visual review of the current conditions and was not a comprehensive investigation of all equipment or systems.

No destructive testing was performed.

No attempt has been made to investigate the capability of the systems to handle the electrical loads.

No testing of life safety systems, including fire alarm and smoke exhaust systems, was undertaken.

No quantitative measurements were taken of voltage or amperages.

2 EXECUTIVE SUMMARY

The facility under review is a three-story building with training tower that comprises of a fire hall, Ham radio operators, council chambers, and municipal offices and supporting uses. It also contains a lounge, laundry, kitchen, administration spaces, mechanical and electrical room. The building was constructed in 1995 with some renovation to interior areas.

The main distribution section does not show indication of servicing. Main breaker part number could not be safety ascertained and manufacturer no longer keeps records for this main board. Main distribution section should be thermography scanned, the main breaker serviced, and breaker make documented for future reference. Servicing may reveal other items requiring rectification. Servicing would require a BC Hydro shutdown.

All distribution and branch panels do not indicate any servicing or maintenance. All existing 1995 panels should thermography scanned and serviced. Servicing may identify additional items requiring rectification. Most panels are at full capacity, either additional panels should be added, and existing panels maintained or the existing panel boards upgrade or replaced to add capacity. Thermography is normally performed at or near peak load. Filler plates should be added to Panel X to cover exposed live bussing.

Emergency power distribution system was code compliant at time of install however does not meet current requirements to separate code and non-code required loads. The Emergency generator is with ten years of end of life and planned replacement should be budgeted for in the long term. The existing automatic transfer switches have controllers that are no longer supported by the manufacturer. The Automatic Transfer Switch located in in the lower electrical room may not start the emergency generator so could leave parts of the facility without power in the event of a localized internal normal power outage. Planned replacement of the transfer switches and implementation of code required versus non-code required separation should be implemented in the immediate term. Current configuration of emergency power and normal power CDPs located in the same room, while code compliant, at time of install no longer meets the current interpretation of the Canadian Electrical Code (CEC). Emergency power receptacles should be replaced with red receptacles to meet the CEC.

An updated electrical single line does not exist and should be prepared and mounted in the electrical room(s). No Arc Flash Hazard labels on panels. Arc Flash Hazard Analysis should be performed, and incident levels displayed on the panels. Additional labeling on panels indicating name and where fed from should be added.

Future renovations should use armored cable or conduit and wire not unarmored NMD90. Consideration should be given to removing existing NM90 and replacing with AC90.

Exterior receptacles should be replaced with GFCI and weather proof in use covers. Exposed exterior wring in patio area should be protected or removed.

Low level vapour mitigation strategy should be implemented to prevent migration of vapours from the apparatus bay to the adjacent occupancy.

Seismic Restraint clips should be installed on lighting on the second floor.

All building mounted lights that are incandescent or HID should be globally replaced with LED. Upper parking lot and access road requires additional lighting to be added. Damaged poles and bases should be repaired, and additional protection added.

The Fire Alarm Panel is obsolete and no longer supported by the manufacturer. A planed replacement of the panel and annunciator should be undertaken. One exit from the upper floor was identified as missing a pull station. Sprinkler tree wiring is not code compliant, lounge kitchen suppression system not monitored by the fire alarm system. Service rooms have sprinkler heads located in them which is code compliant. Smoke detectors placed in service and storage rooms can provide advanced detection.

New horizontal Cabling should be Cat 6 replacing existing Cat5e as areas are renovated. Audit of IT equipment backed up the emergency generator should be undertaken. Investigation of periodic outages in Langford Fire dedicated line should be investigated and fixed.

Unused communication cabling should be removed or if required properly labelled coiled and terminated.

3 MAIN DISTRIBUTION

The building is fed from a pole mounted BC Hydro transformer that is not part of this review. The main service into the building consists of an underground feed from the Hydro pole to an 800 Amp 120/208 Volt 3 phase 4 wire Westinghouse Main Board. The main service was installed in 1995.

The building main service consists of a Westing House Power Line C PRL4 800 Amp 120/208 volt 3 phase 4 Main Distribution Board (MDP). The main Breaker is set to 800A trip setting, there is no ground fault protection on the main breaker and there is no surge suppression device installed. The main board was installed in 1995 and there was no indication of maintenance stickers to indicated when the last time this board was serviced. The main distribution board is floor mounted in the electrical room at the lower level. There is no customer metering present to indicate load on the distribution to confirm loading. BC Hydro Billing peak data provided by the Sooke District indicates a winter peak of 29 kW (February 18, 2019) and a summer peak of 40 kW (July 18, 2019). The Canadian Electrical Code (CEC) allows electrical services to be run at 80% the rating of the board or 640 Amps for this building. In this instance this service would be considered lightly loaded at 17% of the CEC Maximum. Prior to any renovations a demand meter should be installed to confirm loading on the system. BC Hydro billing should be monitored for increases in peak demand.

Power is distributed throughout the building at 120/208V. The building originally had two distinct users the Fire Hall (sub fed with a 600A feed) and the CRP (sub fed with a 400A feeder). There is a 120/208V 3 phase 4 wire 600 Amp Central distribution located in the lower electrical room that serves the Fire Hall occupancy. A single line was provided post site review that indicates a panel D that served the original CRP occupancy. This panel is mis labelled as panel 1. All larger mechanical loads, the elevator and normal power panels are sub-fed from either the Fire Hall CDP or Panel D.

The emergency generator is a 100 kW 120/207V 3 phase 4 wire Kohler Generator that was installed in 1995. The generator is in a weatherproof enclosure outside the main electrical room for the building. The generator has had its annual inspection and load test performed. The generator is tested on a regular basis by onsite fire personnel. For a building of this occupancy monthly load test of 30% of the rated capacity of the generator is required in order to comply with CSA 282 requirements. The generator has no means of load bank connection as is required under new CSA standards.

The building has two automatic transfer switches. One 400A 3 pole to serve emergency loads associated with the fire hall and one 100A 3P to service the original CRP occupancy. Both transfer switches are manufactured by Kohler. Review of the existing drawing indicate that only the fire hall transfer switch will start the generator. The CRP transfer switch will sense loss of voltage of the normal feed and only transfer if generator power is present. The generator feeds directly into a splitter then to the both the firehall transfer switch and the CRP transfer switch. This transfer arrangement may result in panel XX losing power in event of the loss of power to either panel D or the feed to the CRD transfer switch leaving parts of the facility without emergency power. The two automatic transfer switches still have a few mechanical replacement parts available, but the transfer switch controller is no longer supported by the manufacturer. Failure of the transfer switch controller would therefore require replacement of the transfer switch and would also render code required life safety lights and exit signs inoperable while a replacement is obtained and installed. Neither transfer switch is equipped with a by-pass feature.

Some equipment is connected to the emergency power system that is considered non-code required. This arrangement no longer meets the CEC requirements for segregation of code required loads and non-code required loads on the emergency power distribution system. The existing breakers do not have sufficient adjustability to provide selective tripping of the emergency power code required loads from the non-code required distribution.

The existing placement of the emergency power transfer switches in a common room with the normal power distribution , while originally compliant at the time of construction, does not meet the current interpretation of the CEC.

There is no electrical single line posted or mounted in the electrical or server rooms. Panel designations do not seem to match the original single line.

Recommendation:

The main service and the bulk of the electrical distribution has not had any preventative maintenance performed on it in a considerable time. Maintenance, cleaning and thermography scan of all MDP and CDP components is strongly recommended. The maintenance process may identify additional concerns. The manufacturer no longer retains original supply drawings for this board. The main breaker should be serviced, and the serial number and part number recorded for future reference. Spot reading on incoming current should be taken with thermography scan.

The CDPs installed in 1995 in the main electrical room require maintenance and thermography scanning and breakers require exercising.

The emergency generator is with-in ten years of end of life expectancy and should be scheduled for a replacement.

The transfer switch controller is longer be supported by the manufacturer, is approaching rated end of life (ten years) and should be replaced. The transfer switch should be replaced with a closed transition style to minimize disruption to the facility and to ensure that weekly load testing is being performed.

Segregation of the emergency power loads into code required and non- code required loads as is required under current codes is recommended.

The current electrical distribution does not meet the current CEC and BCBC requirements with regards to use of rated rooms for conductor protection and location of emergency CDPs. Co-location of the main Emergency CDP and Automatic Transfer switch in the same room as the main service is also no longer permissible. Should a generator upgrade or transfer switch replacement be undertaken upgrading of the emergency distribution system will also likely be required.

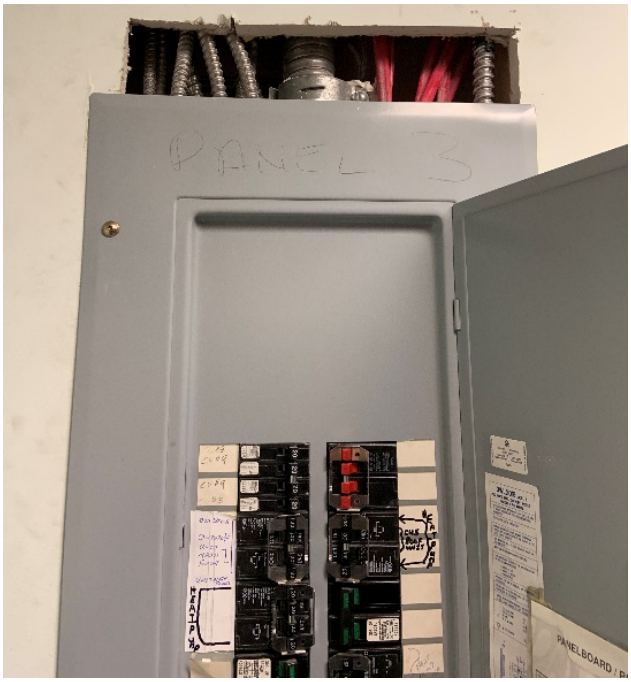
The main electrical service has no arc flash labels present which would seem to indicate that the system has not had no arc flash study performed on it. This would allow workers to properly asses the dangers of live or energized work. Recommendation is to have an Arc Flash study performed.

No Current Electrical Single line exists. It is recommended to have an updated electrical single line confirmed on site and mounted in the main electrical rooms.

4 BRANCH CIRCUIT PANELS

The majority of the panel boards are Westinghouse and date back to the original construction and some are at or near capacity. The panel boards are still supported by the manufacturer under the name Eaton Cutler Hammer. Breakers for these panels are still available. Select panels in the apparatus bay have been retrofitted due to water damage.

The building has 120/208 volt 225 Amp branch circuit panelboards installed in electrical, server rooms and corridors. These panels are manufactured by Westinghouse. These panel boards that date back to the original construction are full and these should be replaced with larger capacity tubs. The newer panels boards have spare capacity while the original era ones are at or near capacity.



120/208V 400A Panel D (also labelled Panel 1) was intended to act as the main distribution for the building's lower floor with sub feeds to panels E (also labelled Panel 2) and to the 100 3P transfer switch and emergency power panel XX . The Emergency power panel XX is not clearly labelled as being an emergency power panel. Some wafer style breakers have been installed to obtain greater breaker capacity.

Emergency Panel X 400 A sub feeds Panel Z in the apparatus Bay and Panel Y in the Fireman's Lounge. Panel X is full. Panel X has missing filler plates which means that live bussing is exposed when the panel door is opened presenting a safety risk.

Recommendation:

Install filler plates on Panel X. Install new emergency power 42 circuit minimum (60 cts preferred) sub panel near panel X and transfer some of the circuits.

It is recommended that the all original Westinghouse branch panel boards that are full be replaced with bolt on breaker style panel boards and the capacity increased to sixty circuits. Alternatively, new panel boards may be installed to increase branch circuit capacity.

Install Lamacoids or labels with Panel names and where fed from onto all panelboards.

Continue to exercise breakers according manufacturers recommendation.

A Thermography scan can reveal overloaded breakers or loose connections.

When panel boards are replaced feeders should also be replaced (preferred option) or tested for degradation as the feeders are likely original to the 1995 construction.

5 ELECTRICAL BRANCH WIRING

The branch circuit wiring throughout the building appears to be completed with the use of EMT conduit and AC90 (BX). There is some NMD90 present in the building. This was noticed in the exterior canopies and connected to Panel E (Panel 3). Installation appears to be neat and orderly. Quantity of receptacles does not appear adequate for today's uses.

Exterior receptacles have weatherproof covers that were compliant at time of construction, but the current codes require weatherproof in use cover plates. Some exterior receptacles and cover plates are damaged and in need of replacement. Ground fault receptacles were installed within 900 mm of sinks, current electrical codes require all receptacles within 1500 mm to be GFCI. GFCI receptacles require regular testing to ensure trip unit is still operational. It is unlike that testing has been performed.

Emergency power receptacles are identified by red cover plates as a means to differentiate them from normal power receptacles. This identification means is well understood by the users however the CEC requires all emergency power receptacles need to be coloured red.

Expected life of panel boards is 40 years and panel boards have 15 years remaining.

Switches and receptacles in most of the rooms appear to be original construction vintage.

In a new wood frame construction facility that contains a fire hall good engineering practice would dictate that all wring should be in conduit and wire, flexible conduit, AC90 or Teck 90 cable. Use of NMD90 (loomex) would not normally be allowed even if permitted by the CEC.

Recommendation:

As rooms or groups of rooms are renovated existing wiring should be tested and all end device replaced with new switches and receptacles including GFCI receptacles as required by the CEC. Yearly maintenance is required on feeders.

Emergency power receptacles should be replaced with red receptacles to bring installation in compliance with the CEC. Cover plates may remain red .

GFCI receptacles should be installed on all receptacles within 1500 mm of sinks.

To meet the CEC weather proof in use cover plate should be installed on all exterior receptacles. GFCI receptacles should be installed on all receptacles with 1.0 meter of grade.

Recommend replacement of NMD90 wiring with AC90 wiring. All new power circuits installed in renovations to the facility should mandate the use of AC90 , TECK90 or conduit and wire.

6 INTERIOR LIGHTING

The building has several types of sources including incandescent, CFL and LED retrofit bulbs, LED T8 Electronic ballast, and CFL fluorescent fixtures installed throughout the building. Consideration should be given to replacing these lights as they fail or are damaged or as rooms are renovated with LED sourced lights. Original T12 fluorescents have been globally retrofitted with T8 lamps and electronic ballasts in 2010. Rated lights on fluorescent fixtures is 30 years so lights have 20 years remaining.

Lighting control appears adequate. On the lower level use of two ballasts per light to obtain OFF, 1/3, 2/3 all ON lighting control .Consideration may be given to incorporating dimming in common areas to ensure proper uniformity when light levels are reduced and to provide users with individual control. The facility does not incorporate any of the BCBC or NECB required automatic lighting control strategies including the use of occupancy sensors, vacancy sensors, and photocells.

Representative recessed light fixtures examined on the second floor do not appear have not been installed with any seismic restraint. It is understood that this would be typical of all lights on the second floor.

Representative lights fixtures examined on the main floor have seismic restraint clips installed. It is understood that this would be typical of all lights on the main floor.

Recommendation:

SMP Engineering recommends that incandescent and fluorescent lighting in common areas be upgrade to LED for energy saving purposes. This may involve light fixture replacement with new lights.

Seismic restraint clips should be installed on all lights on the second floor.

Introduction of occupancy, vacancy sensors, daylight sensors as required by Nation Energy Code of Canada for Building (NECB) 2017 will provide additional energy savings.

7 EXTERIOR LIGHTING

The building building's exterior lighting consists of wall mounted, wall packs, and canopy lights and pole mounted lights in the parking lots. The exterior lights are a mixture of HID source likely High Pressure Sodium and LED sources. Some failures of ballast have caused tripping of select lighting circuits.

All pole mounted exterior lighting has been upgrade to LED (approximately five years ago). Spacing of exterior poles and lights appears adequate on the lower parking lot serving the municipal building. On the access road to the side of the firehall and upper parking the spacing of lights appears inadequate. This may be safety concern and may result in increased pedestrian -vehicle conflicts.

Some of the retrofitted clam bases have sustained vehicle damage and the remaining locations are subject to damage when vehicles back into stalls.

Recommendation:

The light fixtures are serviceable. For energy saving purposes consideration should be given to replacing or retrofitting remaining HID light to LED sourced lights.

Add additional lighting on upper parking lot and access road.

Replaced damaged clam shell bases on lower parking lot pole lights. Installation of additional wheel stops and small car only signage where poles are located close to parking stalls may prevent further damage. Alternatively relocate pole and pole base 1.0 m from curb. Site grading may make this prohibitive.

8 EMERGENCY LIGHTING

The buildings emergency lighting is achieved with the use of lights connected to the emergency generator.

No emergency lighting was observed in the weight room. The occupancy would not require this.

Recommendation:

Emergency lighting is adequate in main building.

Additional emergency lighting could be added in weight room.

9 EXIT SIGNS

The buildings emergency exit signs are red" EXIT" of varying ages with combination of different types of sources some long-life LED style lights some retrofit CFL. The exit signs are connected to the emergency generator. Due to the age of the facility is likely that exit sign in unrenovated areas may not be connected to dedicated circuits as is currently required by the CEC. The British Columbia Building Code recently changed so that only "green running man" style exit lights can be installed in newly renovated areas.

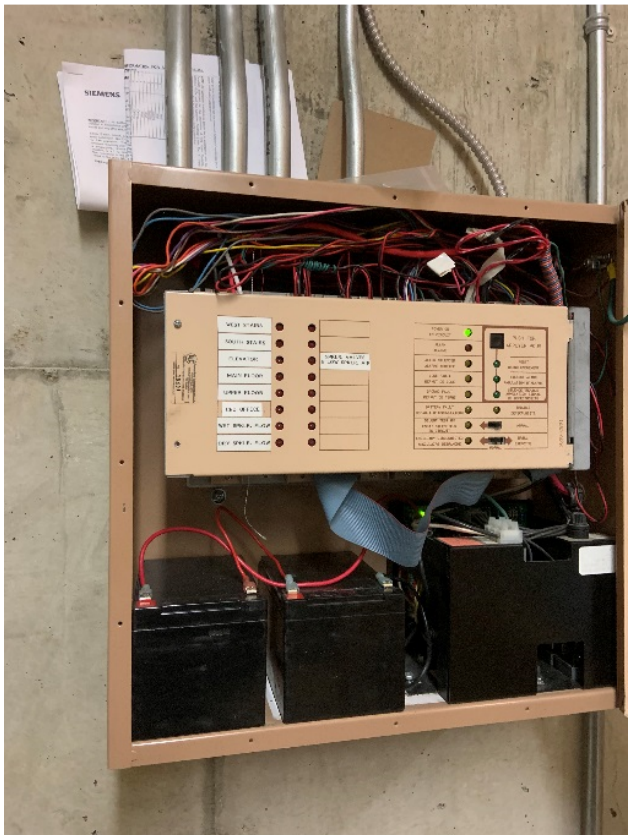
No exit sign was observed in the weight room. The occupancy would not require this.

Recommendation:

Exits signs are functional. Recommend global change out to LED sources and to Green Running Man style.

10 FIRE ALARM SYSTEM

The fire alarm system control panel is an Edwards 6616 installed in 1995 with an annunciator located at the main floor fire department entrance. Both the panel and the initiating field devices date back to the original construction. Signaling Devices consist of horns with integral strobes. Audible levels are reportedly good. The Edwards 6616 control panel is no longer supported by Edwards. In the event of a component failure the entire panel would require replacement.



Additional visual signaling devices where in the process of being installed to augment coverage for hearing impaired staff members.

Some siemens signaling devices were noted being connected to the system. Cross listing of the devices should be confirmed as part of the next annual inspection.

Locations of devices have not kept pace with renovations particularly on the lower level.

It was noted that the second floor (near the council room) could be exited into a stairwell with-out passing a manual pull station.

All though not required by code it is good practice to have heat detectors or smoke detectors in service and storage rooms to provide advanced detection in case of alarm.

Smoke detectors are exhibiting sign of yellowing and ageing and are likely older than the recommended ten years. Smoke detectors should have their sensitivity confirmed or be replaced.

The Fire alarm wiring to sprinkler tree is free air in un-armoured cable so does not meet Canadian Electrical Code. Power to the compressor is not monitored, low air is.

Kitchen suppression system is not monitored by the fire alarm system.

Breaker feeding Fire alarm is red but does not have lock on device so does not meet CEC.

The fire alarm system is functional and reportedly has its annual testing performed. The monitoring does not comply with today's current codes.

Recommendation:

Existing fire alarm panel and annunciator are functional however the panel is no longer supported and should be replaced with new. Continue annual inspections and maintenance replacements.

Existing monitoring is functional and was code complaint at time of install. Upgrade monitoring when certificate expires or when main panel is replaced.

Add additional pull station to ensure all floor levels exist are covered.

Add smoke detectors to all service and storage rooms to provide advanced detection.

Confirm existing smoke detector sensitivities or replace with new detectors.

Revise sprinkler tree wiring to liquid tight flex and wire. Install lock on device on breaker. Monitor air compressor power. Connect Kitchen system to fire alarm system.

11 FIRE FIGHTERS CALL DISPATCH SYSTEM

The building has a fire fighters dispatch centre located on the second floor. This dispatch centre has a dedicated direct line to Langford dispatch for 911 calls relating to the Sooke coverage area. On occasion service to this line has been interrupted potentially due to the installation of a fire wall device resulting in calls not getting through. Further investigation and attempts to replicate this failure should be undertaken to identify and rectify this situation. The centre also contains computers, paging microphones and printers.

This system is backed up with pagers carried by on duty an on-call Fire fighters. Additionally, paging speakers have been installed through the second floor to provide overhead pages in event of a call. This system reportedly works well, and coverage is adequate.

There are no sleeping quarters for fire fighters in this facility.

Recommendation:

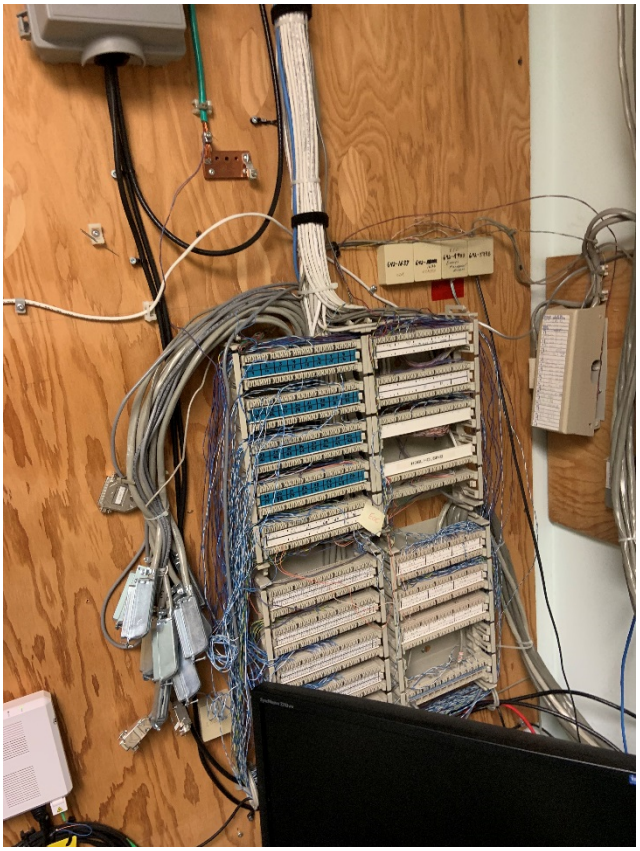
Investigate cause of intermittent outages on incoming Langford line and implement automatic fail over equipment and redundant equipment to ensure calls are received 100% of the time.

In the event of floor plan changes to the second floor to improve functionality and flow review placement of overhead speakers to ensure continued coverage and intelligibility.

12 VOICE, AND DATA SYSTEMS

The main incoming telephone is a 100 pair underground cable into the main telephone room on the lower level combined electrical room. Tie cable is run to the electrical room on the lower level.

Structured Cabling is combination of majority Cat 5e and some Cat 6. Horizontal data cabling is brought back to a local patch panel where it is then connected. There is small wall mounted rack located in the emergency Call Centre Room Use of data seems to be confined to administration areas and the central staffed areas. Use of a single telecom rack or room to provide services to multiple floors does not meet TIA/EIA standards. A dedicated server or telecom room doesn't exist for this facility as racks are collocated with electrical panels in a combine room. The room does have access control to monitor entry. Telecom room size is quite cramped. Switches present on site are Cisco 48 port.



Equipment is backed up by local APC Uninterruptable Power Systems (UPS). Power for appears to be on normal power so not backed up by generator.

Emergency power panel fed from local transfer may not start the emergency generator in case of normal power feed from exterior electrical room failing. This could result in parts of the facility being without emergency power.

Horizontal voice is a mixture of Cat 5 and Cat5e cable that is terminated on local BIX punch down blocks and connected with tie cables to the main telephone board.

New construction of a facility would use CAT 6 as horizontal cabling. Cat 5e was certified for 25 years so is at the end of its certification period. Cat5e is still functional and likely meets the needs of this facility. Certain applications may require CAT 6 cabling to be run to the workstations.

Recommendation:

If facility is going to operated and run as a single facility with common IT infrastructure localized racks minimum 1 per floor should be incorporated linked back to the central rack on the lower floor.

New horizontal cabling for any renovations should be installed with Cat 6 cabling.

Confirm that UPS and server room cooling are on emergency power circuits.

Confirm loss of local power to transfer switch starts generator.

13 ACCESS CONTROL

Select exterior doors have HID proximity readers to manage access control to the facility. These readers are connected to interior Kantech KT-400 door controllers. Exterior doors have door contacts retrofitted to them to monitor door status.

There is DSC LCD 4500 Maysys keypads to disarm intrusion system. The system is monitored by Price alarms.

The system is functional is typical of occupancy of this type.

14 APPARTUS BAY

The apparatus bay has six bay doors three front and three rear access. Electrically the bottom 50 mm (2") of the apparatus bay and any pits or trenches is considered a CEC Zone 2 Hazardous location and may accumulate flammable vapours and fumes. No conduit joints were observed in the bottom 50 mm above slab which is in compliance with the CEC. No curbs or door astragals were observed to prevent migration of fumes and vapours to adjacent occupancy.

The apparatus Bay has a control button linked to traffic lights at the intersection at Otter Road, when initialed allows traffic signal to favour approaching Fire apparatus. Due to changing traffic patterns, changing response routes and depending on the call location this system is functional but is not always employed.

Overhead doors are electrically operated and are reportedly backed up by the emergency generator. The doors have indicator lights adjacent to the door to provide indication to the apparatus drivers that the door is fully opened. It was noted that the door closest to the ham radio room the light was not functioning correctly.

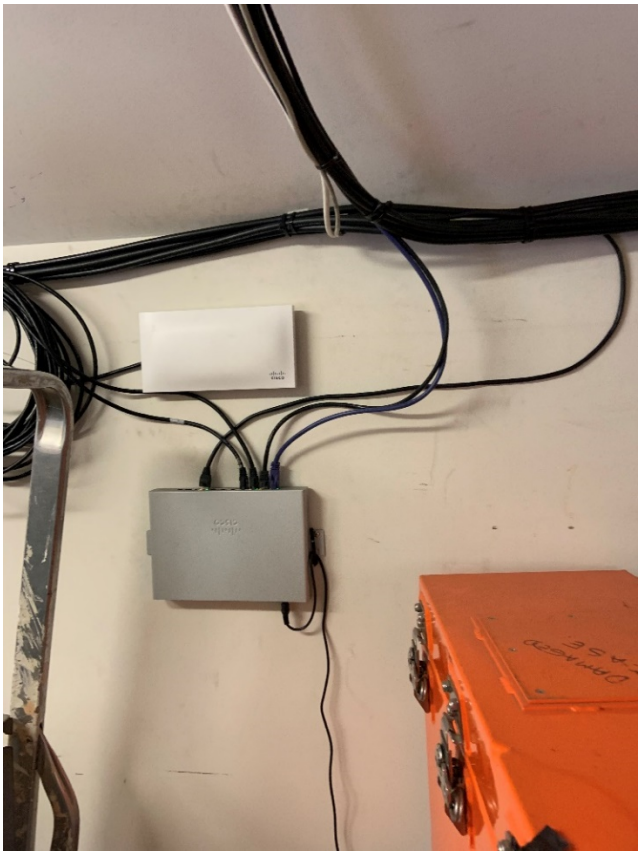
The panels in the apparatus Bay were recently water damaged and have been repaired. Electrical outlet locations at the celling with suspended cords and along the perimeter are adequate for the intended use. Panel designations should be confirmed and labelled properly. Emergency power panel Z is full and the circuit directory incomplete

Redundant controls for original exhaust air system are still present and still function. Personnel primarily use the newer Nederman system installed in the apparatus bay for exhaust management.

Lighting with the apparatus bay has been retrofitted to T8 lamps with electronic ballasts. Lighting control was compliant at time of installation however does not implement any daylight sensors or occupancy sensors as is required by NECB 2017.

Storage areas adjacent to the apparatus bay do not consistently have smoke detectors to provide early detection. This is mitigated by all rooms being sprinklered.

The BC Ambulance Service (BCAS) has equipment in a locked cabinet on the mezzanine. Personal on site do not access this equipment and this equipment is maintained by BC Ambulance service. This equipment was not evaluated as part of this report. Cable management on the mezzanine could be improved.



Recommendation:

Ensure all door indication lights are operational and all lamps working.

Smoke detectors should be added to adjacent storage areas for early detection.

Emergency panel Z should be upgraded to 60 cct and all circuits traced and identified on a new panel directory.

To comply with the CEC all emergency power receptacles should be identified with red receptacles the red cover plates.

Mitigation strategy for low level vapours should be implemented.

Installation of basket tray or Panduit tray could improve mezzanine cable management.

15 HAM RADIO - BC AMBULANCE

An exterior accessible room used by the local Ham Radio organization is adjacent the apparatus bay and contains equipment used by the organization and some BC Ambulance equipment although this is not staffed by the BCAS. Electrical installation appears adequate and code compliant and follows the standard of installation in the rest of the building.

16 RADIO TOWER AND TRAINING TOWER

The radio mast has been relocated from original roof mounted location to ground mounted location adjacent the apparatus bay. Bonding and mechanical protection for the mast appears adequate and in compliance with the CEC. Cable management from the mast to the Building could be improved.

Additional antennas are support from the training tower.

Training tower is attached to the main building and is used for fire fighter training purposes and to access the HVAC enclosure on the roof. The tower contains lights at landings with no fire detectors. Some lights are damaged and missing bulbs. The electrical installation is consistent with the remainder of the building.

17 ATTIC SOFFIT SPACE AND ROOF TOP HVAC ENCLOSURE

Receptacles in the HVAC enclosures should be GFCI and installed with weatherproof in use covers. Penetrations through the roof should be re-calked. There is excess communication cable coiled on the roof. If this cable is redundant then it should be removed. If cable is required to remain it should be clearly labelled as to function and where it terminates in the building. Proper termination in a weather proof junction box should be considered.

The upper soffit space contains cable terminated in marrets (wire nuts) laying loose on the insulation. This cable should be traced out and terminated in a junction box that is labeled as to function. There is also NMD90 wiring strapped to the top joists where it could be subject to mechanical damage. This wiring should be protected or re-wired in AC90 (BX).

18 EXTERIOR MISCELLANEAOUS

Grassed patio area adjacent lower staff parking area there exposed insulated electrical wiring present. A chair has been placed over the exposed wiring to protect it. Exposed wiring should be protected in a CEC approved manner or terminated in a proper weatherproof junction box.

The Television feed to the gym appears to share a common conduit with the power feed into the single phase panel. This installation is not compliant with the CEC as only control wire is allowed to share the raceway system with power wiring.

Power to feed the weight room is run through the pole lighting conduit system then underground to the panel. If the exterior lights power is fed from the emergency generator circuit running the weight room normal power feed in the same conduit system to the weight room would constitute a CEC violation.

APPENDIX A EQUIPMENT REPLACEMENT PRIORITY

The following is an estimate of probable construction cost for the various recommendations. The estimate of probable construction cost is intended to be used as an order of magnitude estimate to allow the Owner to prioritize recommendations. SMP Engineering cannot guarantee that actual cost will not vary significantly form the following estimate.

The Owner should maintain contingency, both design and construction, to allow for unforeseen circumstances. Electrical equipment is subject to US dollar variations and tariffs . Owner should carry 15% contingency to cover these fluctuations.

Maintenance may discover other deficiencies.

EQUIPMENT	ESTIMATE OF PROBABLE REPLACEMENT COSTS	TIME FRAME
Service and Maintenance on distribution equipment	$20,000.00	Immediate
Replace Fire Alarm panel and address code violations.	$25,000.00	Immediate
Repair Damaged light pole base and protect exposed wiring	$20,000.00	Immediate
Main Breaker servicing and maintenance	$20,000.00	Immediate
Transfer switches replacement	$110,000.00	Within one year
Replace original 1995 panelboards or new panels and feeds.	$75,000.00	Within two years
Exterior replacement of receptacles and covers	$20,000.00	Within two years
Upgrade Exterior lighting and Controls	$50,000.00	Within two years
Single Line and Arc Flash Study	$25,000.00	Within two years
Exit Sign Replacement	$15,000.00	Within five years
Upgrade fluorescent lighting to LED	$40,000.00	Within ten years
Replacement of Generator	$125,000.00	Within ten years
Lighting Controls to NECB 2017	$25,000.00	Within ten years