Town Of Sidney Municipal Building
Building Assessment Report

Project Number:
2025508

Prepared For:
Town of Sidney
2440 Sidney Avenue,
Sidney BC V8L 1Y7

Prepared By:
Number Ten Architectural Group
200–1619 Store Street
Victoria BC V8W 3K3

Date:
2025-06-03

numberTEN
architectural group

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APPENDICIES

1 EXECUTIVE SUMMARY

Number Ten Architectural Group was engaged by the Town of Sidney to provide a Building Assessment for the City Hall located at 2240 Sidney Avenue, Sidney , B.C. The goal is to get an understanding of the extent of renovations required to extend the life of the building another 40 plus years and better serve the expanded needs of the community. Currently the town is considering renovations or a new building. An better understanding of the condition of the current building and needed improvements would allow the town to decide if a renovation of the existing building is fiscally prudent or if it would be more cost effective over the long run to use the renovation cost as part of a new building budget. Therefore this report provides a very high level understanding of the current building short comings, including accessibility, building envelope, structure/seismic, mechanical, and electrical systems.

The building consists of the original 1963 structure and the 1975 addition in a split level arrangement providing 4 levels split over 2 floors. Multiple small renovations appear to have also taken place but were not documented. The lowest level is characterized by a series of small spaces partially below grade with portions not connected internally with separate external entries. The main floor is a more open plan with a series of retrofit ramps to a non- descript main entry. From the main floor the internal stair splits a half level down and up to the addition, with one additional down to the a single room.

The consultant team performed a review of the existing conditions, record drawings, and applicable codes. Original architectural drawings prepared by Clive D. Campbell Architect, dated June 1963, and renovation drawings prepared by Campbell Tebbutt Architects, dated September 1975, were provided. From this the team has provided a summary of the existing issues and a high level understanding of how these could be remedied.

In order to rectify the current shortfalls of the building and satisfy the needs going forward a significant enough renovation will be required that it is characterized as a “Major renovation” under the current building code (British Columbia Building Code 2024). Under the code when a major renovation is performed it is expected that the performance be brought to the level of the existing code with some exceptions, such as outlined in the following structural section. The code allows for some gradual improvement and anything that might be considered maintenance so as not to discourage maintenance from being done. In this case the building is considered existing non-conforming and minor work is allowed without code improvements provided use does not change. The goal is to improve to the current code when logical and practical so anything with significantly invasive work is considered a “Major Renovation” and requires improvements to meet code. As will be outlined in the following, the required work to the Town Hall would be considered a Major Renovation.

The report will outline the work that would need to be completed in order to extend the life of the building for approximately 40 years. We will weigh the advantages and short comings of a renovation approach versus replacement of the building. The following will demonstrate that due to the extensive work a renovation would require and the remaining compromises and functional issues that would remain, replacement of the building rather than a renovation path is recommended.

2 TERMS OF REFERENCE

Project Name:	Sidney Town Hall
Location of Project:	2440 Sidney Avenue Sidney BC
Client	Town of Sidney
User:	Town of Sidney
Report Title:	Building Assessment Report

2.1 Project Description

The purpose of the project is to assess existing building condition in relation to building code compliance, accessibility and function. Building features deemed deficient will be outlined with a high level description of improvements needed in a major renovation.

2.2 Project Scope of Work

Scope of work for the project includes:

- Perform field review of existing conditions and review of existing building documentation.
- Identify building code deficiencies.
- Provide report with understanding of current building systems and viability of renovating to extend life approximately 40 years.
- Provide recommendations that are based on feasibility and impact with regard to current code (2024 BCBC) requirements.

2.3 Project Team

This report has been prepared by Number Ten Architectural Group for the Town of Sidney as part of a larger consultant project team.

• Rob Halliday, Architect AIBC, MAA, MRAIC, Partner	Number TEN Architectural Group
• Cameron Marshall, P.Eng. Principal	Skyline Engineering
• Kevin Jackson, P.Eng. Principal	Avalon Mechanical
• Patrick Lourdu, P.Eng. Partner	E2 Electrical Engineering

3 EXISTING BUILDING ASSESSMENT

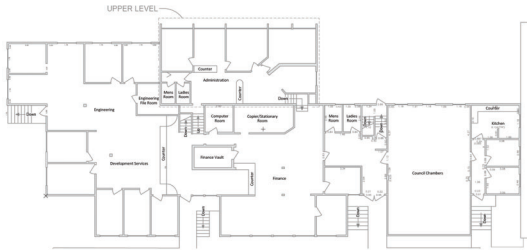
3.1 Architectural Deficiencies

The following is summary of all the immediate architectural issues identified with the current building, both building code and functional. This will be followed by a summary of each discipline, (structural, mechanical, electrical) each of these disciplines reports are included as appendices where the information is outlined in more detail.

3.1.1 Circulation & Elevator

The existing building circulation is extremely poor due to the multiple levels resulting from the addition to the original. To meet the current code all area's of the building would need to be accessible to a wheel chair. Currently exterior ramping provides access to significant portion of the building but to move from one level to another involves leaving the building and re-entering. This meets a bare minimum for public access, to the front desk and council chambers, but is not acceptable for disabled staff and excludes them completely from a significant portion of the building. An elevator could potentially be installed with 4 stops at half levels, opening both sides to provide access to all floors. This would need to be combined with a reworking of the 1st floor (partial basement) to access the area's with only external access.
The accessibility issue is compounded by narrow halls in several locations which would need to be reconfigured. All the above work would require costly structural work to reconfigure. The final result would be functional and meet code but be less than ideal in terms of easy circulation.
Several storage area's throughout the building are completely inaccessible and would need to be increased in size.

Lower Floor Plan



Main & Upper Floor Plan

3.1.2 Accessibility

Accessible washrooms are only provided outside the council chambers. These would need to be provided on every floor as part of a significant renovation. In addition to reworking of corridors as noted above, a number of doors would require realignment or auto openers to be fully accessible. The main entry door would require an operator regardless.

3.1.3 Building Entry and Image

The current public building entries, to front desk and council chambers provide a crowded and uninviting access. This is partly as a result of the addition of an access ramp filling a potion of the small recession into the structure at the door. A full renovation would provide the opportunity to rework the entry, likely projecting from the front mid section of the building to create an entry lobby with one internal ramp. This would provide a defined and sophisticated entry more in keeping with a public building.

This addition would be combined with a recladding of the entire building and the opportunity to add some solar shading devices to the south exterior. The building currently experiences overheating in a number of locations. Interestingly the addition has some shading devices but only utilized in one location. A full renovation would involve replacing the minimal insulation in the walls and potentially adding exterior insulation, dependent on the results of energy modeling. Re-cladding would be required to access the structural work as well, as noted later, giving the opportunity to provide the building with a more contemporary look. Replacement of all windows would also take place to improve the current poor performance.

main entry

3.1.4 Quality and Comfort of Spaces

Retrofit cooling units have been installed in several area's of the building as a result of overheating from unshaded windows. This is compounded by skylights that are currently covered on the outside due to both heat and glare. The mechanical report goes into this in more detail. The issue of heat and glare occurs on the upper two levels. Inversely the basement level has relatively high small windows making the quality of the space less than ideal. Replacement of all windows would also take place to improve the current poor performance.

covered skylights

solar shade,
windows with overheating issue beyond

3.1.5 Future Requirements

The project scope did not involve the development of a full program and analysis of future space requirements. However with the future growth of the community predicted it is expected that the number of city employees is likely to increase in the future. The available space for staff is currently pushing the capacity of the building. An addition to the building would need to consume some of

the park/ceremonial space in front of the building. An alternative approach would be a taller structure, however the current structure could not accommodate this without a wholesale removal of at least a portion of the building.

3.2 Structural

Refer to structural report in appendix A for more detailed information.

The current structure appears to perform to a satisfactory level in terms of gravity loading and would continue to do so provided heavy finishes were not added. However the lateral loading which would resist seismic and wind loading is currently minimal. The code does allow for a major renovation to not fully meet existing code but instead bring it to a certain percentage of code. This minimum level would be 67% of that required in the National Building Code. The building currently meets approximately 30% of this. In order to meet this level the following would have to take place:

- Diaphragm strengthening of the Roof and Level 2 diaphragms, which would consist of blocking and nailing the existing plywood panel edges. Flooring, ceiling finishes and roofing would need to be removed to perform this upgrade.
- The addition of sheathed wood frame interior shearwalls on both levels with hold-down anchor systems.
- The strengthening of exterior walls with additional plywood and new hold-down anchor systems.
- The addition of diaphragm connections to the new and strengthened shearwalls.
- The addition of new foundations under the new interior shearwalls
- Upgrading of the existing foundations under the exterior strengthened shearwalls. Upgrading likely involves locally removing the existing foundations and pouring new and larger foundations.

The above will essentially involve stripping the building down to the framing to complete the work. This does provide the opportunity to reinsulate, reclad and reconfigure some area's as noted earlier. It also allows for the renewal of electrical and mechanical systems as outlined in the following.

3.3 Mechanical

Refer to Mechanical report in appendix B for more detailed information.

All Mechanical systems were reviewed and the following assessments were made:

Plumbing

Plumbing Fixtures: Moderate condition, not meeting accessibility standards.
Domestic Water system: Piping which is original to the building is well past its expected service life and should be replaced.
Storm Water: Exterior storm piping was in moderate condition.
Sanitary System: We expect that almost all sanitary piping within the building is original to the building and is at the end of its useful life.

The building does not have a fire sprinkler system, which would be required of this building under the current code. One would need to be added in a significant renovation.

HVAC
The building's primary heating system is a natural gas boiler distributing heat through finned radiators throughout the structure. Supplementary heating systems include electric baseboard heaters, split system heat pumps, and packaged rooftop heat pumps. The packaged heat pumps also serve to provide ventilation air throughout the main floor of the building, including the council chambers. Ventilation in the basement and upper floor appear to be predominantly through natural ventilation, using operable windows.

The Hydronic heating service to various parts of the building is unreliable, or conflicts with other heating/cooling systems. The rooftop heat pump / cooling units have a 10+ years remaining service life.
There is limited opportunity for mechanical retrofit within the building to the degree that it would be expected in a typical office building of this type. The ceiling space of the basement is quite low, which leaves insufficient room for a conventional ventilation or cooling upgrade. Ductwork could be added, but would necessitate additional dropped ceilings or bulkheads throughout, further compromising an already cramped and low ceiling. The main floor has a slightly higher ceiling, but also suffers from the same constraints. Ductwork could continue to be utilized on the roof of the building, but this will have ongoing reductions in system lifetime and is overall a poor energy efficiency choice. The hydronic heating system is in poor condition and requires replacement. However, we do not recommend replacing the hydronic system as is. Alternatives, such as additional heat pump systems, should be examined first, since they would also offer the opportunity to introduce mechanical ventilation and high efficiency heating/cooling instead of purely heating.

In the event of a significant renovation, it is expected that most, if not all of these systems would be replaced while they are easily accessible. This would allow for more effective, efficient systems that would operate building wide.

3.4 Electrical

Refer to Electrical report in appendix C for more detailed information.

In the event of a renovation, a full electrical system retrofit is necessary. The scope of work required is extensive and is expected to exceed the cost of electrical construction in a new build due to the challenges of retrofitting within existing conditions.

The following systems were identified as either being near end of service life or performing well below current acceptable standards and would be replaced in a significant renovation:

- Lighting (standard and emergency)
- Security system (not present now)
- Fire Alarm System
- Power systems including all outlets currently not meeting safety standards.
- Electrical panels are fully loaded and outdated.

The backup generator is in good condition however, its current load is minimal, and it does not support broader critical building systems. As such, its utility during a power outage is limited.

CONCLUSION

In order to extend the life of the building another 40 years, major renovations will need to be performed. The goal would be to bring the structural system up to the allowable minimum and the remaining systems up to BC Building Code 2024. The primary driver to the extent of work performed is the structural component. In order to perform the structural work the building will essentially be stripped down to the framing. In addition new footings will need to be provided in some locations. The bulk of the mechanical and electrical systems are in need of renewal or will be within 10 years. So given the level of deconstruction all building systems would be replaced. In addition, reconfiguration of some spaces and the addition of an elevator would be completed. Recladding, a new roof, windows and upgraded insulation would also be part of the work.

The renovation approach would bring the building up to contemporary codes and standards, however, although much improved, it would still have many of the functional issues that it currently has. The awkward arrangement of floor levels within the building would remain, although now be accessible. Overall comfort will be improved substantially but elements such as the below grade offices and the degree to which the basement is broken up may remain, but with additional space lost to circulation to the elevator.

Repurposing a building is often considered a more sustainable approach than building new. If a significant portion of the building is saved, this keeps material out of the landfill and minimizes the need for new material and associated carbon footprint. However, little enough of the current Town Hall will be saved that this does not seem applicable.

The level of detail required for a cost estimate of this work was not performed as part of this work at this stage. However given how little of the original building remains, it is likely that the cost would be comparable to a new structure, without any of the replanning advantages a new structure would provide.

We would therefore not recommend that extensive renovations, with the goal of substantially extending the life of the building, be undertaken. Minor work to extend use until a short term (during construction of a new building) or permanent alternative is built.

Town Of Sidney Municipal Building
Building Assessment Report
Appendix A:
Structural Report

SIDNEY TOWN HALL

2240 Sidney Ave, Sidney BC V8L 1Y7

BUILDING ASSESMENT

STRUCTURAL ENGINEERING SERVICES

Cameron Marshall

Skyline Engineering Ltd.

Project: 12562.01

May 12, 2025

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INTRODUCTION

At the request of Rob Halliday with number TEN architectural group on behalf of the Town of Sidney, Skyline Engineering Ltd. was engaged to provide a condition and seismic assessment of the Sidney Town Hall building – located at 2240 Sidney Ave., Sidney BC – to determine the building's existing capacity to resist earthquake and gravity induced loads and overall condition. The structure's capacity was then compared to current building code force levels to approximate its existing resistance. At this time, only conceptual seismic upgrading schemes are discussed within the body of the report. More detailed seismic upgrading schemes and sketches can be provided at the Town of Sidney's request.

Due to the vintage of this building, original structural drawings were not available. Original architectural drawings prepared by Clive D. Campbell Architect, dated June 1963, and renovation drawings prepared by Campbell Tebbutt Architects, dated September 1975, were provided. These plans include floor plans as well as schematic building sections and layouts.

A visual review was performed on May 2, 2025, to investigate the existing structural systems including the existing walls, framing members, connections, load paths, diaphragm connections, and construction materials. However, during this review we were not able to remove any finishes, so access to these structural systems was very limited. This review and subsequent assessment are therefore based primarily on the information provided in the existing architectural drawings.

Building Elevation

Structure Description

This original two-storey structure was built in the 1960's. Renovations performed in the 1970's consisted of adding a two-storey space to the rear of the structure. Neither the original or renovation drawings indicated a structural engineer was involved, and it is most likely this structure has been constructed solely from the Architectural drawings.

This building is a conventional light wood frame structure founded on pad and strip foundations. The roof consists of plywood sheathing atop dimensional 2x12 roof joists, and the floors are constructed of plywood atop 2x8 floor joists. The lowest level consists of a conventional 4" thick cast-in-place concrete slab on grade. The roof and floor structure are supported by conventional wood framed stud walls around the exterior and built-up dimensional 2x beams supported by posts on the interior. These elements are founded on conventional cast-in-place concrete strip and pad foundations.

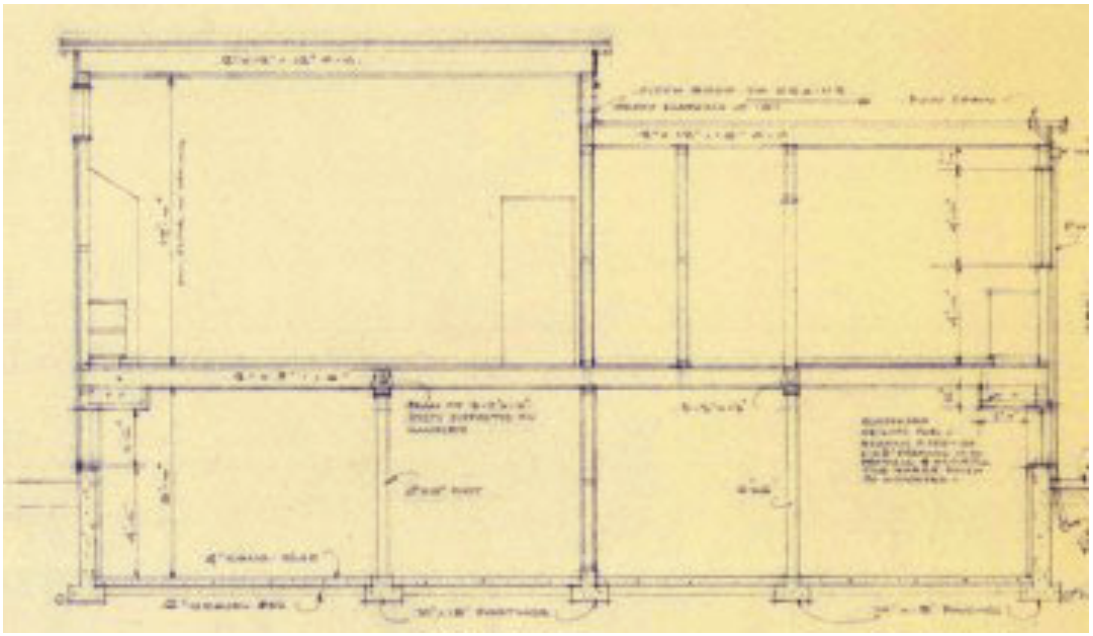

Figure 1: Building Section

Structural Capacity of Gravity Supporting Members

The structural elements supporting occupants (live loading) and roof snow loading, such as the roof and floor joists, have shown satisfactory performance over the life of the building. In accordance with *Structural Commentary L: Application of NBC Part 4 of Division B for the Structural Evaluation and Upgrading of Existing Buildings* from the *National Building Code 2020 Commentary*, and given that this structure is over 30 years old, these gravity resisting elements can be evaluated based on satisfactory past performance. At the time of review, and as discussed with the occupants of the building, there did not appear to be any excessive deflection or vibration of the floor or roof structure, nor settling of walls or foundations, which indicates these structural elements are performing as intended. If this structure is being renovated such that the occupancy load is changing (change of use), or heavier finishes are being added, the floor joists, supporting walls, and foundations should be reviewed to ensure these elements have sufficient capacity and upgraded if necessary.

Seismic Review

This structure was built before the *National Building Code of Canada* prescribed seismic design provisions. Seismic design requirements were first introduced in the *National Building Code of Canada* in 1965. Since then, Code requirements have evolved considerably as scientific understanding of the potential earthquake forces and the structural performance during and after seismic events have been researched and studied.

The seismic capacity of the existing structure was assessed based on the *2020 National Building Code of Canada* (NBC 2020) and *Structural Commentary L: Application of NBC Part 4 of Division B for the Structural Evaluation and Upgrading of Existing Buildings* from the *NBC 2020 Commentary*.

The following parameters were used in the analysis:

Ground Snow Load:	Ss = 1.1kPa, Sr = 0.2 kPa	
Seismic Parameters:	NBC 2020: 2% in 50 Years (1/2500 per year) $Sa(0.2,X_D)=1.69$ $Sa(0.5,X_D)=1.81$ $Sa(1.0,X_D)=1.28$ $Sa(2.0,X_D)=0.799$ $Sa(5.0,X_D)=0.216$ $Sa(10.0,X_D)=0.0738$ $PGA(X_D)=0.741$	Level 3: 5% in 50 years (1/1000 per year) $Sa(0.2,X_D)=1.22$ $Sa(0.5,X_D)=1.27$ $Sa(1.0,X_D)=0.869$ $Sa(2.0,X_D)=0.488$ $Sa(5.0,X_D)=0.110$ $Sa(10.0,X_D)=0.0349$ $PGA(X_D)=0.549$
Seismic Site Class:	'D' (Assumed)	
Importance Category:	Normal	

Due to the vintage of the structure, the original architectural and renovation drawings did not include any clear lateral resistance provisions; therefore, this structure does not have a clear lateral load resisting system. Potential existing resistance to lateral forces, such as those imposed by earthquakes or wind, is provided by the existing 2x6 exterior walls sheathed with plywood or shiplap sheathing. The diaphragms are horizontal structural elements which transfer seismic forces to these lateral resisting elements (the exterior walls). They consist of plywood sheathing on roof and floor levels. The connection of these diaphragms to the exterior walls are not well detailed or defined on the existing drawings.

The goal of seismic upgrading is to improve the building seismic resistance to a minimum level recommended in the National Building Code. However, it is usually very disruptive, costly, and difficult to do a full code compliant upgrade, and often impossible to satisfy all the current Code requirements. Due to these factors, the upgrading often does not proceed, leaving the building unchanged to avoid the

disruption and costs associated. The Commentary to the Code provides guidance on appropriate levels of seismic upgrading to best benefit the safety of the occupants and provides incentive to improve the building's overall seismic performance.

If this structure were to be renovated, it would be classified as a "Major Renovation" and the minimum recommended upgrading should be to "Level 3", which for this project roughly equates to 67% of the NBC 2020 seismic force level (refer to Appendix A for excerpt from Commentary L). Figure 2 below illustrates the proposed upgrade force level (Level 3 per Commentary L) in relation to the NBC 2020 full code values.

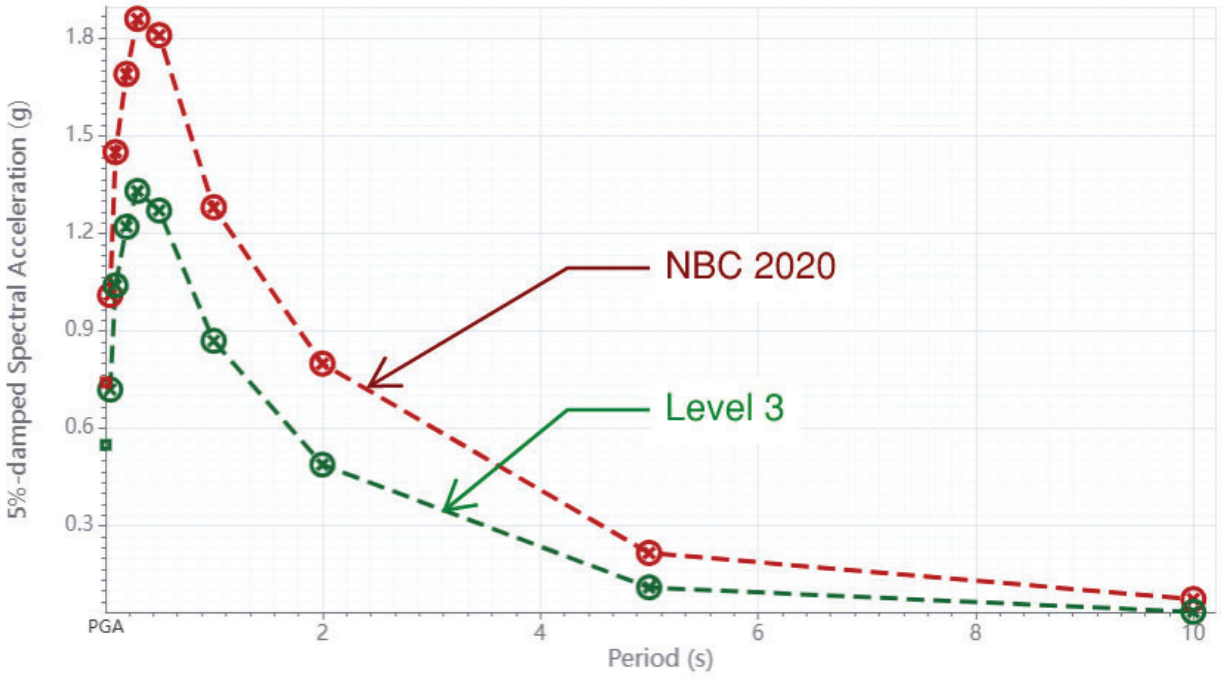

Figure 2: Seismic Hazard

Based on our analysis, the existing lateral load resisting system does not have sufficient capacity and can only resist approximately 30% of Level 3 Seismic Force Levels (or 20% of NBC 2020 seismic force levels). The critical elements appear to be the wood frame exterior walls and diaphragm connections to these exterior walls. In addition, the foundations have not been sized to resist the compression or uplift requirements of exterior shear walls if they were upgraded.

Conceptual Seismic Upgrade Scheme

There is currently no guidance within the National Building Code regarding upgrading existing buildings to meet current seismic requirements. The Authority Having Jurisdiction (AHJ) – in this case, the Town of Sidney – ultimately decides whether or not buildings are required to be upgraded, and if so, to what level. In our experience, the AHJ typically relies on the recommendations outlined in *Structural Commentary L* (refer to Appendix A for an excerpt from this commentary). The proposed renovation to the building is considered a "Major Renovation", which extends the useful lifespan of the building. This commentary recommends a minimum upgrade to "Level 3", which roughly equates to 67% of the NBC 2020 seismic force levels. A seismic upgrade for this structure to achieve a "Level 3" seismic force level would include the following:

- Diaphragm strengthening of the Roof and Level 2 diaphragms, which would consist of blocking and nailing the existing plywood panel edges. Flooring, ceiling finishes and roofing would need to be removed to perform this upgrade.
- The addition of sheathed wood frame interior shearwalls on both levels with hold-down anchor systems.
- The strengthening of exterior walls with additional plywood and new hold-down anchor systems.
- The addition of diaphragm connections to the new and strengthened shearwalls.
- The addition of new foundations under the new interior shearwalls
- Upgrading of the existing foundations under the exterior strengthened shearwalls. Upgrading likely involves locally removing the existing foundations and pouring new and larger foundations.

Summary

The Sidney Town Hall building is performing well for its age but is nearing the end of its useful life span. This structure is seismically deficient, and a renovation and subsequent seismic upgrade would be very intrusive and expensive. Given the potential cost of this renovation, we strongly suggest the client review and consider all potential options, such as constructing a new building entirely conforming to the most recent building code.

We trust the above information is satisfactory. If you have any questions or would like to discuss our findings in more detail, please contact the undersigned.

Yours truly,

Skyline Engineering Ltd.

Cameron Marshall, P.Eng.

Principal

Reviewed by:

Cord MacLean, P.Eng., LEED AP

Principal

APPENDIX A: COMMENTARY L – EXCERPT

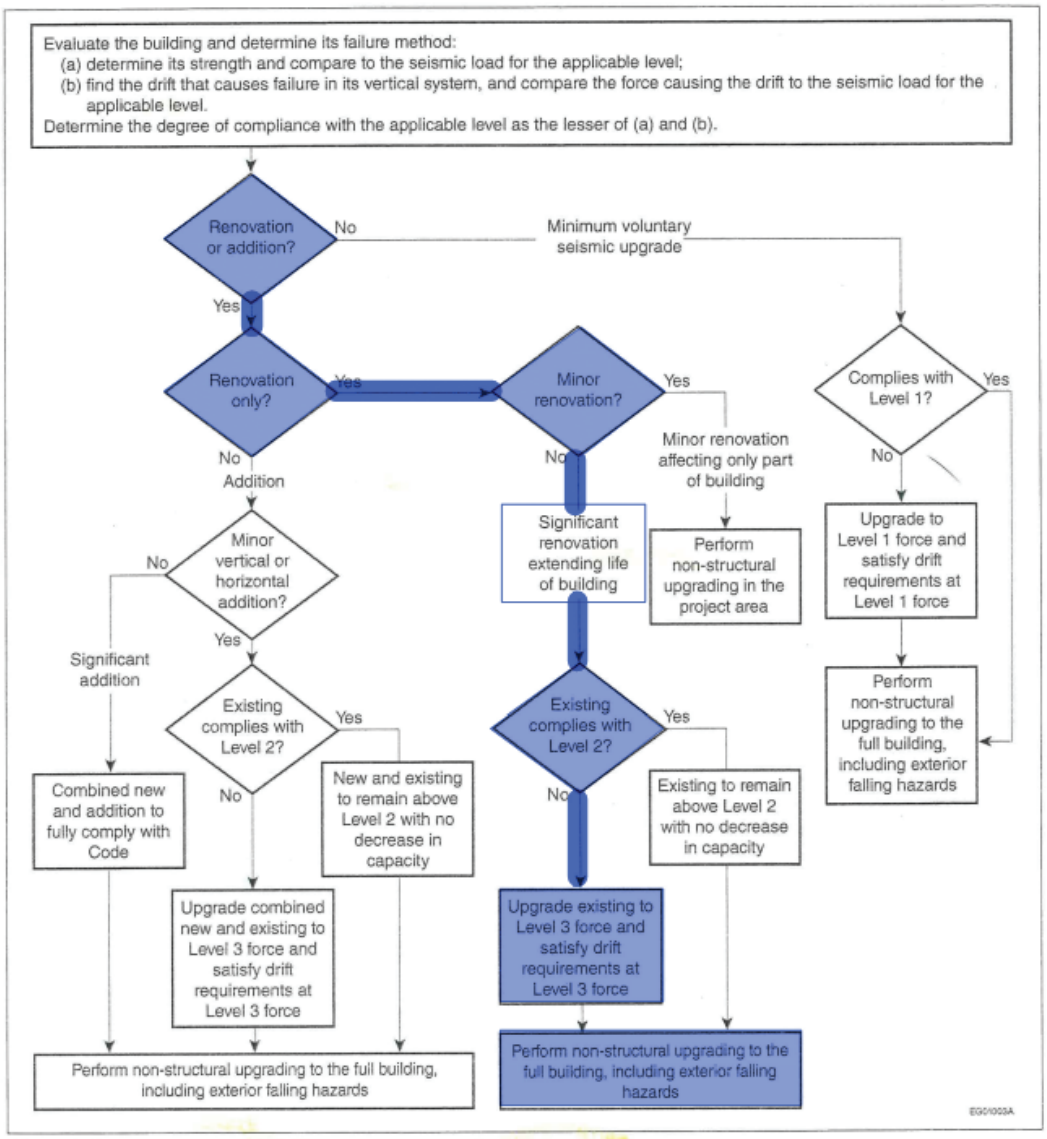

Figure L-1
Flow chart for the seismic assessment and upgrading of existing buildings

Notes to Figure L-1:

(1) The following assessment/upgrading levels are used in the seismic assessment and upgrading of existing buildings:

Level 1: This assessment/upgrading level is for minimum voluntary seismic upgrades. An evaluation of the SFRS must be performed and deficiencies such as weak storeys, discontinuities in the SFRS, inadequate capacity, excessive irregularity including torsional eccentricity, and incomplete lateral load paths must be identified. The upgrade must address these deficiencies as a priority and must also address the restraint of falling hazards, such as parapets. The use of spectral response acceleration values corresponding to 0.5 times those with a probability of exceedance of 5% in 50 years (1/1 000 per year) is suggested.

Level 2: For this assessment/upgrading level, the use of spectral response acceleration values with a probability of exceedance of 10% in 50 years (1/475 per year) is suggested.

Level 3: For this assessment/upgrading level, the use of spectral response acceleration values with a probability of exceedance of 5% in 50 years (1/1 000 per year) is suggested.

Town Of Sidney Municipal Building
Building Assessment Report
Appendix B:
Mechanical Report

MECHANICAL CONDITION ASSESSMENT

Town of Sidney
Municipal Hall

2440 Sidney Ave, Sidney, BC

Project No.: 250304
June 2, 2025

Prepared for:

Number Ten Architectural Group

200-1619 Store St, Victoria, BC V8W 1N5

Prepared by:

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PROJECT BACKGROUND

Avalon Mechanical is working with Number Ten Architectural Group to provide a Condition Assessment of the Town of Sidney's Municipal Hall building at 2440 Sidney Avenue in Sidney, BC. The building is a 3-storey structure originally constructed in the early 1960s. Major alterations include the administrative addition and the council chambers renovation.

Photos and observations included within this report were taken during a walkthrough of the building on May 2, 2025 with the assistance of facilities staff.

RELEVANT CODES AND STANDARDS

The building has been reviewed against the following codes and standards, as they would apply to proposed improvements of the mechanical systems.

- British Columbia Building Code - 2024 Edition
- National Energy Code of Canada for Buildings – 2015 Edition
- NFPA 13 Standard for the Installation of Sprinkler Systems - 2013 Edition
- ASHRAE 62.1 Ventilation for Acceptable Indoor Air Quality - 2001 Edition

REFERENCED DRAWINGS AND DESIGNS

Mechanical drawings from the original 1963 drawings were referenced during the preparation of this report. However, only visible portions of the mechanical systems able to be examined at the time of review were evaluated.

FIRE SUPPRESSION

The building is not sprinklered.

Fire extinguishers were installed throughout the building and were well marked.

PLUMBING

Natural Gas

A natural gas meter is installed just north of the boiler room, outdoors, and accessible from the north parking lot. Natural gas is used primarily for building heating, and for the building's backup generator.

Figure 1. Natural gas generator (left) and natural gas meter adjacent to boiler room (right)

Plumbing Fixtures

Plumbing fixtures were standard vitreous china type, and were in moderate condition. Toilets and sink faucets were generally not low-flow type. Accessible washrooms were equipped with grab bars, but did not have bolt down toilet lids, sink basins that complied with accessibility standards, or insulation on plumbing traps or hot water supplies under sinks.


Figure 2. Typical washroom fixtures

Domestic Water System

Domestic water piping is concealed within wall and floor assemblies, and was not examined during the preparation of this report.

Piping which is original to the building is well past its expected service life and should be replaced.

Storm Water

Scuppers and internal roof drains direct stormwater to underground drainage piping. External rainwater leaders were a combination of galvanized sheetmetal downspouts and PVC, leading to underground PVC drainage piping. We expect that any internal rainwater piping will be cast iron, but none was observed on site

and is likely concealed above ceiling assemblies. Exterior storm piping was in moderate condition.

Sanitary Sewer

Sanitary piping was mainly concealed within floors and wall assemblies. Drainage piping, where observed, was primarily copper. ABS and metal traps have both been used as well. Plumbing vent terminations on the roof were copper with aluminum flashings.

We expect that almost all sanitary piping within the building is original to the building and is at the end of its useful life.

Original architectural drawings indicate a 4" sanitary sewer on the north side of the building, running westwards towards the property line.

HVAC

General

The building's primary heating system is a natural gas boiler distributing heat through finned radiators throughout the structure. Supplementary heating systems include electric baseboard heaters, split system heat pumps, and packaged rooftop heat pumps. The packaged heat pumps also serve to provide ventilation air throughout the main floor of the building, including the council chambers. Ventilation in the basement and upper floor appear to be predominantly through natural ventilation, using operable windows.

Hydronic Heating

A natural gas hydronic heating boiler is located in the building's boiler room. The original mechanical drawings indicate that 5 zones were provided: two for the basement, and three for the main floor. Heating circulators are all located adjacent to the boiler. Piping within the boiler room was a combination of threaded steel and soldered copper piping. The boiler is an atmospherically vented Weil McLain.

Heating within the basement and main floor areas is through finned radiators and cabinet heaters. Reportedly, the system operates poorly. Hydronic heating service to various parts of the building is unreliable, or conflicts with other heating/cooling systems.

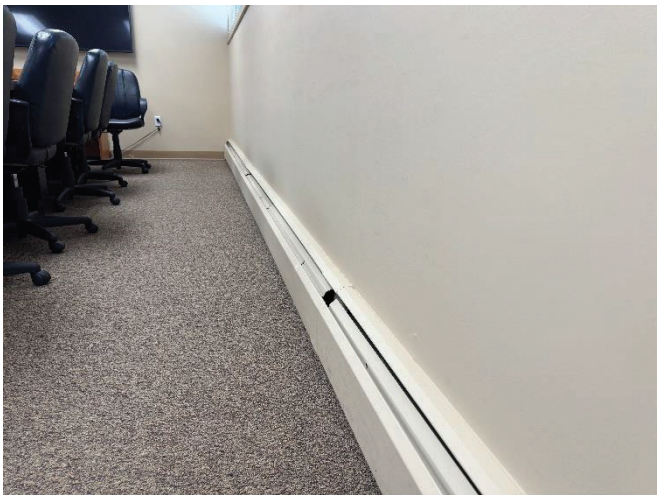

Figure 3. Hydronic radiator (left) and hydronic heating boiler with piping (right)

Cooling and Mechanical Ventilation

Cooling and ventilation is provided by several packaged rooftop heat pumps. The heat pumps are equipped with economizers and barometric relief hoods. Air is distributed through lined ductwork on the roof, to ceiling diffusers within the various office spaces on the main floor. The packaged rooftop heat pumps were manufactured in 2019-2020, and have 10+ years of remaining useful service life.

Figure 4. Rooftop ductwork and packaged rooftop heat pump (left) and rooftop ductwork supports (right)

The rooftop ductwork, which is supported on sleepers which are laying on top of the roof membrane, appears to be in good condition.

The following rooftop packaged heat pumps were installed:

- Lennox KHB036S4DN1P (3-ton unit serving main floor west)
- Lennox KHB036S4DN1P (3-ton unit serving main floor central)
- Lennox KHB030S4DN1P (2.5-ton unit serving council chambers)

Cooling is also provided through ductless split system heat pumps, which serve the server room and the upper level office areas.

Figure 5. Ductless split system fan coil in office space (left) and ductless split outdoor heat pumps (right)

The following split system heat pumps were installed:

- Fujitsu Halcyon AOU18RLXFZ (serving upper office areas).
- Fujitsu Airstage AOU24RLXFZ (serving upper office areas).
- Daikin RXS24DVJU (serving server room).
- Mitsubishi MUY-GE18NA (serving server room).

RECOMMENDATIONS

There is limited opportunity for mechanical retrofit within the building to the degree that it would be expected in a typical office building of this type.

The ceiling space of the basement is quite low, which leaves insufficient room for a conventional ventilation or cooling upgrade. Ductwork could be added, but would necessitate additional dropped ceilings or bulkheads throughout, further compromising an already cramped and low ceiling.

The main floor has a slightly higher ceiling, but also suffers from the same constraints. Ductwork could continue to be utilized on the roof of the building, but this will have ongoing reductions in system lifetime and is overall a poor energy efficiency choice.

The hydronic heating system is in poor condition and requires replacement. However, we do not recommend replacing the hydronic system as is. Alternatives, such as additional heat pump systems, should be examined first, since they would also offer the opportunity to introduce mechanical ventilation and high efficiency heating/cooling instead of purely heating.

Equipment Item No.	Replacement Timeline	Recommended Budget	Recommendations/Comments
Domestic water piping 1.1	0-2 years	$40,000	The copper domestic water piping is nearing the end of its service life and should be planned for replacement.
Drainage piping 1.2	5-10 years	Unknown	The drainage piping is of unknown condition, but is likely at the end of its service life and should be planned for replacement.
Hydronic Heating Loop Piping 1.0	0-2 years	Unknown	The hydronic heating piping is at the end of its useful service life and is recommended to be replaced with additional heat pumps and electric heating.
Packaged rooftop units 1.1	10-15 years	$45,000	The units were installed in 2019-2020, and should provide many remaining years of service.
Split system heat pumps 1.2	10-15 years	$32,000	The units are of varied ages, but are in good condition.
Rooftop ductwork 1.3	5-10 years	$50,000	Allow for regular replacement of rooftop ductwork.
Add ventilation to basement 2.1	0-2 years	$60,000	Add mechanical ventilation to basement areas. Allow for additional dropped ceilings or bulkheads.
Add zoning dampers to packaged systems 2.2	0-5 years	$30,000	Add VAV dampers to improve zoning on main floor heating/cooling systems
Integrate hydronic heating control system 2.3	0-5 years	$40,000	Provide a control upgrade to integrate the hydronic heating system with the packaged rooftop controls

We would like to clarify that individual systems, such as the packaged rooftop units or split heat pumps, are in moderate condition and do not require immediate replacement. However, overall, the building is in poor condition mechanically. The ventilation and heating system for the basement is sub-standard, including the fitness area. The cooling systems are not zoned well and are not well suited to the current floorplans. The various control systems are not integrated and will lead to poor energy efficiency. The occupied areas have low headroom issues, which limits the ability to improve any of these issues.

CLOSURE

Mechanical system life expectancy has been based on published values of life expectancy for mechanical equipment and systems by ASHRAE and CIBSE in combination with experience based knowledge from engineers and contractors. The values are an average across the industry and are not specific to certain environmental conditions, quality of equipment manufacturing, or level of maintenance. Because of this, the values should be used as a general guide for equipment life, but the actual expected life should be based on the condition of the equipment on site and level of performance.

This report is for the use of the intended client only and was produced in accordance with good engineering practice. Avalon Mechanical Consultants Ltd. will not be responsible for any unauthorized third-party use of this report. The assessments and conclusions in this report are based on information gathered and provided by various methods, and should new or conflicting information arise, Avalon Mechanical Consultants Ltd. requests the opportunity to amend the report as required.

Report Prepared by:

AVALON MECHANICAL

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Town Of Sidney Municipal Building
Building Assessment Report
Appendix C:
Electrical Report

numberTEN
architectural group

10

Permit to Practice #1001513

SIDNEY TOWN HALL

FEASIBILITY REPORT

2440 Sidney Ave
Sidney, BC V8L 1Y7
Project Number: 01-25-063

PREPARED FOR

Number 10 Architectural Group

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Revision 00
May 29, 2025

1.0 Executive Summary

An electrical assessment of Sidney Town Hall was completed by e2 Engineering Inc. The review identified widespread deficiencies across all major electrical systems, including lighting, emergency power, fire alarm, security, and distribution.

If the goal is to extend the building's service life, a full electrical system retrofit is necessary. The scope of work required is extensive and is expected to exceed the cost of electrical construction in a new build due to the challenges of retrofitting within existing conditions.

2.0 Assessment

A site assessment conducted on May 2, 2025 identified several significant electrical deficiencies at Sidney Town Hall, each of which impacts the building's safety, operational performance and long-term viability.

The lighting systems throughout the facility, including surface-mounted, recessed, and troffer-type fixtures, have reached the end of their operational life. Full replacement of these luminaires is necessary to ensure reliable illumination and improved energy efficiency.

The current lighting control system relies on basic on/off switches, which offer no energy-saving functionality. Upgrading to occupancy sensor controls would result in substantial energy savings and reduced unnecessary electrical consumption. Emergency lighting provisions are also lacking, particularly in critical areas such as washrooms and exit stair pathways. The existing self-contained emergency lighting units are maintenance-intensive and do not provide consistent reliability. A centralized battery-backed emergency lighting system is recommended to streamline maintenance and enhance system performance.

At present, the building lacks a functioning security system, which poses a significant risk given the anticipated long-term occupancy of the facility. Installing a modern security system is strongly advised to ensure the safety of occupants and protect municipal assets. The building's access control infrastructure is also insufficient, with only two card readers serving the entire premises. Expanding this system to include additional access points would enhance security and improve control over facility entry.

The fire alarm system does not meet current accessibility standards. Manual pull stations are installed at heights that are not compliant with current accessibility principles, and there are no visual strobes to assist occupants with hearing impairments. Considering the building is not

sprinklered and relies solely on heat detection, significant upgrades are needed to bring the fire alarm system in line with modern safety and accessibility expectations.

In terms of general power infrastructure, all electrical receptacles within the facility are outdated and may present fire hazards due to age and wear. A full replacement of these devices is essential to comply with current electrical safety standards. The original building wiring has also reached the end of its service life and requires complete replacement to maintain safe and reliable operation.

Electrical panelboards are fully loaded, obsolete, and do not offer any spare capacity or breaker space, limiting the ability to make future modifications or additions. Immediate replacement is necessary to restore flexibility and integrity to the electrical distribution system. Although the main distribution breaker has been recently upgraded, the overall layout and condition of the electrical room fail to meet BC Hydro requirements. Moreover, the facility currently operates on a 120/208V single-phase service, which is atypical.

A standby generator is installed on-site and includes a dedicated generator panel that supplies backup power to the server room. The generator itself is in good condition; however, its current load is minimal, and it does not support broader critical building systems. As such, its utility during a power outage is limited.

3.0 Conclusion

Based on these findings, if the objective of this project is to extend the service life of Sidney Town Hall, a full electrical system retrofit is required. This would involve upgrading virtually all components of the electrical infrastructure, including distribution, life safety, power, lighting, controls, and specialty systems. The scope and complexity of this retrofit would likely exceed the cost of electrical construction for a new building, as a new facility would not be constrained by the limitations and unknowns of existing site conditions.

Town Of Sidney Municipal Building
Building Assessment Report
Appendix D:
Existing Building Plans

Sidney Town Hall

LOWER FLOOR

Sidney Town Hall

MAIN & UPPER FLOOR